User Manual

# MDCMS

## Change and Distribution Management from Midrange Dynamics

Version 8.1.4
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# Table of Contents

# 1 Overview of the MDCMS Manual

This manual is a guide for installing and using the Midrange Dynamics Change Management System. This manual will refer to this system as MDCMS. MDCMS is a tool that helps manage source and objects throughout the development, migration, modification, and distribution life cycle.

# 2 Starting MDCMS

The MDCMS menu is accessed by typing MDCMS from a command line. Press F4, if necessary, to select a product instance other than the default instance.

```
MDLCMS                              COMPANY NAME                          4.09.15
SCRN1                             MDCMS MAIN MENU                         7:36:08

                   Opt  Description
                    1   MDCMS Setup Menu

                    2   Object Manager
                    3   RFP Manager

                    4   RFP History
                    5   Object History/Archive

                    6   Project Manager

                    7   MDXREF

                    8   Send RFP to Remote System
                    9   Receive RFP from Remote System

           Selection: _

F3=Exit    F6=Messages    F8=Submitted Jobs    F11=View Output    F21=Sys Command
```

Option 1: MDCMS Setup Menu
The first step in preparing to use MDCMS is the *MDCMS Setup Menu*. This portion of MDCMS defines the environment, object types and methods of source and object management. It is a mandatory process for using MDCMS.

Option 2: Object Manager
The *Object Manager* function contains the daily processes for checking out source or objects from application environments, making modifications to the checked-out source, and requesting the installation of the changes back into the application environments.

Option 3: RFP Manager
The *RFP Manager* function provides the means to create, manage, submit, approve and install Requests for Promotion, which are installation packages containing 1 or more objects for deployment.

Option 4: RFP History
The *RFP History* function lists all installed Requests for Promotion to view the activity logs, perform a rollback or to copy a completed RFP to a new RFP.

Option 5: Object History/Archive

The *Object History/Archive* function is a post-installation process for reviewing Source and Object installations. The installation process archives the source or object that is being replaced in application environments. This function provides a method of retrieving previous versions of application source or rolling back objects.

Option 6: Project Manager
*Project Manager*. Here, users may create and maintain requests for work to be done on a Project or Task basis.

Option 7: MDXREF
*MDXREF* is a tool used to view the inter-relationship between objects. This includes what and how programs use files, what and how files relate to one another, the complete process flow of applications, etc. See the MDXREF manual for instructions and more information.

Options 8 & 9: Send RFP to Remote System / Receive RFP from Remote System
When MDCMS is installed on 2 or more IBMi systems or logical partitions, application changes may be transported quickly and safely between the systems/partitions. This allows for a development system to be separate from a production system with very little hassle. Or, it allows for unlimited remote IBMi systems to send and receive updates simultaneously.

Function Keys:
**F3=Exit** – Exit MDCMS
**F6=Messages** – Display messages
**F8=Submitted Jobs** – Work with submitted jobs
**F11=View Output** – Display the MD Output panel and other spool files
**F21=Sys Command** – Command line prompt

# 3 Setting up MDCMS

```
CMSMNU2                          COMPANY NAME                              4.09.15
SCRN1                         MDCMS Setup Menu                             7:36:32

   Opt  Description                    Opt  Description
    1   Application Groups              11   System Settings
    2   Promotion Levels                12   Email Settings
    3   Attributes                      13   Services
    4   Commands/Scripts                14   Logging
    5   Templates                       15   User Groups
    6   OS/400 Locations                16   Project Costs
    7   Distribution Levels
                                        17   Push Settings Data to Locations
    8   Security Settings (MDSEC)       18   Send Settings to Remote System
    9   License Keys                    19   Receive Settings from Remote System
                                        20   Create Config Deployment Settings
                                        21   MDCMS Configuration Report


      Selection: __

F3=Exit    F6=Messages    F8=Submitted Jobs    F11=View Output    F21=Sys Command
```

The ***MDCMS Setup Menu*** consists of several options that are used to define the overall system environment for MDCMS and options for replicating the environment on remote systems.

Option 1: Application Groups
Defines the name of each business application process within MDCMS.

Option 2: Promotion Levels
Defines the object environments (library list) of the applications including the job descriptions and approval, installation and archiving settings.

Option 3: Attributes
Defines the installation libraries for each source and object type within an Application/Promotion Level.

Option 4: Commands
Defines the default commands per Attribute or Promotion for compiling and installing objects.

Option 5: Templates
Definition Templates for Object Authority, Replication and searching that can be applied to Attributes.

Option 6: OS/400 Locations
Defines the connection properties for DDM, MDWorkflow and file transfer between this partition and all target OS/400 partitions.

Option 7: Distribution Levels
Defines the target levels on remote locations for the sending of Promotion Packages.

Option 8: Security Settings (MDSEC)
Defines user authority to MDCMS and MDXREF and provides tools to manage authorization lists and DDM security. MDSEC may also be started by typing the command MDSEC on a command line.

Option 9: License Keys
Allows for the update of the MD product license keys in case the previous keys are about to expire or a new MD product license is to be added.

Option 11: System Settings
Defines the system-level settings, such as the title to be displayed at the top of most MD product screens, the ID to identify the system that sends a promotion package, and the naming format to use for temporary libraries. Applied MDCMS patches can be viewed and rolled back from here as well.

Option 12: Email Settings
Defines the connection properties to a SMTP server, email logging and a list of email addresses to be used by the MDMAIL and MDMAILF email APIs.

Option 13: Services
Defines the job queue, start and end times for each of the MDCMS batch services.

Option 14: Logging
Lists each of the log tables in MDCMS and allows the administrator to set the retention period for each log entry type.

Option 15: User Groups
Defines User Groups and Group Types that can be used for email recipients, projects and MDWorkflow test acceptance.

Option 16: Project Costs
Defines the rules for applying the cost per hour to entered time for Projects.

Option 17: Push Settings Data to Locations
Sends some or all settings to a remote IBM i system using a DDM Push connection definition.

Option 18: Send Settings to Remote System
Sends some or all settings for a Promotion Level to a remote IBM i system using a file transfer connection definition.

Option 19: Receive Settings from Remote System
Receives settings for a Promotion Level from a remote IBM i system that had been sent using option 18 on that system.

Option 20: Create Config Deployment Settings
Generate an Application to manage the MDCMS product, including the deployment of new versions, patches, license keys and settings.

Option 21: MDCMS Configuration Report – generate an excel file with a sheet for each configuration file in MDCMS.

Function Keys:
**F3=Exit** - Return to MDCMS Main Menu
**F6=Messages** – Display messages
**F8=Submitted Jobs** – Work with submitted jobs
**F11=View Output** – Display the MD Output panel and other spool files
**F21=Sys Command** – Command line prompt

## 3.1 Application Groups

The Application Maintenance function defines application software into manageable groups for MDCMS.

```
CMR233                              COMPANY NAME                              11/19/11
SCRN1                           Application Codes                             7:36:53

                                                    Position to Appl: ____
Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display  L=Linked Apps

 Opt  Appl  Description                              RFP Start Link Cst Jrn LFM Trg Stm
  _   MD2K  MD2000 Interface Applications               160002  Y    N   Y   Y   N   N
  _   ACCT  XYZ Accounting Package                       80002      Y   Y   Y   Y   Y
  _   IBUS  International Business System              490000  Y    Y   Y   Y   Y   N




                                                                                Bottom
 F3=Exit    F6=Add    F11=Output
```

Screen Definitions:
Position to Appl
This is used to position the display to a specific Application Group.

Opt
2=Edit – Change the Description of an Application Group
3=Copy – Copy values for Entity to a new Application Group
4=Delete – Delete an Application Group. This is only possible if there are no Levels defined for the Application Group
5=Display – View all information for the Application Group
L=Linked Apps – Manage the list of Applications that contain objects that reference objects existing in the selected Application

Appl
This is a 4 character abbreviation of an Application Group to be used by MDCMS, MDXREF and MDSEC.

Description
A brief title to identify an Application Group.

RFP Start Index
The start position of new RFP numbers. An RFP number is the identifier for an installation package. By default, MDCMS spaces the range for RFP numbers 40000 positions apart so that each application has its own range of numbers. If preferred, applications can start at any point, including at the same point as other applications. MDCMS ensures that any generated number is not already in use by the same or other application.

Automatically Reapply Constraints
Y – When a physical file is installed for the given application, automatically reapply all constraints that were defined for the previous version of the file.
N – Any constraints will not be automatically reapplied

This value is the default for all files in the application and partition, and can be overridden for specific files.

Automatically Reapply Journaling
Y – When a physical or logical file is installed for the given application, automatically reapply journaling based on the settings defined for the previous version of the file.
N – Journaling will not be automatically reapplied

This value is the default for all files in the application and partition, and can be overridden for specific files.

Automatically Reapply LF Members
Y – When a logical file is installed for the given application, automatically recreate all members that were defined for the previous version of the file.
N – Any logical file members will not be automatically recreated

This value is the default for all files in the application and partition, and can be overridden for specific files.

Automatically Reapply Triggers
Y – When a physical file is installed for the given application, automatically reapply all system (non-SQL) triggers that were defined for the previous version of the file. Any SQL triggers that should be re-applied should be requested for recompile and placed on same RFP as the file.
N – Any triggers will not be automatically reapplied

This value is the default for all files in the application and partition, and can be overridden for specific files.

Update Object Description's User Defined Attribute with Attribute
Y – When an object is installed for the given application, automatically put the MDCMS attribute value in the object description's user defined attribute.
N – The object description's user defined attribute will not be automatically updated

Update Object Description's Object Control Level with RFP #1
F – When an object is installed for the given application, automatically put the MDCMS From RFP value in the object description's Object Control Level.
O – When an object is installed for the given application, automatically put the MDCMS Origin RFP value in the object description's Object Control Level.
C – When an object is installed for the given application, automatically put the MDCMS Current RFP value in the object description's Object Control Level.
N – The object description's Object Control Level will not be automatically updated

The combination of the RFP types #1 and #2 make up position 8 of the Object Control Level. It is necessary to store this in the object because it designates the type of RFPs stored in the object. The types of RFP's being stored in objects could change for future stamping after some stamping was already done to some objects.

Update Object Description's PTF with RFP #2
F – When an object is installed for the given application, automatically put the MDCMS From RFP value in the object description's PTF.
O – When an object is installed for the given application, automatically put the MDCMS Origin RFP value in the object description's PTF.
C – When an object is installed for the given application, automatically put the MDCMS Current RFP value in the object description's PTF.
N – The object description's PTF will not be automatically updated

Update Object Description's APAR with Appl and Level
Y – When an object is installed for the given application, automatically put the MDCMS Appl and Level values in the object description's APAR.
N – The object description's APAR will not be automatically updated

Update Object Description's LICPGM with Project, Task and Subtask
Y – When an object is installed for the given application, automatically put the MDCMS Project, Task and Subtask values in the object description's LICPGM. The object's LICPGM can store 14 characters. The project name (maximum of 12 characters), followed by the task and then subtask is the order of precedence how the LICPGM is used. For example, an actual 12 character project name will use up the LICPGM with the task and subtask not being stored in the object's LICPGM.

If there are two tasks assigned to an object, the object's LICPGM will get stamped with the first task.
N – The object description's LICPGM will not be automatically updated

Function Keys:
**F3=Exit**
**F6=Add** –Add a new Application Group
**F11=Output** – Display the MD Output panel and other spool files

### 3.1.1 Linked Applications

View and Manage the list of Applications that contain objects that reference objects existing in the selected Base Application.

```
MDCALNK                          COMPANY NAME                          01/22/14
SCRN1                        Linked Applications                       08:22:59

Base Appl: TEST  Test äpp

Linked.: Y = Objects in selected Appl reference Objects in Base Appl
Inc Lib: Y = Include Base Appl RFP Temp Libs when compiling Linked Appl RFP

Linked  Inc Lib  Appl  Description
  Y        Y     DATA  Test Data 22
  Y        _     INV   Inventory Application
  _        _     BSIS  Rene Test 2
  _        _     SKIK  Test Data 22


                                                                      Bottom
F3=Exit    F11=Output
```

All defined Applications are listed on this screen. The Applications that are currently linked to the Base Application are listed first.

Linked
Y - The Application contains objects that reference objects in the Base Application indicated at the top of the screen. If an Application is linked, MDCMS will show the referencing objects when using the option Include Related Objects from the Object Manager for an object in the Base Application.

For example, a file in the Base Application is checked out. The programmer then uses option I=Include Related Objects in the Object Manager to check out impacted programs, etc. MDCMS will first show dependencies within the same Base Application and then will proceed to show the dependencies in each linked application.

When submitting an RFP for Promotion from the Base Application, MDCMS will also check and warn the programmer of any dependencies in the linked Applications.

The Level Number in the Linked Application must match the Level Number in the Base Application for the Referencing to be considered.

Inc Lib
Y – Any temporary MDCMS Installation Libraries for Base Application RFPs will be included in the library list during the compile of objects for a Linked Application RFP. The libraries will be placed after the temporary libraries for the Linked RFP but before the rest of the library list.

This is typically relevant for environments, such as Production, that have the RFPs compiled and prepared during the day and then have the installation itself occur at a later time.

For a Base Application RFP to be considered, the status of the RFP must be one of the following:
02 – Waiting for Approval
03 – Waiting for Installation
IP – Installation Pending
04 – Installation Job submitted but not yet started

## 3.2 Promotion Levels

Promotion Level Maintenance defines and sequences the specific environments for the installation of objects for an Application.

```
CMR229                          COMPANY NAME                              4.09.06
SCRN1                  Promotion Level Maintenance                        7:37:14

                                                  Nxt BsO Chk RFP RFP RFP RFP RFP
         Appl Lvl Description         Job Desc   Lvl Lvl Out Rcv Sbm Apr Ins Snd
Filters: ____  __ ____________________ _________  __  __  _   _   _   _   _   _

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display  J=JOBD  L=Libraries  V=Validate  X=XREF

                                                 Nxt BsP Chk RFP RFP RFP RFP RFP
  Appl Lvl Description                 Job Desc  Lvl Lvl Out Rcv Sbm Apr Ins Snd
_ JRN  10  Journal Inspector           JRN10               Y   N   N   Y   Y   Y
_ OLY  10  Olympic Test Environment    OLY10           8   N   N   N   N   Y   N
_ OPER 10  Operations Environment      BLD10      20       Y   N   N   Y   N   Y









                                                                          Bottom
 F3=Exit    F6=Add    F11=Output    F21=Sys Command
```

Screen Definitions:
Filters
Filter the list of Promotion Levels based on the values entered into the individual fields. For the Appl, Description, and Job Description filters, a Promotion Level will be listed if any part of the field matches the value entered in the filter.

Option
**2=Edit** – Change the parameters of a Promotion Level
**3=Copy** – Copy a Promotion Level's parameters to a new Promotion Level
**4=Delete** – Delete a Promotion Level
**5=Display** – Display the parameters for a Promotion Level
**J=JOBD** – Display the job description for the Promotion Level
**L=Libraries** – view a list of all Object Libraries/Folders and Source Libraries that are defined as target libraries by attributes defined for the level. If authorized, a new value for the name of a library can be entered, which will be applied to all attributes in the level that use that library.
**V=Validate** – Create a validation report for the level. See section Promotion Level Validation Report for more details.
**X=XREF** – Navigate directly to the MDXREF Cross Reference build screen for the level. This is so that the information for the level can be added quickly for help with setting up attributes for the level.

Promotion Level Parameters:

Application
This is a 4 character abbreviation of an Application Group to be used by MDCMS.
The Application Group must exist - see Application Group Maintenance.

Install Level
This is a 2-digit numeric identification of the Promotion Level. The levels are in sequential numeric order. The lowest numeric value represents the lowest Promotion Level and the highest represents the highest Promotion Level.

Example:
10 = Test
50 = Quality Control
90 = Production

Description
A brief statement to identify the Promotion Level.

Job Description
This is the Job Description used for compiling objects for an application installation. The Library List defined in the JOBD is used for the compile environment of objects. The User Profile defined in the JOBD becomes the default owner of all installed objects for a specific level.

Next Level
If objects that have been installed into this level are to be migrated to a higher level on the same system, then the number entered here identifies the level for the objects to be migrated to. If a migration from this level should not occur (either directly or indirectly), then the next level should remain blank.

Direct Migration
Y – The migration to the next level occurs directly from this level
N – If a Next Level value is defined, then after installation into this level, the objects are sent to a level on a different system and those objects are eventually sent back to this system directly to the next level.
This is typically used when the next level places the objects into the core (Production) libraries after having gone through user testing.

Provide Indirect Source
Y – If a Next Level value is defined and flag Direct Migration is set to N, Provide Indirect Source may be set to Y. This indicates to MDCMS that source will not be sent to a different system, but should be staged on this system for migration to the next level once the objects are sent back to this system.

This is typically used on a system prior to Production when source is not allowed on Production. Then, the core libraries on this system will contain the correct source version that correlates to the object in Production.

N – Source is not staged for indirect migration to the next level

Archive Generations
This is the default number of maximum archived copies to store for source, objects or data collections. If, for example, a level is set to 3 archived copies, then up to 3 iterations of change will be archived. When a specific source member or object is changed for the 4th time, the 1st change is removed from archive history and the cycle is continued. A maximum of 99,999 generations are possible.

Data collections (*DATA or *DTAGRP) attributes can individually set a different maximum value of between 0 and 99 due to the potential large size of those items.

Limit Archived Source
Y – the number of generations of archived source for a specific source member or IFS source is limited to the number defined in field Archive Generations.
N – there isn't a limit for source generations – all generations will be stored

Based on Level
If multiple versions of the same application are managed, they are to be identified by level. The Based on Level represents the application version that existed prior to this level. This provides 2 features:

1) When an object is checked out of the Install Level, but the source or object is not found in the chain for that level, MDCMS will then check if it exists in the chain for the Based on Level and then that level's Based on Level, etc. This allows for each new version of an application to be a delta of the prior version.
2) When an object is checked out of the Based on Level, MDCMS will prompt for resolution of the objects in the newer Level(s) to ensure that fixes in older versions of objects get pushed forward to newer versions.

For example:
Install Level = 10 and represents version 1.1.
Based on Level = 9 and represents version 1.0.

When object is requested for version 1.1 and isn't found, MDCMS looks in version 1.0.
When a fix is made in version 1.0, MDCMS prompts user for resolution of fix in version 1.1.

Resolution Required
Y – Before an RFP can be submitted, all new, modified or deleted objects that exist in newer version levels of the application must be resolved. Resolution prompting occurs when another level is based on this level and the object exists there as well, or it is a new object.

N – The programmer can submit the RFP for this level without resolving all version conflicts.

Allow Checkout
The Allow Checkout flag specifies if objects may be requested for modification in the Object Manager for this level. Only levels that are lower than the lowest "Next Level" are allowed a value of Y.

Y – Allow for the direct request to modify an object. This value is recommended to only be used on the development system.

N – Do not allow for the direct request to modify an object. Updates, recompiles and migrations from a lower level or a remote system are allowed.

Allow Receipt
The Allow Receipt flag specifies if objects may be received from another system into this level.

Y – Allow RFPs to be received for this level.
N – Do not allow RFPs to be received for this level.

Delta Object Level
The Delta Object Level flag specifies if only new or modified objects (delta objects) are intended for this level. Technically, a delta level consists of libraries that reside at the top of the library list at run-time and the lower libraries belong to the core permanent environment.

An entry of 'N' specifies that objects remain permanently in this level.

An entry of 'Y' will allow for the automatic deletion of objects. The objects will be deleted when all of the following requirements are filled:

- The exact same object (based on the internal MDCMS Object version ID) with the same MDCMS attribute is installed into a level with a higher level number than this level
- The attribute for the object at a later level in the migration path uses an Object Deletion Level template that includes this level

Delta Source Level
The Delta Source Level flag specifies if only new or modified source (delta source) are intended for this level.

An entry of 'N' specifies that source members remain permanently in this level.

An entry of 'Y' will allow for the automatic deletion of source members. The members will be deleted when all of the following requirements are filled:

- The exact same object (based on the internal MDCMS Object version ID) with the same MDCMS attribute is installed into a level with a higher level number than this level
- The attribute for the object at a later level in the migration path uses a Source Deletion Level template that includes this level

Emergency Level
The Emergency Level flag specifies if only temporary source/objects (emergency objects) are intended for this level and should be removed again when the objects are then installed into the standard levels. An entry of 'Y' will allow for the automatic deletion of source or objects. The source or objects will be deleted when all of the following requirements are filled:

- The Delta Object and/or Delta Source flags are set to Y depending on if emergencies pertain to Objects, Source or both
- An object with the same name and with the same MDCMS attribute is installed into a later level in the migration path. The internal MDCMS Object version ID does not need to match.
- When pertaining to objects, the attribute for the object at a later level in the migration path uses an Object Deletion Level template that includes this level.
- When pertaining to source, the attribute for the source at a later level in the migration path uses a Source Deletion Level template that includes this level.

An entry of 'N' specifies that source/objects remain permanently in this level or it is a standard Delta level.

Target OS Release
The value used for compile wildcard ##TGTRLS## to ensure that objects are created for the appropriate version for the target systems.

*DSTQ – the oldest defined release in the distribution levels for the application

Level Check Warnings
The Level Check Warnings flag specifies if MDCMS should compare the file level ID in programs submitted for installation with the file level ID in this level.

N – This validation process will be skipped for this level during the submission of an RFP.

Y – Each program in a promotion for this level will be checked for file level ID mismatches or missing files in the environment. If a problem is found, the RFP will be flagged as containing warnings and each warning is listed in the RFP log.

Auto Receipt
The Automatic RFP Receipt flag is used to specify if a Promotion sent from a Remote System will automatically be received and all objects to be received are automatically requested for this Level.

N – An authorized user must receive the Promotion using option 9 from the Main Menu.

Y – Submit the Receive job to batch the moment that the Promotion is finished being sent from a Remote System. If the user id of the sender exists on the local system, then the sender's user id will be used for the receipt. If not, then the user defined in the Job Description for the Promotion Level will be used.

Auto Submit
The Automatic RFP Submit flag is used to specify if a Promotion will automatically be submitted once it is successfully received or is installed into a lower level.

N – An authorized user must submit the Promotion

Y – The promotion will be submitted to batch the moment that the Promotion is finished being received onto the local System or the moment that a Promotion is finished being installed into a lower level for the same application. If errors are encountered during the previous process, then the Promotion will not be submitted.

S – The promotion will be submitted to batch the moment that the prior level's Promotion has been closed in the send list, if that Promotion was successfully sent to at least one target level.
For example, the local copy of production shouldn't be updated until installation is complete on all target production systems. If the prior level closes the RFP in the send list once installed or ignored for all targets, then the local copy will be automatically updated at that time.

W – The promotion will be submitted to batch the moment that the Promotion is finished being received onto the local System. Or, the submit will automatically occur the moment that a Promotion is finished being installed into a lower level for the same application and MDWorkflow acceptance has been completed for all objects for the prior Promotion into the lower level . If errors are encountered during the previous process, then the Promotion will not be submitted.

Auto Approval
The Automatic RFP Approval flag is used to specify if a Promotion Level requires an approval before objects are installed into an Application Environment.

N – An authorized user must approve the promotion before MDCMS will allow it to be installed. The approval step occurs after the Submit portion has completed successfully.

Y – Approval to install occurs automatically.

Example:
TEST Application Environments are commonly used by programmers - set flag to 'Y'
PRODUCTION Application Environments usually require approval - set flag to 'N'.

Auto Launch MDRapid
The Automatic Launch MDRapid flag is used to specify if data copies for modified files should commence immediately after install approval is granted. This flag is ignored if MDRapid isn't required for the promotion.

N – MDRapid must be launched by an authorized user

Y – MDRapid (pre-emptive data copying) will automatically begin as soon as Approval is granted.

Auto Install
The Automatic RFP Installation flag is used to specify when objects are installed into an Application Environment once the preparation and approval is complete.

N – An authorized user must submit the RFP for scheduled installation or the MDINSRFP API may be called to install the RFP.

R – The promotion will be installed as soon as approval is granted, if MDRapid is not required, but will wait for an authorized user to schedule the install if MDRapid is required.

Y – The promotion will be installed as soon as approval is granted (and MDRapid is complete, when applicable).

This flag is usually set to N for production environments. Then, when the compilation and error checking portion is complete, the programmer can schedule the installation to occur when no one is actively using the application.

Auto Send
The Automatic RFP Send flag is used to specify if a Promotion will automatically be sent to remote systems once an Installation is complete for this Level.

N – An authorized user must send the Promotion.

Y – The promotion will automatically be sent to all Distribution Queues for the Promotion Level where the Default Flag is set to 'Y'.

W – The promotion will automatically be sent to all Distribution Queues for the Promotion Level where the Default Flag is set to 'Y' once MDWorkflow acceptance has been completed for all objects for the prior Promotion into the lower level.

Auto Close Sent RFP
The Automatic Close Sent RFP flag is used to specify if a Promotion will automatically be closed in the Send listing once a certain status has been reached.

N – An authorized user must always manually close the Promotion in the Send list.

S – The Promotion will close once sent to all default levels

R – The promotion will close once successfully received on each of the default target locations. If a warning occurs during receipt, the promotion will remain open.

I – The promotion will close once successfully installed on each of the default target locations. If a warning occurs during installation, the promotion will remain open.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the defined application groups when the cursor is on the appl field or browse/maintain the job description when the cursor is on the job description field
**F6=Add** – Add a new Promotion Level
**F11=Output** – Display the MD Output panel and other spool files
**F21=Sys Command** – Command line prompt

### 3.2.1 Promotion Level Considerations

1. It is important to have a deployment life cycle defined for an application and to have the Promotion Levels set up to match the migration strategies of the Application.
2. The default for checking out source or objects for a development modification is based on the lowest level of an Application Group that allows checkout. MDCMS will automatically search up the chain of levels based on the next level values, followed by the chain of based on levels, if the source or object does not exist in the base level. Search templates can also be defined to look elsewhere for the components.
3. The Job Description for a level is very important to the installation process. The Library List and User Profile defined in the Job Description must be correct.
4. To save time, it is best to completely define all attributes and commands for the base promotion level. Afterwards, that level can be copied with Option 3 and all attributes and commands will also be copied to the other levels. Or, all attributes and commands can be sent to another partition using option 18 from the Setup menu.

### 3.2.2 Specify Library Names for Copied Levels

```
MDCIMPS                          COMPANY NAME                           9.01.13
SCRN3                      Copy Attribute Settings                      20:00:13

From Application: TEST    To Application: TEST
           Level: 10                Level: 31      Attribute: *ALL

Type changes, press Enter.
 *NONE=Skip Attr using Lib, *NOOBJ=No Obj for Attr, *NOSRC=No Source for Attr
 *REQONLY=No Src/keep Requests, *TEMP=Temporary Source

Object                   Change to                Source         Change to
Libraries                Library                  Libraries      Library
/test/JAVA/P             /test/JAVA/P_____        TSTSRC10       TSTSRC10__
TSTOBJ10                 TSTOBJ10__               TSTSRC11       TSTSRC11__
TSTOBJ11                 TSTOBJ11__

                                                                      Bottom
Enter=Confirm    F2=Full Name    F3=Exit    F4=Browse    F5=Refresh
```

The left column for the Object Libraries lists the name of each distinct Object Library specified in the received Attribute(s).

The Change to column allows the user to modify the name of the Object or Source Library to be saved in the attribute(s) on the local system.

Special Object Library values:
*NONE – do not copy the attributes using the object library
*NOOBJ – change the Object Type to *SOURCE for attributes containing a source and object library. Do not copy the attributes containing only the object library.

Special Source Library values:
*NONE – do not copy the attributes using the source library
*NOSRC – remove the Source Library definition for attributes containing a source and object library. Do not copy the attributes containing only the source library.
*REQONLY - remove the Source Library definition for attributes containing a source and object library. Change source file to *REQONLY for *SOURCE attributes.
*TEMP – temporarily migrate source for compiles, but don't keep the source in the target environment. Typically used for production environments where persistent source isn't allowed.

Function Keys
F2 – display/edit the full name of paths that exceed the length of the prompt field
F3 – cancel the copy of the attributes
F4 – browse the list of Libraries or IFS directories
F5 – reset the library names to their original values

### 3.2.3 Promotion Level Validation Report

This report searches for potential problems in the attribute settings and objects for a promotion level. The report is requested by using option V for a Promotion Level in the Promotion Level listing.

```
MDLVLVL                          Company Name                        22.05.12
SCRN1                      Level Validation Report                   20:41:32


  Appl Lvl
  ACCT 10  Accounting app

  WARNING It is important that the cross-reference information for the
          Libraries impacted by the Level Attributes is up-to-date prior to
          creating this Report


  Include Source Change Date Comparison . .  Y   Y/N
  Submit Report Job to Batch  . . . . . .  Y   Y/N



Enter=Continue   F12=Cancel
```

The reporting process looks for the following issues:

- Non-existent Object Library or IFS Folder
- Non-existent Source Library
- Non-existent Source File or Message File
- Managed Library that hasn't been Cross-Referenced
- Object Types in Managed Library without a defined Attribute
- Source not found in target Source File or Search List for Object
- Source Change Date and maximum Record Date for Source Member does not match Object – this check can be excluded by entering N at the Include prompt

The generated output is available from the MD Output Panel (F11) and from there can be viewed, printed or exported.

## 3.3 Attributes

The Attribute Maintenance function defines the destination of objects and source that are installed during the promotion process. Each destination for an Application/Level and Object (or source or message) type is uniquely identified by an Attribute. This attribute is then used for setting command definitions, object authority, etc…

When initially defining attributes for a new application, it is best to **start out by pressing F9** to automatically generate the most common attributes, compile commands, and object authorities. Special object handling can then be individually maintained from the attribute maintenance screens.

Once all attributes are set for a given promotion level, the easiest way to propagate those settings to another promotion level on the same system is to specify 'copy attribute settings' when copying the promotion level. The easiest way to propagate the settings to a promotion level on another system is to send the settings using option 18 from the settings menu.

```
MDCCMEM                          COMPANY NAME                                4.09.06
Filters:                      Attribute Maintenance                         12:52:42
    Appl Lvl Type    Attribute  Object Lib      Src Lib    Src File   Sq C D L
    ____ __  _______ __________ _____________ __________ __________ __ _ _ _

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display  C=Commands  L=Linked Checkouts

Opt Appl Lvl Type    Attribute  Object Lib      Src Lib    Src File   Sq C D L
 _  MD   10  *CMD    ACMD       MDADMT          MDADMT     QCMDSRC     9 Y   Y
 _  MD   11  *CMD    ACMD       MDADMT          MDADMT     QCMDSRC     9 Y
 _  MD   12  *CMD    ACMD       MDADM71         MDADM71    QCMDSRC     9 Y Y
 _  MD   13  *CMD    ACMD       MDADMT          MDADMT     QCMDSRC     9 Y
 _  MD   14  *CMD    ACMD       MDADMT712       MDADMT712  QCMDSRC     9 Y
 _  MD   15  *CMD    ACMD       MDADM712        MDADM712   QCMDSRC     9 Y Y
 _  MD   30  *CMD    ACMD       MDADMP          MDADMP     QCMDSRC     9 Y
 _  MD   50  *CMD    ACMD       MDADM           MDADM      QCMDSRC     9 Y
 _  MD   10  *CMD    CCMD       MDCMST          MDSRCT     MCCMD       9 Y
                                                                    More...
 F3=Exit   F4=Browse   F5=Refresh   F6=Add   F9=Gen Dft Attr
```

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of attribute records which exactly match those filters. For example, enter '10' in the lvl filter to see only attribute records for level '10'. For the Attribute, Object Lib, Src Lib and Src File filters, records will be included if the initial string matches. For example, enter 'TE' in the Src Lib filter to see all records with a source library beginning with TE.

Sq is the Compile Sequence Filter

C specifies if any commands are defined for the Attribute. Use value N to see only attributes without commands.

D specifies if Deletion Level templates are assigned to the Attribute. Use value N to see only attributes without Deletion Level templates.

L specifies if other Attributes are Linked to the Attribute. Use value N to see only unlinked attributes

Opt
**2=Edit** – Change the parameters of an attribute
**3=Copy** – Copy the parameters of an attribute to a new attribute
**4=Delete** – Delete an attribute
**5=Display** – Display the parameters of an attribute
**C=Commands** – Edit the default compile and installation commands for an attribute
**L=Linked Checkouts** – Edit the list of attributes that should prompted to check out, when a programmer checks out an object for this attribute

Appl
This is a 4 character abbreviation of an Application Group to be used by MDCMS.
The Application Group must exist - see Application Group Maintenance.

Level
This is a 2-digit numeric identification of the Promotion Level as defined in the Promotion Level Maintenance.

Type

| | |
|---|---|
| all IBMi object types | Standard IBMi object types (*PGM, *FILE, *CMD, etc...) that exist in standard QSYS libraries. These objects may be compiled from a source member or may be handled as an object only. |
| *DATA | A MDCMS object type to migrate some or all data records into a physical file while leaving the file description intact. All records in the file prior to the installation can be archived and rolled back if parameter Archive Generations is > 0 for the attribute. |
| *DTAGRP | A MDCMS object type to define a collection of files (1 or more) with common key values for their records. The records for each file matching the requested value will be migrated. See the next section for more information.<br>The specific data records impacted by the installation of a *DTAGRP object can be archived and rolled back if parameter Archive Generations is > 0 for the attribute.<br>**NOTE:** Robot/SCHEDULE data can also be managed within MDCMS using the *DTAGRP Attribute (see details in next section of this manual) |
| *DUMMY | A MDCMS object type to allow information to be migrated without any actual object being involved. |
| *IFS | A MDCMS object type to handle objects that are stored in the Integrated File System. |
| *MNUDDS | A MDCMS object type to handle all relevant objects and source for a DDS menu. This means that the display file, message file, menu object, display source, and command list source are all managed by a single reservation. |
| *MSGD | A MDCMS object type to handle individual message descriptions to be stored in a message file. |
| *REMOTE | A MDCMS object type to handle objects that reside on systems other than the IBMi. The MDOpen Plug-in is required to request the objects. |
| *SOURCE | A MDCMS object type to handle source-only items such as copybooks. |
| *SQLCST | An SQL Constraint using the SQL name for the constraint and SQL schema name for the Object Library. A RUNSQLSTM command of type 3 (Post-Installation) must be defined for the attribute to create the constraint at |

| | |
|---|---|
| | installation time. |
| *SQLFUN | An SQL Function using the SQL name for the function and SQL schema name for the Object Library. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the function at installation time. |
| *SQLIDX | An SQL Index using the SQL name for the index and SQL schema name for the Object Library. |
| *SQLMQT | An SQL Materialized Query Table using the SQL name for the table and SQL schema name for the Object Library. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the table at installation time. |
| *SQLPRC | An SQL Procedure using the SQL name for the procedure and SQL schema name for the Object Library. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the procedure at installation time. |
| *SQLSCR | An SQL Script to manipulate data in tables. The Object Library is the SQL schema name that is the target for the SQL statements in the script. The object replication template can be used to repeat the statements for several libraries during a single deployment.<br>A RUNSQLSTM command of type 3 (Post-Installation) must be defined for the attribute. |
| *SQLSEQ | An SQL Sequence using the SQL name for the sequence and SQL schema name for the Object Library. |
| *SQLTAB | An SQL Table using the SQL name for the table and SQL schema name for the Object Library. |
| *SQLTRG | An SQL Trigger using the SQL name for the trigger and SQL schema name for the Object Library. A RUNSQLSTM command of type 3 (Post-Installation) must be defined for the attribute to create the trigger at installation time. |
| *SQLVAR | An SQL Variable using the SQL name for the variable and SQL schema name for the Object Library. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the variable at installation time. Enter a valid Object Authority template, which is applied to the service program created on behalf of the SQL Variable. |
| *SQLVW | An SQL View using the SQL name for the view and SQL schema name for the Object Library. |

Attribute

This field is used to uniquely identify each source or object attribute to be handled by MDCMS. Standard IBMi object attributes can be used or the user may define customized attributes.

Example:

1. Standard IBMi object attributes or source types are, for example, RPG, CBL, PF, LF, DSPF, PRTF.
2. User defined source types may look like RPG1. The definition in MDCMS could be for special compilers for RPG type programs using a specific application compiler or different RPG compiler defaults. It could also be to have the source or object placed in a different library than standard RPG programs.

Object Library
This field identifies where an application object resides for a specific Application, Level, Type, and Attribute. This is used when installing an object into an environment.

This is left blank for source-only items.
For *IFS and *REMOTE attributes, the directory path is to be entered here beginning with the root.
For *DATA and *DTAGRP attributes, the file library should be entered here. If data shouldn't be copied into a library for the given level, special value *NONE can be used – this can be useful when the level is for a delta database environment so that the target files may not exist. MDCMS will internally retain the data from the prior library for migration or send to the next level.
For *SQL attributes (except *SQLPKG), the SQL name of the target library should be entered here.

Source File
This field identifies the source file for a specific Application, Level, Type, and Attribute. This is used when installing source into an environment.

For message descriptions, this is the name of the message file.

*IFS – use this value if the source is stored in IFS and enter the full path of the directory in the Source Library field
*REQONLY – use this value for *SOURCE attributes if source isn't stored at this level but the request records for *SOURCE requests should remain in the RFP. This is typically used on a production system where source isn't allowed and the copy of production on the development system then indirectly pulls the source from the delta development environment once the RFP is sent from production to development.

This field is left blank for object-only items.

Source Library
This field identifies the source library for a specific Application, Level, Type, and Attribute. This is used when installing source into an environment.
If the source is contained in source members, the library containing the source files is used.
If the source is stored in IFS, the value is the complete IFS path of the directory containing the source files.
For message descriptions (*MSGD), this is the library where the message file is located.

*TEMP – temporarily migrate source for compiles, but don't keep the source in the target environment. Typically used for production environments where persistent source isn't allowed.

This field is left blank for object-only items.

Dft Source Naming
By default, the name of the source is the same as the name for the object and is defined as ++OBJNAM++. If source names for the attribute have different names as for the object, the naming pattern can be entered here. For example, use ++OBJNAM++.sql to automatically assign the suffix .sql to the end of the source name when checking out the object. Each object checked out can individually be assigned a different source and MDCMS retains this information for future checkouts of the object.

Dft Source Type
The type to apply by default when requesting to generate a new source member.
This type is also applied when MDCMS converts source that has been imported from Git, SVN or other file systems.

Archive Generations
This flag is only relevant for *DATA or *DTAGRP attributes.

The number of generations of the entire file (in the case of *DATA) or the specific impacted records (in the case of *DTAGRP) that will be archived, providing the ability to view the prior state of the records or to roll back to the prior state if necessary. The archived records are copied to a stream file in IFS and then zipped to reduce storage requirements as much as possible.

If set to 0, the prior data is not archived and can't be rolled back at a later date. This is only recommended if disk space availability is minimal or if the data is otherwise saved prior to installations.

Retain Data Set for Migration to next Level
This flag is only relevant for *DATA or *DTAGRP attributes.

Y = when the data collection is prepared for deployment into the initial level, only records in that collection will migrate to higher levels regardless if changes or additions are made to the files in the initial level. For example, 2 records are migrated into level 10 which also has 10 other records matching the same filter criteria. Only the 2 records will continue on to level 20.

N = the data collection is freshly prepared at each level. For example, 2 records are migrated into level 10 which also has 10 other records matching the same filter criteria. All 12 records will continue on to level 20.

Server Location
The target server that *REMOTE objects for the given attribute should be deployed to. Press F4 to select from the list of target servers. MDOpen must be used to manage the target server list as well as to check out *REMOTE files and folders.

*NONE can be used to indicate that the *REMOTE objects shouldn't be physically deployed to a remote server for this promotion level. The requests will merely travel with the RFP to the next level in the migration path.

In the case of *IFS attributes, a server name can be stored in this field. The value will then be used by occurrences of the ##SERVER## wildcard by commands and scripts for an IFS file using the attribute.

Require Approval
Y – If an RFP contains a request for the given attribute, an authorized user must approve the RFP before it can be installed even if the Attribute's level is set to auto-approve RFPs.
N – The auto-approve flag for the Attribute's level determines if the RFP is auto-approved or not.

Compile Sequence
The compile sequence is used by MDCMS to sequence the order of object compiles during a request for promotion. The sequence is in ascending order.

The compile sequence is automatically set for all object types except *DTAGRP, *FILE, *MODULE and *SRVPGM.

***DTAGRP** - the compile sequence is by default 16, and the data records are only migrated after the installation is complete. If a lower compile sequence is entered, the records will be migrated during compile time based on the sequence, in case the compiler for other objects depends on that data. When the compile step for all objects in the RFP is complete, the data migration will be rolled back and re-migrated after the installation is complete.

***FILE** - Recommended compile sequence for files:
Reference file = 3
Physical files = 4
Logical files = 5
Display/Printer files = 6

***MODULE/*SRVPGM** - the compile sequence may be set to 11 or 12. When both types are set the same, MDCMS automatically sorts an RFP in the following sequence:

1) Modified Modules
2) Service Programs binding Modified Modules
3) Recompiled Modules
4) Service Programs binding Recompiled Modules

The sort subsequence for modules and service programs can still be used for a specific RFP, but is not carried over to future RFPs so that the sort can be automatically handled for each constellation.

Object Authority Template
The name of the template containing the Object Authority Definition to apply to objects for this template. This template is required for all object types except *SOURCE, *MSGD, *DATA, *DTAGRP and *DUMMY.

The template type must correspond to the object type:
IFS - *IFS object types. The authority for IFS source is automatically applied from the *DFTIFS template
OS400 – OS/400 object types
REMOTE – *REMOTE object types

Object Replication Locs Template
When an installation occurs, an object using this attribute will always be deployed to the defined Object Library.
If that same object should be replicated to additional libraries for the same environment, then the name of the Object Replication Template that contains the list of locations should be entered.

Common Usage Examples:
1) The complete set of physical and logical files for production is also stored in Month-End and Year-End libraries. If the format for a file changes, then the format change could be replicated to the Month-End and Year-End libraries at the same time of the format change for production. The data for each library/file is mapped back appropriately.

2) Multiple web servers are used in the same environment for load balancing purposes. Replication can be used to deploy remote object changes to each of those servers at the same time.

Source Replication Locs Template
When an installation occurs, a source member using this attribute will always be deployed to the defined Source Library or Directory.
If that same source member or IFS file should be replicated to locations for the same environment, then the name of the Source Replication Template that contains the list of locations should be entered.

Object Search Locations Template
When checking out an object that doesn't contain source, the defined Object Library for the attribute and level will be checked for existence. If it doesn't exist in that location, MDCMS checks in the target locations for the higher levels on the local partition. If the object still isn't found, an Object Search Location template can be used to search additional libraries/directories for the object.

Source Search Locations Template
When checking out source, the defined Source Library/File for the attribute will be checked for existence. If it doesn't exist in that location, MDCMS check in the target locations for the higher levels on the local partition. If the source still isn't found, a Source Search Location template can be used to search additional libraries/directories for the source. In the case of source members, the source locations can be on remote systems if DDM is implemented.

Object Deletion Levels Template
If objects should be removed from delta or emergency levels after installation into this level, the Deletion Level template defining the list of levels can be entered here.

Source Deletion Levels Template
If source should be removed from delta or emergency levels after installation into this level, the Deletion Level template defining the list of levels can be entered here.

In the case of source members, the levels can be on remote systems if DDM is implemented.

Source Comments Template
If comments should automatically be generated in the source code during deployment for the attribute, apply the template matching the commenting format intended for that attribute.

MDRapid Usage Template
If MDRapid is licensed for the system and the attribute is a *FILE or *SQLTAB type, a MDRapid template can be applied to the attribute to indicate when and how MDRapid should be launched for files using that attribute.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of valid values for a field.
**F6=Add** – Add an environment attribute
**F9=Gen Dft Attr** – Generate default attributes for a promotion level

### 3.3.1 *DTAGRP Attribute

*DTAGRP is a special MDCMS object type to define a collection of files (1 or more) with common key values for their records. The records for each file matching the requested value will be migrated.

For example, 3 files have a field containing the table ID. A user wishes to migrate all records in each file where the table ID = "ABC". The user simply requests object name "ABC" using a *DTAGRP attribute that describes the 3 files and relevant field for each file. MDCMS will then migrate the records to the next level(s).

If a rollback is performed for ABC, the record contents for table ID ABC will be restored to the state prior to the installation.

```
MDCATDG                          COMPANY NAME                              10/01/11
SCRN1                    Generate Standard Attributes                      10:37:46


Appl: TEST  Lvl: 10  Attribute: CSSADD      Library: TESTOBJ10

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display

Opt File       Field 1    Type 1  Field 2    Type 2  Field 3    Type 3  Opt Mnd
 _  MDAINV     CSTNBR         7N                                 REP  N
 _  MDALIC     CSTNBR         7N  PRDCOD          3A  BILLYN     FIX     REP  Y



                                                                      Bottom
F3=Exit   F5=Refresh   F6=Add
```

The list of files for a particular *DTAGRP attribute are maintained by pressing F8 from the attribute detail screen.

File
The name of the file that must exist in the object library defined for the attribute. Press F4 to browse using MDXREF.

Field
The name of the field to use as a record filter for the file. Up to 3 fields may be defined per file. Every record in the file where the value for these fields matches the value requested in the Object Manager will be included in the data set. Press F4 to browse the list of fields in the file. Alphanumeric or Numeric fields are allowed for use as the record filter.
Be certain that the ordering of the fields match the order for the other files in the Data Group.

If no fields are specified for the file, then all records will be included in the data set.

Starting Pos / Length
If the field is alphanumeric, a substring of the field can be used for the key value by specifying the starting position and length of the substring. If these 2 fields are left blank, then the entire field is used for the key value.

Fixed Value
Each defined field for the file may have a fixed value so that a value for that field doesn't need to be entered for each object request.

Blank – the value is entered as a variable in the object request name
*EMPTY – only records where this field is blank (or 0 for numeric fields) will be migrated
Value – only records where this field contains this value will be migrated

Record Option
*ADDNEW – any records that don't already exist in the table for the given field values will be added when migrated into this level. The file itself must be defined as uniquely keyed to use this feature.

*REPLACE – all records for the given field values will be replaced by the records being migrated. The *REPLACE option is permitted for any physical file, regardless of key definitions for the file.

*UPDADD – existing records with matching field values will be updated and new records will be added. The file itself must be defined as uniquely keyed to use this feature.

Records Mandatory
Y – 1 or more records must be available to migrate, otherwise the installation will fail
N – records with matching field values are not mandatory for this file

### 3.3.2 Requesting a *DTAGRP migration in the Object Manager

The records are requested using option M or N in the Object Manager. Enter the value for each variable field in the object name. If more than 1 field is defined for a file in the Data Group, separate the values with a comma. Trailing spaces should not be entered.

If the data already exists in the initial level, *NONE should be specified which signifies that the collection is taken from that level and is migrated from there to the rest of the levels. If the data does not already exist, then the Library containing the records for the various files should be specified.

Use option D to delete all records in the files where the keys equal the value of the object requested.

**Example of Object Name**
The example Data Group contains a variable alphanumeric field, a variable numeric field, and a fixed value field with value Y.

In the Object Manager, the programmer would enter the alphanumeric key value, a comma, and then the numeric key value:

EXAMPLE STRING, 75

When deploying the RFP, all records where field 1 = EXAMPLE STRING, field 2 = 75 and field 3 = Y would be migrated.

### 3.3.3 *DTAGRP for managing Robot/SCHEDULE data

Robot/SCHEDULE can also be managed within MDCMS using the *DTAGRP Attribute.

The purpose of this feature is for the migration of Robot/SCHEDULE job schedule data from a user's pre-production system that contains their test version of the Robot/SCHEDULE product to their production system that contains their Robot/SCHEDULE product version.

**Setup**

When setting up the *DTAGRP Attribute for managing Robot/SCHEDULE data, follow these steps:

Using the F6=Add from the Attribute Maintenance panel (MDCCMEM/SCRN1) fill in the parameters as shown here.

Application
Specify the Application Group code that the Attribute will be added for.

Level
Specify the Application Group code Level value that the Attribute will be added for.

Object Type
Specify a value of *DTAGRP

Object Attribute
Specify the name of the Attribute that will help you recognize it as being specific for Robot/SCHEUDLE.

The remaining fields on the initial Attribute panel are irrelevant. Pressing ENTER on the Add Attribute Record panel will bring you to the Attribute Data Group Files panel. Use the ***F6=Add*** function key to add the following record:

File Name
Enter a File Name value of *ROBOT

The remaining field values will be set automatically by MDCMS.

**Object Request and Migration**

The user should use the standard method available within the Robot/SCHEDULE product for creating, changing, or deleting job schedule entries. MDCMS will be used to migrate those changes from the user's pre-production system to their production systems where the production version of Robot/SCHEDULE resides. The only function that MDCMS performs is the migration of the requested Robot/SCHEDULE jobs to the customer's production systems.

The name of the actual Robot/SCHEDULE job name will be used when requesting and migrating within the MDCMS Object Manager for either option M-Modify Object or option D-Delete Object.

When an object request is initiated on the pre-production system that contains the customers test version of Robot/SCHEDULE the ***Copy Data from Library*** parameter should be set to *NONE as it is not necessary to copy any data to the users development environment. When the object request is then added to an RFP it is done so for the purpose of sending the updated (or deleted) Robot/SCHEDULE job entry from the pre-production system to the user's production system. When the local RFP is processed for deployment to the target system, the Robot API RBTMRG is used with parameter DIRECTION (*EXPORT) to place all of the job information in library RBTMRGLIB. MDCMS then saves the library to a save file for the RFP package and sends it to the target system.

When the RFP arrives at the target system the Robot API RBTMRG is used with parameter DIRECTION(*IMPORT) to restore the Robot/SCHEDULE library RBTMRGLIB from the RFP save file and then migrate the job schedule information directly into the users production version of Robot/SCHEDULE.

When a delete is performed at installation time the Robot API RBTBCHDLT is used to remove the job entities from Robot/SCHEDULE.

**IMPORTANT NOTES:**

- When the scheduled job entry being imported had already existed within the target system, the job history will be deleted by the Robot API.
- The Robot API does not handle REACT jobs correctly. The Robot scheduled job should be sent to the target system without any REACT parameters defined and then the REACT parameters should be added to the scheduled job on the target system after the migration has been installed.

### 3.3.4 Generate Standard Attributes

In order to quickly define attributes and compile commands for a new promotion level, or for a new library within a promotion level, F9 may be pressed from the Attribute Maintenance screen.

```
MDCCMED                          COMPANY NAME                          04.09.06
SCRN1                  Generate Standard Attributes                    10:37:46


Application . . . . ____
Level . . . . . . . __

Object Library  . . __________   Name

Source Library/Dir. ____________________________________________________________
____________________________     Name, *NONE

Attribute Prefix  . *NONE        Prefix, *NONE

Attribute Suffix  . *NONE        Suffix, *NONE




F4=Browse   F12=Previous
```

The first screen is used to get the default settings for all common attributes that are to be generated. After Enter is pressed, a second screen is displayed where each individual attribute may be edited and selected.

Application
This is a 4 character abbreviation of an Application Group to be used by MDCMS.
The Application Group must exist - see Application Group Maintenance.

Level
This is a 2-digit numeric identification of the Promotion Level as defined in the Promotion Level Maintenance.

Object Library
The name of the library where the objects are stored.

Source Library/Dir
The name of the library or IFS Directory where the source is stored. If there is no source code for the objects, enter *NONE.

Attribute Prefix
A set of characters to place at the beginning of each system attribute for the naming of MDCMS attributes. For example, 'AA' would result in the MDCMS attribute of AARPG for RPG programs. No prefix will be generated, if the value *NONE is entered.

Attribute Suffix
A set of characters to place at the end of each system attribute for the naming of MDCMS attributes. For example, 'AA' would result in the MDCMS attribute of RPGAA for RPG programs. No suffix will be generated, if the value *NONE is entered. You have the choice of a prefix or a suffix. Both simultaneously is not allowed.

```
MDCCMED                              COMPANY NAME                          04.09.06
SCRN2                        Generate Standard Attributes                  10:37:46

Appl: ACCT  Lvl: 90  Source Library: TSTSRC10

Type options, press Enter.
 1=Select

    Object    System    MDCMS                                  Source
Opt Type      Attribute Attribute   Object Library             File       Cmd
 _  *SQLSEQ   SQLSEQ    SQLSEQ      TSTOBJ10                   QSQLSRC     Y
 _  *FILE     PFREF     PFREF       TSTOBJ10                   QDDSSRC     Y
 _  *FILE     PF        PF          TSTOBJ10                   QDDSSRC     Y
 _  *FILE     PFSQL     PFSQL       TSTOBJ10                   QSQLSRC     Y
 _  *SQLTAB   SQLTAB    SQLTAB      TSTOBJ10                   QSQLSRC     Y
 _  *DATA     DATA      DATA        TSTOBJ10                               N
 _  *FILE     LF        LF          TSTOBJ10                   QDDSSRC     Y
 _  *FILE     LFSQL     LFSQL       TSTOBJ10                   QSQLSRC     Y
 _  *SQLIDX   SQLIDX    SQLIDX      TSTOBJ10                   QSQLSRC     Y
 _  *FILE     DSPF      DSPF        TSTOBJ10                   QDDSSRC     Y
 _  *FILE     PRTF      PRTF        TSTOBJ10                   QDDSSRC     Y
                                                                        More...
Enter=Confirm   F4=Browse   F5=Refresh   F8=Edit Details
```

This screen lists each of the most common system and SQL attributes in a typical application. For each system attribute, a MDCMS attribute, object library and source library/file (or directory) is prepared for the definition based on the entries from the prior screen.

If the library is included in MDXREF database, selection option 1 will be automatically placed next to each attribute found in the library that isn't yet defined for the level. Additional attributes may be then individually selected or unselected.

If an attribute has default commands defined for it, the generate command flag (Cmd) may be set to Y.

Press enter to generate the selected attributes. For each attribute with the command flag set to Y, the compile and/or post-installation command will also be automatically generated.

Function Keys:
**Enter=Confirm**
**F4=Browse** – Browse the list of valid values for a field.
**F5=Refresh**
**F8=Edit Details** – Initially, all fields except for the option are protected. Press F8 to edit the values in the other fields.

### 3.3.5 Generate JDE World Attributes

The Standard Attribute Generator, described in the prior section, can also be used to generate the Data Group attributes for managing the reservation and deployment of common components for the JDE World product from Oracle.

In the Object Library field, specify the name of the data library containing the JDE environment's tables.

At the bottom of the Standard Attribute listing, the following attributes are available for selection:

| Attribute | Description |
|---|---|
| JDAAI | Automatic Accounting Instructions |
| JDDAC | Default Accounting Constants |
| JDDAD | Data Dictionary |
| JDDDC | Default Depreciation Constants |
| JDDRM | Dream Writer |
| JDLGT | Ledger Type |
| JDMNI | Individual Menu Item |
| JDMNU | Entire Menu |

Any other collection of tables within JDE World or any other product can be defined individually within the Attribute Maintenance screen using the *DTAGRP type.

### 3.3.6 Linked Attribute Checkout Definitions

When an object for a particular attribute is checked out in the Object Manager, the programmer can be prompted to check out other objects that frequently need to be changed at the same time. This is most commonly used for selecting all components for a 4GL, Case Tool or other Middleware process when a program is checked out. The list of linked attributes can be managed by entering option L for the parent attribute.

```
MDCLNKC                          COMPANY NAME                          19.04.13
SCRN1                     Linked Checkout Definitions                  22:22:40

    Appl Lvl  Attribute   Library
    MD   10   RMCBL       MDREPT

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display

Opt Attribute  Dft Rcmp Typ Pattern/Expression                      File
 _  RFUN        N   N   SQL MDFUN                                   MDDRFUN
 _  RLBL        N   N   FIX ++OBJNAM++IO
 _  RSCREEN     N   N   FIX ++OBJNAM++


                                                                        Bottom
F3=Exit   F5=Refresh   F6=Add
```

Opt
**2=Change** – Change the definition for a linked attribute
**3=Copy** – Copy the definition
**4=Delete** – Delete the definition
**5=View** – display the definition

Function Keys:
**F5=Refresh**
**F6=Add** – Add a new Linked Attribute Checkout Definition

**Linked Attribute Checkout Definition Detail**

```
MDCLNKC                          COMPANY NAME                          19.04.13
SCRN2                  Edit Linked Checkout Definition                 22:27:43

 Appl: MD    Lvl: 10  Attribute: RMCBL       Definition Number:   2

 Linked Attribute .  RFUN______
 Request by Dft . .  N  Y/N
 Link for Recomp  .  N  Y/N
 Object Name Type .  S  F=Fixed Name Pattern, S=SQL Column Expression

Name Pattern or SQL Column Expression  (value ++OBJNAM++ replaced at runtime)
MDFUN_____________________________________________________________________________

 SQL Input File . .  MDDRFUN___
   Library  . . . .    MDREPT____

Condition:
MDPGM = "++OBJNAM++"_______________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

 Enter=Confirm   F4=Browse   F8=Test Definition   F12=Previous
```

Linked Attribute
Enter the name of an existing MDCMS attribute for the same application and level whose object should be prompted for checkout when an object for the parent attribute is checked out. Multiple definitions for the same linked attribute are allowed, as long as the resulting object names will be different.

Request by Dft
Y – The object will already be selected for checkout when the prompt screen is displayed
N – The object will be displayed but not already selected for checkout in the prompt screen

Link for Recomp
Y – The programmer will be prompted to check out the linked object even if the parent object is requested for recompile
N – The programmer will not be prompted to check out the linked object when the parent object is requested for recompile

Object Name Type
F – Fixed Name Pattern – a name pattern is provided to determine the name of the linked object
S – SQL Column Expression – an SQL column expression (as used in a SELECT statement), SQL Input file and an optional SQL condition will be used to determine the name of the linked object

Name Pattern or SQL Column Expression
If fixed naming is used for the definition, specify the constant value pattern to be used for the object name. The string ++OBJNAM++ can be used anywhere within the pattern and will replaced with the name of the parent object at run-time.

If SQL naming is used, enter the name as a valid SQL expression for a column. The expression can be any combination of table field names and constants. ++OBJNAM++ can be used within the expression and will be replaced with the name of the parent object at run-time.

SQL Input File
If SQL naming is used for the definition, specify the name and library of the file that the object name will be derived from.

Condition
If SQL naming is used for the definition, optionally specify a valid SQL condition (without the WHERE clause) to appropriately limit the records in the file that would be used to provide the object name.

If more than 1 record exists for the file/condition, only the first record will be used to provide the object name.

Function Keys:
**Enter=Confirm**
**F4=Browse** – browse the list of possible fields, files or libraries when using SQL naming
**F8=Test Definition** – Immediately run a test to ensure that the definition correctly generates the object name

**Linked Attribute Definition Test**

```
MDCLNKC                          COMPANY NAME                          19.04.13
SCRN3                  Edit Linked Checkout Definition                 22:27:43

 Appl: MD    Lvl: 10  Attribute: RMCBL       Definition Number:   2

 Linked Attribute .  RFUN
 Linked Type  . . .  *DTAGRP


Example Object Name of Parent Object
RC0102_____________________________________________________________________


Result Object Name of Linked Object
C.RFP.DET









 Enter=Execute Test   F12=Previous
```

Example Object Name of Parent Object
Enter a potential name for an object checked out for the parent attribute. Then, press Enter to have MDCMS generate the Linked Object name based on the Fixed Pattern or SQL definition.

## 3.4 Commands

The Attribute Command displays are used to define the command defaults that are used to compile and manage objects. Each Application Group/Level/Attribute that requires a default command should be defined here. Default commands may also be defined to run for each promotion of objects, regardless of the types of objects in the promotion package.

```
CMCCMST                        COMPANY NAME                              4.09.06
SCRN1                  MD Default Command Maintenance                    7:39:30

         Appl  Lvl  Attribute   Type  Command
Filters: ____  __   __________   _    ____________________

Type options, press Enter.
 2=Change   3=Copy   4=Delete   5=View

Opt Appl Lvl Attribute Typ Seq Command
 _  ACCT 90  *RFP       1      CALL PGM(ACCTLIB/CHKUSERS)
 _  ACCT 90  CLP        C      CRTCLPGM PGM(##OBJLIB##/##OBJNAM##) SRCFILE(#..
 _  ACCT 90  DSPF       C      CRTDSPF FILE(##OBJLIB##/##OBJNAM##) SRCFILE(#..
 _  ACCT 90  LF         C      CRTLF FILE(##OBJLIB##/##OBJNAM##) SRCFILE(##S..
 _  ACCT 90  PF         C      CRTPF FILE(##OBJLIB##/##OBJNAM##) SRCFILE(##S..
 _  ACCT 90  PF         3   10 STRJRNPF FILE(##OBJLIB##/##OBJNAM##) JRN(JRNL..
 _  ACCT 90  PRTF       C      CRTPRTF FILE(##OBJLIB##/##OBJNAM##) SRCFILE(#..
 _  ACCT 90  RPG        C      CRTRPGPGM PGM(##OBJLIB##/##OBJNAM##) SRCFILE(..
 _  ACCT 90  RPG36      C      CRTS36RPG PGM(##OBJLIB##/##OBJNAM##) SRCFILE(..
                                                                   Bottom
 F4=Browse  F6=Add  F7=Obj Cmds  F8=ObjGrp Cmds  F9=Gen RFP Cmds  F10=Scripts
```

Option 4 Screen Definitions
Filters
Appl/Lvl
Enter a value here to limit the listing to a specific application or level.

Attribute
Enter part or all of an attribute to limit the listing. For example, enter C to list only commands with an attribute starting with C.

Type
Enter a value here to limit the listing to a specific command type. See the next section for detailed information about each type of command available within MDCMS.

Command
Enter a string here to limit the listing to commands containing that string. For example, enter SRC to list only commands containing the string SRC.

Opt
**2=Change** – Change the text and run-time attributes for the selected Command
**3=Copy** – Copy a command
**4=Delete** – Delete a command
**5=View** – display a command

Function Keys:
**F4=Browse** – Browse the list of valid values for a filter field.
**F6=Add** – Add a new Attribute Command

**F7=Obj Cmds** – List/Manage all commands that are defined to be executed for specific objects. Commands that have been processed during the installation of an RFP, and that have the Reuse Command flag set to Y, will automatically show up in this list. Commands can also be created from here for objects that aren't yet requested. Alternatively, option C can be used on an existing Object Request to manage commands for that specific object. Navigate to the Commands/Scripts for Object section for help with the individual parameters.
Object Specific Scripts can be managed by pressing F10=Scripts from with the Object Specific Commands screen.

**F8=ObjGrp Cmds** – List/Manage all commands that are defined to be executed for specific objects. Commands that have been processed during the installation of an RFP, and that have the Reuse Command flag set to Y, will automatically show up in this list. Commands can also be created from here for objects that aren't yet requested. Alternatively, option C can be used on an existing Object Request to manage commands for that specific object. Navigate to the Commands/Scripts for Object section for help with the individual parameters.
Object Specific Scripts can be managed by pressing F10=Scripts from with the Object Specific Commands screen.

**F9=Gen RFP Cmds** – Generate *RFP commands in order to notify users by email when specific events occur. When F9 is pressed, the first screen allows you to select one or more application levels that should contain the commands. The second screen then allows you to select each command type, or exit point, for when the MDMAILF command should run. MDCMS then generates the commands for each selected exit point for each selected level.

Once the commands are generated, further customization can be performed on the commands from the command settings. This is particularly necessary for the Waiting for RFP Approval command type, since the group or user responsible for approving the RFP will need to be entered into the appropriate parameter.

**F10=Scripts** – Manage scripts that are defined for *IFS and *REMOTE attributes.

### 3.4.1 Add or Change display

```
CMCCMST                          MD Demo System                          8.07.16
SCRN2                    MD Default Command Maintenance                  22:52:00

 Appl.....: OPER                                Run for Modifications: Y  Y/N
 Lvl......: 10                                         Recompiles...: Y  Y/N
 Attribute: BCLP______  Attribute, *RFP                 Deletes......: N  Y/N
                                                        Updates......: N  Y/N
 Type.....: C  Compilation                     Ignore Errors.........: N  Y/N
 Sequence.: ___                                Keep MD Libs in Libl.: N  Y/N
 Frequency: _  O=Object, R=RFP                 Wildcards in SQL......: N  Y/N
                                               Run as User Profile..: __________
Command
CRTCBLPGM PGM(##OBJLIB##/##OBJNAM##)SRCFILE(##SRCLIB##/##SRCFIL##)________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

 F4=Browse    F7=Insert Wildcard    F12=Previous
```

Screen Definitions:

Appl/Lvl
The Application Group and Level that the attribute resides in.

Object Attribute
This field is tied to the attribute defined in Source/Object Attribute Maintenance (see previous section).

*RFP may also be entered. A command with attribute *RFP will run once each time a promotion is run.

Run for Modifications
Flag stating if the command should run for new or changed objects.

Run for Recompiles
Flag stating if the command should run for recompiled objects.

Run for Deletes
Flag stating if the command should run for deleted objects.

Run for Updates
Flag stating if the command should run for updated objects.

Type
The Type value designates when a command should run

| | | |
|---|---|---|
| C | Compile | used to compile the object from source code or to create the ILE Program/Service Program |
| D | Data Copy | • *FILE attributes – determines how the existing records in a physical file should be mapped to the new format when a physical file is installed.<br><br>Data Transformation must be disabled for the file in order for MDCMS to consider a Data Copy command. It can be disabled using option F=File Data Transformation from the Object Manager and then pressing F10.<br><br>The data copy command can use CPYF, in which case the parameters FROMMBR, TOMBR and MBROPT are considered. All other keywords in the CPYF command are ignored. Only 1 command may be defined for *FILE mapping.<br><br>Other commands, such as RUNSQLSTM or CALL, may also be used for mapping the data in a changed file from the old format to the new format. If such a command is used, it is critical to use the ##OFF wildcards so that MDCMS can correctly provide the location of the old file format.<br><br>• *DATA attributes – determines how and which data records should be copied from one environment to another. All keywords except FROMFILE and TOFILE are then used when the CPYF command is run. Only the CPYF command is permitted for *DATA attributes |
| U | Update | runs during the installation process for updates to existing objects. This command is mandatory for objects requested for update (*UPDATE). An example would be the UPDPGM command to update existing ILE programs without migrating or recreating the object. The Update Command may optionally also be used to update an existing object using the modified source. An example for this would be the CHGPF command to update the format of a physical file for a modified DDS source. In this case, the source would be checked out using the M (modify) option and at installation time, the Update command would be used (as long as a compile command is not defined for the attribute or an update command is defined for the object). |
| M | Object Request | runs when an object is requested (checked out) |
| L | Object Lock | runs during the compile or installation process when a required object or source is locked. Separate field Wait before Usage specifies the amount of time to wait before executing the command. Multiple commands can be defined in order to have a lock escalation process in place. |
| V | Pre-Submit Validation | runs when user selects to submit an RFP for promotion. Command MDCHKRFP must be used and this provides an organization with the ability to add custom validation rules before an RFP can be submitted. See section MDCHKRFP API for more information. |
| 1 | Pre-Compile | runs prior to compiling objects |
| P | Post-Compile | runs after all object compilations are successfully completed |
| E | Compile Error | runs when the compile phase of an RFP fails to complete successfully. |
| A | RFP Approved | runs after an RFP has been approved for installation |
| J | RFP Rejected | runs after an RFP has been reset from Waiting for Approval status |

| | | |
|---|---|---|
| F | MDRapid Waiting to Launch | runs after an RFP has been approved and MDRapid is required for the RFP |
| G | MDRapid Started | runs to indicate that MDRapid has begun copying data for changed files |
| H | MDRapid Completed | runs after all existing records in the changed files has been copied to inform the users that the installation can be started. |
| I | MDRapid Error | runs when the MDRapid Data Copy phase of an RFP fails to complete successfully. |
| 2 | Pre-Installation | runs prior to installing objects into the environment |
| 3 | Post-Installation | runs after the installation of objects is complete |
| 4 | Installation Error | runs when the installation phase of an RFP fails to complete successfully. This type could be used, for example, to send an email or SMS to the installer if a weekend Installation fails. |
| W | Installation Warning | runs if an RFP Installation completes, but with warnings. Warnings can occur if data cannot be copied or if a Post-Installation Command fails to run successfully. |
| S | RFP Test Status Accepted | runs if an RFP Test Status is Accepted in MDWorkflow |
| T | RFP Test Status Rejected | runs if an RFP Test Status is Rejected in MDWorkflow |
| 5 | Pre-Send | runs once prior to sending an RFP to one or more remote systems |
| O | Data Copy during Send | Available for *DATA attributes only. Determines which data records should be sent to a remote location based on the INCCHAR and INCREL parameters of the CPYF command.<br>The command is run separately for each target location. Wildcard ##SVFLOC## could, for example, be used to filter by the location ID, if a column in the table contains that value. |
| Q | Post-Send for a Location | Runs for each location after an RFP has been successfully sent to that location. Wildcards ##SVFTGT## (Target Address of Sent Savefile) and ##SVFNAM## (Sent Savefile Name) are applicable for this command type. |
| X | All Send Locations Terminated | Runs when all default locations for a sent RFP have terminated either due to an exception or the completion of the installation on the target location. |
| 6 | Post-Send | runs once, after an RFP has been successfully sent to one or more remote systems |
| 7 | Send Error | runs in case the send of an RFP fails to complete successfully |
| 8 | Post-Receive | runs after an RFP has been successfully received from a remote system |
| 9 | Receive Error | runs in case the receipt of an RFP fails to complete successfully |
| R | Receive Warning | runs in case the receipt of an RFP completes, but with warnings |

Command Types **A, E, F, G, H, I, J, L, Q, R, V, W, S, T, X, 4, 5, 6, 7, 8, and 9** are only valid at the RFP Level (Usage Attribute = *RFP).

Ignore Errors

Y – Continue with RFP processing even if the command fails.
Flag will always be Y for types 3, 4, 6, 7, 8, 9, A, E, J, M, V and W.
N – Cease and Rollback RFP processing if the command fails

Sequence

The sort sequence of the command at run time, in case multiple commands for the same attribute and type are defined.

Keep MD Libs in Libl
N – The MD Libraries (MDCMS and MDXREF) are removed from the library list before the command is invoked. This assures that any MD Objects with the same name as your objects are not used.
Y – The MD Libraries are left in the library list. This is necessary when MD Objects, such as interface programs, MDMAIL or MDMAILF, are needed to process the command.

Frequency
O – The command will run for every object in the RFP that is assigned to the given Attribute.
R – The command will run for the first object in the RFP that is assigned to the given Attribute and then ignored for any additional objects for the same Attribute. This option is only possible for non-*RFP attributes with command type 1, P, 2 or 3.

Wildcards in SQL
N – The SQL member or IFS file used by a RUNSQLSTM command does not contain MDCMS wildcards – no conversion will occur
Y – The SQL member or IFS file used by a RUNSQLSTM command contains MDCMS wildcards – MDCMS will create a temporary copy of the script and convert the wildcards in the copy to the actual runtime values. This flag should also be set to Y when script is used to create SQL indexes, views, constraints or triggers, even if wildcard is not present, so that MDCMS can automatically qualify the object.

This flag is only relevant for object-related command types using the RUNSQLSTM command. The wildcards embedded in the SQL script may be delimited by ++ instead of ## to avoid code page issues.

Run as User Profile
By default, commands executed during an RFP run under the profile of the user profile defined on the job description of the application level for the RFP. If a specific command should run under the authorities of a different user, that user ID can be entered here. As a safety precaution, the user placing a value in this field must have authority to use that entered user profile in order to save the command definition.

Wait before Usage
If the command type is L (Lock Wait for Object), the number of seconds to wait before an object lock condition causes the command to be executed can be defined.

If multiple L commands are defined, each command waits the number of seconds defined for that command after the prior command has completed.

For example:
Command 1 waits 15 seconds before sending an email to the user that submitted the RFP.
Command 2 waits 300 seconds before sending an email to the entire operations group (plus the 15 seconds wait for command 1)
Command 3 waits 3600 seconds before rolling back the RFP (plus the 315 seconds from commands 1 and 2).

Command
The IBM i or user-defined command to be performed. Enter the name of the command and then press F4 to fill in the keywords.

Some wildcard parameter values may be used and are substituted by MDCMS at run-time. The wildcard value may be typed directly into the command or the cursor may be positioned in the command and F7 pressed to insert the value from a list.

For Lock Wait command types, special value *ROLLBACK can be used to automatically roll back an RFP if an Object Lock condition occurs.

Function Keys:
**F4=Browse** – Browse for values.
**F7=Insert Wildcard** – Insert wildcard value into command string at the location of the cursor. A list of all fixed wildcard values followed by all wildcards for custom fields will displayed to select from.

### 3.4.2 Attribute Command Considerations

This function is directly related to the Source/Object Attribute Maintenance. The commands are used during the RFP compile and Installation processes and the defaults entered for a command will affect the object's attributes.

It is absolutely essential that the generic ## names are used within the compilation commands for the object library and name, and source library and name. Otherwise, the installation process will not work properly.

If a command is to run for every RFP for an Application/level and is not based on the installation of a specific object-type, use the attribute *RFP.

If a command is intended to be used only for a specific object or for a specific RFP, then define the command within the Command Override function in the Object Manager or RFP manager.

### 3.4.3 Fixed Command Wildcard Values

The fixed wildcard parameters are:

| Value | Type | Length | Title | Description of Value Origin |
|---|---|---|---|---|
| ##OBJLIB## | CHAR | 240 | Object library | During the compile phase, this is the developer library/folder or temporary RFP build library. During the install phase, this is the Object Library/Folder defined for the Object's attribute/replication template |
| ##OBJNAM## | CHAR | 80 | Object name | Name of the requested Object |
| ##OBJTYP## | CHAR | 7 | Object type | Object Type for the requested object |
| ##SRCLIB## | CHAR | 240 | Source library | The target Source Library/Folder defined for the Object's attribute/replication template |
| ##SRCFIL## | CHAR | 10 | Sourcefile name | The target Source File defined for the Object's attribute/replication template |
| ##SRCNAM## | CHAR | 80 | Source Name | The name of the source member or IFS file for the requested object |
| ##APPLIC## | CHAR | 4 | Application code | The Application Code of the RFP |
| ##PROLVL## | INT | 2 | Promotion Level | The Promotion Level of the RFP |
| ##ATTRIB## | CHAR | 10 | Attribute | The MDCMS Attribute code |
| ##REQNBR## | INT | 11 | Request Number | The unique identifier of an object request |
| ##OBJREQ## | CHAR | 10 | Object Requester | The user that has requested the Object |
| ##REQRSN## | CHAR | 6 | Request Reason | MODIFY, DELETE, RECOMP or UPDATE |
| ##REQDAT## | CHAR | 10 | Request Date | The date that the object was checked out, formatted to match system locale including century |
| ##REQTIM## | CHAR | 8 | Request Time | The time of day that the object was checked out in format HH:MM:SS |
| ##MODULE## | CHAR | 2800 | ILE Bound Modules | The list of bound modules for the creation of ILE Programs or Service Programs |
| ##ENTMOD## | CHAR | 23 | ILE Entry Module | The bound module containing the Program Entry Procedure for the creation of ILE Programs |
| ##SRVPGM## | CHAR | 2800 | ILE Bound Service Programs | The list of bound service programs for the creation of ILE Programs or Service Programs |
| ##TGTRLS## | CHAR | 8 | Target Release | The target OS release for the compilation of modules and programs. The value used will be the lowest release defined for the distribution levels for the given Application, unless a specific value is defined for the promotion level. |
| ##OFFLIB## | CHAR | 10 | Old File Format File Library | The name of the library containing the old version of the file when mapping data to the new format for a file |
| ##OFFNAM## | CHAR | 10 | Old File Format File Name | The name of the file containing the old version of the file when mapping data to the new format for a file |
| ##OFFMBR## | CHAR | 10 | Old File Format File Member | The name of the file member containing data for the old version of the file when mapping data to the new format for a file |
| ##FRMLIB## | CHAR | 240 | Object Library to Migrate from | The developer library/folder that the object will be migrated from. Typically used at checkout to handle conversion routines. |

| | | | | |
|---|---|---|---|---|
| ##FRMSLB## | CHAR | 240 | Source Library to Migrate from | The developer library/folder that the source will be migrated from. Typically used at checkout to handle conversion routines. |
| ##FRMSFL## | CHAR | 10 | Source File to Migrate from | The developer source file that the source will be migrated from. Typically used at checkout to handle conversion routines. |
| ##OBLLIB## | CHAR | 240 | Level Object Library/Folder | This is the Object Library/Folder defined for the Object's attribute/replication template, regardless of the RFP phase when the wildcard is used. |
| ##SERVER## | CHAR | 50 | Server | The target server address for a *REMOTE object or the server name for a *IFS object. |
| ##ERRMSG## | CHAR | 240 | Error Message | The message text explaining why the RFP failed |
| ##SYSTIT## | CHAR | 40 | System Title | Title of system defined in System Settings |
| ##RFPNBR## | INT | 7 | RFP number | The Request for Promotion Number |
| ##RFPDSC## | CHAR | 160 | RFP description | RFP description |
| ##RFPPRG## | CHAR | 10 | RFP requester | User assigned to the RFP |
| ##RFPSBM## | CHAR | 10 | RFP submitter | User that submitted the RFP for compile |
| ##RFPSBD## | CHAR | 10 | RFP Submit Date | The date that the RFP was submitted (or scheduled to submit) for the compile phase, formatted to match system locale including century |
| ##RFPSBT## | CHAR | 8 | RFP Submit Time | The time of day that the RFP was submitted (or scheduled to submit) for the compile phase in format HH:MM:SS |
| ##RFPAPR## | CHAR | 10 | RFP approver | User that approved the RFP for installation |
| ##RFPAPD## | CHAR | 10 | RFP Approve Date | The date that the RFP was approved for installation, formatted to match system locale including century |
| ##RFPAPT## | CHAR | 8 | RFP Approve Time | The time of day that the RFP was approved for installation in format HH:MM:SS |
| ##RFPINS## | CHAR | 10 | RFP installer | User that installed the RFP |
| ##RFPIND## | CHAR | 10 | RFP Install Date | The date that the RFP was installed (or scheduled to install), formatted to match system locale including century |
| ##RFPINT## | CHAR | 8 | RFP Install Time | The time of day that the RFP was installed (or scheduled to install) in format HH:MM:SS |
| ##RFPWFU## | CHAR | 10 | RFP Workflow User | The user that confirmed the MDWorkflow acceptance or rejection of an installed RFP |
| ##RFPRCV## | CHAR | 10 | RFP receiver | User receiving the RFP onto the local system |
| ##RFPSND## | CHAR | 10 | RFP sender | User sending the RFP to target locations |
| ##SVFLOC## | CHAR | 10 | Target Location ID of Sent Savefile | The Location ID that an RFP is sent to. This wildcard is only applicable for command type O or Q. |
| ##SVFTGT## | CHAR | 80 | Target Address of Sent Savefile | The Location Address that an RFP is sent to. This wildcard is only applicable for command type O or Q. |
| ##SVFNAM## | CHAR | 80 | Sent Savefile Name | The name of the savefile that has been sent to a location. This wildcard is only applicable for command type O or Q. |
| ##PROJID## | CHAR | 12 | Project ID | The first Project in the list of projects assigned |

| | | | | |
|---|---|---|---|---|
| | | | | to an object request or to object requests in an RFP. |
| ##PRJTYP## | CHAR | 10 | Project Type | Project Type |
| ##PRJTIT## | CHAR | 80 | Project Title | Project Title |
| ##PRJREQ## | CHAR | 10 | Project requester | Project requester |
| ##PRJAGR## | CHAR | 10 | Assigned Group for Project | the designated user group assigned to carry out the Project |
| ##PRJPRG## | CHAR | 10 | Project programmer | the designated programmer for the Project |
| ##PRJAUT## | CHAR | 10 | Project Authorizer | user that authorized work to be done for project |
| ##PRJAPR## | CHAR | 10 | Project Approver | user that approved the installation of Project |
| ##PRJCLS## | CHAR | 10 | Project Closer | user that closed the Project |
| ##PRJPRI## | CHAR | 1 | Project Priority | The priority of the project from 1 to 5 |
| ##PRJSTS## | CHAR | 1 | Project Status | The current status code of the Project |
| ##PRJEDT## | CHAR | 10 | Project Due Date | The date that the project is expected to complete, formatted to match system locale including century |
| ##PRJHRE## | DEC | 7,2 | Project Hours Estimated | Estimated number of hours to complete the project |
| ##PRJHRA## | DEC | 7,2 | Project Hours Actual | Number of hours entered to date for the Project |
| ##PRJCSE## | DEC | 9,2 | Project Cost Estimated | Estimated cost to complete the project |
| ##PRJCSA## | DEC | 9,2 | Project Cost Actual | Actual calculated cost based on hours entered to date for the project |
| ##TASKID## | DEC | 5 | Task ID | the 5-digit ID of the task |
| ##STSKID## | DEC | 5 | Subtask ID | the 5-digit ID of the subtask |
| ##TSKTYP## | CHAR | 10 | Task Type | Task Type |
| ##TSKREF## | CHAR | 20 | Task Ref Code | Internal Reference Code |
| ##TSKDSC## | CHAR | 80 | Task Description | First line of the Task Description |
| ##TSKREQ## | CHAR | 10 | Task Requester | User that created the Task |
| ##TSKAGR## | CHAR | 10 | Assigned Group for Task | the designated user group assigned to carry out the Task |
| ##TSKPRG## | CHAR | 10 | Assigned User for Task | the designated programmer for the Task |
| ##TSKTGR## | CHAR | 10 | Test Group for Task | the designated user group expected to test the results of the Task |
| ##TSKTUS## | CHAR | 10 | Test User for Task | a specific user expected to test the results of the Task |
| ##TSKCLS## | CHAR | 10 | Task Closer | user that closed the Task |
| ##TSKPRI## | CHAR | 1 | Task Priority | The priority of the task from 1 to 5 |
| ##TSKSTS## | CHAR | 1 | Task Status | The current status code of the Task |

| | | | | |
|---|---|---|---|---|
| ##TSKEDT## | CHAR | 10 | Task Due Date | The date that the task is expected to complete, formatted to match system locale including century |
| ##TSKHRE## | DEC | 7,2 | Task Hours Estimated | Estimated number of hours to complete the task |
| ##TSKHRA## | DEC | 7,2 | Task Hours Actual | Number of hours entered to date for the task |
| ##TSKCSE## | DEC | 9,2 | Task Cost Estimated | Estimated cost to complete the task |
| ##TSKCSA## | DEC | 9,2 | Task Cost Actual | Actual calculated cost based on hours entered to date for the task |
| ##WFLURL## | CHAR | 80 | MDWorkflow URL | The fixed portion of the URL to connect to MDWorkflow as defined in the Email Settings |
| ##WFLLOC## | CHAR | 10 | MDWorkflow Location ID | The System Location ID of the RFP, used within the URL to link to the RFP details in MDWorkflow |

### 3.4.4 MDCHKRFP – Validate RFP prior to Submission command

The Validate MDCMS RFP (MDCHKRFP) command provides the parameters necessary for MDCMS to invoke a custom validation program prior to the submission of an RFP.

A custom validation program can be used to provide an info, warning or error message to the developer when attempting to submit a specific RFP. To do so, this command must be defined for a specific RFP or for a *RFP attribute command using command type V=Pre-Submit Validation.

Command MDCHKRFP doesn't directly invoke a program. Instead, it uses the command parameters to know the name and location of a custom program to be directly called by MDCMS when an RFP is selected for submission.

The V command type can be repeated if more than one custom program should be called.

The custom program must contain exactly the following calling parameters with each parameter individually defined:

**Custom Parameter Table**

| Description | Type | Length |
|---|---|---|
| MDCMS Application Code inputted to program | CHAR | 4 |
| MDCMS RFP Number inputted to program | PACKED-DECIMAL | 7,0 |
| Message Text outputted from program containing any information that the user should be notified about in regards to the RFP.<br>Return blanks if a message shouldn't be displayed. | CHAR | 360 |
| Message Severity outputted from program.<br>10=informational message only<br>20=warning message, but user can continue with RFP<br>30=error message, RFP not allowed to be submitted | PACKED-DECIMAL | 2,0 |

**MDCHKRFP Parameter Table**

| KEYWORD | Description | Type | Length |
|---|---|---|---|
| PGMNAM | Program Name - The name of the Custom Program to be invoked in order to provide additional validation of the RFP beyond what is already performed by MDCMS. | CHAR | 10 |
| PGMLIB | Program Library - Specifies the library where the Custom Program resides.<br><br>*LIBL - The program library resides in the library list at the time of execution. | CHAR | 10 |
| LIBL | The library list to use during execution to ensure any program dependencies are found.<br><br>*RFP - the library list of the job description for the target level of the RFP<br><br>*CURRENT - the current library list when the submit option is requested is used | CHAR | 8 |

## 3.5 Scripts

The Attribute Script displays are used to define the scripts that are used for *IFS or *REMOTE attributes. Script Maintenance is invoked by pressing F10 from the Command Maintenance display.

```
MDCCMSS                            COMPANY NAME                           7.03.16
SCRN1                          Attribute Scripts                         11:53:35

          Appl  Lvl  Attribute   Type  Script
Filters:  ____  __   __________   _    ________________

Type options, press Enter.
 2=Edit   3=Copy   4=Delete   5=View   S=Script Content

Opt Appl Lvl Attribute  Typ Seq Script
 _   CMP  32  IFS         3      /7.0/stop-test-glassfish.bat
 _   CMP  52  IFS         3      /7.0/stop-test-glassfish.bat
 _   MD   90  PATCH       3      /stop-global-warming.bat
 _   TEST 10  IFS         3      /7.0/stop-test-glassfish.bat
 _   TEST 10  PHP         3      /6.8.1/start-test-glassfish-2.bat
 _   TEST 10  PHP-IFS     2      /zend/ifs/shutdown.sh
 _   TEST 10  PHP-IFS     3      /zend/ifs/startup.sh
 _   TEST 10  WINAPP      2    1 /7.4/windows-stop-tomcat.bat
 _   TEST 10  WINAPP      3    1 /7.4/windows-start-tomcat.bat
 _   TEST 30  IFS         2  366 /zend/ifs/config.sh
 _   TEST 30  IFS         2  367 /zend/ifs/config.sh
                                                                      More...
F3=Exit   F6=Add   F12=Previous
```

Screen Definitions
Filters
Appl/Lvl
Enter a value here to limit the listing to a specific application or level.

Attribute
Enter part or all of an attribute to limit the listing. For example, enter C to list only scripts with an attribute starting with C.

Type
Enter a value here to limit the listing to a specific script type. See the next section for detailed information about each type of script available within MDCMS.

Script
Enter a string here to limit the listing to scripts containing that string. For example, enter SRC to list only scripts containing the string SRC.

Opt
**2=Edit** – Change the properties for the selected Script
**3=Copy** – Copy a script definition
**4=Delete** – Delete a script definition
**5=View** – display a script definition
**S=Script Content** – view the contents of a script. Use MDOpen to edit the contents and an RFP to deploy to script to each level where it should be used.

Function Keys:
**F6=Add** – Add a new Attribute Script definition

### 3.5.1 Add or Change display

```
MDCCMSS                              MD T 74 6.1                              7.03.16
 SCRN2                          Attribute Script Detail                      12:14:01

 Appl.....: CMP                                    Run for Modifications: Y  Y/N
 Lvl......: 52                                            Deletes......: Y  Y/N
 Attribute: IFS                                    Ignore Errors........: Y  Y/N
 Type.....: 3  2=Pre-Install, 3=Post-Install       Replace Wildcards....: N  Y/N
 Sequence.: ___                                    Run as User Profile..: __________
 Frequency: R  O=Object, R=RFP

 Submit Job . . . . . .  N           Y/N
 Job Name . . . . . .    __________
 Job Queue  . . . . . .  QSYSNOMAX_
   Library  . . . . . .    QSYS_____
 Script Root Folder . .  /MDCMS/SCRIPTS
 Script Subfolder . . .  /7.0_____________________________________________________
_____________________________________________________________________________

Script File
Stop-test-glassfish.bat_____________________________________________________

 F3=Exit    F4=Browse
```

Screen Definitions:

Appl/Lvl
The Application Group and Level that the attribute resides in.

Attribute
The MDCMS attribute that the script will be tied to.
Only *IFS or *REMOTE attributes may use scripts.

Run for Modifications
Flag stating if the script should run for new or changed objects.

Run for Deletes
Flag stating if the script should run for deleted objects.

Ignore Errors
Y – Continue with RFP processing even if the script fails.
Flag will always be Y for type 3.
N – Cease and Rollback RFP processing if the script fails

Type
The Type value designates when a script should run

| | | |
|---|---|---|
| 2 | Pre-Installation | runs prior to installing objects into the environment |
| 3 | Post-Installation | runs after the installation of objects is complete |

Replace Wildcards
N – The script doesn't contain wildcard values to be replaced by runtime values when executed
Y – Replace wildcard values in the script at run time

Sequence

The sort sequence of the script at run time, in case multiple scripts for the same attribute and type are defined.

Run as User
The user profile that the IFS script will run under within QSHELL

Frequency
O – The script will run for every object in the RFP that is assigned to the given Attribute.
R – The script will run for the first object in the RFP that is assigned to the given Attribute and then ignored for any additional objects for the same Attribute.

Wait for Response
Y – MDCMS waits until the Remote server confirms completion of the script execution
N – MDCMS continues without waiting for a response from the remote server

Submit Job
Y – Submit the IFS Script execution to a separate job. MDCMS will not wait for a response in this case, but instead continue with RFP processing.
N – the ifs script execution runs within this job

Job Name
The name of the submitted job that will process the IFS script

Job Queue
The name and library of the Job Queue to receive the submitted job

Script Subfolder
The relative path of the script, if it isn't directly located in the script root folder.

Script
The name of the script file located in IFS

Function Keys:
**F4=Browse** – Browse for values.
**F12=Previous**

## 3.6 Templates

Templates are distinct definitions for Object Authority, Replication, Search or Deletion that can be used for one or more Attributes across Applications and Levels. Additionally, the Data Copy Libraries template is used to define sets of From and Target Libraries for the copying of data.

### 3.6.1 Object Authority Templates

An Object Authority Template defines the authorities applied to objects when they are installed into a promotion level. A template must be assigned to every attribute that has an object library or folder defined for it (except attributes of type *DATA, *DTAGRP and *DUMMY).

```
MDCTMOA                          COMPANY NAME                              25.11.12
SCRN1                     Object Authority Templates                       12:17:57
Filters:            *PUBLIC                              Used by:
 Type   Owner       Obj Auth  Auth List  User             Appl Lvl Library
 ______ __________  _________ __________ ___________     ____ __  ________________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes
                                        *PUBLIC                  Primary     Other
Opt Template  Atr  Type    Obj Owner   Obj Auth     Auth List   Group       Users
 _  *DFTIFS        IFS     *JOBD       *OBJREF      *NONE
 _  *DFTRMT        REMOTE  *FTP        *NONE        *NONE
 _  *DFT400        OS400   *JOBD       *CHANGE      *NONE
 _  IFS1       Y   IFS     *JOBD       *OBJEXIST +  TLIST1                      1
 _  IFS2       Y   IFS     *SAME       *SAME        *SAME       *SAME           1
 _  OS4A       Y   OS400   *JOBD       *AUTL        TLIST1      MDPGP           1
 _  OS4B       Y   OS400   MMORGAN     *USE         *NONE                       1
 _  OS4C       Y   OS400   *SAME       *SAME        *SAME       *SAME           1
 _  OS40000003     OS400   MRDATA      *USE         *NONE
 _  RMT00001   Y   REMOTE  *FTP        *NONE        *NONE
                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Used By

Only templates that are used by attributes for the entered Application, Level or Object Library will be listed.

Position to Template

A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options

2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**

Template
A 10-Character name for the template definition. The templates *DFTIFS, *DFTRMT and *DFT400 are automatically created by MDCMS at installation time with the most common object authority definitions for each type. The definitions may be modified to meet the requirements of the majority of your objects.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Template Type
IFS – Object Authority definition for objects residing in IFS
REMOTE – Object Authority definition for objects residing on other system than the IBMi

Apply Template
Flag available for OS400 objects to determine when template should be applied to a deployed object.
A – Always apply template
N – Only apply template for new objects. A modified object will retain the same authority as the object it replaced.

Obj Owner
The value entered here is the owner of the objects for the specified Attribute. It may be any valid user profile on your IBMi system. The default value of *JOBD will set the object ownership to be the value of the application level job description 'USER' value.

The value *SAME may also be given. If *SAME is used for a new object the owner is based on user running the compile phase of an RFP for compiled objects or based on the from object for copied objects. If *SAME is used for an existing object, the current object's ownership will be transferred to the object replacing it.

Auth List
If you are maintaining authorities on your system through authorization lists, enter the name of the authorization list here. Otherwise, it may be left blank.

The value *SAME may also be given. If *SAME is used for a new object, the authorization list is based on the compile at install time for compiled objects or based on the from object for copied objects. If *SAME is used for an existing object, the authorization list will be transferred to the object replacing it.

Users with Authority to Object
*PUBLIC – the authority granted to any user that is not specified in the list for the Template
Primary Group – the name of the Primary Group for an OS400 or IFS object. Press F9 from the Template Edit screen to add a Primary Group to a Template definition.
*OWNER – the Owner authority for a remote object
*GROUP – the Group authority for a remote object
Other Users – the IBMi user profiles to be granted specific authority for the Template. Press F6 from the Template Edit screen to add a user profile to a Template definition.

OS400 Authorities

Possible Single Values

| | |
|---|---|
| *ALL | All authority |
| *CHANGE | Change authority |
| *EXCLUDE | No Authority |
| *SAME | The authority of the existing object is applied for the user to the authority for the object replacing it |
| *USE | Usage authority |

OR

Possible Multiple Values (1 or more in the list applied for the same user)

| | |
|---|---|
| *ADD | Authority to add entries to Object |
| *DLT | Authority to remove entries from an Object |
| *EXECUTE | Authority to run program or locate the object |
| *OBJALTER | Object Alter Authority |
| *OBJEXIST | Object Existence Authority |
| *OBJMGT | Object Management Authority |
| *OBJOPR | Object Operational Authority |
| *OBJREF | Object Reference Authority |
| *READ | Authority to get contents of an entry |
| *UPD | Authority to change contents of an entry |

IFS Object Authorities

Possible Single Values

| | |
|---|---|
| *ALL | All authority |
| *NONE | No Object Authority |
| *SAME | The authority of the existing object is applied for the user to the authority for the object replacing it |

OR

Possible Multiple Values (1 or more in the list applied for the same user)

| | |
|---|---|
| *OBJALTER | Object Alter Authority |
| *OBJEXIST | Object Existence Authority |
| *OBJMGT | Object Management Authority |
| *OBJREF | Object Reference Authority |

IFS Data Authorities

| | |
|---|---|
| *EXCLUDE | no data or object authority |
| *NONE | no data authority |
| *R | Read authority |
| *RW | Read/Write authority |
| *RWX | Read/Write/Execute authority |
| *RX | Read/Execute authority |
| *SAME | The authority of the existing object is applied for the user to the authority for the object replacing it |
| *W | Write authority |
| *WX | Write/Execute authority |
| *X | Execute authority |

Remote Object Authorities

| | |
|---|---|
| *NONE | no data authority |
| *R | Read authority |
| *RW | Read/Write authority |
| *RWX | Read/Write/Execute authority |
| *RX | Read/Execute authority |
| *W | Write authority |
| *WX | Write/Execute authority |
| *X | Execute authority |

### 3.6.2 Object Replication Templates

An Object Replication Template defines the list of locations that an object should be deployed to in addition to the location defined for the object's attribute.

```
MDCTMOR                          COMPANY NAME                              25.11.12
SCRN1                   Object Replication Templates                       13:19:30
Filters:                                                              Used by:
 Type   Library/Folder            Server                              Appl Lvl
 ______ _____________________ _____________________________  ____ __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes
    __________
Opt Template Atr Type   Replication Locations
 _   FILE MJ   Y  OS400  TSTOBJ10M, TSTOBJ10Y
 _   FOLDERS      IFS    /transfer/5_4, /transfer/6_0, /transfer/6_7_5, /transfe >
 _   ORT2       Y  OS400  DD01000020, DSAV000006
 _   ORT222     Y  OS400  IT000764, MDADMT, MDAPI
 _   T_FOLDER   Y  IFS    /T_Folder/IT/BU1, /T_Folder/IT/BU2
 _   TSTPUB        OS400  TSTPUB
 _   WEB        Y  REMOTE MD Web Server:/dev/testenv/T1_alt1, MD Web Server:/dev/ >


                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Used By

Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template

A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options

2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys

F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**

Template
A 10-Character name for the template definition.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Template Type
IFS – Object Replication definition for objects residing in IFS
REMOTE – Object Replication definition for objects residing on other system than the IBMi
OS400 – Object Replication definition for standard IBMi objects
SQL – Object Replication definition for SQL Objects

Library
The list of libraries that OS400 objects will be replicated to at installation time

Folder
The list of folders that IFS or REMOTE objects will be replicated to at installation time

Schema
The list of SQL Schemas that SQL objects will be replicated to at installation time

Server
The list of servers that REMOTE objects will be replicated to at installation time

Existing Objects Only
N – any object will be replicated to this library
Y – an object will only be replicated to this library if it already exists in the library

Object Auth. Template
*SAME – the same Object Authority Template for the Attribute library will be used for the replication library.

Template name – the entered Template will be used for the application of Object Authorities to the Replication Library

Reference Libraries to include in LIBL at deployment
Up to 5 Libraries that will be added to the top of the library list when a logical file (including SQL indexes or views) is created at installation time to access the correct physical file libraries for the replication library.

### 3.6.3 Source Replication Templates

A Source Replication Template defines the list of files that a source member, IFS source or message description should be deployed to in addition to the location defined for the object's attribute.

```
MDCTMSR                          COMPANY NAME                            25.11.12
SCRN1                  Source Replication Templates                      13:28:34
Filters:                                                          Used by:
 Type  Library     File                                            Appl Lvl
 _____ __________  __________                                      ____ __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes
    __________
Opt Template Atr Type  Replication Locations
 _  MSGS       Y  MSG   TSTOBJ10/MSGFD, TSTOBJ10/MSGTD, TSTSRCREP1, TSTSRCREP1/ >
 _  REPS       Y  SRC   TSTSRCREP1, TSTSRCREP2
 _  REPS2      Y  SRC   MDADMP, MDADMT/QCBLSRC




                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Used By

Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template

A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options

2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys

F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**

Template
A 10-Character name for the template definition.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Template Type
IFS – Source Replication definition for source residing as files in IFS
MSG – Message Description Replication definition for messages in Message Files
SRC – Source Member Replication definition for members residing in Source Files

Library/File
The list of IFS directories, message files, or source files to replicate to at installation time

### 3.6.4 Object Search Templates

An Object Search Template defines the list of libraries or IFS directories that should be searched when checking out an object.

During check-out, MDCMS searches for objects (that don't have a source member defined for the attribute) in the following sequence:

1) The target library for the attribute
2) If the promotion level is a delta level, the higher levels will be checked in ascending order
3) If the level is based on another level, the based-on level and its higher levels are checked in ascending order
4) The search libraries in the search template in sequential order

```
MDCTMOS                          COMPANY NAME                          25.11.12
SCRN1                      Object Search Templates                     13:51:23
Filters:                                                          Used by:
 Type   Library/Folder                                            Appl Lvl
 ______ ____________________                                      ____ __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes

    __________
Opt Template  Atr Type   Search Locations
 _  FINDASO    Y  OS400  SIVQRY, LIVQRY
 _  FINDASO12     OS400  WIVQRY, ZIVQRY
 _  FINDIFS    Y  IFS    /T_Folder/IT/javamail-1.4.3, /T_Folder/IT/javamail-1.4. >
 _  SEARCH003  Y  IFS    /T_Folder/SIT, /T_Folder/Prod
 _  SEARCH004     OS400  TSTOBJ30, TSTOBJ70


                                                                      Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Used By

Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template

A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options
2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**
Template
A 10-Character name for the template definition.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Template Type
IFS – Object Search definition for objects residing in IFS
OS400 – Object Search definition for standard IBMi objects

Sort Sequence
A number indicating the sort sequence for the location, in ascending order

Library
The list of OS/400 libraries that will be searched at check-out time

Folder
The list of IFS folders that will be searched at check-out time

Display Warning
If set to Y, MDCMS will always check if the object is in this library, even if found sooner elsewhere, and display a warning screen that the object was found in the location specified by the template.

This provides the ability to warn about an object already in another location when attempting to check it out.

### 3.6.5 Source Search Templates

A Source Search Template defines the list of source files or IFS directories that should be searched when checking out source.

During check-out, MDCMS searches for source in the following sequence:

1) The target source file/directory for the attribute
2) If the promotion level is a delta level, the higher levels will be checked in ascending order
3) If the level is based on another level, the based-on level and its higher levels are checked in ascending order
4) The source locations in the search template in sequential order

```
MDCTMSS                          COMPANY NAME                          25.11.12
SCRN1                      Source Search Templates                     21:21:42
Filters:                                                             Used by:
 Type  Library/Folder            File       System                    Appl Lvl
 ___   ____________________________ __________ ____________________________   ____ __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes

Opt Template   Atr  Type  Search Locations
 _  IBMODP      Y   MBR   PROIB
 _  IFSSEARCH   Y   IFS   /test/30
 _  MBRSEARCH   Y   MBR   SQLLIBSRC




                                                                      Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Used By

Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template

A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options

2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**
Template
A 10-Character name for the template definition.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Template Type
IFS – Source Search definition for source residing in IFS
MBR – Source Search definition for source members residing in Source Files

Sort Sequence
A number indicating the sort sequence for the location, in ascending order

Library
The name of a Library containing source files

File
The name of a source file
*SRCFILE – the name of the target source file for the attribute

System
The address of the remote system containing the source file to be searched. The addresses are defined in the OS/400 Locations.
*LOCAL – the library resides on the same system partition

Display Warning
If set to Y, MDCMS will always check if the source is in this library, even if found sooner elsewhere, and display a warning screen that the source was found in the location specified by the template.

This provides the ability to warn about source already in another location when attempting to check it out.

### 3.6.6 Object Deletion Level Templates

An Object Deletion Level Template defines the list of levels containing Delta or Emergency objects that should be deleted when those objects are installed into the current level.
For example, the template could be assigned to attributes in the production level to delete the objects from the development and test levels.

In order for the deletion to occur, the level to delete from must have the Delta Object Level flag set to Y. If the Emergency Level flag is set to Y, and the object is found in the level, it will be deleted regardless of version. If the Emergency Level flag is set to N, the object will only be deleted if the version in the delta level is the same as the version in the level being installed into. This insures that new work in progress won't be deleted from delta libraries.

If an Object Deletion Level Template is assigned to a *DATA attribute, MDCMS will delete the entire file from the delta level if MDCMS also automatically created the file to contain the data and no additional deployments or changes have been made to the file since that creation occurred.

```
MDCTMOD                          COMPANY NAME                          29.07.14
SCRN1                      Object Deletion Templates                   21:20:10
Filters:                                                             Used by:
 Lvl                                                                   Appl Lvl
 __                                                                    ____ __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes
    __________
Opt Template  Atr  Deletion Levels
 _  T30        Y   10, 20
 _  T50        Y   30



                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**
Filters
The entry of a value into the level filter fields will result in a subsetted list of records which contain that level.

Used By
Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template
A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options
2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**
Template
A 10-Character name for the template definition.

Atr
Y – The template is assigned to 1 or more MDCMS attributes

Level
The list of levels from which to delete objects

### 3.6.7 Source Deletion Level Templates

The usage and handling of Source Deletion Level Templates is identical to that of Object Deletion Level Templates described in the previous section.

The one additional feature for Source Deletion Levels is that the deletion level may exist on a remote system. Use *LOCAL as the System value to delete from a level on the local system. Otherwise, enter the OS/400 location to delete the source from that system when the source is installed into the current level on the local system.

### 3.6.8 MDRapid Usage Templates

An MDRapid Usage Template defines the Job Queue to submit the MDRapid batch jobs to (1 control job + one copy job for each physical file in an RFP that requires MDRapid record copying) as well as the default minimum record count needed to require the use of MDRapid for a file or SQL table.

The usage of MDRapid permits all data to be copied from the old format of a changed file to the new format while the application is still in use, thus substantially reducing the amount of downtime. Once the original records are copied, MDRapid continues to mirror transactions to the new format of the file until such time that the install should occur.

```
MDCTMRP                            COMPANY NAME                          29.07.14
SCRN1                        MDRapid Usage Templates                     14:19:24
                                                                  Used by:
                                                                   Appl Lvl
                                                                   ____  __

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes
    __________
Opt Template   Atr  Minimum Rcd Cnt  Job Queue  Jobq Library
 _  RAPID       Y       1,000,000    QBATCH     QGPL



                                                                      Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Used By
Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template
A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options
2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**

Template

A 10-Character name for the template definition.

Atr

Y – The template is assigned to 1 or more MDCMS attributes

Minimum Rec Count

The minimum number of records that have to exist in the current version of the file (across all members) in order for that file to be included by default in the MDRapid process. This can be overridden for specific file requests in the Object Manager.

Job Queue

When MDRapid runs, a single monitor job is submitted for entire the RFP and a job is submitted for each target physical file. Enter the name of the job queue that these jobs should be submitted to. It should be a queue that allows a sufficient number of jobs to be concurrently active.

Job Queue Library

The library that Job Queue exists in. If left blank, MDCMS will attempt to retrieve the library from the library list.

### 3.6.9 Source Comments Templates

A Source Comments Template defines the text that should be automatically inserted into source code when MDCMS deploys the source to a level that allows checkout.

This template is limited to source stored as members in source files.
The 3 examples in the screen below are shipped with MDCMS to help understand some of the common formatting possibilities available.

```
MDCTMSC                          MD T 8.1 dev                            8.11.17
SCRN1                    Source Comments Templates                     18:05:01
                                                                  Used by:
                                                                   Appl Lvl
                                                                   ____  __
Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  A=Attributes

    _________          Margins    Delimiters
Opt Template   Atr Lft Rgt Top  Left Right  Pos Comments
 _  CBLDDS      Y    7  71   6  **   *       L  ++REQDAT++ ++REQTIM++ ++OBJREQ+
 _  CL          Y    1  71   1  /*   */      L  *nl++RFPSBD++ ++RFPSBT++ ++OBJR
 _  SQL         Y    7  71   1  --           F  ++REQDAT++ ++REQTIM++ ++OBJREQ+









                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F10=Attributes   F21=Sys Command
```

**Screen Definitions:**

Used By
Only templates that are used by attributes for the entered Application or Level will be listed.

Position to Template
A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options
2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template; all attributes using the template will automatically be updated
A – List all attributes using the template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F10=Attributes – List all attributes to be able to view and change the usage of the Templates

**Fields**

Template
A 10-Character name for the template definition.

Left Margin
The leftmost position in the source code where each row of the text should begin

Right Margin
The rightmost position in the source code where each row of the text should end. If a word doesn't finish when the right margin is reached, the entire word will be placed on the next row.

Top Margin
The earliest possible row in the source code where the comment rows should be inserted

Left Delimiter
The character(s) to use as a comment delimiter on the left side of the text so that the compiler realizes that the row contains comments.

Right Delimiter
The character(s) to use as a comment delimiter on the left side of the text so that the compiler realizes that the row contains comments.

Comment Position
F – Insert the comment at the very first row defined by the Top Margin
L – Position to the Top Margin and continue until a row is encountered that doesn't start with the Left Delimiter and place the new comment there, which is expected to be the last comment in that sequence.

Comments
The text to be inserted into the source.

Wildcards – wildcards are special values delimited by ++ that are replaced at runtime with MDCMS values. Position the cursor and press F7 to insert a wildcard into the comment field.

*nl – special value indicating to skip to the next line

### 3.6.10 Attributes for Templates

In order to see where templates are used, and to assign templates to many attributes at once, the list of attributes can be displayed for each type of template.
From the maintenance screen for a type of template, press F10 to view all attributes or enter option A for a specific template to see the attributes using that template.

```
MDCTAOA                          COMPANY NAME                          25.11.12
SCRN1              Attributes for Object Authority Templates           21:34:40
          Appl Lvl  Type    Attribute   Object Lib       Template    Temp Type
Filters: ____ __   ______  __________  ________________  __________  ______

Type options, press Enter.
 1=Assign Attribute to Template: __________

Opt Appl Lvl Type    Attribute  Object Lib           Template
 _  TEST 11  *DTAARA DTAARA     TSTOBJ11             OS4A
 _  TEST 10  *FILE   DSPF       TSTOBJ10             *DFT400
 _  TEST 11  *FILE   DSPF       TSTOBJ11             *DFT400
 _  TEST 30  *FILE   DSPF       TSTOBJ30             OS4A
 _  TEST 70  *FILE   DSPF       TSTOBJ70             *DFT400
 _  TEST 10  *FILE   LF         TSTOBJ10             *DFT400
 _  TEST 11  *FILE   LF         TSTOBJ11             *DFT400
 _  TEST 30  *FILE   LF         TSTOBJ30             OS4B
 _  TEST 70  *FILE   LF         TSTOBJ70             *DFT400
 _  TEST 10  *FILE   PF         TSTOBJ10             *DFT400
 _  TEST 11  *FILE   PF         TSTOBJ11             *DFT400
 _  TEST 30  *FILE   PF         TSTOBJ30             OS4B
                                                                    More...
F3=Exit   F4=Browse   F5=Refresh   F13=Repeat Opt
```

**Screen Definitions:**

Filters

The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Options

1 – Assign Attribute to Template – enter a valid template name in the field above the list and then place a 1 next to each attribute that should have that template assigned to it. The Template Type must be compatible with the object type.

Function Keys

F3=Exit
F4=Browse – Browse the list of valid values for a filter field or the Template field.
F5=Refresh
F13=Repeat the assign option for all compatible attributes

### 3.6.11 Data Copy Libraries Templates

A Data Copy Libraries Template defines a set of libraries for the copying of data from one environment to another. This is typically used to refresh test libraries with some or all data located in production libraries, without losing format and object changes made in the test environment.

There are 2 levels of capabilities available with the Data Copy Libraries Template

1) Basic capabilities – the files to copy from must be in a library on the local system and CPYF is used to copy all records in the file. If the format of the target file is different, *MAP/*DROP is used.

2) MDTransform capabilities (MDTransform License required):
   - The files to copy from can be in a library on a different system (DDM read access to the data library and to the QSYS2 library must be allowed on that system).
   - SQL is used for the copy for faster performance and better handling of modified field types
   - Validation can be performed to ensure the copy will function at run-time
   - Record Conditions can be defined for files so that only a subset of data will be copied
   - Custom field value Transformation, such as to synthesize confidential data, can be performed on specific field columns.

**Data Copy Templates Screen:**

```
MDCTMDC                        MD Production 6.1                          2.11.17
SCRN1                        Data Copy Templates                        17:52:41
Filters:
 From Location  From Library  Target Library
 __________     __________    __________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  7=Rename  V=Validate  X=Execute

     __________
Opt Template   Libraries
 _   TEST1      PROD:ACCTLIBPA->ACCTLIBTA, PROD:ACCTLIBPB->ACCTLIBTB


                                                                      Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F11=View Output   F21=Sys Command
```

Filters
The entry of values into one or more of the filter fields will result in a subsetted list of records which contain the values of those filters.

Position to Template
A value can be entered into the field above the Template column to position the cursor to the first entry in the list greater than or equal to the value.

Options
2 – Edit an existing Template definition
3 – Copy the definition for a Template to a new Template name
4 – Delete a Template definition
5 – Display all details of the Template definition
7 – Rename the Template
V – Validate the ability to perform the copy between the libraries defined for this Template without actually performing the copy. (MDTransform License required)
X – Execute the copy of data between the libraries defined for this Template

Function Keys
F3=Exit
F4=Browse – Browse the list of valid values for a filter field.
F5=Refresh
F6=Add – Add a new Template Definition
F11=View Output – view/export report output, including Data Copy Log Reports
F21=Sys Command – access a command line

**Target Libraries for a Data Copy Template Screen:**

```
MDCTMDC                          MD T 8.1 dev                              2.07.18
SCRN2                         Data Copy Template                          16:42:32

Template Name .  TESTLOC

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  O=Objects  V=Validate  X=Execute

Opt Seq From Loc   From Library                   Target Library
 _    1 *LOCAL     MDADM      MD Administration O MDADMT712
 _    3 *LOCAL     MDADM      MD Administration O MDADMT72   MD Administration
 _   11 MDDEMO     MDCMST8    MDCMS  product libr MDCMS_BU   MDCMS  Backup libr
 _  211 *LOCAL     MDADMT712                      MDADMT73   MD Administration



                                                                        Bottom
F3=Exit   F6=Add   F21=Sys Command
```

From Location (MDTransform License required)
The OS/400 Location containing the library to copy from. The DDM settings for the location must be valid and DDM read access to the from library as well as the QSYS2 library must be allowed.
*LOCAL – the from library is on this partition

From Library
A library containing data in physical files or data areas that will be copied. The from library doesn't need to exist at the time of adding it to the template.

Target Library
The name of the library that contains physical files or data areas to be updated with data from the From Library. The Target Library must exist at the time of adding it to the Template.

Sort Sequence
The sequence in the list to process the from/target combination. The Sort can be used, for example, to pull data from production for a primary test environment and then copy from that environment to other environments on the same system.

Options
2 – Edit an existing entry
3 – Copy the entry to a new entry
4 – Delete the entry
5 – Display the entry details
O – list all objects (Data Areas and Physical Files) in the Target Library
V – Validate the ability to perform the copy between the from and target library without actually performing the copy. (MDTransform License required)
X – Execute the copy of data specifically between the from and target library

**Target Objects Screen:**

```
MDCTMDC                          MD T 8.1 dev                              2.07.18
SCRN4                          Target Objects                             16:50:56
Template TESTLOC    From Loc: *LOCAL     Lib: MDADM      Target Lib: MDADMT712
Filters
 Object: __________  Desc: ______________  Omit: _  Cond: _  Transform: _

Type options, press Enter.
 C=Conditions  I=Include  O=Omit  S=SQL  T=Transform  V=Validate  X=Execute

Opt Object     Type    Description                                 Omit Cond Trns
 _  MDACRD     *FILE   Admin: Credits
 _  MDACST     *FILE   Admin: Customers                               Y    Y
 _  MDACUR     *FILE   Admin: Currencies
 _  MDAINP     *FILE   Admin: Customer Invoice Profit Distributio
 _  MDAINV     *FILE   Admin: Customer Invoices
 _  MDALIC     *FILE   Admin: Customer Licenses
 _  MDALOC     *FILE   Admin: Locations
                                                                    More...
F3=Exit   F5=Refresh   F13=Include all   F14=Omit all   F21=Sys Command
```

Filters

The entry of values into one or more of the filter fields will result in a limited list of records which contain the values of those filters.

Options

C – Conditions (MDTransform License required)– define the SQL record conditions (the WHERE clause) for the file to limit the records to be copied to those conditions. Additionally, the option can be given from the Conditions screen to replace all records in the file with the records matching the conditions or to replace only those records in the file that also match the conditions.

I – Include the Data Area or Physical File when performing the copy. If the object doesn't exist in the from library, it is automatically omitted and any data in the target object is retained.

O – Omit the Data Area or Physical File when performing the copy so that any data in the target object is retained. If the object doesn't exist in the from library, it is automatically omitted.

S – SQL (MDTransform License required) - View the SQL syntax for the INSERT statement that will be used for the copy based on the current transformation definitions for the file. This can then be copied to an interactive SQL session for troubleshooting purposes.

T – Transform (MDTransform License required) – define the resulting values for specific columns in the target file based on SQL syntax.

V – Validate (MDTransform License required) – validate the ability to perform the copy between the specific from and target object without actually performing the copy. (MDTransform License required)

X – Execute the copy of data for the specific object

*** Limitation: If the from File is on a remote location and has multiple members, MDCMS is unable to copy the data due to DDM limitations. Any multi-member file data that is required to be copied will need to be restored to a temporary library on the local system and then a template entry can be defined to copy from that library.

### 3.6.12 MDCPYDATA Command – Copy Library Data

The MDCPYDATA command is provided to run a Data Copy Libraries Template from a command line or scheduler.

| Parameter | Description |
|---|---|
| Data Copy Template | The name of the Data Copy Libraries Template defined in the previous section |
| Logging Level | A log report can optionally be generated. The report is made available from the MD Reports screen, which is accessible with F11 from most MD screens.<br>0 – nothing is logged<br>1 – logs any data areas or files that could not be copied due to errors<br>2 – log level 1 + any files that had a different record format<br>3 – log level 2 + all copied objects<br>4 – log level 3 + all objects not copied because they are on the omit list |
| Validate Only | *NO – the data is copied<br>*YES – the process is validated but the data itself isn't copied<br>*SQL – the process is validated and the SQL syntax is returned for troubleshooting purposes (if for a specific file), but the data itself isn't copied |
| Submit Job | *YES – the copy process will be submitted as a new batch job<br>*NO – the copy process will run immediately within the same job |
| Job queue | The name of the job queue to submit the job to, if requested |
| Job queue Library | The location of the job queue to submit the job to, if requested |
| Specific From Location | The location to copy from<br>*NO – copy from all locations for the template |
| Specific From Library | The library to copy from<br>*NO – copy from all libraries for the template |
| Specific Target Library | The library to copy to<br>*NO – copy to all libraries for the template |
| Specific Object Name | The specific object to copy<br>*NO – copy all included objects for the template |
| Specific Object Type | The specific object type to copy<br>*NO – copy all types of included objects for the template<br>*DTAARA – copy only data areas<br>*FILE – copy only physical files |
| Environment ID | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |

For each Target object that is not omitted and exists in both the From Library and the Target Library, the following occurs:

1) Automatically increase maximum number of members if less than current number of members in From Library
2) Adds or Removes members as necessary if the From File has <> 1 member
3) Automatically increase maximum number of records if less than current number of records in From Library
4) Automatically handle differing record formats
5) Apply any defined record conditions to limit records copied
6) Perform any defined column transformations during the copy process
7) clear member if from member is empty
8) adjust the next value of an Identity Column in SQL Tables

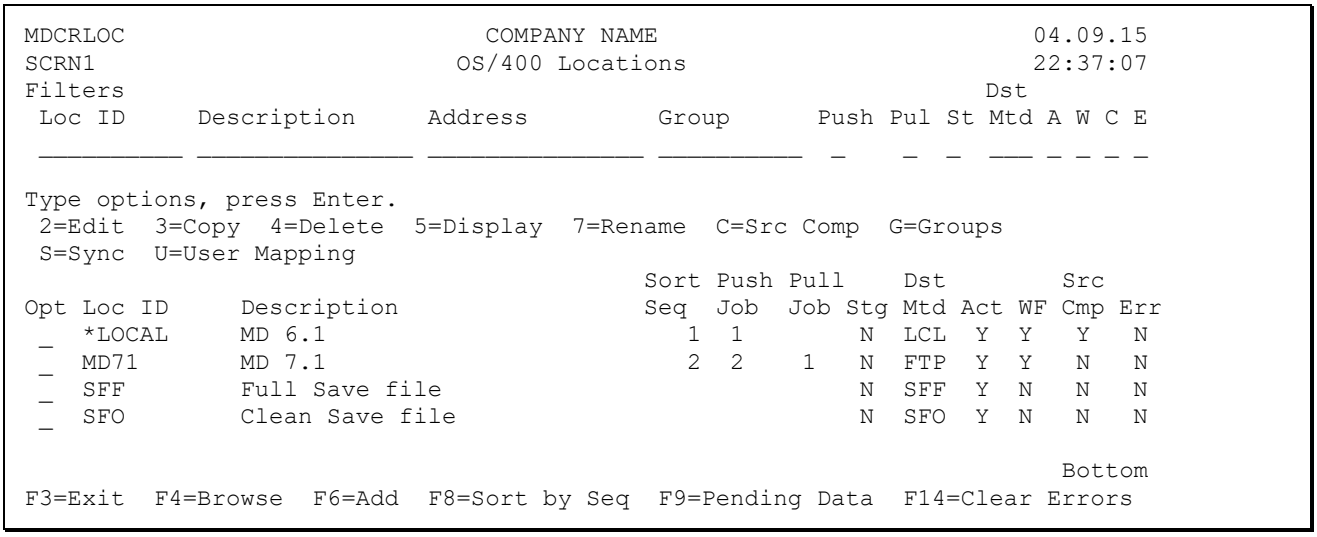
9) temporarily disable constraints and triggers in a target file during the copy process

## 3.7 OS/400 Locations

The OS/400 Locations define all locations where MDCMS should connect to for the distribution of settings and promotions, or for data connections to synchronize project, RFP and MDWorkflow information and perform remote retrieval of source or MDXREF information.

MDCMS utilizes the DDM (Distributed Database Management) features of the IBMi system for executing the data connections. MDSEC can be used to manage the security and logging of DDM usage.

For the distribution of promotions, a variety of methods are available.



```
MDCRLOC                          COMPANY NAME                          04.09.15
SCRN1                          OS/400 Locations                        22:37:07
Filters                                                          Dst
 Loc ID     Description     Address          Group      Push Pul St Mtd A W C E
 __________ _______________ _______________ __________  _    _  _  ___ _ _ _ _

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display  7=Rename  C=Src Comp  G=Groups
 S=Sync  U=User Mapping
                                        Sort Push Pull    Dst        Src
Opt Loc ID     Description              Seq  Job  Job Stg Mtd Act WF Cmp Err
 _   *LOCAL     MD 6.1                     1  1        N  LCL  Y  Y   Y   N
 _   MD71       MD 7.1                     2  2    1   N  FTP  Y  Y   N   N
 _   SFF        Full Save file                      N  SFF  Y  N   N   N
 _   SFO        Clean Save file                     N  SFO  Y  N   N   N

                                                                      Bottom
F3=Exit  F4=Browse  F6=Add  F8=Sort by Seq  F9=Pending Data  F14=Clear Errors
```

Screen Definitions:

Opt
**2=Edit** – Edit the parameters for a location
**3=Copy** – Copy the parameters of an existing location to a new location
**4=Delete** – Delete a remote location from the list.
**7=Rename** – Rename a remote location id.
**C=Src Comp** – Define the Level residing at the location for source to be compared to when that source is checked out on the local system.
**G=Groups** – View the Location Groups that the location belongs to. Additionally, manage the Location Groups. Location Groups are used to provide a means of filtering a list of Locations in the Distribution screens by any definition necessary for the organization. Multiple locations can belong to a location group and multiple location groups can contain the same location.
**S=Sync** – Provide project information from the local system to the target system. If the target system contains the MDWorkflow repository, then additional object and promotion information is provided. If the local system contains the MDWorkflow repository, it should also be synced initially to load the local information into the MDWorkflow tables.
**U=User Mapping** – Map the User IDs of Sending Users on the local system to the corresponding User IDs on the target system, if the target system uses different naming patterns.

Special Function Keys
**F8-Sort by Seq/Sort by ID –** toggle the listing between ordering the entries by sort sequence or by the Location ID.
**F9-Pending Data –** View a count of pending data transactions waiting to be delivered to each target system via DDM. Option 4 can then be used from the Pending Data listing to delete the pending records for a Location.
**F14-Clear Errors –** Reset all error flags to N. The error flag for a given location will then return to Y only if a new error occurs for the location.

### 3.7.1 Location DDM Settings

Location settings span up to 3 pages per location. The first page defines the DDM settings for the location.

Location ID
A unique ID for the location. This ID must match the Location ID entered in the system settings on the target system.

Additionally, there is the special value of *LOCAL to maintain MDWorkflow and source comparison settings for the local system.

Description
A free-format description of the location

Address
The network host name or IP address of the target OS/400 partition

Database Name
The name of the DB/400 database containing MDCMS at the remote location. To easily find the name of the database, enter command STRSQL at a command line on the remote system. The database name will be displayed.

DRDA Port
The port number used on the remote system for handling DDM service requests. *DRDA is the default port number, which is correct in most circumstances.

Loc Active
A flag indicating if connections should be attempted to this location

Data Push Job#
If the local system can connect to the location via DDM, a number between 1 and 9 should be specified. This number corresponds to the MDPUSH job to push asynchronous data to the location.

If there are only a couple of locations to push information to, it is recommended to only use 1 push job. However, if there are many locations, then it is recommended to split the locations across several MDPUSH jobs in parallel.

Data Pull Job#
If the local system can connect to the location via DDM, but the location can't connect to the local system, then a queue number between 1 and 9 should be specified. This number corresponds to the MDPULL job to pull asynchronous data from the location.

If there are only a couple of locations to pull information from, it is recommended to only use 1 pull job. However, if there are many locations, then it is recommended to split the locations across several MDPULL jobs in parallel.

In general, it is better to be able to push rather than pull for performance and administration reasons. However, if a firewall only allows one-way DDM connections, then the pull process will enable this to be technically possible.

Stage Data
If the local system can't connect to the location via DDM, but the location can connect to the local system, then the local system can stage the data and the remote location can use an MDPULL job to retrieve the staged data.

MDWorkflow Rep
Set this value to Y if this location contains the repository that the MDWorkflow web application connects to. This indicates to the local system that additional information needs to be distributed to the location so that all necessary data appears in MDWorkflow.

If the local system contains the repository, then set this parameter to Y for location *LOCAL.

MDWorkflow Sort#
If the local system contains the MDWorkflow repository, then set the sort sequence for each location to be viewed from within MDWorkflow.

Remote User
The user id to be used on the remote IBMi in order to process synchronizations or source retrieval. The password for the user on the remote system must also be entered.

UTC Offset
The difference in time between the local time of the location and UTC standard time. The 5-character field has the following format:
shhmm, where s=sign (+/-), hh=hours (00-24) and mm=minutes (00-59)

*LCL – special value for UTC offset to indicate that the target location has the same UTC offset as the local system.

Special Function Keys:
**F10=Test DDM Connection** – test the DDM connection to the remote location based on the current settings for the location

### 3.7.2 Location Distribution General Settings

Location settings span up to 3 pages per location. The 2nd page defines the general Distribution settings for the location.

Dist. Method
The method to send an RFP or Settings from this partition to another partition

| Value | Description | Distribution Address Value |
|---|---|---|
| CDR | IBM Connect:Direct | C:D Node |
| FTP | Native File Transfer Protocol | Hostname/IP |
| GOA | Linoma GoAnywhere MFT | GA Project ID |
| LCL | Direct Send to *LOCAL Level<br>For use on the *LOCAL location only.<br>Typically used when send promotions from the top of a deployment branch to the bottom of the trunk.<br>Direct Save/Restore of Send Package without use of Network Connectivity. | N/A |
| MDF | MDFTP Client to transfer via FTPS or SFTP. A location entry for a FTPS service (such as OpenSSL) or SFTP service (such as OpenSSH) must be defined in the Remote Server Location Settings. The connection information is then pulled from that entry. | Remote Server Location Address |
| OPT | Optical Device | Device Name |
| SFF | Save File with Full RFP Information for manual distribution to other systems that use MDCMS.<br><br>In order to receive the file into a target system, place it in folder /MDCMS/SEND/(instance) on that system and use command MDRCVIFS to process it. | IFS Folder including Path |
| SFO | Save File with Source/Objects only for manual distribution to other systems that don't use MDCMS | Library Name<br>OR<br>IFS Folder including Path |
| SNA | IBM Systems Network Architecture | SNA Queue |
| TAP | Tape Device | Device Name |
| XCM | CA XCOM Data Transport | XCOM Remote System |

Dist. Address
The value of the address based on the method in the table above. Special value *LOCADR can be used if the DDM address is the same as the distribution address.

Target Release
The operating system that is currently installed on the destination system. This value can be overridden for each Distribution Level.
*CURRENT – the default indicating that the OS versions are equal between the 2 systems
*PRV – the destination system runs on the previous OS version
VxRxMx – the exact version number of the destination system (e.g. V5R4M0)

Data Compression
If the data sent to the target location should be compressed before sending.
N – the save file isn't compressed before sending. The preparation of the save file takes a bit less time, but the transfer of the data may take 2-3 times longer.
Y – the save file size is minimized using high data compression. The preparation of the save file takes a bit more time, but the transfer of the data will be 2-3 times faster. Recommended for slow connections.

Dft Selection

Determines, in combination with the RFP Auto Send Flag for a Promotion Level, when and whether to send an RFP to the Queue. This value can be overridden for each Distribution Level.

| RFP Auto Send | Default to Send | Result |
|---|---|---|
| Y | Y | RFP sent automatically and immediately to level, unless the Place RFP in Send Promotion List flag for the specific RFP is set to M=Manual Send Only |
| Y | M | RFP must be sent manually, automatically selected in list |
| Y | N | RFP must be sent manually, not automatically selected in list |
| W | Y | RFP sent automatically once accepted in MDWorkflow |
| W | M | RFP must be sent manually, automatically selected in list |
| W | N | RFP must be sent manually, not automatically selected in list |
| N | Y | RFP must be sent manually, automatically selected in list |
| N | M | RFP must be sent manually, automatically selected in list |
| N | N | RFP must be sent manually, not automatically selected in list |

Object Owner
The Owner of the Temporary Library and Objects that are saved into the Save File

Public Authority
The object authority granted to *PUBLIC for the objects saved into the Save File
- *ALL - All Authority
- *AUTL - Authority defined by Authorization List
- *CHANGE - Change Authority
- *EXCLUDE - No Authority
- *SAME - The authorities are same as in local environment
- *USE - Usage Authority

Send Objects for Attributes containing Source
Y – Source will not be compiled on the target system, so send the object (Option O or B)
N – Source will be compiled on the target system, so only send the source (Option S)

Send Objects for Attributes not containing Source
Y – Objects should be sent to target system (Option O)
N – Objects should not be sent – target system intended for source only (Option N)

Send Source for Modifications
Y – Source is permitted on the target system, at least temporarily (Option S or B)
N – Source is not permitted on the target system (Option O)

Send Source for Recompiles
Y – Source will be compiled on the target system, but it isn't permanently stored there. MDCMS will then convert the request to modify and send the source for the location. (Option S)
N – Source is not permitted on the target system (Option O)

If not sending Source, Send Request for *SOURCE Objects
Y – *SOURCE types will send only the request records (Option R)
N – *SOURCE types will not be sent (if Send Source is set to N) (Option N)

Send *DATA or *DTAGRP attributes
Y – *DATA and *DTAGRP attributes will be sent to target system (Option O)
N – *DATA and *DTAGRP attributes will not be sent to target system (Option N)

The above Send rules can be overridden for the distribution levels and for each attribute in a distribution level.

### 3.7.3 Additional Distribution Settings for Connect:Direct

Connection User
The optional Connect:Direct local profile that will be used to execute the transfer

Password
The optional Connect:Direct password for the local execution profile (optional)

### 3.7.4 Additional Distribution Settings for FTP

Connection User
The profile on the remote IBMi to use for the FTP connection.
It is recommended to create a user profile specifically for FTP use in MDCMS. The keywords USRCLS(*USER) INLMNU(*SIGNOFF) and PWDEXPITV(*NOMAX) are recommended. The user will need *CHANGE authority to library MDCMS and *ALL authority to file MDCMS/MDDFTPM.

Password
The password for the user on the remote system.

Remote ASP Device
The ASP device on the remote system containing the MDCMS instance
- *DFT – The device attributed to the connection user on the remote system
- The alphanumeric device ID for the ASP

Server Port
The FTP Port number on the remote system.
- *DFT – Port 21
- *SECURE – Port 990 for FTP using SSL
- 1 - 65535

Secure Connect
The security mechanism to protect the user/password and possibly data information transferred via FTP.

- *DFT - If the PORT parameter specifies *SECURE or 990, *IMPLICIT is used; otherwise, *NONE is used.
- *IMPLICIT – immediately attempt to use SSL when connecting to the server
- *SSL – use a SSL protected session after the connection has been made
- *NONE – no encryption used

Data Protection
The type of data protection used during the FTP transfer

- *DFT – protection is based on the connection type
- *PRIVATE – the data is encrypted
- *CLEAR – the data is not encrypted

Toggle Ext. PASV
Specifies whether or not to toggle the use of Extended Passive mode within the FTP session. Only potentially necessary for OS V6R1M0 or higher.

Toggle PASV
Specifies whether or not to toggle the use of Passive mode within the FTP session

Toggle Ext. PORT
Specifies whether or not to toggle the use of Extended Port mode within the FTP session. Only potentially necessary for OS V6R1M0 or higher.

### 3.7.5 Additional Distribution Settings for SFO

Authorization List

- *NONE – Objects in Save File not protected by an Authorization List
- Name of Authorization List existing on local system that would also be required to exist when library is restored on target systems

Prompt for Name

- Y – For each RFP that is sent manually from the Send Promotions list using method SFO, the name of the Library containing the Objects, the name of the Save File, and, if relevant, the name of the IFS File can be optionally provided custom names.
- N – the Library, Save File and IFS File names will be generated by MDCMS and have the format MD0nnnnnnn

### 3.7.6 Using GoAnywhere™ to Distribute MDCMS Promotions and Settings

GoAnywhere™ is a managed file transfer (MFT) solution from Linoma Software that allows organizations to secure and automate the exchange of data with their trading partners, customers, employees and internal systems.

For MDCMS, GoAnywhere™ can be used to transfer promotions and settings via FTP, FTPS, SFTP or SCP.

Steps necessary to use GoAnywhere™ within MDCMS:

1) Separately purchase and Install GoAnywhere™ from Linoma Software
2) If GoAnywhere™ is installed to a library with a name other than GOANYWHERE, then change the value of Data Area MDCMS(instance)/MDGOALIB
3) Define a FTPS, SFTP, or SCP Server resource for the remote partition that MDCMS must deploy to
4) Define a IBM i Server resource for the remote partition that MDCMS must deploy to
5) Save the following XML code shown below to a file. Replace --your FTPS Resource—by the name of your Transmission resource. If using SFTP or SCP, the task element will need to be renamed from ftps to scp or sftp
6) Import the XML file into the Projects list
7) Define a Distribute Queue where the Distribution Queue name is the name of the GoAnywhere™ project, including the relative path. For example /MDCMS_SEND_1. The Distribution Queue Method must be set to GOA.
8) Repeat steps 3 – 7 for each additional remote partition

**Project XML**

```
<?xml version="1.0" encoding="UTF-8"?>
<project name="MDCMS_SEND_1" mainModule="Main" version="1.0" logLevel="debug"
         onError="abort">
   <module name="Main" logLevel="debug">
      <ftps label="FTPS" resourceId="--your FTPS Resource--" version="1.0"
            logLevel="debug">
         <put label="Put Savefile" sourceFile="${ifsSavefile}"
destinationFile="${ifsSavefile}._.${user}._.${sys}._.${agp}._.${lvl}._.${rfp}"
              type="binary" />
      </ftps>
   </module>
   <description>Send MDCMS RFP/Settings to Remote Server 1</description>
</project>
```

### 3.7.7 Source Comparison Settings

```
MDCSCMP                          COMPANY NAME                          04.09.06
SCRN1                    Source Comparison Settings                    10:37:42

Location: MD71       MD 7.1 Partition

For each Appl Level where a Source Comparison should occur, enter the Level
of the Environment that the checked out source should be compared to.

Appl  Level  Description                                 Compare to Level
HUBI   12    Custom Company Dev 12                              31
TEST   10    Test 10                                            50
CMP    12    Custom Company Dev 12                              __
HUBI   13    Custom Company Dev 12                              __
TEST   11    Test 11                                            __
TEST   12    Test 12                                            __
TEST   25    Emergency for v10                                  __




                                                                          Bottom
F3=Exit    F5=Refresh
```

This screen is displayed when a 'C', for Source Comparisons, is requested for the *LOCAL location or a Remote Location within the OS/400 Locations listing.

Appl/Level
Each Application Level that is defined in MDCMS on the local System that allows checkout. If a Compare to Level at another remote location has been defined for an Application's Level, then that Level will not be displayed for the selected remote location. Only levels that are available to the selected remote location will be displayed in the list.

Compare to Level
The level number for the Application at the Remote Location that should be compared to, when checking out source from the selected level on this System.

If the Compare to Level number is higher than 0, then every time that source is checked out on this system for the selected level, the source will be compared to the source residing within the specified level on the Remote System. If the source versions are different, a warning screen will be presented to the programmer.

### 3.7.8 Location User Mapping

```
MDCDSTU                          COMPANY NAME                          1/22/14
SCRN1                    Distribution User Mapping                     10:37:59

Location: MD71       MD 7.1

Filter by Local User: __________  Desc: ________________  Target User: _________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View

Opt Local User Description                                        Target User
 _   *DFT       Default Target User                              *SAME
 _   MMORGAN    Michael Morgan                                   MMORGANBU



                                                                      Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add   F11=View Output   F21=Sys Command
```

This screen sets the mapping of User IDs from the user sending the RFP on the local system to the user receiving the RFP on the target system. This provides the ability to use automated receipt on the target system even when the naming patterns for the users are different compared to the local system or when responsibility of the RFPs should be handed off to a different person on the target system.

Local User
*DFT – the target user mapping to invoke for any profile that is not explicitly defined in this list. If *DFT is not defined and the user is not defined, the target User ID will remain the same

User ID – the name of a valid User ID on the local system

Target User
*SAME – the target user ID is the same as the local user ID

User ID – the name of a valid User ID on the target system

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of valid values for a field
**F5=Refresh** – Refresh the list view
**F6=Add** – Add a new mapping entry to the list
**F11=Output** – Display the MD Output panel and other spool files
**F21=Sys Command** – displays the IBMi command entry screen so that IBMi commands may be run without the need to exit MDCMS.

## 3.8 Distribution Levels

The Distribution Level Maintenance function defines the target levels for the distribution of promotions or settings to remote systems. Multiple target levels are permitted for a given combination of Application, Level and Location.

The settings for a Distribution Level are inherited from the Location. The following settings can then be overridden per target level:

- Description of Level
- Default to Send
- Target Release
- Target Attribute Rules

### 3.8.1 Distribution Level Listing

```
MDCDSTQ                          COMPANY NAME                            1/22/14
SCRN1                         Distribution Levels                        18:35:03
         Appl Lvl  Location    Tgt Lvl  Dft  Release   Method  Group
Filters: ____ __   __________    __      _   ________   ___    __________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=Display  A=Attributes  O=Obj Override  T=Test

                                                        Tgt     Target
Opt Appl Lvl Location   Description                     Lvl Dft Release Method
 _  TEST 10  MD71       MD 7.1                           20  Y  *CURRENT FTP
 _  TEST 10  SFF        Full Save file                   10  N  *CURRENT SFF
 _  TEST 10  SFO        Clean Save file                  10  Y  *CURRENT SFO
 _  TEST 25  *LOCAL     MD 6.1                           50  Y  *CURRENT LCL



                                                                      Bottom
F3=Exit   F4=Browse   F6=Add   F8=Settings
```

Filters
The entry of values into one or more of the filter fields will result in a subsetted list of distribution levels which exactly match those filters. For example, enter '10' in the lvl filter to see only distribution levels for level '10'.

Opt
**2=Edit** – Edit the override parameters for a distribution level
**3=Copy** – Copy the override parameters of an existing distribution level to a new target level
**4=Delete** – Delete a distribution level
**5=Display** – Display the override parameters for a distribution level
**A=Attributes** – State whether or not each type of source or object is to be sent to the target level.
**O=Obj Override** – Maintain list of objects that should be sent from a different library/folder instead of the library/folder specified on the attribute when sending to the target level.
**T=Test** – Test if a connection can be made to the specified level on the target system.

### 3.8.2 Add Distribution Levels to List

Press F6 from the Distribution Levels listing to add one or many levels at once.

Once F6 is pressed, a list of all defined promotion levels is displayed. This list can be filtered by application, level or level description.

By default, the target level on the remote locations will be the same number as the local level. This can be changed for each individual row by entering a different value for that row, or it can be applied to all filtered rows by entering a value in the Default Target Level field.

Place a 1 in front of each Promotion Level that should have a target level added for it and press Enter.

The 2nd listing displays all locations that have a distribution method defined. This list can be filtered by location, description, address, method or locations belonging to a location group.

Place a 1 in front of each location that should have the promotion levels added to it and press Enter.

The result is a Distribution Level for every combination of select Promotion Level and Location. If a particular combination already existed, it is left as is.

### 3.8.3 Specifying the Source/Object types to send to a Target Level

```
MDCDSTA                          MD T 8 6.1                              4.04.17
SCRN1                Specifications for Target Attributes              23:01:21
FILTERS:
 Appl: TEST  Lvl: 32       Location: *LOCAL____  Target Lvl: 10
  Opt: _    Type: _______ Attribute: __________  Object Lib: __________  *NONE
                                                 Source Lib: __________  *NONE
                                               Source File: __________
Type options, press Enter.
 S=Source   O=Object   B=Both   N=Neither   R=Request Only

Opt Attribute  Type    Object Library                  Source Lib  Source File
 O  CBL        *PGM    TSTOBJ30                        TSTSRC30    QCBLSRC
 O  CBLLE31    *PGM    TSTOBJ31                        TSTOBJ31    QCBLLESRC
 O  CBLMOD     *MODULE TSTOBJ30                        TSTSRC30    QCBLLESRC
 O  CBLMOD31   *MODULE TSTOBJ31                        TSTOBJ31    QCBLLESRC
 O  CBL31      *PGM    TSTOBJ31                        TSTOBJ31    QCBLSRC
 O  CLLE31     *PGM    TSTOBJ31                        TSTOBJ31    QCLSRC
 O  CLMOD31    *MODULE TSTOBJ31                        TSTOBJ31    QCLSRC
 O  CLP        *PGM    TSTOBJ30                        TSTSRC30    QCLSRC
 O  CLP31      *PGM    TSTOBJ31                        TSTOBJ31    QCLSRC
                                                                      More...
Enter=Confirm   F5=Refresh   F12=Previous   F13=Apply to all relevant Rows
```

This screen is displayed when option A for Attributes is requested for a Distribution Level. The screen lists each attribute that is defined within MDCMS (Option 3 –Attributes) and what is to be sent to the target level for that attribute.

Filter Fields
Filter the listing, limiting it to rows with matching values. For the Location, Attribute, Object Lib, Source Lib and Source File filters, all rows containing the filter value will be listed.

Opt
S – Send only the source. The target system will compile the source if an object library is defined.
O – Send only the object. The object does not contain source, or the target system does not permit source.
B – Send both the source and the object. The source and object are expected on the target system, but a compile of the source will not occur.
N – Send nothing for this attribute.
R – Request Only. Only send the request record as no source will be migrated to the target system. This option is only valid for *SOURCE Object types (such as copy books or SQL statements). This option is used when source is not permitted on the target system, but the source will be indirectly migrated to the next level on this system once the Request record returns in an RFP for the next level.

Function Keys:
**F3=Exit**
**F5=Refresh** – Refresh the listing
**F13=Apply to all relevant Rows** – Place the cursor on a row with an option to replicate and press F13 to apply that option to all other rows in the list (based on the filters) that would allow the option. For example, if all attributes in the filtered listing need to change from S to O, then put an O on one of the rows and then press F13 while the cursor is on that option – all attributes with an Object Library would then change to O.

### 3.8.4 Specifying Object Overrides for Target Levels

```
MDCDSTO                          MD T 8 6.1                              4.04.17
SCRN1                      Distribution Overrides                        10:06:25
FILTERS:
 Appl: ____   Location: __________  Obj Name: __________  Atr Lib: ____________
 Lvl.: __     Tgt Lvl.: __          Obj Type: __________  Ovr Lib: ____________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View

                          Tgt
Opt Appl Lvl Location    Lvl Object       Type     Attribute Lib  Override Lib
 _   TEST  30 MD71         50 server.xml   *IFS     /test8/30/conf /test8/30/cust
 _   TEST  30 MD71         50 BIG TIME     *DTAGRP TEST8O_30      BASOBJ30

                                                                        Bottom
Enter=Confirm    F6=Add    F12=Previous
```

This screen is displayed when option O for Obj Overrides is requested for a Distribution Level. The screen lists each object that is defined to be distributed from a different Library/Folder when sent to a given Target Level.

When an RFP is sent to a target level, each object in the RFP where the attribute is defined to send the Object will be checked against this list.

If the local application, local level, object name, object type and target level match an entry, then MDCMS will check if the object exists in the Override Library/Folder. If it does exist, then that object will be sent instead of the object in the Library/Folder defined for the Attribute. If it doesn't exist, then the standard object will be sent instead.

Examples of when this can be helpful:

- Each location has its own properties file for a web application.
- Each location has its own configuration data for a system application

Filter Fields

Filter the listing, limiting it to rows with matching values. For the Location, Object Name, Attribute Library, and Override Library filters, all rows containing the same prefix as the filter value will be listed.

Object Type

*ALLOBJ – check if object exists for any system object type. The object type defined for the object's attribute will be used.
*SRCIFS – the override pertains to source residing in IFS
*SRCMBR – the override pertains to source residing as a member in a source file
Object Type – the specific object type for the object override. Overrides are not relevant for *REMOTE, *DUMMY, or *MSGD object types. When *SOURCE, use *SRCIFS or *SRCMBR to define the override.

Attribute Library/Folder
The object library or folder defined for attributes where the object is pulled from normally. If the object type is *SRCIFS, then this would be the source folder and if the object type is *SRCMBR, then this would be the source library.

Object Name
*ALL – any object in the RFP that is normally distributed from the Attribute Library/Folder should be overridden, if it exists.
The name of the object (or source) that should be overridden to be distributed from a different location, if it exists.

Distribute from Library/Folder
The location that should be distributed from instead. If the object (or source) doesn't exist in the location at the time of the send, it will be sent from the normal location instead.

Function Keys:
**F6=Add** – add a new Object Override entry

## 3.9 System Settings

```
MDCSYSI                          System Settings                          04.09.08
SCRN1                                                                     10:37:42

    Location Title  . . . . . .  COMPANY NAME_____________________________
    Location ID . . . . . . . .  COMP1_____   (0-9, A-Z)
    Send Prefix . . . . . . . .  6            0-9, A-Z

    Java Connect User Profile . .  MDCONNECT   *NONE, Profile
    Sign Objects  . . . . . . . .  Y           Y/N

    Default CCSID . . . . . . . .  1148

    Temporary Library Prefixes:                Example
     RFP Backup . . . . . . . .  SAV          SAV123456
     RFP Installation . . . . .  CMS          CMS123456
     RFP Receipt  . . . . . . .  MD0          MD01123456
     RFP Rollback . . . . . . .  MDR          MDRB123456

    MD Build Date . . . . . . .   4.11.10
    MD Installation Date  . . . .   4.11.10

F3=Exit    F4=Browse    F8=Patch History
```

Location Title
The title to be displayed at the top of nearly all MD Product screens to help the user identify which system they are currently working on.

Location ID
A 10-Character ID to uniquely identify this system. The ID for this system must match the ID defined in the OS/400 location settings for any partition that will be connecting to this system.

Send Prefix
A 1-Character ID to uniquely identify distributions from this system. This is used to avoid conflicts in case multiple systems send Promotions to the same remote system. The temporary receiving library on the remote system will use this character in the 4th position of the library name.

Java Connect User Profile
The technical user profile on this system to be used to run MDCMS java modules.
Java is used in MDCMS for Excel and PDF report generation, FTP of objects to other platforms, sending emails, signing objects, and Zip compression. F4 may be used to browse user profiles.

*NONE – java modules should not be used on this system. Recommended only if a JVM with minimum version of 1.6 is not present on the system.

Sign Objects
Y – Sign Objects as they are being installed to ensure that they are not manually changed during the promotion process
N – Do not sign objects. Recommended only if the necessary IBM Java Encryption Libraries are not present on the system.

Default CCSID
The Coded Character Set to use by default when communicating with this system using MDOpen or MDWorkflow. This ensures that characters are displayed in the form and order that is expected for the user's locale within those clients. If certain users require a different CCSID, that value can be defined for the user in MDSEC. F4 may be used to browse the list of CCSIDs defined for use in MDCMS.

Temporary Library Prefixes
The prefix string to add to the front of each type of temporary library in MDCMS. The prefix may be changed so that conflicts can be avoided when multiple instances of MDCMS exist on the same system.

MD Build Date
The date that this version of MDCMS was built by Midrange Dynamics

MD Install Date
The date that this version of MDCMS was installed onto this system

### 3.9.1 Patch History

Any patches that have been applied to the MDCMS product family since the last full installation of MDCMS can be viewed by pressing F8 from the System Settings screen. Authority to manage the System Settings is required to use this feature.

Status
ERROR – the patch didn't apply successfully – any object changes were automatically rolled back
OK – the patch applied successfully
ROLLBK – the patch has been manually rolled back

Opt
5 – view header details about the patch
O – view the list of objects contained in the patch
R – roll back the objects contained in the patch to the version prior to the patch.

### 3.9.2 Setting the JVM to be used for MDCMS Java Modules

MDCMS uses Java for various processes relating to Excel generation, FTP, Object Signing, PDF generation, SMTP, and Zipping. In order to carry out these processes, a JVM (minimum 1.6) must be installed on each system partition where MDCMS will be used.

Data area MDSEC(instance)/MDJAVAHOME designates which installed JVM is to be used.

The valid values for this data area are:
*DFT – use the default JVM
*PROPFILE – load the JVM based on the settings in property file /mdcms/JAVA/mdcms.properties
A pathname pointing to a JVM (for example: /QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit)

If a JVM is not available on the system, *NONE can be specified for the Java Connect User in the System Settings (Setup Menu Option 10). This will disable all java-related functionality, while still allowing all MDCMS core functionality to be performed.

## 3.10 Email Settings

```
MDCSMTP                          COMPANY NAME                          04.09.08
SCRN1                          Email Settings                          10:37:42

SMTP Hostname . .  mail.company.com
SMTP Port . . . .  25

SMTP User . . . .  as400@company.com
Password  . . . .  __________
Repeat Password .  __________

email Address . .  as400@company.com

SMTP Auth Reqd  .  Y  Y/N
SMTP Logging  . .  Y  Y/N
Encryption  . . .  T  N=None, Y=SSL, T=TLS

ZIP Attachments .  300___  *ALWAYS, *NEVER, minimum size in KB

MDWorkflow URL  .  http://company.com:8080/mdWorkflow

URL for MDOpen  .  Y  N=Never, Y=Always, I=Yes, except Interfaced Projects

F3=Exit   F8=Addresses   F10=Log
```

SMTP Hostname
The IP address or domain name of the SMTP server which will send emails to recipients

SMTP Port
The SMTP server Port number, which normally is 25 for SMTP and 465 for SMTPS

SMTP User
The ID of the user to connect to the SMTP server

Password
The password for the SMTP user

email Address
The sender address to use for the system

SMTP Auth Reqd
Y – The SMTP Server requires user authorization to occur
N – The SMTP Server does not require user authorization to occur

SMTP Logging
Y – Detailed debug-level SMTP information will be included in the IFS logs for service MDMAIL
N – Only high-level transaction information will be in the IFS logs for service MDMAIL

Encryption
N – Connect to the SMTP Server in unsecured mode
Y – Connect to the SMTP Server using SSL Encryption
T – Connect to the SMTP Server using TLS Encryption

ZIP Attachments
*ALWAYS – attached files will be always be zipped to reduce the size of the emails
*NEVER – attached files will never be zipped
n KB – an attached file will only be zipped if it is larger than the entered number of Kilobytes

MDWorkflow URL
The context path for links to the MDWorkflow application. This must include http or https, the server address, port number if not 80 and the name of the web application.

This URL is used within MDMAILF email bodies to allow the user to navigate directly to a specific RFP and is used when generating Project, Task or Subtask mails out of MDWorkflow.

URL for MDOpen
The list views for Projects, Tasks and Subtasks in MDOpen can include a URL icon. This parameter sets the priority for what the contents of the URL should be.

N – Never

| Priority | URL contents |
|---|---|
| 1 | Interface URL to Project, Task or Subtask, if for a JIRA Project |
| 2 | First Custom URL field for the Project, Task or Subtask |
| 3 | empty |

Y – Always

| Priority | URL contents |
|---|---|
| 1 | MDWorkflow details for Project, Task or Subtask |

I – Yes, except Interfaced Projects

| Priority | URL contents |
|---|---|
| 1 | Interface URL to Project, Task or Subtask, if for a JIRA Project |
| 2 | MDWorkflow details for Project, Task or Subtask |

### 3.10.1 Email Addresses

The email addresses of the recipients can be maintained by pressing F8 from the Email Settings screen. If DDM connections are defined, the updates will be synced to all locations. The addresses can also be entered directly in the MDSEC user details.

User ID
The user profile of the user. If the user does not have a profile on the system, any other ID of up to 10 characters can be used.

Name
The Name to be recipient to be displayed in the mail header

Address
The email address of the recipient

### 3.10.2 Email Log

Each time the MDMAIL job is used to send an email, a log entry will be written to MDSEC file MDDEMLL with the following information:
Date, Time, Job, Recipients, Subject, Attachments and Error Message

F10 can be pressed from the Email Settings screen to view/search log entries

Additionally, the MDMAIL service logs information to the IFS which can be viewed from the Services listing.

### 3.10.3 MDSTRMAIL – Start MDMAIL Client command

In order for MDWorkflow, the MDMAIL API or the MDMAILF API to send an email, the MDMAIL SMTP client must be running. This will happen automatically if the MDMAIL service is set to start automatically. Alternatively, command MDSEC(Instance)/MDSTRMAIL can be added to a scheduled job for a fixed starting time.

**MDSTRMAIL Parameters**

| | |
|---|---|
| Environment ID | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |
| Submit Job | *YES – a job named MDMAIL(instance) will be submitted to the entered Job Queue<br>*NO – the MDMAIL process will run within the current job |
| Job Queue | *DFT – submit to the queue defined for the MDMAIL service<br>*JOBD – submit to the default queue for the running job profile<br>The name of the job queue to submit MDMAIL to |
| Job Queue Library | The library of the job queue to submit MDMAIL to or *LIBL if the job queue is located in the current library list |
| Time of Day to auto-end Job | *DFT – end at the time defined for the MDMAIL service<br>*NEVER – the MDMAIL job shouldn't end automatically – it should run until the job is forcibly ended or command MDENDMAIL is invoked.<br>A specific time to end in format HH:MM:SS |

### 3.10.4 MDENDMAIL – End MDMAIL Client command

The MDMAIL job can be set to end automatically at a certain time, or it can be ended at any time using command MDSEC(Instance)/MDENDMAIL. Once MDENDMAIL is run, MDMAIL will cleanly stop within 30 seconds.

**MDENDMAIL Parameters**

| | |
|---|---|
| Environment ID | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |

### 3.10.5 MDMAIL – Send Text Mail command

This command, which resides in the MDSEC(instance) library, can be used to send a plain text mail to one or more recipients.

**MDMAIL Parameters**

| | |
|---|---|
| Email Address of Recipient (ADDR) | A specific email address<br>*NONE – the user group or user parameters are used instead |
| User Group of Recipients (GRPN) | All users belonging to a user group defined in MDSEC that have an email address defined.<br>*NONE – the address or user parameters are used instead<br>*RFP – send the email to all involved groups of the given group type (GRPT) for the projects included in the RFP (RFP). |
| User ID of Recipient (USER) | The email address defined for the MDSEC user will be used as the recipient.<br>*NONE – the address or user group parameters are used instead |
| Message Subject (SUBJ) | The text to display in the subject of the email. |
| Body Text (BODY) | The text string, up to 2000 characters in length, to use as the email body in plain text format. |
| Attachment 1 (ATT1) | The IFS path, including file name, of a file to attach to the email. |
| Attachment 2 (ATT2) | The IFS path, including file name, of a 2nd file to attach to the email. |
| Delete Attachments after Send (DELA) | Whether or not to delete the attachment file(s) once the email is successfully sent.<br>*NO – don't delete the attachment(s)<br>*YES – delete the attachment(s) once sent. If the send fails, the attachment(s) won't be deleted. |
| MDCMS Instance (INST) | Specifies the MDCMS environment that should be used. The ID correlates to the suffix of the MDCMS library name.<br>*SAME – the environment of the current library list will be used<br>*DFT – the default environment will be used. This correlates to library MDCMS. |
| Application (APPLIC) | The MDCMS Application Group of the RFP, in the situation that GRPN(*RFP) is used. |
| Level (PROLVL) | The MDCMS promotion level of the RFP, in the situation that GRPN(*RFP) is used. |
| RFP Number (RFPNBR) | The MDCMS Request for Promotion number, in the situation that GRPN(*RFP) is used. |
| Group Type of Recipients (GRPT) | When the value of *RFP is used for the User Group of Recipients (GRPN) this value will specify the type of group to send to. Possible values are:<br>a user defined group type<br>*ACCGRP (default) – all Acceptance Groups for all Projects for the RFP,<br>*TECGRP – all Technical Groups for all Projects for the RFP<br>*TSKASN – all assigned groups/users for all tasks for the RFP<br>*TSKREQ – all creators for all tasks for the RFP<br>*TSKTST – all test groups/users for all tasks for the RFP |

### 3.10.6 MDMAILF – Send Formatted Mail command

This command, which resides in the MDSEC(instance) library, can be used to send a pre-formatted plain text or HTML mail to one or more users. The mail body to be used must be stored in IFS.
The body may contain wildcard values which are replaced by the actual MDCMS values at runtime. The wildcards within the mail body can be delimited by ## or ++.

HTML body templates for each of the primary RFP exit points are available in IFS folder /MDCMS/MAIL.

**MDMAILF Parameters**

| | |
|---|---|
| Email Address of Recipient (ADDR) | A specific email address<br>*NONE – the user group or user parameters are used instead |
| User Group of Recipients (GRPN) | All users belonging to a user group defined in MDSEC that have an email address defined.<br>*NONE – the address or user parameters are used instead<br>*RFP – send the email to all involved groups of the given group type (GRPT) for the projects included in the RFP (RFP). |
| User ID of Recipient (USER) | The email address defined for the MDSEC user will be used as the recipient.<br>*NONE – the address or user group parameters are used instead |
| Message Subject (SUBJ) | The text to display in the subject of the email. |
| Body File including Path (BODY) | The IFS path, including file name, which contains the body to use in the email. |
| Body File Type (BTYP) | The format of the body<br>TEXT – the email body has a plain text format<br>HTML – the email body uses html formatting |
| Attachment 1 (ATT1) | The IFS path, including file name, of a file to attach to the email. |
| Attachment 2 (ATT2) | The IFS path, including file name, of a 2nd file to attach to the email. |
| Delete Attachments after Send (DELA) | Whether or not to delete the attachment file(s) once the email is successfully sent.<br>*NO – don't delete the attachment(s)<br>*YES – delete the attachment(s) once sent. If the send fails, the attachment(s) won't be deleted. |
| MDCMS Instance (INST) | Specifies the MDCMS environment that should be used. The ID correlates to the suffix of the MDCMS library name.<br>*SAME – the environment of the current library list will be used<br>*DFT – the default environment will be used. This correlates to library MDCMS. |
| Use Wildcards (WCRD) | Whether or not to find and replace any wildcards in the email body.<br>Any of the wildcard parameters in this command that are required as specific values must be present on the command definition.<br>At a minimum, it's recommended that the (APPLIC), (PROLVL) and (RFPNBR) are included on the command definition.<br><br>The email body can include any wildcard, including wildcards for custom fields. The wildcards will be replaced by the runtime value as long as the necessary key parameter(s) are included in order to find the values in the database. |
| Send Phase (SEND) | Whether or not the email pertains to an RFP during the send phase.<br>MDCMS will then use replacement values based on the RFP in the send list rather than in the installation database. |

| | |
|---|---|
| Application (APPLIC) | The MDCMS Application Group represented by the wildcard value of ##APPLIC##. |
| Level (PROLVL) | The MDCMS Application Promotion Level represented by the wildcard value of ##PROLVL##. |
| RFP Number (RFPNBR) | The RFP number for this promotion represented by the wildcard value of ##RFPNBR##. |
| Object Request Number (REQNBR) | The MDCMS Object Request number represented by the wildcard value of ##REQNBR##. This is necessary when wildcards for a specific object request are necessary. If not included, the first object in the RFP will be used. |
| Project (PROJID) | The Project ID represented by the wildcard value of '##PROJID##'. |
| Task Number (TASKID) | The MDCMS Project Task number represented by the wildcard value of ##TASKID##. |
| Subtask Number (STSKID) | The MDCMS Project Subtask number represented by the wildcard value of ##STSKID##. |
| Object Library (OBJLIB) | The Object Library represented by the wildcard value of '##OBJLIB##'. |
| Source Library (SRCLIB) | The source library name represented by the wildcard value of ##SRCLIB##. |
| Source File (SRCFIL) | The source file name represented by the wildcard value of ##SRCFIL##. |
| Error Message (ERRMSG) | The error text explaining why an RFP failed. This is represented by the wildcard value of ##ERRMSG## |
| Group Type of Recipients (GRPT) | When the value of *RFP is used for the User Group of Recipients (GRPN) this value will specify the type of group to send to. Possible values are:<br>a user defined group type<br>*ACCGRP (default) – all Acceptance Groups for all Projects for the RFP,<br>*TECGRP – all Technical Groups for all Projects for the RFP<br>*TSKASN – all assigned groups/users for all tasks for the RFP<br>*TSKREQ – all creators for all tasks for the RFP<br>*TSKTST – all test groups/users for all tasks for the RFP |

### 3.10.7 MDUPDEMLA – Update Email Address command

This command, which resides in the MDCMS(instance) library, can be used to systematically add or change the email address for a user. If DDM connections are defined, the updates will be synced to all locations.

**MDUPDEMLA Parameters**

| | |
|---|---|
| User ID (USER) | Specifies the user ID under which to store the name and email address. The user ID does not have to be defined in MDSEC and can be any value of up to 10 characters. |
| User Name (NAME) | Specifies the name of the user that will be used as the recipient name when emails are sent to the user ID. |
| Email address (MAIL) | Specifies the Email address that will be used for the recipient when emails are sent to the user ID. |
| Environment ID (ENV) | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |

## 3.11 MDCMS Services

```
MDCSVCL                          MD T 74 6.1                          12.03.16
SCRN1                          MDCMS Services                         15:42:22

Type options, press Enter.
 2=Edit  5=Display  S=Start Jobs  E=End Jobs  L=Logs

                                    Aut  Default    Runtime Window    Dft# Act#
Opt Service  Description            Str Job Queue  Str Time End Time  Jobs Jobs
 _  MDCLEAN  Cleanup Temp Libs/Data  Y  QSYSNOMAX  *ANY     *NEVER     1    0
 _  MDFTP    *REMOTE FTP Clients     Y  QFTP       05:30:00 23:30:00   2    0
 _  MDJIRA   JIRA Interface Client   N  QSYSNOMAX  *ANY     01:00:00   2    0
 _  MDMAIL   SMTP Client             Y  QMAIL      05:30:00 23:30:00   1    0
 _  MDPULL   Pull Data from MD Locs  N  QSYSNOMAX  *ANY     *NEVER     1    0
 _  MDPUSH   Push Data to MD Locs    Y  QSYSNOMAX  07:00:00 23:30:00   2    0
 _  MDRCVIFS Receive RFPs from IFS   N  QSYSNOMAX  *ANY     23:00:00   1    0
 _  MDRCVSNA Receive RFPs from SNA   N  QSYSNOMAX  *ANY     *NEVER     1    0
 _  MDSIGN   Source/Object Signing   Y  QSYSNOMAX  *ANY     23:30:00   1    0
 _  MDXANI   X-Analysis Updater      Y  QSYSNOMAX  *ANY     23:30:00   1    0
                                                                      Bottom
F3=Exit   F5=Refresh   F21=Sys Command
```

The Services list provides an overview of all possible persistent batch jobs that run in the background to carry out MDCMS processes. The job name for a service is the same as the service name + the environment ID.

Special Options
S=Start Jobs – Start the default number of jobs for the service
E=End Jobs – End any jobs running for that service
L=Logs – View the IFS logs for the MDFTP or MDMAIL services

Auto-Start Jobs
Y – the jobs will begin the moment they are needed by MDCMS, if within the Runtime Window.
N – the jobs will be started manually or using the starting command for the service from a scheduled job.
Only MDCLEAN, MDFTP, MDGIT, MDMAIL, MDPUSH, MDSIGN and MDSVN can be started automatically by MDCMS

Default Job Queue
The default job queue name and library to submit the jobs to when started. This value can be overridden when using the starting command for the service.

Start of Runtime Window
The time of day that an auto-start job may begin. Not applicable for a job started manually
*ANY – the job is permitted to start whenever needed

Default End Time
The time of day that a running job will end. This value can be overridden when using the starting command for the service.
*NEVER – don't end automatically. Only end when manually requested.

Default # Parrallel Jobs
MDFTP, MDPULL and MDPUSH can have up to 9 jobs actively running in parallel.

Default Delay Interval

MDRCVIFS and MDRCVSNA allow for setting the number of seconds between RFP checking.

Default SNA User
The default SNADS user id to check for RFPs received via SNA.

**F10=More Settings** – most services have additional parameters that can be configured. This function is available for those services from the edit screen.

### 3.11.1 Commands to Start and End MDCMS Services

Some of the services can start automatically

All of the services can be ended automatically at a specified time as well as be started or ended from the MDCMS Services screen.

However, for those services that must be started manually, or if services should otherwise start or end via a command, the following commands are available that can be used from a command line or from within a job scheduler, etc.:

| Service | Start Command | End Command |
|---|---|---|
| MDCLEAN | MDCMS/MDCLEAN | ends immediately upon completion |
| MDFTP | MDCMS/MDSTRFTP | MDCMS/MDENDFTP |
| MDGIT | MDXREF/MDSTRGIT | MDXREF/MDENDGIT |
| MDJIRA | MDCMS/MDSTRJIRA | MDCMS/MDENDJIRA |
| MDMAIL | MDSEC/MDSTRMAIL | MDSEC/MDENDMAIL |
| MDPULL | MDCMS/MDSTRPULL | MDCMS/MDENDPULL |
| MDPUSH | MDCMS/MDSTRPUSH | MDCMS/MDENDPUSH |
| MDRCVIFS | MDCMS/MDRCVIFS | MDCMS/MDENDRIFS |
| MDRCVSNA | MDCMS/MDRCVSNA | MDCMS/MDENDRSNA |
| MDSIGN | MDCMS/MDSTRSIGN | MDCMS/MDENDSIGN |
| MDSVN | MDXREF/MDSTRSVN | MDCMS/MDENDSVN |
| MDXANI | MDXREF/MDSTRXANI | MDXREF/MDENDXANI |

For extensive details about each command, enter it at a command line and press F4 to prompt the parameters and then F1 for help information.

### 3.11.2 MDFTP – MDCMS FTP Client command

The MDCMS FTP Client (MDFTP) command provides the ability to connect to a remote server in order to perform FTP, SFTP or FTPS transactions.

The MDFTP service jobs are used to perform the transactions. Ensure that either at least 1 MDFTP job is set to auto-start or that the MDFTP jobs have already started prior to invoking this command. This can be reviewed and edited in the MDCMS Services settings.

MDFTP transactions are logged to the IFS and can be viewed from the MDCMS Services settings.

If an error occurs, a diagnostic message is written to the job log and a CPF0001 exception message is thrown. If successful, the diagnostic message "MDFTP Transaction successful" is written.

**MDFTP Parameters**

| | |
|---|---|
| Server Address (LADR) | The address of the FTP server to connect to. This address must be defined in the Remote Server Locations settings. MDCMS uses the connection information stored with the address. Be aware that the address is case sensitive and must exactly match the address in the settings. |
| FTP Action (ACT) | The action to be performed<br>*EXIST – check if a folder or file exists on the remote server<br>*GET – copy a file from the remote server to the local IFS<br>*PUT – copy a file from the local IFS to a remote server<br>*DELETE – delete a folder or file on the remote server<br>*MKDIR – create a folder on the remote server<br>*LIST – list the contents of a folder on the remote server. The result list is written to file QTEMP/MDDFTPF. The format for the file is based on file MDCMS/MDDFTPF.<br>*TESTCONN – test the connection to the remote server |
| MDCMS Instance (INST) | Specifies the MDCMS environment that should be used. The ID correlates to the suffix of the MDCMS library name.<br>*SAME – the environment of the current library list will be used<br>*DFT – the default environment will be used. This correlates to library MDCMS. |
| Local Folder (LFLR) | The path of the local IFS folder |
| Local File (LFIL) | The name of a file in the local IFS folder |
| Remote Folder (RFLR) | The path of a folder on the remote server<br>*LFLR – the path of the remote folder is the same as the local folder |
| Remote File (RFIL) | The name of a file on the remote server<br>*LFIL – the name of the remote file is the same as the local file |

## 3.12 Logging

```
MDCLOGM                              MD Dev                              26.08.18
SCRN1                          MDCMS Log Maintenance                     16:00:20

Filter by Description: _____________________

Type options, press Enter.
 2=Edit  P=Purge  Q=Query
                                                                          Age
Opt Log File   Library    Description                              Purge (Days)
 _  MD Output  MDSEC      User Generated Reports                     Y      90
 _  MDDACMD    MDCMS      MDADDCMD API Log                           N
 _  MDDALRL    MDCMS      RFP Send Log Target Problems               Y      45
 _  MDDAREQ    MDCMS      MDADDREQ API Log                           N
 _  MDDCLOG    MDCMS      Object Creation Log                        Y      14
 _  MDDCRTO    MDCMS      MDCRTOBJ API Log                           N
 _  MDDDLOG    MDCMS      Object Request Deletion Log                Y     180
 _  MDDDRFP    MDCMS      MDDELRFP API Log                           N
 _  MDDEMLL    MDSEC      Email Log                                  Y      90
 _  MDDFLOG    MDCMS      RFP Send FTP Log                           Y      45
 _  MDDILOG    MDCMS      Automatic Installation Log                 N
 _  MDDIRFP    MDCMS      MDINSRFP API Log                           N
                                                                       More…
F3=Exit   F10=Purge All   F21=Sys Command
```

The Logging list (Setup Menu option 14) provides an overview of all log files that are written by the MD products.

Options
2=Edit – edit the Purge settings for the Log File
P=Purge – immediately delete all log records for the Log File that are older than the defined number of days
Q=Query – view the current contents of the log

Purge Records
Y – automatically delete all log records that are older than the minimum age for the Log File. The automatic purge occurs during the first RFP to run for a particular day. Purging doesn't occur on days that an RFP doesn't run.

N – retain the log records indefinitely, or until a manual purge occurs from this screen

Minimum Age before Purge
The number of days that must pass since the creation of a log record before it is allowed to be deleted.

## 3.13 User Groups

```
MDCGRPN                          MD T 74 6.1                          24.04.16
SCRN1                          MD User Groups                         15:13:19
                  Filters
Pos: __________  Desc: ____________________   Type: __________  User: __________

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  U=Users

Opt  Group      Type        Description                                  Users
 _   MARK-CH    MARKETING   Marketing in Switzerland                         1
 _   MD INTERN  SALES       MD Internal (Michael & Stephan)                  2
 _   NORAM      SALES       Sales North America                              3
 _   PGMR 1     PROGRAMMER  Programmer Group 1                               2
 _   PGMR 2     PROGRAMMER  Programmer Group 2                               6
 _   RMCH       RLSMGR      Release Manager CH                               2
 _   TEST 1     TESTER      Test Group 1                                     3




                                                                       Bottom
F3=Exit  F4=Browse  F5=Refresh  F6=Add  F9=Acceptance Group Types per Level
```

The User Group list (Setup Menu option 15) provides the ability to create and manage collections of users that can be used for sending emails, project assignments and MDWorkflow.

Options
2=Edit – edit the group details
3=Copy – create new group with information for existing group pre-filled in the parameters
4=Delete – delete the group
U=Users – View/Maintain the list of users that belong to the group. A user may belong to a group if the user is defined in MDSEC.

Group Type
The type or category to assign to the group. Press F4 to view/manage the group types.
If MDWorkflow is used, group types can be assigned to promotion levels to indicate which category of groups must accept an RFP before that RFP can continue to the next step in a migration path. Multiple user groups can belong to the same group type, so that project groups can vary based on regional or application requirements.

### 3.13.1 Acceptance Group Types per Level

If MDWorkflow is licensed, F9 can be pressed from the User Group or User Group Type screens to define the Acceptance Group Types per Level on this partition,

For each MDCMS Promotion Level, between 0 and n types of groups can be designated to be responsible for the acceptance of an installed RFP into that level. This means that each time an RFP, which is a package of objects, is installed into a specific level, 1 person from a group for each required group type must accept the results of the installation before that object package will be allowed to move on to the next step in the Workflow process.

The actual groups containing the users for any given group type are assigned to the project(s) that are impacted by the RFP. So, different projects could use different groups of users for any given group type.

Example:
MDCMS Promotion Level 50 is defined as the User Acceptance Environment level. When objects are installed into this level, business users and IT management must test the environment before those objects are allowed to be installed into the Production Environment level. To ensure that this occurs, group types BUS_USER and IT_MGMT are specified as Required Acceptance Group Types for level 50. Then, whenever an RFP is installed into level 50, a user within a group of type BUS_USER and a user within a group of type IT_MGMT must accept the RFP before it can be sent to Production.

```
CMC264                          MD T 74 6.1                          24.04.16
SCRN1                 Acceptance Group Types per Level               15:31:15

Filter by Appl: ____  Lvl: __  Group Type: __________

Type options, press Enter.
 4=Delete

Opt  Appl  Lvl  Description                              Group Type
 _   TEST   10  Vendor Trunk                            TESTER
 _   TEST   30  Test 30                                  MARKETING
 _   TEST   30  Test 30                                  TESTER




                                                                  Bottom
F3=Exit   F6=Add
```

In order to add or remove an acceptance group type to a promotion level, you must have authority to MDSEC code 73 for that promotion level's application.

When F6 is pressed to add group types, you first select one or many promotion levels and then press Enter. Then, you select one or many group types and press Enter. MDCMS then creates the list of all combinations of the selected levels and group types.

## 3.14 Project Costs

```
MDCPCST                          MD T 8 6.1                            4.04.17
SCRN1                          Project Costs                           13:24:03

Pos: ___  Filter by Project Type: __________  Task Type: __________
                           Phase: ______            User: __________
Type options, press Enter.                          Cost: __________
 2=Edit  3=Copy  4=Delete  5=Display

Opt Sort  Project Type  Task Type   Phase  User        Cost per Hour
 _   50   *ANY          ADMIN       *ANY   *ANY           120.00
 _  100   *ANY          *ANY        COR    *ANY            25.75
 _  100   *ANY          *ANY        DOC    *ANY            90.00
 _  100   *ANY          *ANY        FUN    *ANY           120.00
 _  100   *ANY          *ANY        REQ    *ANY           130.00
 _  100   *ANY          *ANY        TEC    *ANY           130.00
 _  100   *ANY          *ANY        TST    *ANY           100.00
 _  200   *ANY          *ANY        DEV    MMORGAN        160.00
 _  999   *ANY          *ANY        *ANY   *ANY           150.00
 _

                                                                    Bottom
F3=Exit   F6=Add   F10=Recalculate
```

The Project Costs settings provide the rules in order to apply the correct cost per hour to the time entered for Projects, Tasks and Subtasks.

When time is entered, MDCMS compares the project type, task type, phase and user against the cost rules in the sort sequence. The first matching rule is applied as the cost per hour for the time entry in order to calculate the total cost of that entry and increase the cost sum for the impacted project, task and subtask.

Options
2=Edit – edit the cost rule
3=Copy – copy a cost rule to a new rule
4=Delete – delete the cost rule
5=Display – View the cost rule

Sort Sequence
The sequence of the cost rule in relation to other rules in ascending order.

Project Type
If not *ANY, then limit the cost to projects of entered type.

Task Type
If not *ANY, then limit the cost to project tasks of entered type.

Phase
If not *ANY, then limit the cost to time entry records for the entered project phase.

User
If not *ANY, then limit the cost to time entry records for the entered user ID.

**F10 – Recalculate** – when pressed, existing Time Entry records can be recalculated based on the current rules. A confirmation screen is shown in order to limit the recalculation to a specific date range and to specify if closed Projects/Tasks should be included in the recalculation.

## 3.15 Push Settings Data to Locations

MDCMS and MDXREF settings can be pushed (copied) to any defined Location that allows DDM connectivity. To define and execute the push of settings to another location, select option 17 from the MDCMS Setup Menu.

```
MDCPSET                          MD T 74 6.1                          12.03.16
SCRN1                 Push Settings Data - Definitions                17:19:18

          Appl  Lvl  Attribute  Tgt Lvl  RFP Cmds  Status
Filters:

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  L=Locations
                                                          Last Push
Opt Appl Lvl Attribute  Tgt Lvl  RFP Cmds  Upd Del Env    Date     Time    Stat
 _  *ALL     *ALL                  Y       Y   Y  T74  13.01.16 15:37:22 DONE
 _  *ALL 10  *LF                   Y       Y   Y  T74  13.01.16  3:38:07 DONE
 _  *ALL 10  *RPG*                 Y       Y   Y  T74   5.01.16 14:29:11 DONE
 _  *ALL 10  LF*                   N       Y   Y  T74  13.01.16  3:17:01 DONE
 _  CMP      *ALL                  Y       Y   Y  T74  20.01.16 10:45:01 DONE
 _  CMP      PNLGRP                Y       Y   Y  T74  20.01.16 10:59:30 DONE
 _  TEST 10  *ALL         20       Y       Y   Y  T74   1.02.16 18:01:46 DONE
 _  TEST 10  *LF          33       Y       Y   Y  T74  13.01.16 15:21:22 DONE



                                                                      Bottom
Enter=Continue  F4=Browse  F5=Refresh  F6=Add  F12=Previous
```

The initial screen lists any existing Push definitions. Use F6 to add a new definition or the standard options to maintain an existing definition.

**Definition Parameters**

Application
- *ALL – all applications
- an application

Level
- 0 – all levels
- a level

Attribute
- *ALL – All attributes
- *NONE – attribute settings should not be sent
- *generic* – use * as a placeholder to filter the attributes by a name pattern
- an attribute

Target Level
- 0 – the same value as the local level
- the level number to apply on the remote system

Update Existing Data
- Y – any matching entries already on the remote system will be updated with the new values
- N – only new entries will be added

Delete Undefined Data

- Y – if value *ALL is used for the attribute, then all attributes on the target system that aren't on the local system are deleted.
  If value Y is used for Include RFP Commands, then all RFP commands on the target system that aren't on the local system are deleted.
  Attribute commands that aren't defined locally will be deleted
  If all levels are sent, then remote levels that aren't defined locally will be deleted
- N – unmatched settings will remain on the target system

Target MD Environment

The instance of MDCMS on the target system.

- *DFT – the instance that doesn't include a suffix for the product libraries is the target
- an MDCMS instance

Once a definition is created, use option L to select one or more DDM Locations to push the information to.

After the locations are selected, press Enter to submit the job to batch. The job queue and library can be modified at the top of the location listing screen.

### 3.16 Send Settings to Remote System

Attributes, including command and authority information, can be sent to Remote Locations using the distribution methods, such as FTP, that are defined for the locations. If *ALL attributes are selected for an Application/Level, then the definitions for the Application and Level, including the Level's Job Description, will also be exported.

Before settings can be sent to a remote system, a Distribution Level for the local Application/Level must be defined (MDCMS Setup Menu Options 6 & 7).

```
MDCEXPS                          COMPANY NAME                          11/23/11
SCRN1                  Send Settings to Remote System                  10:37:35


                       Application: ____
                             Level: __


                         Attribute: *ALL______   *ALL, *RFP, *generic*, Attribute



F3=Exit    F4=Browse    F8=FTP Log
```

Screen Definitions:

Application / Level
The local Application and Level that contains the Attribute(s) to be sent to Remote System(s).

Attribute
- a specific Attribute to send only that Attribute
- a portion of the Attribute name with a wildcard, i.e. R*, to send all matching Attributes that begin with an 'R'
- *ALL to send all defined Attributes for the Application/Level. If *ALL is selected, then the entire definition of the Application and Level, including the Level's Job Description and *RFP commands will be sent.
- *RFP to send only the Application Level's *RFP command types

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of valid values for a field
**F8=FTP Log** – If one or more of the selected Distribution Queues use method FTP, the F8 key will be enabled after the attempt to send the settings has finished. If the send failed, the log can be viewed in order to better troubleshoot the connection problem. The log is also available when successful.

Once the selections have been made, press Enter. Then, the list of Distribution Queues for the selected Application and Level are displayed. Select 1 or more Distribution Queues to send the settings to.

## 3.17 Receive Settings from Remote System

```
MDLIMPS                          COMPANY NAME                          04.09.06
SCRN1                 Receive Settings from Remote System              10:37:22



                    MD Filename: __________


                Transmitted via: 1      1=SNA
                                        2=FTP/Other
                                        3=Tape
                                        4=Optical Device

                   Netfile User: QPGMR_____



Enter=Confirm    F4=Browse    F12=Cancel
```

Screen Definitions:
MDCMS settings sent from remote systems are received using the above display, which is option 13 from the MDCMS Settings Menu.

Settings may be sent via SNA, FTP, GoAnywhere, XCOM, tape, or optical device. MDCMS remembers which method was used the last time that a promotion or setting was received. It is best to set the Transmitted via parameter (if incorrect) before entering the other information.

MD Filename
Enter the name of the file containing the Settings. MD setting packages are always named 'MDAS' + the 2-digit Host ID of the sending IBMi + a 4-digit sequence number. Press **F4** to browse the list of outstanding setting packages.

Netfile User
If the setting package was sent via SNA, a specific netfile user was entered (default is QPGMR). The same user id must be entered here to receive the settings.

If the setting package is transmitted via tape or optical device, you will also be prompted for the Device Description. It is required for receiving the setting package or for browsing the MD setting packages that exist on the medium.

Function Keys:
**Enter=Confirm**
**F4=Browse** – Browse the list of valid values for a field
**F12=Cancel**

### 3.17.1 Select Application/Level for Receipt of Attributes

```
MDCIMPS                          COMPANY NAME                          04.09.06
SCRN1                 Receive Settings from Remote System              10:37:05




                      Received
                        Application: OPER
                              Level: 30
                          Attribute: CMD

                      Copy to
                        Application: ____
                              Level: __



F3=Exit    F4=Browse
```

Enter the Application and Level on the local system to copy the attribute(s) into. Press F4 to select from a list.

Press Enter.

If the attribute(s) already exist in the selected Application and Level, they will be overwritten with the information received from the remote system.

### 3.17.2 Specify Application/Level Definitions for Received Settings

If the Application or Level on the local system does not yet exist, and all (*ALL) attributes were sent from the remote system, then the user will be prompted for the descriptions of the Application or Level as well as the name and location of the Job Description.

```
MDCIMPS                          COMPANY NAME                          04.09.06
SCRN2                        Copy Level Settings                       10:37:00


       Received:
         Application . . . .  OPER  Operations
         Level . . . . . . .  30    Test environment for Operations
         Attribute . . . . .  *ALL

         Job Description . .  OPER30
           Library . . . . .    QGPL


       Copy to:
         Application . . . .  OPER  Operations
         Level . . . . . . .  90    Test environment for Operations_______

         Job Description . .  OPER30____   name, *NONE
           Library . . . . .    QGPL______


Enter=Confirm   F3=Exit
```

If the Application is new, the default description may be modified.

The description for the Level may be modified.

The name and library of the job description to be used for the local Application/Level can be modified. If *NONE is specified, the Job Description will not be copied.

Press Enter to copy the definitions, or press F3 to cancel the receipt of the settings.

### 3.17.3 Specify Library Names for Received Attributes

```
MDCIMPS                          COMPANY NAME                            9.01.13
SCRN3                      Copy Attribute Settings                      20:00:13

From Application: TEST    To Application: TEST
           Level: 10                Level: 31      Attribute: *ALL

Type changes, press Enter.
 *NONE=Skip Attr using Lib, *NOOBJ=No Obj for Attr, *NOSRC=No Source for Attr
 *REQONLY=No Src/keep Requests, *TEMP=Temporary Source

Object Libraries            Change to                   Source Libs Change to
/test/JAVA/P                /test/JAVA/P_____           TSTSRC10    TSTSRC10__
TSTOBJ10                    TSTOBJ10__                  TSTSRC11    TSTSRC11__
TSTOBJ11                    TSTOBJ11__

                                                                        Bottom
Enter=Confirm    F2=Full Name    F3=Exit    F4=Browse    F5=Refresh
```

The left column for the Object Libraries lists the name of each distinct Object Library specified in the received Attribute(s).

The Change to column allows the user to modify the name of the Object or Source Library to be saved in the attribute(s) on the local system.

Special Object Library values:
*NONE – do not copy the attributes using the object library
*NOOBJ – change the Object Type to *SOURCE for attributes containing a source and object library. Do not copy the attributes containing only the object library.

Special Source Library values:
*NONE – do not copy the attributes using the source library
*NOSRC – remove the Source Library definition for attributes containing a source and object library. Do not copy the attributes containing only the source library.
*REQONLY - remove the Source Library definition for attributes containing a source and object library. Change source file to *REQONLY for *SOURCE attributes.
*TEMP – temporarily migrate source for compiles, but don't keep the source in the target environment. Typically used for production environments where persistent source isn't allowed.

If the attribute is for object type *MSGD, *SQLCST, *SQLFUN, *SQLPRC, *SQLSCR, *SQLTRG or *SQLVAR, the attribute will still be received with the library and source file of the sending system even when *NOSRC or *REQONLY are used. This is because these types require source to be used. Additionally, if the object type is *SOURCE and the attribute contains a post-installation command that performs a RUNSQLSTM, this is also received because SQL scripts are typically migrated across systems to perform updates to table data.

Function Keys
F2 – display/edit the full name of paths that exceed the length of the prompt field
F3 – cancel the copy of the attributes
F4 – browse the list of Libraries or IFS directories
F5 – reset the library names to their original values

### 3.18 Create Config Deployment Settings

Setup Menu option 20 provides command **MDCRTSET** to generate an Application to manage the MDCMS product, including the deployment of new versions, patches, license keys and settings. The command has the following parameters:

| | |
|---|---|
| Application Code (APPL) | The Application code to use for MDCMS product administration.<br><br>Defaults to value MD<br><br>If the application code already exists, any existing settings will not be updated, but any new attributes will be added.<br><br>If the code doesn't exist yet, MDCRTSET creates it. |
| Level (LVL) | The Application level number to use for MDCMS product administration. Defaults to value 90. Typically, only one level is necessary per instance of<br><br>MDCMS on a specific system.<br><br>If the level already exists, any existing settings will not be updated, but any new attributes will be added.<br><br>If the level doesn't exist yet, MDCRTSET creates it and sets the flags to allow checkout and receipt and to automatically process an RFP. The flag values can be modified as necessary afterwards. |
| Job Description (JOBD) | Specifies the name of the job description to be applied to the level definition, if the level doesn't yet exist.<br>Defaults to value MD90<br>If the job description doesn't exist, MDCMS will create it automatically and set the parameters to commonly used values. |
| Job Description Library (JBDL) | Specifies the library of the job description to be applied to the level definition, if the level doesn't yet exist.<br>Defaults to value QGPL<br>The library must already exist on the system. |
| Job Queue (JOBQ) | Specifies the name of the job queue to be defined in the job description, if the job description doesn't yet exist.<br>Defaults to value QBATCH<br>The job queue must already exist |
| Job Queue Library (JBQL) | Specifies the library of the job queue to be applied to the job description, if the job description doesn't yet exist.<br>Defaults to value QGPL<br>The library must already exist on the system. |

**MDCRTSET** generates the following attributes:

| Type | Attribute | Description |
|---|---|---|
| *DTAGRP | APP | Deploy a specific application code. Only the code itself is deployed – use the other attributes to deploy the contents of an application |
| *DTAGRP | APPLVL | Deploy a specific level by specifying <APPL value>, <Level value> as the object name. The level settings and MDXREF library list are deployed – use the other attributes to deploy the contents of the level |
| *DTAGRP | ATR | Deploy a specific attribute by specifying <APPL value>, <Level value>, <ATTRIBUTE name> as the object name. The attribute settings, commands and scripts are deployed for that attribute. |
| *DTAGRP | ATRALL | Deploy all attributes for a level by specifying <APPL value>, <Level value> as the object name. The attribute settings, commands and scripts are deployed for all attributes for the level. |
| *DTAGRP | CMDRFP | Deploy all *RFP commands for a level by specifying <APPL value>, <Level value> as the object name. |
| *DTAGRP | SECALL | Deploy all User Groups and Users defined in MDSEC. Any value can be used for the object name, since all records are included automatically. |
| *DTAGRP | SECGRP | Deploy the authorities for a specific User Group by specifying the group id as the object name. The users in the group are not deployed. |
| *DTAGRP | SECUSR | Deploy the authorities for a specific User by specifying the user id as the object name. The group definitions that the user belongs to are not deployed. |
| *DTAGRP | TMPDTACPY | Deploy a Data Copy template by specifying the template ID |
| *DTAGRP | TMPOBJAUT | Deploy an Object Authority template by specifying the template ID |
| *DTAGRP | TMPOBJDEL | Deploy an Object Delete template by specifying the template ID |
| *DTAGRP | TMPOBJREP | Deploy an Object Replication template by specifying the template ID |
| *DTAGRP | TMPOBJSEA | Deploy an Object Search template by specifying the template ID |
| *DTAGRP | TMPRAPID | Deploy an MDRapid template by specifying the template ID |
| *DTAGRP | TMPSRCDEL | Deploy a Source Delete template by specifying the template ID |
| *DTAGRP | TMPSRCREP | Deploy a Source Replication template by specifying the template ID |
| *DTAGRP | TMPSRCSEA | Deploy a Source Search template by specifying the template ID |
| *IFS | INSTALL | Deploy a new build of the MDCMS products and then automatically install that build.<br><br>Each of the 4 IFS save files (MDCMS.savf, MDREP.savf, MDSEC.savf and MDXREF.savf) should be requested using this attribute. The easiest way to do so is in MDOpen using the Import Local Objects option.<br><br>If the install (MDINSSAVF) shouldn't be automatic, then disable the post-install command or create a copy of the attribute that doesn't contain the post-install command. |
| *IFS | LICENSE | Deploy the MDLICENSE.savf to update the license keys and execute the update |
| *IFS | PATCH | Deploy a patch (mdupdateyyyymmdd.savf) and then automatically apply the patch |

### 3.19 MDCMS Configuration Report

Setup Menu option 21 provides the ability to generate an excel file containing one sheet for each MDCMS configuration file. When option 21 is selected, the user is presented with the following parameters:

| | |
|---|---|
| File Name | The name of the excel file. MDCMS will apply the .xlsx suffix automatically |
| Export Option | 1 – Copy the file to an IFS folder<br>2 – Email the file to an address and/or user and/or user group<br>3 – Copy and email the file |
| Copy to Folder | If option 1 or 3 is selected, the name of the IFS folder to generate the excel file into |
| Email to Address | If option 2 or 3 is selected, the specific email address to send the file to |
| Email to User | If option 2 or 3 is selected, the specific user to send the file to. This pertains to the MDSEC user ID and the email address saved in MDSEC for that ID.<br>Press F4 to select from a list |
| Email to Group | If option 2 or 3 is selected, the user group to send the file to, based on the MDCMS user group definitions.<br>Press F4 to select from a list |

# 4 Object Manager

## 4.1 Overview

The MDCMS menu option 2 is a multi-function display that controls the processes required for making and installing modifications of objects.

```
CMC100                          COMPANY NAME                                  10/18/11
Filters/Defaults                 Object Manager                               7:40:40
  Programmer  : PGMR1_____                          Cmd/Script: _ / _       Y/N
  Appl Group  : ____          RFP Number : ______   Attribute : __________ *gen*
  Project .. .: ____________  Promo Lvl .: 0        Object ...: __________ *gen*
  Task/Subtask: _____ _____   Status ....: __ __ _  Assign RFP: ______

 Opt Object     Attribute  Appl Lvl Project         RFP Sts   Cmd From Lib
  _  ACCTPGM1   CBL        ACCT 10  VAT     +        37 01C R  Y  MMORGAN
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
  _  __________ __________ ____ __  ____________  _____
                                                              More...
F2=Full Name      F4=Browse      F5=Refresh     F6=Messages  F7=Promote RFP
F8=Submitted Jobs F9=RFP Control F10=Assign RFP F11=Output   F24=More Keys
```

The Object Manager is used for:

- Source/Object request and retrieval.
- Reserving Object names for new objects.
- Grouping objects for installs.
- Identifying modification requests
- Requesting the installation of objects into application environments

Filters / Defaults

Programmer

When an object is requested for modification or a new object name is reserved, it is assigned to a user profile. An entry in this field will limit the listing to objects assigned to the user profile.

Appl Group

An entry in this field will filter by the Application Group that has been entered. An entry here is also the default value for new requests so that the programmer does not need to enter it for each object.

Project

A Project defines the reason, responsible parties, and timeline for work to be done. During the Project process, a request is made to assign one or more Projects to the object. This enables MDCMS to filter and track objects by project. An entry in this field will filter the display to only include objects assigned to the selected Project. An entry here is also the default value for new requests so that the programmer does not need to enter it for each object.

Task/Subtask
The Task, or Subtask, associated with the Project value. Tasks and Subtasks enable the user to further define and subset the work being done for the Project. An Object Request may be assigned to one or more Projects, Tasks or Subtasks. This enables MDCMS to filter and track objects by Project, Task and Subtask. Entries in these fields will filter the display to only include objects assigned to the selected Project, Task and Subtask. An entry here will also be used as the default value for any new requests so that the programmer does not need to enter it for each object.

RFP Number
An RFP is a Request for Promotion. When an object or a group of objects are ready to be installed into an application environment, an RFP is required to track and to group an installation. The RFP is Application Group and Promotion Level specific. The system requires a brief explanation of the promotion request. This explanation is stored in the system and a number is assigned. This number is used to group objects to be installed. An entry in this field will filter the display to only include objects assigned to the selected RFP number.

Promo Lvl
An entry in this field will filter the display by the Promotion Level that has been entered. An entry here is also the default value for new requests. If left blank, the lowest level for the application that allows checkouts will be used by default.

Request Status
The first of 3 status filter fields. As each object is processed through the MDCMS system, a status is applied to the object record to track the modification and installation progress. If this field is left blank, the system will include object records with any active status. An entry is in this field will filter the display to only include objects that match the Status selected.

Status values:
**RP** – The request for the promotion level is pending MDWorkflow acceptance in the prior level.
**UL** – The request is currently unlocked so that others can work with the same object.
**00** - Object has been requested for modification and a RFP has not been assigned.
**01** - An RFP number has been assigned to the requested object.
**02** - Approval Pending - an RFP approval is required before the installation process can continue.
**CP** – File waiting for MDRapid to be launched to copy the data to the new format for the file
**CR** – MDRapid is currently copying the Data
**03** - Installation Pending - The object is ready for installation and requires an RFP installation release.
**04** - RFP has been submitted to batch for an installation.

Creation/Copy Status
A value, when applicable, is displayed to the right of the Request Status to indicate the Creation or Copy Status of the object. The value is updated with a creation status when option 8 is used to compile the object into the Developer's library or during the compile and installation of the object as part of an RFP. The value is updated with a copy status when MDRapid is used to copy a file's data from the current format to a new format prior to installation.

Status values:
**C** – The object was successfully created or copied
**E** – An error occurred during the creation or installation of the object
**L** – RFP blocked due to lock on the Object or Source member
**00-99** – the maximum % of data that has been copied during the MDRapid process

Additionally, value N can be used in the filter to only list objects for which no creation or copy has been attempted.

Conflict Status
A value, when applicable, is displayed to the right of the Creation/Copy Status to indicate status of Conflict Resolution when multiple versions of an application are managed.

Status values:
**O** – Conflict Resolution open – other versions have not been resolved
**L** – Conflict ignored for this level, but will be open again when RFP continues to next level
**I** – Conflict ignored for all levels for this request
**R** – Conflict has been resolved for all other versions for request

Additionally, value N can be used in the filter to only list objects for which Conflict Resolution is not necessary.

Cmd

**Y** – Filter the object requests to show only those requests that contain commands defined for the specific object.
**N** – Filter the object requests to show only those requests that don't contain commands defined for the specific object.

Script

**Y** – Filter the object requests to show only those requests that contain scripts defined for the specific object.
**N** – Filter the object requests to show only those requests that don't contain scripts defined for the specific object.

Attribute
An attribute is the identifier for the handling of each type of object. The attribute is defined in Option 3 of the System Settings and specifies source/object locations, compile handling, etc. An entry in this field will filter the display to only include objects assigned to the selected attribute. An entry here is also the default value for new requests. The wildcard character * can be used as a generic prefix or suffix for the value.

Object
An entry in this field will limit the display to requests for matching object names. The wildcard character * can be used as a generic prefix or suffix for the value.

Assign RFP
The RFP number to use when assigning request records to a promotion grouping.
Using option 'A' in front of individual unassigned object requests, will then immediately apply the Assign RFP value to those requests (if for same Application and Level as RFP number).

Using F10 will assign the RFP number to all unassigned requests in the filtered list for the same Application and Level.

## 4.2 The Request Record fields

Object

For object requests the object value is as follows:

| Object Type | Object Value |
|---|---|
| OS/400 Objects | system object name |
| *DATA | system name of physical file containing the data |
| *DTAGRP | record key values |
| *DUMMY | free text |
| *IFS | IFS file or directory name |
| *MSGD | message description ID |
| *SOURCE | source member name |
| *SQLxxx | SQL long name |

When selecting to perform a library migration, the object value is the name of the library or IFS directory path.

If the name is longer than 10 characters, press F2 to view/modify the complete value.

Attribute
The Attribute is the MDCMS Source or Object code that is used during the Retrieval and Installation processes to define the behaviour of the object. Il left blank, MDCMS will use the attribute last used for the object name specified. If left blank and multiple object types exist for the same object name, MDCMS will prompt for the selection of the type before applying an attribute.

Appl
The Application Group is used to retrieve Promotion Level and Environment information required for source retrieval and installing object and source.

Lvl
The Promotion Level is used to define the library that compiled objects are to be installed into and the library of the application's source files. If the promotion level is not entered, or if the object is new, the level will be automatically set to the lowest level that allows checkout for the application environment.

Project
The Project(s) that the object request is assigned to. If the object is assigned to more than one Project, or is assigned to a Projects Task or Subtask, a plus sign(+) will be displayed to denote additional information is available. Enter an option '5' or '6' to see all Projects, Tasks, or Subtasks for an Object.

RFP
The Request for Promotion number is required for installing an object to an application environment. An RFP is Application Group and Promotion Level specific. MDCMS edits the assignment process and will not allow assignments across Application Groups and Levels. When the RFP is submitted for installation, all objects that are assigned to it will be installed.

Sts
The line Status shows the current status of the request record. It is a display only field.

Status values:
**RP** – The request for the promotion level is pending MDWorkflow acceptance in the prior level.
**UL** – The request is currently unlocked so that others can work with the same object.
**00** – Object has been requested for modification and a RFP has not been assigned.
**01** – An RFP number has been assigned to the requested object.
**02** – Approval Pending - an RFP approval is required before the installation process can continue.
**CP** – File waiting for MDRapid to be launched to copy the data to the new format for the file
**CR** – MDRapid is currently copying the Data
**03** – Installation Pending - The object is ready for installation and requires an RFP installation release.
**04** – RFP has been submitted to batch for an installation.

The 3rd and 4th positions of the Status shows the Creation, Copy or Lock Status. The possible values are:
**C** – The object was successfully created or copied
**E** – An error occurred during the creation, copy or installation of the object
**L** – RFP blocked due to lock on the Object or Source member
**00-99** – the % of data that has been copied during the MDRapid process

C
Y – Commands are attached to this specific object request and will run at install time.

S
Y – Scripts are attached to this specific object request and will run at install time.

From Lib
The library name that corresponds to the From Library associated with the Application level indicated on the Object Request line or the library name of a Library Migration request. This will normally be a named library except when a request is for the recompile, delete or update of an object which will be indicated by the corresponding values of *RECOMPILE, *DELETE and *UPDATE. Value *REQONLY indicates that a request record exists for a *SOURCE type, but source will not physically be migrated on this system.

Function Keys:
**F2=Full Name** - Edit or display the full name of an Object, when the name is too long to fit on this screen.
**F3=Exit**
**F4=Browse** - Display list of valid values for a field. For fields such as Project, Task, Subtask or RFP, the fields may also be maintained from the F4 screen.
**F5=Refresh**
**F6=Messages** – Display message queue of user.
**F7=Promote RFP** - Prompts the user to submit a RFP for installation.
**F8=Submitted Jobs** – Work with jobs submitted by user
**F9=RFP Control** - Used to select and maintain an RFP Assignment number for the **F10** process or the 'A' option.
**F10=Assign RFP** - Automatically assigns an RFP number to all displayed request records that have a status of '00' and match the application environment and level for the RFP. The RFP number used is retrieved from the RFP Assignment field in the header of the display.
**F11=Output** – Display the MD Output panel and other spool files
**F12=Previous**

**F15=Print List** - Prints a list of every active Project record that matches the current set of filter values.
**F17=Top** – Position the cursor to the top of the request list.
**F18=Bottom** – Position the cursor to the bottom of the request list.
**F19=Time Entry** – Bring up the Project/Task Hours Used listing to view and enter time worked.
**F20=Assign Proj** - Automatically assigns a selected open Project/Task/Subtask to all displayed requested records not yet assigned to a Project. The Project Selection display is provided in order to select the Project/Task/Subtask or cancel the Assign process before the process is performed.
**F21=Sys Command** – displays the IBMi command entry screen so that IBMi commands may be run without the need to exit MDCMS.
**F22=Create All** – MDCMS attempts to create all eligible objects into the developer library, based on, and in the order of, the rows listed. When F22 is pressed, a confirmation screen is shown that displays the total number of object requests that are eligible for creation into the developer library. Press Enter to proceed with the attempt or F12 to cancel. Upon completion, the total number of successful attempts and total number of failed attempts are shown.
**F24=More keys** – Displays the additional Function Keys that do not appear on initial panel.

## 4.3 Requesting a change to an Object

### 4.3.1 M – Modify Object

The 'M' option is a request to modify an existing object. If the request is successful, MDCMS will copy the requested source to a development library and create a Request record in Lock Mode.

*The Object Selection Process*

1) position cursor to a blank line in the object manager
2) Enter the name of the object or press F4 to select object from list. A portion of the object name may be entered before pressing F4 to position the cursor to that name in the list. It is permitted to select multiple objects from the list. If more than 1 object is selected, each additional selection will be placed on its own new row within the Object Manager listing and the option, application and RFP for the initial row will be replicated to the additional rows for rapid check-out of multiple objects.
3) Enter the name of the MDCMS attribute or press F4 to select the attribute from list. If left blank, the default value entered at the top of the screen will be used. If this value is also blank, MDCMS will use the attribute that was used for the object the last time that the object was installed. The attribute specifies the location of the source and object as well as how the source is compiled and which authorities are assigned to the object.
4) Enter the name of the application in which the object exists or press F4 to select the application from list. If left blank, the default value entered at the top of the screen will be used.
5) Enter the Level number for the application or press F4 to select the level from a list. If left blank, the default value entered at the top of the screen will be used. If this is also blank, then the lowest level for the application will be used.
6) Enter the Project ID or press F4 to select the Project, Task or Subtask from the Project Listing panel. If left blank, the default value entered at the top of the screen for Project, Task and Subtask will be used. It is not required that a Project is selected at request time. More than 1 Project may be selected for the same object request.
7) Enter the RFP number or press F4 to select the RFP from list. If left blank, the default value entered at the top of the screen will be used. It is not required that a RFP is selected at request time.
8) Press Enter.

MDCMS checks to see if another user already has the object requested. If so, the newly entered request is declined and a screen is displayed which shows all relevant information pertaining to the existing request. From the screen, the user has the option to press F10 in order to request the object in Unlock Mode.

MDCMS then checks if the source/object already exists in the destination library that is defined for the entered attribute. If not, it searches the locations on the local system in the higher levels for the attribute. If still not found, it searches for the source or object based on the search template definition for the attribute.

```
CMC180                                T Dev                          29.07.14
SCRN1                      Source Member Copy Options                22:15:14


Appl Lvl Type    Attribute  Object
TEST 10  *PGM    CLP        ACOBJ1

Copy From
  Location  . . .  *LOCAL_____________________________________
  Source File . .  QCLSRC_____
    Library . . .    TSTSRC10__
  Member Name . .  ACSRC1_____        Name, *NONE

Copy To
  Dev Source File  QCLSRC_____
    Library . . .    MMORGAN___
  Member Name . .  ACSRC1_____

Dev Object Library MMORGAN___



Enter=Confirm    F4=Browse    F5=Refresh    F12=Cancel
```

This screen is then displayed where the user chooses where to copy the source from and where to copy the source to. Modifications are then made to the copy of the source, rather than the original source to protect the installed version of the source.

If the source already exists in the programmer's library, the programmer will be prompted as to whether or not the existing source should be overwritten.

If the library or source file does not yet exist in the programmer's library, the programmer will be prompted to create them.

The name of the source can differ from the name of the object and the source library may be different than the object library.

**Source Comparison**

If Source Comparison Checking is defined for the application level in the OS/400 Location settings (MDCMS Settings Menu Option 8), then the version of the source that is to be copied into the programmer's library will be compared with the version of the source that is residing in the comparison level on the local or a remote system.

If the versions are different, a warning screen will be displayed to the programmer. F8 can be pressed to view the differences in the 2 versions of the source code. If the programmer has authority to request source from a different location (MDSEC Code 33 for the application), the programmer then has the option of copying the remote version of the source rather than the local source.

If the versions are different and the programmer that made the prior change to the source is different than the current programmer, the current programmer can only check out the source if they have authority to change programmer for object request (MDSEC Code 32).

**Emergency Checkout Warning**
If the Object was most recently checked out for deployment to an Emergency level, and the new request is for a standard level, a warning screen will be displayed to the programmer informing them of the level, user and Project involved in order to help resolve the merging of the changes made for the emergency deployment.

**Location Warning**
When requesting source or objects, MDCMS can be configured to automatically notify the user if the source or object is found in specific locations. This can be helpful to make the user aware of potential conflicting versions of the object, such as in vendor libraries. To automatically search and notify, apply search templates with the libraries to be checked to the attributes to be monitored.

### 4.3.2 N – New Object

This option is used to reserve an object name. The steps followed are identical to those for the modification of an object. The new object name may not already exist in the destination library for the attribute. If for new source, the user is then prompted for an existing source to copy from (as a template). The copy is optional.

If an existing source member is copied to a new member, or if the copy from value of *GEN is used to generate a new source member in the programmer library, the programmer is then prompted to provide the source attribute and description of the new member.

If the member to copy from doesn't exist in the default source library, F16 can be pressed to have MDCMS search for the source in the level chain and based on levels.

### 4.3.3 D – Delete Object

This option is used to delete an object and the source for the object. The steps followed are identical to those for the modification of an object. When the promotion occurs that causes the deletion, the source or object is archived prior to deletion (if archiving is turned on for the level.) Any cross-reference information about the object is also removed at promotion time.

To delete an IFS file or directory, enter the attribute for the IFS entity before pressing F4 to select it from a list. If a directory is selected, and that directory contains files or sub-directories, MDCMS will automatically create deletion reservations for those entities too.

### 4.3.4 R – Recompile Existing Source

This option is used to recompile an object from the existing source at the requested level. This can be requested even when work is in progress for the source. The steps followed are otherwise identical to those for the modification of an object.

If multiple objects of different names share the same source, the initial object can be checked out as Modify and the other objects can be checked out as Recompile.

### 4.3.5 U – Update Existing Object

This option is used to update an existing object without modifying any source or migrating the Object from a lower level. An Update command must be defined for the object or attribute. An example of an Update command would be the UPDPGM command for updating existing ILE programs. The Update option may be requested even when work is in progress for the source or object. The steps followed are otherwise identical to those for the modification of an object.

### 4.3.6 L – Library Migration

Often, a temporary library will be sent from a vendor (or some other source) with the intent that the objects in this library are to be migrated into your application. The 'L' option can be used to easily request the objects for migration.

To do this, enter the name of the library at the object prompt. Also enter the Application code. Leave the attribute field blank. Press Enter. A list of all objects in the library is then displayed.

```
CMC125                              COMPANY NAME                              10/18/11
SCRN1                          Library Objects Request                        15:44:34
Library.: LIV12121
Appl/Lvl: TEST 10  RFP: _______ Project: SAP001______ Task/Subtask: _____ _____
Filters (* = generic*)
 Object*: __________  Type: _______ *Sys Attr*: __________ *Desc*: ____________
                                        Created from: ________ to: ________
Type options, press Enter.
 M=Migrate  D=Object Description  S=Source Members  5=View Request Details

Opt Object     Type      CMS Attr   Created   Description
 M  COHDRL1    *FILE     LF         10/01/11  XYZ CO HDR file by costs
 _  COHDRL2    *FILE     LF         10/01/11  XYZ CO HDR file by cocst
 _  COHDRL3    *FILE     LF         10/01/11  XYZ CO HDR file by copsts
 M  CO001D     *FILE     DSPF       10/01/11  XYZ Customer Order Maint
 M  CO002D     *FILE     DSPF       10/01/11  XYZ Customer Order Browse
 M  CO002R     *PGM      RPG        10/01/11  XYZ Customer Order Browse
 _  CO006D     *FILE     DSPF       10/01/11  XYZ Customer Order Print
 M  CO007P     *FILE     PRTF       10/01/11  XYZ Customer Order Print

                                                                      More...
F4=Browse   F8=Today   F9=Dft Attribute   F13=Repeat Opt   F14=Repeat Attribute
```

This display lists all objects that exist in the library.

RFP
The RFP number to assign to the selected objects in the library. Press F4 to create a new RFP and/or select an RFP from the list of open RFPs.

Project/Task/Subtask
The Project ID to assign to the selected objects in the library. Press F4 to create a new Project and/or select a Project from the list of open Projects. If the assignment needs to be for a task or subtask within the Project, those values can be entered as well.

Filters
The list of objects may be filtered by Object, Type, System Attribute, Description or range of Creation Dates.

The object name filter value can use the suffix * to filter the objects based on the value preceeding the *. The system attribute and description filters allow the * wildcard before and after the generic value.

The filters are not case sensitive.

Opt

M=Migrate – Migrate the object from the selected library into the lowest application level on the system. A request will then be created for that object. The request can then be handled like all other requests in the Object Manager.

D=Object Description – Display the object description using the IBM Display Object Description command(DSPOBJD) using a Detail parameter value of *FULL. The information on the Display Object Description panel can aid in analysing objects prior to migration.

S=Source Members – View the list of source members in a source file. This option is only valid for source files. The members may then be individually requested.

5=View Request Details – View the details of an already requested object.

Attribute

MDCMS makes a best guess as to what the attribute should be. Enter a different value or press F4 to select from list, if necessary.

Function Keys:

**F4=Browse** – Display list of valid values for a field.

**F8=Today** – Creates a filtered view of all objects that were created with today's date.

**F9=Dft Attribute** – Set default Attribute to be used for new objects with same system attribute.

**F13=Repeat Opt** – Repeat an option until end of list. For example, if 'M' was entered on the 4th line of the list and F13 was then pressed, lines 5 through the end would also have 'M' entered.

**F14=Repeat Attribute** – Repeat an attribute. Place cursor on line for attribute to be repeated and press F14. For every object with a matching object type, this attribute will be inserted.

### 4.3.7 L – IFS Directory Migration

Option L can also be used to migrate files or entire directories that exist in IFS.

To specify a Directory Migration rather than a Library Migration, place a "/" at the beginning of Object field before pressing Enter.

```
CMC126                              COMPANY NAME                              10/18/11
SCRN1                        IFS Object Migration Request                     12:55:23

Directory: /transfer



Type options, press Enter.
 M=Migrate  S=Set Root Directory  5=View

Object Filter: ____________________________________

Opt     Object                          Date Modified       Attribute   Req'd By
 _   DIR downloads                      2011-08-25 14.33.24 __________
 _   DIR patch070315                    2011-08-25 14.33.25 __________
 _   DIR patch070326                    2011-08-25 14.33.26 __________
 _   DIR patch070420                    2011-08-25 14.33.27 __________
 _   DIR patch070427                    2011-08-25 14.33.28 __________
 _   DIR patch070620                    2011-08-25 14.33.29 __________
 _   DIR saved070211                    2011-08-25 14.33.30 __________
 _   DIR savem070407                    2011-08-25 14.33.31 __________
                                                                   More...
F2=Full Name   F3=Exit   F4=Browse   F12=Up   F13=Repeat Opt   F14=Repeat Attr
```

This display lists all sub-directories and files that exist in a specified directory.

Object Filter
The list of objects may be filtered by object name. All values are interpreted as generic strings. For example, enter TCH in the object filter to see all objects with tch somewhere in the name. The filter is not case sensitive.

OPT
M – Migrate the object from the specified directory into the lowest application level on the system. A request will then be created for that object. The request can then be handled like all other requests in the Object Manager. If the object is a directory, and the directory contains files or sub-directories, you will be prompted with the choice to automatically migrate all files and/or directories as well. You can also limit the migration to include only directories/files that have been modified since a specific date/time.

S – Set the Root Directory for the Migration. Afterwards, you can use option 5 to drill down into the directory and its sub-directories and select to migrate specific files or directories, while retaining the path starting with the root directory.
For example: an Attribute is defined that specifies that an IFS object is to be installed into directory /tomcat. You could then use option S to set the root directory for the migration as directory webapps, which resides in directory /delivery. Afterwards, option 5 is used to select a file in directory /delivery/webapps. When the file is migrated, it will be moved from directory /delivery/webapps to directory /tomcat/webapps. This way, you only need to create an attribute for the uppermost directory of commonly changed objects in IFS.

5 – If the object is a file, then the contents of the file will be displayed. If the object is a directory, then this display will change to show all objects residing in the directory.

Attribute
MDCMS makes a best guess as to what the attribute should be. Enter a different value or press F4 to select from a list of IFS attributes, if necessary. If a Root Directory has been set, then the Attribute for the Root Directory will be used.

Function Keys:
**F2=Full Name** – Display the full name of an IFS Object or Directory. Place the cursor on the field before pressing F2.
**F12=Up** – Go up 1 directory in the path. If the currently displayed path is /, then MDCMS returns to the Object Manager.
**F13=Repeat Opt** – Repeat an option until end of list. For example, if 'M' was entered on the 4th line of the list and F13 was then pressed, lines 5 through the end would also have 'M' entered.
**F14=Repeat Attr** – Repeat an attribute. Place cursor on line for attribute to be repeated and press F14. For every object with a matching object type, this attribute will be inserted.

### 4.3.8 Request Linked Objects for Attribute

If the object just requested was for an attribute that contains Linked Checkout definitions, then MDCMS will automatically present a list of linked objects to be considered for checkout.

```
CMC123                          COMPANY NAME                          20.04.13
SCRN1               Request Linked Objects for Attribute              21:41:56

 Object: RC0300                          Appl: MD     Project: V7
   Type: *PGM          Attr: RMCBL         Lvl: 10     RFP Nr.:

Type options, press Enter.
 D=Delete   M=Modify   N=New   R=Recompile   U=Update   5=View Request

Opt Object                Type    Attribute  Description
 _  C.OBJ.LST____________ *DTAGRP RFUN
 _  RC0300_______________ *DTAGRP RSCREEN
 _  RC0300IO_____________ *SOURCE RLBL       Screen Definition Copybook









                                                                    Bottom
F2=Full Name   F3=Exit   F13=Repeat Opt
```

Opt
D=Delete – Create a Request to delete the Object
M=Modify – Create a Request to modify an existing object
N=New – Create a Request to create a new object
R=Recompile – Create a Request to recompile an existing object
U=Update – Create a Request to update an existing object
5=View Request – View the details of an already requested object.

Object
MDCMS automatically generates the name of the linked object, based on the name of the parent object in combination with the Naming Pattern definition for the linked attribute. The object names can be modified before pressing Enter to request them.

Function Keys:
**F2=Full Name** – Place cursor on an Object field and press F2 to view/edit the complete value
**F13=Repeat Opt** – Repeat an option until end of list. Place cursor on line for option to be repeated (including a blank option) and press F13. Every line after the line containing the cursor will receive the same option.

## 4.4 Process Request Records

### 4.4.1 2 – Edit Request Details

An entry of '2' for an existing request will allow the user to change the request parameters.

```
CMC100                          COMPANY NAME                              4.09.06
SCRN3                       Edit Request Details                          10:37:02

Appl/Lvl: TEST 10  RFP:          Object: JAVAXREF
Project.:                          Type: *SQLTAB
Reason..: *MODIFY

Attribute  . .  SQLTABIFS_
Programmer . .  MMORGAN___
Sort Sequence.  _____
Source Name  .  JAVAXREF.sql_____________________________________________________
Object Desc  .  Admin - Invoice maintenance_____________________  *SAME,*BLANK
From Lvl . . .  __
From Obj Lib .  MMORGAN___
From Src Lib .  /home/mmorgan____________________________________________________
Data Origin  .  *SAME_____________________________  Name, *SAME, *MIGRATE, *NONE
Data Member  .  __________                          Name, *ALL, *FIRST
Use MDRapid  .  *DEFAULT                            *DEFAULT, *YES, *NO
Automatically Reapply Y/N:
 Journaling: Y  Constraints: Y  Triggers: Y

Enter=Confirm   F2=Full Name   F4=Browse   F8=Edit Projects for Request
```

Attribute
The MDCMS attribute may be changed, as long as the new attribute is of the same Object Type as the old attribute, and the target source or object for the attribute isn't already locked by another request.

Programmer
The programmer can be changed to a different user registered in MDSEC.

Sort Sequence
Object Requests are sorted by attribute compile sequence, sort sequence and object name. The sort sequence for the individual object can be entered here in case other objects of the same attribute compile sequence are dependent on this object. For SQL objects see the MD Best Practice – Managing SQL Entities guide for more information on automatic sorting.

Source Name
The source name may differ from the object name and can be modified here

Object Desc
The object description that is either currently on the object or that can be entered to be applied to the object when deployed.
*SAME – keep the same value for the object description when the object is created. If blank, then the object description will be set to the description of the object that it is replacing.
*BLANK – set the object description to be blank.

From Lvl
If more than one level migrates to the request level, a different level to migrate from can be selected

From Obj Lib/Src Lib/Src File
If the request is from the lowest level, the from location for the object (and source when applicable) can be changed.

Data Origin
When the request is for a file, existing data will by default be copied from the old version of the file to the new version of the file.

The origin can be one of the following:
*MIGRATE – the data in the file is migrated with the changed format for the file. This is the equivalent of having a *FILE request and a *DATA request in the same RFP.
*NONE – any existing data will not be retained. *NONE is required when changing the system attribute from PF to LF or from LF to PF.
*SAME (default) – any existing data in the file being replaced will be mapped to the new format for the file.
The system or SQL name of the file containing the data to copy from. The file must exist in the same target library as the file being modified.

Data Member
When the request is for a file, and the Data Origin is a different file, the member in the other file can be defined to copy from. This is particularly helpful when converting an existing multi-member DDS file to several new SQL tables, since SQL only allows for one member per table.

The member can be one of the following:
*ALL – all members in the file will be copied. This is only valid if the requested file is a DDS file.
*FIRST – the first member in the file will be copied.
The name of the member to copy from the Data Origin to the requested file.

Use MDRapid
Whether or not MDRapid, if licensed, should be used to copy data from the prior version of a file to the new version of the file, in order to significantly reduce the amount of time required during deployment.

*DEFAULT – MDRapid will be used, if the number of records in the file meet or exceed the minimum defined on the MDRapid Usage template.
*YES – use MDRapid for the copy/syncing of data, even if the current record count is less than the default minimum.
*NO – don't use MDRapid for the file deployment, even if the file would otherwise be qualified.

Automatically Reapply Journaling
Whether or not Journaling for a file should be automatically reapplied when the file is modified.

Automatically Reapply Constraints
Whether or not constraints for a file should be automatically reapplied when the file is modified.

Automatically Reapply Triggers
Whether or not system (non-SQL) triggers for a file should be automatically reapplied when the file is modified. Any SQL triggers that should be re-applied should be requested for recompile and placed on same RFP as the file.

Automatically Reapply LF Members
Whether or not existing members for a logical file should be automatically recreated when the file is modified.

### 4.4.2 4 – Delete Object Request

An entry of '4' will delete the request for an object modification. This is only allowed if the Status of the request record is currently '00 or '01', which means that the installation of the request is not yet in progress. A confirmation screen is displayed before the request is deleted.

If the request is for the lowest level on the system, the user may choose to delete the source and object from the programmer library. This allows for a cleaner developer environment.

### 4.4.3 5 – Display Request Details

The Option '5' will display all relevant information pertaining to the object request.

### 4.4.4 6 – Edit Projects for Request

An entry of '6' allows the user to change the list of Projects, Tasks, or Subtasks that the Request is assigned to. If the user has enough authority, they can also edit the details of the projects or add new Projects, Tasks or Subtasks.

### 4.4.5 7 – Rename Object Request

An entry of '7' will prompt the user for a new name for the requested object. The user may also let MDCMS automatically rename the source and object residing in the programmer's library.
Renaming is only allowed for new objects.

### 4.4.6 8 – Create Object

An entry of '8' will prompt the user to compile the object into their own library from the checked out source. This is useful for validating the source or for unit testing prior to submitting the RFP. This is only valid for object attributes defined with a source and object location or for ILE programs/service programs. The source must be checked out as New, Modify or Recompile from a level allowing check-out.

The compile process uses the Pre-Compile, Compile and Post-Compile commands defined for the attribute or specific object so that the object is created in exactly the same way as during a deployment.
In the case of SQL Constraints or Triggers, the Post-Installation commands are used instead of the Compile commands.

If compiling a physical file, any logical files over the physical that exist in the developer library will be automatically deleted. However, logical files in other libraries must be handled manually.

Library List
1 – The library list defined for the Job Description assigned to the Application Level is used
2 – The current library list for the job is used

Include Dev Library
Y – The developer object library for the request is added to the top of the library list to reference any objects in that library that may also have changed.
N – The developer object library is not added to the library list. If it is already in the library list, it will remain at the position it is in.

Object Exists
Y – The object already exists in the developer library and will be automatically deleted prior to the create process.
N – The object doesn't yet exist in the developer library

Show Create Log
The Create Log consists of job log entries and compile log entries written during the create process. In order for compile log entries to be written, the CRTxxxx command must include the option *EVENTF, if that option is available for the command.

The following options determine when the create log will be shown directly after processing the pre-compile and compile-commands:
E – if command exceptions occurred or the object didn't get created
Y – always
N - never

When the Create Log is displayed, the minimum severity can be set to filter out lower severity messages than the filter value.

### 4.4.7 9 – View Spooled File

An entry of '9' will display the most recent spooled file for the object. The spooled file will have been created during the compile of the object into the developer's library using option 8 or during the compile of the object during RFP processing.

### 4.4.8 A – Assign RFP

An 'A' entry in the option field will assign the RFP number entered in the RFP field to the Object Request record. The Status of the Request record must currently be 00 or UL. If the RFP is blank, the system will transfer the display to the RFP Select Display so that the user may add and/or select an RFP.

### 4.4.9 B – Bound Objects for Program

An entry of 'B' will allow the programmer to configure the list of Bound Modules and Service Programs for an ILE Program or Service Program.

This information will then be used when the program is created, assuming a compile command is defined for the attribute or object with the wildcards ##MODULE##, ##SRVPGM## and ##ENTMOD## (for programs).

If this option is not used before a program is created during installation, then MDCMS will use the current definition for the object in the migration library.

```
MDCCMSB                        MD Test Environment                          11.03.08
SCRN1                             Bound Modules                             17:18:30

 Program: ILEXREF     Type: *PGM       Attribute: ILEPGM

Type options, press Enter.
 M=Modify   4=Remove from List   E=Entry Module

Opt Module      Library   PEP Attribute  Description
 _  MDCDATR     TSTLIBMOD     CBLLE      MDXREF: calculate date range
 _  MDCDIRL     TSTLIBMOD  Y  CBLLE      MDCMS - view/select directory contents
 _  MDCIFSE     TSTLIBMOD     CBLLE      MD Check access of IFS object
 _  MDCIFST     TSTLIBMOD     CBLLE      MD Check type of IFS object
    __________  *LIBL
    __________  *LIBL
    __________  *LIBL
                                                                        Bottom
F3=Exit   F4=Browse   F8=Service Programs   F10=Create in Programmer Lib
```

Opt

**M=Modify** – Request the Module or Service Program for modification. The requested element will automatically be assigned to the same RFP and Project as the Program binding it.
**4=Remove from List** – Remove a Module or Service Program from the list
**E=Entry Module** – Designate a specific module to contain the PEP (Program Entry Procedure)

Module [or Service Program]
The name of a Module or Service Program to add to the list

Library
The current location of the Module or Service Program. MDCMS looks first in the developer library and then in the library list for the Level.

Attribute
The MDCMS attribute to use if requesting to modify the Module or Service Program

Function Keys:
**F3=Exit**
**F4=Browse**
**F8=Service Programs** – toggle the listing between Modules and Service Programs
**F10=Create in Programmer Lib** – create the program in the developer library, based on the currently defined list of bound modules and service programs. MDCMS will use the version of each module or service program based on the found library location. It is not necessary to create a program in the check-out library, but it can be useful for testing purposes.

### 4.4.10 C – Commands/Scripts for Object

An entry of 'C' activates the MD Detail Command Maintenance function for a specific object. This function is used to define IBMi commands that can be executed during the installation of objects into an application level. This function is also used to override the default compile, data, and update commands defined at the attribute level.

```
CMC192                              COMPANY NAME                                4.09.06
SCRN1                          Commands for this Object                        15:54:04

Appl/Lvl: ACCT 10  Object: ACRPT01

Type options, press Enter.
 2=Edit   3=Copy   4=Delete   5=View

 Opt Type Seq  Command String
  _    1   10   OVRDBF FILE(ACCTPF1) TOFILE(PRODLIB/ACCTPF2)
  _    3   10   RMVM PRODLIB/ACCTPF1 XXXTEST


                                                                          Bottom
 F3=Exit   F6=Add   F12=Previous
```

Type

C – Compile Command. Will be used to compile the object from source code. The C command override uses the compilation command as defined in the System Settings for the attribute as a default model. The command can then be changed for the compile process. This override will then be used to compile the specific object rather than the default compile command for the attribute.

D – Data Copy Command

- *FILE attributes – determines how the existing records in a physical file should be mapped to the new format when a physical file is installed.

  Data Transformation must be disabled for the file in order for MDCMS to consider a Data Copy command. It can be disabled using option F=File Data Transformation from the Object Manager and then pressing F10.

  The data copy command can use CPYF, in which case the parameters FROMMBR, TOMBR and MBROPT are considered. All other keywords in the CPYF command are ignored. Only 1 command may be defined for *FILE mapping.

  Other commands, such as RUNSQLSTM or CALL, may also be used for mapping the data in a changed file from the old format to the new format. If such a command is used, it is critical to use the ##OFF wildcards so that MDCMS can correctly provide the location of the old file format.

- *DATA attributes – determines how and which data records should be copied from one environment to another. All keywords except FROMFILE and TOFILE are then used when the CPYF command is run.
  Only the CPYF command is permitted for *DATA attributes

U – Update Command. The U command override will be used to update the existing object rather that the U commands defined at the attribute level. An example would be the UPDPGM command to update existing ILE programs. The Update Command may also be used to update an existing object using the modified source. An example for this would be the CHGPF command to update the format of a physical file for a modified DDS source. In this case, the source would be checked out using the M (modify) option and at installation time, the Update command would be used.
1 – Pre-Compile Command runs prior to compiling objects
P – Post-Compile Command runs after compiling objects
2 – Pre-Installation Command runs prior to installing objects into the environment
3 – Post-Installation Command runs after the installation of objects is complete.
O – Data Copy during Send runs for *DATA requests only during the copy of data to send to a remote location, determining which data records should be sent to a remote location based on the INCCHAR and INCREL parameters of the CPYF command. The command is run separately for each target location. Wildcard ##SVFLOC## could, for example, be used to filter by the location ID, if a column in the table contains that value.

Ignore Errors
Y – Continue with RFP processing even if the command fails. Flag will always be Y for type 3.
N – Cease and Rollback RFP processing if the command fails

Keep MD Libs in Libl
N – The MD Libraries (MDCMS and MDXREF) are removed from the library list before the command is invoked. This assures that any MD Objects with the same name as your objects are not used.
Y – The MD Libraries are left in the library list. This is necessary when MD Objects, such as interface programs, MDMAIL or MDMAILF, are needed to process the command.

Reuse Command
Y – The next time that this same object is checked out, this command will be reapplied to the request
N – This command is intended to be used only once for this object

Wildcards in SQL
N – The SQL member or IFS file used by a RUNSQLSTM command does not contain MDCMS wildcards – no conversion will occur
Y – The SQL member or IFS file used by a RUNSQLSTM command contains MDCMS wildcards – MDCMS will create a temporary copy of the script and convert the wildcards in the copy to the actual runtime values.

This flag is only relevant for RUNSQLSTM commands. The wildcards embedded in the SQL script may be delimited by ++ instead of ## to avoid code page issues.

Sequence
The sort sequence of the command at run time, in case multiple commands for the same type are defined.

Location to run Cmd
The location that the command should be run, allowing for commands to be run only for certain environments. Enter a valid Location ID or press F4 to select a location from the list.

Otherwise, select from one of the following special values:
- *ALL – run the command on every level in the migration path
- *LOCAL – run the command on any level on this system
- *LOCLVL – run the command only for this level
- *REMOTE – run the command on any level everywhere but this system

Run as User Profile
By default, commands executed during an RFP run under the profile of the user profile defined on the job description of the application level for the RFP. If a specific command should run under the authorities of a different user, that user ID can be entered here. As a safety precaution, the user placing a value in this field must have authority to use that entered user profile in order to save the command definition.

Command
The IBM i or user-defined command to be performed. Enter the name of the command and then press F4 to fill in the keywords.

Some wildcard parameter values may be used and are substituted by MDCMS at run-time. The wildcard value may be typed directly into the command or the cursor may be positioned in the command and F7 pressed to insert the value from a list. The full list of values are in this manual in the Attribute Command section.

**Scripts**

If the MDCMS object type for an object is *IFS or *REMOTE, then scripts can be applied to the object to be run before or after the object is deployed to IFS or a remote server.

To manage the scripts for an object, use option C for Commands/Scripts from the object manager and press F10 from the command listing.

```
CMC171                              COMPANY NAME                              4.09.15
SCRN1                          Scripts for this Object                       15:54:04

Appl/Lvl: ACCT 10  Object: webApp.war

Type options, press Enter.
 2=Edit   3=Copy   4=Delete   5=View   S=Script Content

 Opt Type Seq Script
  _   2    1  /ifs-stop-tomcat.sh
  _   3    1  /ifs-start-tomcat.sh


                                                                          Bottom
 F3=Exit   F6=Add   F12=Previous
```

Type
The Type value designates when a script should run

| | | |
|---|---|---|
| 2 | Pre-Installation | runs prior to installing objects into the environment |
| 3 | Post-Installation | runs after the installation of objects is complete |

Sequence
The sort sequence of the script at run time, in case multiple scripts for the same type are defined.

Ignore Errors
Y – Continue with RFP processing even if the script fails.
Flag will always be Y for type 3.
N – Cease and Rollback RFP processing if the script fails

Reuse Script
Y – The next time that this same object is checked out, this script will be reapplied to the request
N – This script is intended to be used only once for this object

Replace Wildcards
N – The script doesn't contain wildcard values to be replaced by runtime values when executed
Y – Replace wildcard values in the script at run time

Loc. to run Script
The location that the command should be run, allowing for commands to be run only for certain environments. Enter a valid Location ID or press F4 to select a location from the list.

Otherwise, select from one of the following special values:
*ALL – run the command on every level in the migration path
*LOCAL – run the command on any level on this system
*LOCLVL – run the command only for this level
*REMOTE – run the command on any level everywhere but this system

Run as User
The user profile that the IFS script will run under within QSHELL

Wait for Response
Y – MDCMS waits until the Remote server confirms completion of the script execution
N – MDCMS continues without waiting for a response from the remote server

Submit Job
Y – Submit the IFS Script execution to a separate job. MDCMS will not wait for a response in this case, but instead continue with RFP processing.
N – the ifs script execution runs within this job

Job Name
The name of the submitted job that will process the IFS script

Job Queue
The name and library of the Job Queue to receive the submitted job

Script Subfolder
The relative path of the script, if it isn't directly located in the script root folder.

Script
The name of the script file located in IFS

### 4.4.11 D – MDRapid Data Copy Status

A 'D' entry in the option field will result in seeing the copy status of all physical and logical files that require MDRapid processing once copy is pending until such time that the RFP is installed. The status can also be viewed from the RFP after installation to check the amount of time that was required for the copy.

### 4.4.12 F – File Data Transformation

An 'F' entry in the option field will bring up the Data Transformation screen. This is only relevant for physical files or SQL tables that are checked out for modify or recompile.

Data Transformation is used, by default, to map the data in a file from the prior format for the file to the new format during the installation of the file.

Data Transformation performs a dynamic SQL insert to populate the new version.
The results for each column, by default, are the contents of the same column name in the prior version, if the prior column type can be cast to the new column type. For new or invalid columns, MDCMS automatically fills with blank, 0 or null, depending on column properties.

In order to view/customize the data transformation values for a file, the new and old version of the file must exist. If the file is checked out for modification, use option 8=Create Object first to create the file in the developer library prior to using option F.

The following screen lists each column in the new format of the file, it's format and the new value of the column when the transformation occurs.

```
MDCRAPF                          COMPANY NAME                          29.01.18
SCRN1                        Data Transformation                       15:14:50
File...: INVOICE_PARTNERS
Enabled: Y         Filter by Field: __________  Type: _  Desc: ________________

Type options, press Enter.
 2=Edit  4=Remove Custom Result  5=Display

Opt Field Name   Len Typ Dec SQL Name                  S Result Value
 _  INVNBR         9  B      INVOICE_NUMBER           D INVNBR
 _  PARNBR         9  B      PARTNER_NUMBER           D PARNBR
 _  INVAMT        11  P   2  INVOICE_AMOUNT             INVAMT
 _  CREATED       26  Z                               C DATETIME_TO_TIMESTAM
 _  CREATED_BY    10  A                               C CRTUSR
 _  CHANGED       26  Z                               C DATETIME_TO_TIMESTAM
 _  CHANGED_BY    10  A                               N NULL



                                                                      Bottom
F3=Exit  F7=View SQL  F8=New/Diff/Custom only  F9=Descriptions  F10=Disable
```

Enabled
Y – When the file is installed, Data Transformation will be used to map the existing records to the new format for the file.
N – A Data Copy Command will be used to map the records. If a Data Copy Command isn't defined, then a CPYF *MAP/*DROP will be performed.

A file is enabled by default, use F10 to toggle between disabled and enabled.

Filter by Field
Enter a value to limit the list of fields to field names or SQL names that contain that value

Filter by Type
Enter a field type to limit the list of fields to that type

Filter by Desc
Enter a value to limit the list of fields to field descriptions that contain that value

Opt
2 – Edit – add or change the custom Result value for a field
4 – Remove Custom Result – return the Result value to the default value for the field
5 – Display – view all information about the Data Transformation for the Field

Function Keys
F7 – View the SQL syntax for the INSERT statement that will be used for the copy based on the current transformation definitions for the file. This can then be copied to an interactive SQL session for troubleshooting purposes.
F8 – toggle the listing between all fields in the new format of the file and only those fields that are new, have a different format, or have a custom Result Value.
F9 – toggle the listing between showing the Field Description and the SQL Name
F10 – toggle Data Transformation for the file between Enabled and Disabled

Result Value
This is the SQL syntax containing the value for the field in the new version of the file for each record selected from the old version of the file.

When Data Transformation is performed, MDCMS runs an SQL insert into new file select <Result Value> from old file.

The Result Value can be any valid SQL value, containing any combination of constants, functions, expressions and field names.

Basic SQL syntax checking is done immediately when a custom value is entered. Additionally, full validation of the insert statement occurs during the Compile phase of the RFP, in order to catch any issues before the actual installation occurs.

### 4.4.13 H – Installation History

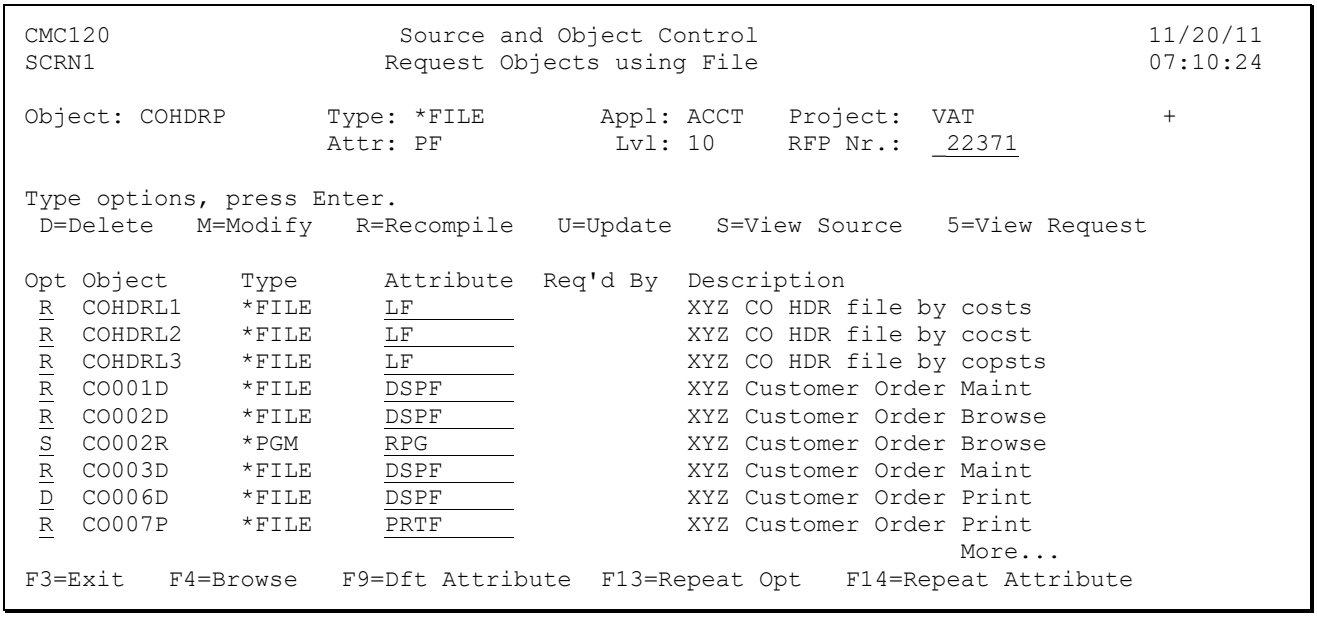
An 'H' entry in the option field will result in directly navigating to the Installation History listing for the object. This option is available for new or existing request records in the display.

### 4.4.14 I – Include Related Objects

This option is used to request objects that 1) are dependent upon a requested file, ILE module, Service Program, or copybook or 2) invoke a requested program, command, query, function, procedure or menu. **MDXREF** is used to identify the objects.

Example 1: the length of a field in file COHDRP needs to be changed. The user would first select COHDRP for modification. Then, the user would place an 'I' in front of the request record so that all of the objects that use COHDRP (or other files that use COHDRP, such as logical files) can be selected for modification, deletion, or recompilation.

Example 2: the linkage section of a COBOL program needs to be changed. The user would first select the program for modification. Then, the user would place an 'I' in front of the request record so that all of the objects that invoke the program can be selected for modification, deletion, or recompilation.



```
CMC120                    Source and Object Control                          11/20/11
SCRN1                   Request Objects using File                           07:10:24

Object: COHDRP       Type: *FILE        Appl: ACCT   Project:  VAT             +
                     Attr: PF            Lvl: 10     RFP Nr.:  22371

Type options, press Enter.
 D=Delete   M=Modify   R=Recompile   U=Update   S=View Source   5=View Request

Opt Object     Type      Attribute  Req'd By  Description
 R  COHDRL1    *FILE     LF                   XYZ CO HDR file by costs
 R  COHDRL2    *FILE     LF                   XYZ CO HDR file by cocst
 R  COHDRL3    *FILE     LF                   XYZ CO HDR file by copsts
 R  CO001D     *FILE     DSPF                 XYZ Customer Order Maint
 R  CO002D     *FILE     DSPF                 XYZ Customer Order Browse
 S  CO002R     *PGM      RPG                  XYZ Customer Order Browse
 R  CO003D     *FILE     DSPF                 XYZ Customer Order Maint
 D  CO006D     *FILE     DSPF                 XYZ Customer Order Print
 R  CO007P     *FILE     PRTF                 XYZ Customer Order Print
                                                                  More...
F3=Exit   F4=Browse   F9=Dft Attribute  F13=Repeat Opt   F14=Repeat Attribute
```

This display lists all objects that somehow reference a selected file or invoke a selected object.

OPT
D=Delete – Delete the object and source for the object. When the promotion occurs that causes the deletion, the source or object is archived prior to deletion (if archiving is turned on for the level.) Any cross-reference information about the object is also removed at promotion time.
M=Modify – Modify the object (and source used to create object).
R=Recompile – Recompile an object from the existing source at the requested level. This can be requested even when work is in progress for the source.
U=Update – Update the existing object
S=View Source – View the source code for the object.
5=View Request – View the details of an already requested object.

Function Keys:
**Enter=Confirm** – Process the Request selections for the currently listed Application. If other Applications are linked to the Base Application and references to the Object are found, a list references for each Linked Application will be displayed. A separate RFP can be selected for each Application by changing the number at the upper right of the screen.

**F3=Exit**
**F4=Browse**
**F9=Dft Attribute** – Default Attribute will be set to be used for new objects with same system attribute.
**F13=Repeat Opt** – Repeat an option until end of list. For example, if 'R' was entered on the 4th line of the list and F13 was then pressed, lines 5 through the end would also have 'R' entered.
**F14=Repeat Attribute** – Repeat an attribute. Place cursor on line for attribute to be repeated and press F14. For every object with a matching object type, this attribute will be inserted.

### 4.4.15 L – Lock Object Request

The Option 'L' will lock a requested object so that other users are unable to install a different request of the same object. A lock will only be granted to the request if the object is not already locked by another request.

### 4.4.16 M – Merge Source Updates

The Option 'M' for checked out source provides the ability to compare and merge source code from another member.

**Member Selection Fields**:

Location
*LOCAL – the other member is located on the same system
Synchronization Location – The location of a remote system containing the other member

Source File
*TGTFIL – the source file name is identical to the name of the source file of the checked out member
Source File – The name of the source file containing the other member

Library
*TGTLIB – the source library name is identical to the name of the source library of the checked out member
Source Library – The name of the source library containing the other member

Member
*TGTMBR – the source member name is identical to the name of the checked out member
Source Member – The name of the other member

**Compare/Merge Screen**:

If the 2 members are identical, a message is returned stating this and the code is not displayed.
If they are different, the top half of the screen displays the checked out member and the bottom half displays the other member. The code will positioned to the first difference between the 2 members and the difference will be highlighted.
Press F14 to merge all differences from the other member into the checked out member.
Press F15 to merge only the highlighted difference from the other member into the checked out member.
Press F16 to position the source code to the next difference

### 4.4.17 P – PDM/IFS-links

The Option 'P' will begin the Work with Members[or Objects] Using PDM display for the specific source member or, for the specific object (when source is not applicable).
This option is valid as long as the source/object is requested for modification and has not yet been submitted for installation.

For IFS objects, the Work with Object Links display is presented.

### 4.4.18 R – Remove Object from RFP

An entry of 'R' will remove the assigned RFP number from the object. This is only allowed if the Status of the request record is currently '01', which means that the request has been assigned a promotion number that is not yet in progress. A confirmation screen is displayed before the RFP number is removed.

### 4.4.19 S – View/Edit Source

Option 'S' will open the IBM editor for the source based on the type and attribute of the source.

For IFS – The Stream file editor will be opened

For Message Descriptions, S will start a WRKMSGF session for the file that the message description resides in.

For Source Members, the Source Entry Utility (SEU) is invoked for the editor based on the source member attribute.

A user may edit the source if it is requested for modification by that user and if the request is for a level flagged as a Check-out level. Otherwise, the user will only be allowed to view the contents of the source.

### 4.4.20 U – Unlock Object Request

The Option 'U' will unlock a locked object request, which allows another user to request the same object.

### 4.4.21 V – Version Conflict Resolution

This option is used to manage resolution of objects belonging to multiple versions of the same Application. Conflict Resolution is automatically prompted for an object when it is checked out for New, Modify or Delete from a level that other levels are based on. In the case of Modify or Delete, the prompt is only given when the object also exists in at least one of the dependant levels.

Since Resolution may not be possible immediately when an object is checked out, or to view/change the status of Resolution, it can be managed at any time by using option V for an object showing a Resolution Status in Object Manager or by using option V for an RFP to see all relevant objects in the RFP in one view.

```
CMC175                            COMPANY NAME                          17.03.15
SCRN1                     Version Conflict Resolution                   20:58:07

Appl: TEST  Lvl: 30  RFP: 2000018 Plex import
                                                  Auto-Gen/Assign RFP: Y  Y/N

Type options, press Enter.
 5=Details  B=Bind  C=Clr  D=Delete  I=Ignore  L=Ignore Lvl  M=Modify  R=Recomp
 U=Update
                                  Ins Obj Src            Request
Opt Object       Type    Rsn Status Lvl Lvl Lvl Attribute  Fnd Bnd Rsn     RFP
 _  MDAPAR       *FILE    M  Open    31  31  31 PF          N   N
 _  MDAPAR       *FILE    M  Reslvd  32  32  32 PF          Y   Y   M  2000024

                                                                      Bottom
F3=Exit    F5=Refresh    F13=Repeat Opt
```

This display lists all objects that somehow reference a selected file or invoke a selected object.

OPT

5=Details – View extensive details about this request and the Object in the depending version

B=Bind – Resolve the conflict by binding this request to an existing request for the depending version

C=Clr – Clear the Resolution Status, which returns the status to Open

D=Delete – Request to Delete the Object in the depending version. MDCMS automatically binds the new Delete request to this request and sets the status to Resolved.

I=Ignore – Ignore the Conflict between this Object and the depending version for entire migration path. MDSEC authority to code 36 for application required.

L=Ignore Lvl – Ignore the Conflict between this Object and the depending version for this level only. Status will return to Open for next level in migration path. MDSEC authority to code 36 for application required.

M=Modify – Request to Modify the Object in the depending version. MDCMS automatically binds the new Modify request to this request and sets the status to Resolved.

R=Recomp – Request to Recompile the Object in the depending version. MDCMS automatically binds the new Recompile request to this request and sets the status to Resolved.

U=Update – Request to Update the Object in the depending version. MDCMS automatically binds the new Update request to this request and sets the status to Resolved.

Auto-Gen/Assign RFP

When an object for a depending version is requested for Modify, Delete, Recompile or Update, it can be automatically assigned to an RFP for that level with the same description as the RFP description as this request. If an open RFP for the level and description is not found, it is automatically created. This is only applicable if this request is assigned to an RFP.

Status

Ignore – Conflict ignored between this object and the depending version of the object and will continue to be ignored throughout the migration path.

TmpIgn - Conflict ignored between this object and the depending version of the object, but will be reset to Open status at next level.

Open - Conflict Resolution has not yet occurred for this version. If the Level requires resolution, the RFP cannot be submitted until Resolution occurs.
Reslvd - Conflict Resolution is completed for this version.

Ins Lvl
The level number of the other version

Obj Lvl
The level number where the object for the other version was found. MDCMS first searches in that level, then in the chain for that level, then in the chain of levels it is based on. This helps to indicate if the object already exists for that version when delta levels are used.

Src Lvl
The level number where the source for the other version was found. MDCMS first searches in that level, then in the chain for that level, then in the chain of levels it is based on. This helps to indicate if the object already exists for that version when delta levels are used.

Attribute
The MDCMS attribute for the object

Request Fnd
If an active request for the object in the depending level already exists.

Request Bnd
If an active request for the object is bound to this request

Function Keys:
**F3=Exit**
**F13=Repeat Opt** – Repeat an option until end of list. For example, if 'R' was entered on the 4th line of the list and F13 was then pressed, lines 5 through the end would also have 'R' entered.

### 4.4.22 X – MDXREF Information

The Option 'X' will result in directly navigating to the MDXREF Cross-Reference screen with the search criteria pre-filled with the object name, application and level.

## 4.5 MDADDREQ – Generate Object Request Records command

MDCMS is delivered with a command-based API that allows external tools or applications to create Object Requests within MDCMS.

The MDCMS command is named ***MDADDREQ*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your tool, you can also directly call program ***MDLAREQ*** in library MDCMS. In this case, be certain that the parameter order and formats sent to the program exactly match the parameters in command MDADDREQ.

All MDADDREQ API transactions are logged to file MDCMS/MDDAREQ.

### 4.5.1 MDADDREQ Parameter Table

| KEYWORD | Description | Type | Length |
|---|---|---|---|
| APPL | Application | CHAR | 4 |
| LVL | Level | INTEGER | 2 |
| OBJT | Object Type | CHAR | 7 |
| ATTR | MDCMS Attribute | CHAR | 10 |
| OBJN | Object Name | CHAR | 80 |
| RPTH | Object Relative Path | CHAR | 240 |
| SRCN | Source Name | CHAR | 80 |
| RSN | Request Reason | CHAR | 10 |
| USER | Programmer | CHAR | 10 |
| FOLB | From Object Library | CHAR | 240 |
| FSLB | From Source Library | CHAR | 240 |
| FSFL | From Source File | CHAR | 10 |
| COPY | Copy from Env | CHAR | 4 |
| PROJ | Project | CHAR | 12 |
| TASK | Task | INTEGER | 5 |
| STSK | Subtask | INTEGER | 5 |
| ARFP | Assign RFP | CHAR | 4 |
| RFP | RFP Number | INTEGER | 7 |
| RFPD | RFP Description | CHAR | 160 |
| CREQ | Create Requests for Next Level | CHAR | 4 |
| AREQ | Assign RFP to Next Level Reqs | CHAR | 7 |
| SREQ | Place RFP in Send List | CHAR | 7 |
| LOCK | Lock Request | CHAR | 4 |
| CSQO | Compile Subsequence | INTEGER | 5 |
| DATA | Data Origin | CHAR | 60 |
| DMBR | Data Member to Copy | CHAR | 10 |
| RPGM | Use MDRapid | CHAR | 10 |
| RJRN | Reapply Journals | CHAR | 4 |
| RCST | Reapply Constraints | CHAR | 4 |
| RTRG | Reapply Triggers | CHAR | 4 |
| RLFM | Reapply LF Members | CHAR | 4 |
| DIR | Is IFS Directory | CHAR | 4 |
| ENV | MDCMS Environment ID | CHAR | 4 |
| VREF | Vendor Reference ID | CHAR | 20 |
| EMSG | Exception Message | CHAR | 7 |

### 4.5.2 Detailed Description of MDADDREQ Parameters

**Application (APPL)**

The target MDCMS Application code for the request
This is a required parameter.

**Level (LVL)**

The target MDCMS Promotion Level for the request that allows check-outs
This is a required parameter.

**Object Type (OBJT)**

The System or MDCMS Object Type code for the Object. For example: *PGM for a program or *IFS for an IFS file.
This is a required parameter.

**MDCMS Attribute (ATTR)**

The MDCMS Attribute code that identifies the behaviour and target locations for the requested object.
This is a required parameter.

**Object Name (OBJN)**

The name of the Object to be requested.
For *SOURCE, this would be the name of the member
For *MSGD, this would be the name of the Message ID
For *DTAGRP, this would be the value of the record key(s)

This is a required parameter.

**Relative Path (RPTH)**

Specifies the relative portion of an IFS path, starting with /, that will be deployed with the object.
For example, if the *IFS attribute has a target fixed directory defined as /srv/dev and this object should be deployed to /srv/dev/app1/dist, then the value of RPTH should be /app1/dist.

**Member/IFS File Name (SRCN)**

Specifies the name of the Source Member or IFS Source File to be requested. This parameter is ignored if attribute defined as having no source.

**OBJ* - The name of the source is the same as the name of the object

**Request Reason (RSN)**

The reason for the object request

*MIGRATE - a source and/or object will be migrated into the selected application level

*DELETE - an existing object will be deleted

*RECOMPILE - an object will be recompiled based on the currently active source for that environment without the source being modified

*UPDATE - this is intended for ILE programs to bind the current modules and service programs to the program. A U command (such as CHGPGM) must be defined for the attribute.

**Programmer (USER)**

Specifies the user profile to be indicated as the programmer for the request. If this command generates an RFP, the owner of the RFP will also be this user

*USER - the current user profile of the job invoking this command is the user

**From Object Library/Path (FOLB)**

Specifies the library or IFS path that contains the object to be migrated to the specified level. The library should be a developer or team library that is not managed by MDCMS.
If the attribute contains source only, then enter the library/path containing the source.
If the object resides in IFS, provide the entire directory path starting with /.

*USER - the library name is the same as the user defined for parameter USER

**From Source Library/Path (FSLB)**

Specifies the library or IFS path that contains the source for the object that is to be migrated to the specified level. The library should be a developer or team library that is not managed by MDCMS. This parameter is ignored if attribute is defined as having no source.

*OBJLIB - the library containing the source is the same library that contains the object

**From Source File (FSFL)**

Specifies the source file containing the source member to be migrated. This parameter is ignored if attribute defined as having no source.

*ATR - the Source File to migrate from has the same name as the source file defined for the attribute.

**Copy Source/Object from Env (COPY)**

Specifies if the source or object should be copied from the target environment to the library from which to be migrated from. This parameter is only considered for Reason *MIGRATE.
If the attribute defines a source and object location, only the source will be copied.
If the source or object already exists in the From Library, it will not be replaced by the source or object in the target environment.

*NO - the Source or Object will be manually placed in the From Library prior to migration.

*YES - MDCMS will copy the Source or Object from the Target Environment to the From Library, if it doesn't already exist in the From Library.

**Project (PROJ)**

Specifies the Project to assign to the Request. The project, if entered, must already exist and be in an open status. If the project is not yet authorized, then the user must have MDSEC authority to authorize the Project and then MDCMS will do so automatically.

**Task (TASK)**

Specifies the Project Task to attribute to the Request. The task, if entered, must already exist and be in an open status.

**Subtask (STSK)**

Specifies the Subtask to attribute to the Request. The Subtask, if entered, must already exist and be in an open status.

**Assign Request to RFP (ARFP)**

Specifies if the request should be immediately assigned to an RFP and the method of determining the RFP.

*NO - The request will be created without being assigned to an RFP

*YES - The request will be assigned to the RFP number based on parameter RFP

*AUTO - MDCMS searches for an open RFP matching the Application, Level, User and Description values entered for this command. If an RFP is found the Request will be assigned to that RFP. If an RFP is not found, a new RFP will be created.

*NEW - A new RFP will be created for the Application, Level, User and Description values entered for this command.

**Existing RFP Number (RFP)**

Specifies the RFP to assign to the Request. Will only be used if parameter ARFP is set to *YES.

**RFP Description (RFPD)**

The description to be used for a new RFP or to search for an existing RFP. Will only be used if parameter ARFP is *AUTO or *NEW.

**Create Requests for Next Level (CREQ)**

If a level exists to migrate after this target level, this parameter specifies if the object requests should be generated for that level once this level's RFP is complete. This parameter will only be applied to the RFP if it is created during the processing of this command.

*YES - Requests for the next level will be generated upon completion of the RFP into this level.

*NO - Requests for the next level will not be generated.

**Assign RFP to Next Level Reqs (AREQ)**

If a level exists to migrate after this target level, this parameter specifies if the generated object requests should be assigned to an RFP. This parameter will only be applied to the RFP if it is created during the processing of this command.

*YES - Requests for the next level will be assigned to a new RFP number with the same description as this RFP's number.

*NO - No, requests for the next level will not be assigned to a new RFP.

*MANUAL - Requests for the next level will be assigned to a new RFP, but the RFP will not be automatically submitted, even if the next level is set to automatically submit RFPs by default.

**Place RFP in Send List (SREQ)**

If distribution levels are defined for this level, this parameter specifies if the RFP should be placed in the Send List. This parameter will only be applied to the RFP if it is created during the processing of this command.

*YES - The RFP will be placed in the send list upon completion of the installation.

*NO - The RFP will not be placed in the send list.

*MANUAL - The RFP will be placed in the send list, but the RFP will not be automatically sent, even if the level is set to automatically send RFPs by default.

**Lock Request (LOCK)**

Specifies whether or not the Request will be placed in Locked status

*YES - The Source/Object will be locked for check-out by this request. The Source or Object may not already be locked by another request for this Request to be created.

*NO - The Request will be created in Unlocked status. Other requests for the same Source or Object may exist.

**Compile Subsequence (CSQO)**

Specifies the sequence for compiling (lowest first) for objects in same RFP that have the same primary sort sequence in order to handle potential dependency issues. This parameter is not relevant for *IFS Objects.

**Data Origin for Physical Files or SQL Tables (DATA)**

Specifies the origin of the data that should be copied into a new or modified physical file/SQL Table

*SAME - The data is mapped from the old format of the modified file to the new format of the file of the same name/target library.

*MIGRATE - The data is migrated with the file from the check-out location to the target library.

*NONE - The data is not migrated. The new file format will be empty. *NONE is required for a logical file if it is replacing a physical file.

*character-value* - Specify the name of the file from which to migrate the data. The data origin file must exist in the same library as the target file at the time of installation.

**Data Member to Copy (DMBR)**

Specifies the member(s) to copy to the new version of a physical file/SQL Table or to migrate from the prior environment.

*ALL – All existing members are included for the copy. If the target is an SQL Table, only the first member will be copied.

*FIRST – The first member in the originating file is copied. Any other members are omitted.

*character-value* – The name of the specific member to be copied from the originating file. Any other members are omitted.

**Use MDRapid (RPGM)**

Specifies if MDRapid should be used to map the data from the old version of a file to the new version.

*DFT - MDRapid will be used if the number of records in the file is at least the number in the MDRapid template for the attribute. Otherwise not.

*YES - MDRapid will be used for the file, even if it wouldn't qualify for MDRapid processing.

*NO - MDRapid will not be used for the file, even if it would qualify for MDRapid processing.

**Automatically Reapply Journaling (RJRN)**

Specifies if the new version of a table or access path should have the journaling attributes applied to it that belonged to the file that it replaced.

*DFT - The default defined for the Application is used

*YES - If journaling was used on the prior version of the file, it will be applied to the new version.

*NO - Journaling will not be automatically reapplied. Commands run during the installation, or external processes, will determine the definition.

**Automatically Reapply Constraints (RCST)**

Specifies if the new version of a table should have the constraints applied to it that belonged to the table that it replaced.

*DFT - The default defined for the Application is used

*YES - If constraints were used for the prior version of the table, they will be applied to the new version.

*NO - Constraints will not be automatically reapplied. Commands run during the installation, or external processes, will determine the definition.

**Automatically Reapply Triggers (RTRG)**

Specifies if the new version of a table should have the system (non-SQL) triggers applied to it that belonged to the table that it replaced.

*DFT - The default defined for the Application is used

*YES - If SQL triggers were used for the prior version of the table, they will be applied to the new version. Any SQL triggers that should be re-applied should be requested for recompile and placed on same RFP as the file.

*NO - Triggers will not be automatically reapplied. Commands run during the installation, or external processes, will determine the definition.

**Automatically Reapply Logical File Members (RLFM)**

Specifies if the new version of a logical file should have the members added to it that belonged to the logical file that it replaced.

*DFT - The default defined for the Application is used

*YES - Any members that existed for the prior version of the logical file will be added to the new version.

*NO - Members will not be automatically reapplied. Commands run during the installation, or external processes, will determine the definition.

**IFS Object is a Directory (DIR)**

Specifies whether or not the Request of an object of type *IFS is a directory.

*NO - The Requested Object is not an IFS Directory

*YES - The Requested Object is an IFS Directory

**Environment ID (ENV)**

Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.

*DFT - The default environment will be used. This correlates to library MDCMS.

**Vendor Reference ID (VREF)**

Specifies the Vendor Generated Identifier in order for an external process to easily identify the transaction record in the MDDAREQ table. Any value up to 20 characters in length can be used.

**Exception Message Returned (EMSG)**

Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.

*DIAG - A diagnostic message will be placed in the calling program's message queue in the following format:

MDADDREQ Exception. Object=<OBJN>, Vendor Reference=<VREF>, Reason=<the error reason>

If the Vendor Reference isn't passed to MDADDREQ, it won't be included in the diagnostic message.

*ESCAPE - The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.

*NONE - An exception message will not be returned to the calling program's message queue.

### 4.5.3 MDDAREQ EXAMPLE for invoking API and retrieving exception details

This example is a snippet of CL source that tries to create a new request for an SQL Table and add the request to an auto-generated RFP based on the description. The CL then monitors for an exception and retrieves the details of the exception for the diagnostic message.

```
DCL VAR(&KEY) TYPE(*CHAR) LEN(4)
DCL VAR(&MSG) TYPE(*CHAR) LEN(132)

MDADDREQ APPL(TEST) LVL(10) OBJT(*SQLTAB) ATTR(SQLTABIFS)  +
         OBJN('CUSTOMER_TABLE') SRCN('CUSTOMER_TABLE.sql') +
         USER(MMORGAN) FSLB('/home/mmorgan/source') PROJ(MODERNIZE) +
         ARFP(*AUTO) RFPD('modernize customer table') DATA(CUSTTAB) +
         VREF(A123CX) EMSG(*ESCAPE) EMSG(*ESCAPE)
MONMSG MSGID(CPF0001) EXEC(DO)
   RCVMSG MSGTYPE(*LAST) RMV(*NO) KEYVAR(&KEY)
   RCVMSG MSGTYPE(*PRV) MSGKEY(&KEY) RMV(*NO) KEYVAR(&KEY) MSG(&MSG)
ENDDO
```

## 4.6 MDADDCMD – Add Command to Object Request command

MDCMS is delivered with a command-based API that allows external tools or applications to add object-level commands to existing Object Requests within MDCMS.

The MDCMS command is named ***MDADDCMD*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your tool, you can also directly call program ***MDLACMD*** in library MDCMS. In this case, be certain that the parameter order and formats sent to the program exactly match the parameters in command MDADDCMD.

All MDADDCMD API transactions are logged to file MDCMS/MDDACMD.

To match the command to the object request, the APPL, LVL, OBJT, ATTR, OBJN and USER values must be identical. The RPTH, RFP, RFPD or REQN parameters can be used to uniquely identify the request in case multiple requests for the same object name and type could exist.

### 4.6.1 MDADDCMD Parameter Table

| KEYWORD | Description | Type | Length |
|---|---|---|---|
| APPL | Application | CHAR | 4 |
| LVL | Level | INTEGER | 2 |
| OBJT | Object Type | CHAR | 7 |
| ATTR | MDCMS Attribute | CHAR | 10 |
| OBJN | Object Name | CHAR | 80 |
| CMD | Command | CHAR | 600 |
| CMDT | Command Type | CHAR | 1 |
| CMDO | Command Option | CHAR | 7 |
| IGNE | Ignore Errors | CHAR | 4 |
| KEEP | Keep MD Libs in Libl | CHAR | 4 |
| REUS | Reuse Command | CHAR | 4 |
| WCRD | Wildcards in SQL Script | CHAR | 4 |
| RLOC | Location to Run Command | CHAR | 10 |
| RUSR | Run as User Profile | CHAR | 10 |
| USER | Programmer | CHAR | 10 |
| RPTH | Object Relative Path | CHAR | 240 |
| RFP | RFP Number | INTEGER | 7 |
| RFPD | RFP Description | CHAR | 160 |
| REQN | Request Number | INTEGER | 11 |
| ENV | MDCMS Environment ID | CHAR | 4 |
| VREF | Vendor Reference ID | CHAR | 20 |
| EMSG | Exception Message | CHAR | 7 |

### 4.6.2 Detailed Description of MDADDCMD Parameters

**Application (APPL)**

The target MDCMS Application code for the request
This is a required parameter.

**Level (LVL)**

The target MDCMS Promotion Level for the request that allows check-outs
This is a required parameter.

**Object Type (OBJT)**

The System or MDCMS Object Type code for the Object. For example: *PGM for a program or *IFS for an IFS file.
This is a required parameter.

**MDCMS Attribute (ATTR)**

The MDCMS Attribute code that identifies the behaviour and target locations for the requested object.
This is a required parameter.

**Object Name (OBJN)**

The name of the requested Object.
This is a required parameter.

**Command (CMD)**

The command string that is to be added to the Object Request.
This is a required parameter.

**Command Type (CMDT)**

The Command Type, which specifies at which point in the deployment process that the command is invoked.

C - Compile - the command will be used to compile or create the Object

*1* - Pre-Compile - the command will be run prior to compilation. For example to override a database file or add a library to the library list.

*P* - Post-Compile - the command will run after compiling is finished but before approval is granted

2 - Pre-Install - the command will run immediately prior to installing the object to the target location.

*U* - Update - the command will be used to update an object in place. For example to update an ILE program to refresh bindings.

*D* - Data Copy - the command will be used to map data from the old format of a table or physical file to the new format of a table or physical file.

3 - Post-Install - the command will run after the installation of the object is complete

**Command Option (CMDO)**

The Command Option determines what should happen to any commands that are already defined for the same object and command type.

Note - Only one Data Copy command is permitted per Object.
All other types allow up to 999 commands.

*ADD - The command will be appended to the end of the list of commands that will run for the object and command type, so that the command runs after any already defined command.

*REPLACE - The command will replace any commands already defined for the object and command type. Commands defined for a different command type will not be removed.

**Ignore Errors (IGNE)**

Specifies if the RFP process should continue if an error occurs during the execution of the Object command.

Note - Data Copy and Post-Install command errors are automatically ignored because the installation is already complete. A warning will be generated, though.

*YES - any error that occurs will cause a warning condition to occur, but the RFP will continue with the deployment process.

*NO - MDCMS will end processing and roll back the RFP to the state it was in prior to beginning of the deployment step.

**Keep MD Libs in Libl (KEEP)**

Specifies if the MD libraries (MDCMS, MDXREF, and MDSEC) should remain in the library list during the execution of the command.

*NO - the libraries will be removed from the library list to avoid allocation of MD objects that are named the same as objects in your application.

*YES - The libraries will remain in the library list, which is important if the command is an MD command.

**Reuse Command (REUS)**

Specifies if the command should automatically reattach to the object the next time that the object is requested for the same application and level.

*YES - The command should be reused for future versions of the object

*NO - The command is to be used this time only

**Wildcards in SQL Script (WCRD)**

Specifies if MDCMS should inspect the SQL script for wildcards and replace them with the runtime execution values.

This flag is relevant when the command RUNSQLSTM is used and the SQL script is stored in either a source member or in an IFS file.

*NO - The script doesn't contain wildcards or the command isn't RUNSQLSTM

*YES - The RUNSQLSTM command is defined and wildcards need to be replaced in the script.

**Location to Run Command (RLOC)**

Specifies which locations the command should be on, at the time that an RFP containing the command runs at that location.

*ALL - The command should run at every location that the RFP containing the command deploys to.

*LOCAL - The command should only run on this system and will not be distributed to other locations.

*LOCLVL - The command should only run on this system for this level and nowhere else.

*REMOTE - The command should not run on this system, but should for every system that the RFP is distributed to.

location - The Location ID of a specific system that the command should run on when the RFP is deployed on that system.

**Run as User Profile (RUSR)**

Specifies the user profile to use when executing the command.

*USER - the user profile of the job that is running at the time that the command is executed.
Otherwise, a valid User Profile name. The profile will be saved with the command definition only if *USE authority is enabled for the invoker of MDADDCMD.

**Programmer (USER)**

Specifies the user profile assigned to the existing request.

*USER - the current user profile of the job invoking this command is the user

**Relative Path (RPTH)**

Specifies the relative portion of an IFS path, starting with /, that will be deployed with the object.
For example, if the *IFS attribute has a target fixed directory defined as /srv/dev and this object should be deployed to /srv/dev/app1/dist, then the value of RPTH should be /app1/dist.

This is optional and is only used to help uniquely identify the object request

**Existing RFP Number (RFP)**

Specifies the RFP assigned to the Request.
This is optional and is only used to help uniquely identify the object request

**RFP Description (RFPD)**

The description used for the RFP assigned to the object request.
This is optional and is only used to help uniquely identify the object request

**Request Number (REQN)**

The internal request number of the object request, which can be retrieved from the MDDAREQ log, if MDADDREQ was used to add the request.
This is optional and is only used to help uniquely identify the object request

**Environment ID (ENV)**

Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.

*DFT - The default environment will be used. This correlates to library MDCMS.

**Vendor Reference ID (VREF)**

Specifies the Vendor Generated Identifier in order for an external process to easily identify the transaction record in the MDDACMD table. Any value up to 20 characters in length can be used.

**Exception Message Returned (EMSG)**

Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.

*DIAG - A diagnostic message will be placed in the calling program's message queue in the following format:

MDADDCMD Exception. Object=<OBJN>, Vendor Reference=<VREF>, Reason=<the error reason>

If the Vendor Reference isn't passed to MDADDCMD, it won't be included in the diagnostic message.

*ESCAPE - The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.

*NONE - An exception message will not be returned to the calling program's message queue.

## 4.7 MDCRTOBJ – Create Object in Dev Library command

MDCMS is delivered with a command-based API that provides external tools or applications the ability to create an object in the Developer Library for currently checked out source.

When invoked, MDCMS uses either the current library list or the library list defined for the job description of the request's Application and Level.
Optionally, the developer library itself can be included at the top of the library list when depending on other checked out objects that have already been created.

The creation process uses the pre-compile and compile commands defined for the Object or Attribute so that the developer is certain that the result mirrors what would occur during the actual submission of the request in an RFP.

In the case of SQL Constraints or SQL Triggers, the pre-compile and post-install commands are used to create the entity, since these types use Post-Install commands rather than Compile commands.

The MDCMS command is named ***MDCRTOBJ*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your tool, you can also directly call program ***MDLCRTO*** in library MDCMS. In this case, be certain that the parameter order and formats sent to the program exactly match the parameters in command MDCRTOBJ.

All MDCRTOBJ API transactions are logged to file MDCMS/MDDCRTO.

To find the object request, the APPL, LVL, OBJT, ATTR, OBJN and USER values must be identical. The RFP, RFPD or REQN parameters can be used to uniquely identify the request in case multiple requests for the same object name and type could exist.

### 4.7.1 MDCRTOBJ Parameter Table

| KEYWORD | Description | Type | Length |
|---|---|---|---|
| APPL | Application | CHAR | 4 |
| LVL | Level | INTEGER | 2 |
| OBJT | Object Type | CHAR | 7 |
| ATTR | MDCMS Attribute | CHAR | 10 |
| OBJN | Object Name | CHAR | 80 |
| USER | Programmer | CHAR | 10 |
| LIBL | Library List | CHAR | 8 |
| INCL | Include Dev Lib in LIBL | CHAR | 4 |
| REPL | Replace existing Object | CHAR | 4 |
| RFP | RFP Number | INTEGER | 7 |
| RFPD | RFP Description | CHAR | 160 |
| REQN | Object Request Number | INTEGER | 11 |
| ENV | MDCMS Environment ID | CHAR | 4 |
| VREF | Vendor Reference ID | CHAR | 20 |
| EMSG | Exception Message | CHAR | 7 |

### 4.7.2 Detailed Description of MDCRTOBJ Parameters

**Application (APPL)**

The target MDCMS Application code for the request
This is a required parameter.

**Level (LVL)**

The target MDCMS Promotion Level for the request that allows check-outs
This is a required parameter.

**Object Type (OBJT)**

The System or MDCMS Object Type code for the Object. For example: *PGM for a program or *IFS for an IFS file.
This is a required parameter.

**MDCMS Attribute (ATTR)**

The MDCMS Attribute code that identifies the behaviour and target locations for the requested object.
This is a required parameter.

**Object Name (OBJN)**

The name of the requested Object.
This is a required parameter.

**Programmer (USER)**

Specifies the user profile assigned to the existing request.

**USER* - the current user profile of the job invoking this command is the user

**Library List (LIBL)**

Specifies the library list to use during the creation process.

**JOBD* - the library list of the job description for the Application Level will be used

**CURRENT* - the current library list for the job will be used

**Include Dev Lib in LIBL (INCL)**

Specifies if the developer library should be placed at the top of the library list to use any objects it is dependent on that have already been created.

**YES* - the compile-time library list will include the developer library at the top.

**NO* - the developer library won't be added to the top of the list

**Replace Existing Object (REPL)**

Specifies if the prior version of the object should be replaced, if it already exists.

*YES - an existing object will be replaced

*NO - MDCMS will not replace the object if it exists, and will generate an exception message.

**Existing RFP Number (RFP)**

Specifies the RFP assigned to the Request.
This is optional and is only used to help uniquely identify the object request

**RFP Description (RFPD)**

The description used for the RFP assigned to the object request.
This is optional and is only used to help uniquely identify the object request

**Object Request Number (REQN)**

The internal request number of the object request, which can be retrieved from the MDDAREQ log, if MDADDREQ was used to add the request.
This is optional and is only used to help uniquely identify the object request

**Environment ID (ENV)**

Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.

*DFT - The default environment will be used. This correlates to library MDCMS.

**Vendor Reference ID (VREF)**

Specifies the Vendor Generated Identifier in order for an external process to easily identify the transaction record in the MDDCRTO table. Any value up to 20 characters in length can be used.

**Exception Message Returned (EMSG)**

Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.

*DIAG - A diagnostic message will be placed in the calling program's message queue in the following format:

MDCRTOBJ Exception. Object=<OBJN>, Vendor Reference=<VREF>, Reason=<the error reason>

If the Vendor Reference isn't passed to MDCRTOBJ, it won't be included in the diagnostic message.

*ESCAPE - The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.

*NONE - An exception message will not be returned to the calling program's message queue.

## 4.8 MDADDIWS – Add Integrated Web Service command

The Add Integrated Web Service (MDADDIWS) command adds a Rest or SOAP service to an existing IWS server, making it possible to manage and deploy IWS services automatically using MDCMS.

It's recommended to run this command as an object-level or attribute-level post-install command on an RFP for the requested *IFS properties file or *IFS pcml file.

It's also highly recommended to keep the configuration for the service in the *IFS properties file, so that changes or rollbacks are audited and easy to perform. Refer to the **Integrated Web Services Server Administration and Programming Guide** for more details.

The MDCMS command is named ***MDADDIWS*** and is located in library MDCMS. The MD libraries must already be in the library list prior to using this command (Keep MD Libs in Libl = 'Y').

Prompt the command and then use the help function (F1 in MDCMS, Help in MDOpen) for detailed instructions about each command parameter.

### 4.8.1 Example MDADDIWS Parameters for an Attribute Command

The following is an example of the command to define for a *IFS attribute to add/replace a service in an existing Integrated Web Services server:

MDADDIWS SERVICE(##OBJNAM##) SERVER(##SERVER##) PGMNAM(##OBJNAM##) PGMTYP(*SRVPGM) PROP('##OBJLIB##/##OBJNAM##') LIBL(*CURLIBL)

- This example assumes the invoked program has the same name as the service and requested properties file. If different, then generate a reusable object-level command from this command for the specific service.
- The ##SERVER## wildcard is replaced at runtime with the server ID on the *IFS attribute or the object replication server for the attribute.
- LIBL(*CURLIBL) will automatically insert the library list for the target level into the library list for the service so that dependencies are correctly located at service run-time.

## 4.9 MDRMVIWS – Remove Integrated Web Service command

The Remove Integrated Web Service (MDRMVIWS) command removes a Rest or SOAP service from an IWS server, making it possible to remove IWS services automatically using MDCMS.

It's recommended to run this command as an object-level or attribute-level post-install command on an RFP for the *IFS properties file or *IFS pcml file that is requested to be deleted.

The MDCMS command is named ***MDRMVIWS*** and is located in library MDCMS. The MD libraries must already be in the library list prior to using this command (Keep MD Libs in Libl = 'Y').

Prompt the command and then use the help function (F1 in MDCMS, Help in MDOpen) for detailed instructions about each command parameter.

# 5 RFP Manager

## 5.1 RFP Listing

```
CMC228                              COMPANY NAME                                10/18/11
SCRN1                  Request For Promotion Number Listing                     07:06:37
Filters:              Status
Appl Lvl    RFP T In E S T Assigned   Description Text Project       Task STask
____ __ _______ _ __ _ _ _ MMORGAN___ _______________ ____________ _____ _____
                                        Install Date Min: ________ Max: ________
Type options, press Enter.
 1=Select   2=Edit  3=Copy  5=View    7=Reset    9=Close  C=Cmd/Scr D=Rapid Sts
            L=Log   M=Merge O=Objects P=Projects S=Spools U=AutUsrs V=Versions
   Appl    RFP Sts Lvl Assigned   Description
 _ ACCT      3  01 10  PGMR1      TEST PROMOTION OF DATABASE CHANGES 2
 _ ACCT      4  01 10  PGMR1      TEST PROMOTION OF DATABASE CHANGES 3
 _ ACCT      7  01 10  PGMR2      TEST PROMOTION OF GL Transactions
 _ ACCT      9  01 10  PGMR2      TEST PROMOTION OF DISPLAY FILES
 _ ACCT     10  01 10  PGMR1      NEW AP SYSTEM
 _ ACCT     10  00 10  PGMR1      MODIFICATIONS TO ADJUSTMENTS
 _ ACCT     12  01 10  PGMR2      VENDOR MASTER FILE CHANGES
 _ ACCT     31  01 10  PGMR2      TEST PROMOTION OF DATABASE CHANGES
                                                                      Bottom
F4=Browse  F6=Add  F7=Submit  F8=Approve  F9=Install  F10=Manage   F17/18=T/B
```

The RFP (Request for Promotion) Manager is accessed with option 3 from the Main Menu or by pressing **F9** from the Object Manager panel. It may also be accessed by pressing **F4** while the cursor is positioned on an RFP Number field.

Filters
The Request For Promotion Number Listing can be filtered by any of the following fields at the top of the display.

**Appl** –Application
**Lvl** – Application Level
**RFP** – Request for Promotion number
**T** – RFP Type – used in conjunction with the RFP number filter
- C – number of current RFP
- F – number of prior RFP in migration path
- O – number of original RFP in migration path

**RFP Status** – If the Install Status filter is set to blank, only open RFP numbers will be displayed. Enter a Status of 09 to see closed RFPs or press F10=History to see installed RFPs.
**Exception Status** – if warnings or errors have occurred for an RFP
**Send Status** – the state of deployments of this RFP to other systems for an installed RFP
**Test Status** – the state of MDWorkflow acceptance for an installed RFP
**Assigned** – The Programmer assigned to the RFP
**Description Text** – The RFP Description. The description filter will list all RFPs that have matching text in the description. For example, enter PRINT to list only RFPs with print somewhere in the short description. The Description filter is not case sensitive.
**Project** – The Project associated with the RFP
**Task** – The Project Task associated with the RFP
**Subtask** – The Projects Task and Subtask associated with the RFP
**Install Date** – When in history mode, the minimum and/or maximum install date can be entered.

RFP Status
**RP** – Request pending – the RFP is waiting for MDWorkflow acceptance of an RFP in the prior level before the new RFP can be used.
**00** – Open, no request records assigned to RFP
**01** – Open, one or more request records assigned to RFP
**SP** – RFP has been scheduled for submission and is waiting for the MD Submission service to submit the RFP
**YY** – RFP Submission currently in Job Queue
**XX** – RFP Submission in progress
**02** – RFP is waiting for approval
**CP** – MDRapid Data Copy process is pending launch
**CJ** – MDRapid Data Copy process has been submitted to a job queue
**CR** – MDRapid Data Copy is in process
**03** – RFP is waiting to be installed
**IP** – Installation Pending - RFP has been scheduled for installation and is waiting for the MD Installation service to install the RFP
**04** – Installation in JOBQ
**XY** – RFP Install in progress
**05** – RFP is installed
**09** – RFP Closed/No Install

Exception Status
E – RFP Error has occurred, causing the processing of the RFP to be rolled back
W – Warnings occurred during the processing of the RFP
N – Special filter value to show only RFPs without an exception

Option L=Log can be used for extensive details about any warnings or errors that occurred.

Send Status
O – open - the RFP hasn't been sent to any target systems yet
P – partial - the RFP is in the process of being sent and installed on some target systems
C – closed – the RFP is no longer open in the send list
N – not applicable – special filter value to show only RFPs that aren't defined to be sent to targets
U – not closed – special filter value to show any open or partially sent RFPs

Option T=Target Locs can be used for extensive details about the send progress as well as to initiate the send of the RFP to target systems.

Test Status
The state of MDWorkflow acceptance for an installed RFP.
Blank – MDWorkflow not applicable for RFP
0 – MDWorkflow acceptance is ongoing – any further steps are blocked at this time
1 – MDWorkflow provisionally accepted – waiting for confirmation from authorized user
2 – MDWorkflow acceptance complete – next step in process for RFP is freed, as long as all objects in RFP aren't waiting for acceptance in another RFP
8 – MDWorkflow provisionally rejected – waiting for confirmation from authorized user
9 – MDWorkflow rejection complete – next step in process for RFP has been deleted. Corrections must be brought up to this level to allow objects to continue.

Options

**1=Select** – Select, Enter and return the RFP number back to the requesting process.
**2=Edit** – Edit the RFP's detail information.
**3=Copy** – Copy the RFP's detail information to a new RFP. If a completed RFP (status 05) is copied, the user can also choose to re-request some or all of the objects in the RFP.
**5=View** – View the RFP's detail information.
**7=Reset** – Reset the RFP. This function causes the following based on the current RFP Status:
01 – All requests assigned to the RFP are removed from the RFP and may optionally be deleted.
02 – Installation Package waiting for Approval is deleted and the status is returned to 01.
CP – RFP is returned to status 02 or 01, depending on whether or not Approval is automatic
CR – MDRapid Data Copy is stopped and the RFP returns to status CP
03 – If Approval is required at the RFP's level, the status returns to 02, otherwise the Installation Package waiting for Installation is deleted and the status returns to 01.
XX/04/XY – MDCMS checks if the submitted RFP job is still active. If the job is no longer active, the status returns to 01 or 03 depending on the last completed installation step.
**9=Close** – Close the RFP (status set to '09').
**A=Accpt Test** – View/Manage the MDWorkflow Acceptance of an installed RFP
**C=Cmd/Scrp** – Define commands or scripts to run for this specific RFP.
**D=Rapid Sts** – the MDRapid Copy Status of all physical and logical files that require MDRapid processing are displayed. This option is available once the RFP has at least reached Copy Pending status.
**L=Log** – view all steps that have occurred during the processing of the RFP. For each step, the job log entries can be viewed for additional information. The steps, the job log, or a combination of both can be exported to an excel report.
**M=Merge** – Merge 2 or more RFP Packages into 1 RFP. Enter an M for at least 2 RFP packages of the same application and level and then press Enter. A confirmation screen is shown where the target RFP number can be selected and the description of the merged package can be edited. All objects (and commands) of the selected RFPs will be merged into the target RFP. The other specified Packages will be emptied and closed once the merge is complete. Duplicate objects and commands will be eliminated automatically.
**O=Objects** – Display all objects that are contained within the RFP.
**P=Projects** – Display all projects that are contained within the RFP.
**R=Rollback** – Select to rollback some or all objects in a completed RFP.
**S=Spools** – Display the spooled files for the most recent submission of the RFP
**T=Target Locs** – view extensive details about the send progress as well as to initiate the send of the RFP to target systems
**U=AutUsrs** – Display the users in MDSEC that have authority to submit, approve or install depending on the status of the selected RFP.
**V=Versions** – Display the Conflict Resolution Status for dependent versions of object requests in this RFP. See the section on option V from Object Manager for additional details.

Function Keys:

**F3=Exit**
**F4=Browse** – Browse list of valid values for the filter fields.
**F5=Refresh**
**F6=Add** – Add a new RFP.
**F7=Submit/Manage** – Toggle between RFP Submit and RFP Manage modes
**F8=Approve/Manage** – Toggle between RFP Approve and RFP Manage modes
**F9=Install/Manage** – Toggle between RFP Install and RFP Manage modes
**F10=History/Manage** – Toggle between RFP History and RFP Manage modes
**F17=Top** – Position cursor to the top of the RFP listing.
**F18=Bottom** – Position cursor to the bottom of the RFP listing.

## 5.2 RFP Details

```
CMC228                          COMPANY NAME                                  11.03.16
SCRN2              Request For Promotion Number Details                       16:44:31

Application.: TEST                                    User         Date     Time
RFP Level...: 30                          Assigned.: MMORGAN    10.03.16 18:25:15
RFP Number..:    1217                     Submitted: MMORGAN    10.03.16 18:30:06
From RFP....:    1011  Loc: *LOCAL        Approved.: MMORGAN    10.03.16 18:30:09
Original RFP:    2022  Loc: MD71          Installed: MMORGAN    10.03.16 18:30:20
Status......: 05-Installed                RFP Cmds.: Y          Scripts: Y
Send Status.: O-Open  Test: 0-Ongoing
RFP Description
Change to main accounting report_____________________________________________
_____________________________________________________________________________

Upon COMPLETION of RFP
    Delete from Developer Library - Source: Y  Y/N    Object: Y  Y/N
    Delete from Import Library    - Source: N  Y/N    Object: N  Y/N
    Delete Job Log when no Warnings occur.: Y  Y/N
    Generate Requests for the Next Level..: N  Y/N
    Assign new RFP to Next Level Requests.: N  Y=Yes, N=No, M=Manual Submit Only
    Place RFP in Send Promotion List......: N  Y=Yes, N=No, M=Manual Send Only

 F4=Browse    F12=Previous    F15=Print
```

The Request for Promotion Number Details display is where the Promotion number details are entered.

Application
The Application that objects will be promoted into.

RFP Level
The Application level for this RFP.

RFP Number
The assigned number of the RFP.

Merged into RFP
The number of the RFP that the objects for this RFP were merged into for this level when the RFP was merged/cancelled.

From RFP
The number of the RFP that was installed one step prior in the migration path. If the path started at the current level, then this will be blank.

From Loc
The location ID of the RFP that was installed one step prior in the migration path. If the path started at the current level, then this will be blank. Special value *LOCAL will be displayed if the prior level was on the same system as this RFP.

Original RFP
The number of the initial RFP in the migration path. If the path started at the current level, then this will be blank.

Original Loc
The location ID of the initial RFP in the migration path. If the path started at the current level, then this will be blank. Special value *LOCAL will be displayed if the prior level was on the same system as this RFP.

Status
The status of the RFP.

Send Status
O – open - the RFP hasn't been sent to any target systems yet
P – partial - the RFP is in the process of being sent and installed on some target systems
C – closed – the RFP is no longer open in the send list

Test Status
The state of MDWorkflow acceptance for an installed RFP.
Blank – MDWorkflow not applicable for RFP
0 – MDWorkflow acceptance is ongoing – any further steps are blocked at this time
1 – MDWorkflow provisionally accepted – waiting for confirmation from authorized user
2 – MDWorkflow acceptance complete – next step in process for RFP is freed, as long as all objects in RFP aren't waiting for acceptance in another RFP
8 – MDWorkflow provisionally rejected – waiting for confirmation from authorized user
9 – MDWorkflow rejection complete – next step in process for RFP has been deleted. Corrections must be brought up to this level to allow objects to continue.

Assigned
The programmer that the request changes are assigned to. More than one programmer may be included in a request, but only one programmer may be entered on this display (includes the Date and Time of assignment).

Submitted
The user who submitted the RFP (includes the Date and Time of submission).

Approved
The user who approved the RFP (includes the Date and Time of approval).

Installed
The user who installed the RFP (includes the Date and Time of installation).

Upon COMPLETION of RFP:

Delete Source from Developer library
Y – Delete the source from the developer library after the successful installation of the RFP. This is only permitted when installing into an Application Level that permits checkout.
N – Leave a copy of the source in the developer library

Delete Object from Developer library
Y – Delete the objects from the developer library after the successful installation of the RFP. This is only permitted when installing into an Application Level that permits checkout.
N – Leave a copy of the objects in the developer library

Delete Source from Import library
Y – Delete the source from an imported library after the successful installation of the RFP. This is only permitted when installing into an Application Level that permits checkout.
N – Leave a copy of the source in the import library

Delete Object from Import library
Y – Delete the objects from the imported library after the successful installation of the RFP. This is only permitted when installing into an Application Level that permits checkout.
N – Leave a copy of the objects in the import library

Delete Job Log when no Warnings occur
Y – Delete the job log for the RFP installation job once it has successfully finished and no warnings occurred.
N – Retain the job log even if there were no errors or warnings

Generate Requests for the Next Level
Y – If a next level on the same system is defined for this level, automatically create request records for all objects in this RFP for migration from this level to the next level.
N – Do not create request records for the next level

Assign new RFP to Next Level Requests
Y – If object requests are to be generated for the next level, then also create a new RFP number to assign to those requests. The description and user will be copied from this RFP.
N – Do not assign object requests to a new RFP
M – Assign to a new RFP for the next level, but don't automatically submit the RFP, even if the next level is defined to automatically submit RFPs by default.

Place RFP in Send Promotion List
Y – If a distribution queue is defined for this level, automatically place the RFP in the send queue.
N – Do not place the RFP in the send queue.
M – Place RFP in the send queue, but don't automatically send the RFP, even if the level is defined to automatically send RFPs by default.

Function Keys:
**F4=Browse** – Browse the Assigned field.
**F12=Previous** - Cancel any changes.
**F15=Print** – Print the details of the RFP to a spooled file.

## 5.3 RFP Commands

An entry of 'C' for an RFP activates the MD Detail Command Maintenance function for a specific RFP. This function is used to define IBMi commands that can be executed during the processing of the specific RFP.

```
CMC192                              COMPANY NAME                                4.09.06
SCRN1                          Commands for this RFP                           15:54:04

Appl/Lvl: ACCT 10  RFP: 1031 demo 42

Type options, press Enter.
 2=Edit   3=Copy   4=Delete   5=View

 Opt Type Seq  Command String
  _   1   10   OVRDBF FILE(ACCTPF1) TOFILE(PRODLIB/ACCTPF2)
  _   3   10   RMVM PRODLIB/ACCTPF1 XXXTEST


                                                                          Bottom
 F3=Exit   F6=Add   F10=Scripts
```

Type

| | | |
|---|---|---|
| L | Object Lock | runs during the compile or installation process when a required object or source is locked. Separate field Wait before Usage specifies the amount of time to wait before executing the command. Multiple commands can be defined in order to have a lock escalation process in place. |
| V | Pre-Submit Validation | runs when user selects to submit an RFP for promotion. Command MDCHKRFP must be used and this provides an organization with the ability to add custom validation rules before an RFP can be submitted. See section MDCHKRFP API for more information. |
| 1 | Pre-Compile | runs prior to compiling objects |
| P | Post-Compile | runs after all object compilations are successfully completed |
| E | Compile Error | runs when the compile phase of an RFP fails to complete successfully. |
| A | RFP Approved | runs after an RFP has been approved for installation |
| J | RFP Rejected | runs after an RFP has been reset from Waiting for Approval status |
| F | MDRapid Waiting to Launch | runs after an RFP has been approved and MDRapid is required for the RFP |
| G | MDRapid Started | runs to indicate that MDRapid has begun copying data for changed files |
| H | MDRapid Completed | runs after all existing records in the changed files has been copied to inform the users that the installation can be started. |
| I | MDRapid Error | runs when the MDRapid Data Copy phase of an RFP fails to complete successfully. |
| 2 | Pre-Installation | runs prior to installing objects into the environment |
| 3 | Post-Installation | runs after the installation of objects is complete |
| 4 | Installation Error | runs when the installation phase of an RFP fails to complete successfully. This type could be used, for example, to send an email or SMS to the installer if a weekend Installation fails. |
| W | Installation Warning | runs if an RFP Installation completes, but with warnings. Warnings can occur if data cannot be copied or if a Post-Installation Command fails to run successfully. |
| S | RFP Test Status Accepted | runs if an RFP Test Status is Accepted in MDWorkflow |
| T | RFP Test Status | runs if an RFP Test Status is Rejected in MDWorkflow |

| | | |
|---|---|---|
| | Rejected | |
| 5 | Pre-Send | runs once prior to sending an RFP to one or more remote systems |
| Q | Post-Send for a Location | Runs for each location after an RFP has been successfully sent to that location. Wildcards ##SVFTGT## (Target Address of Sent Savefile) and ##SVFNAM## (Sent Savefile Name) are applicable for this command type. |
| 6 | Post-Send | runs once, after an RFP has been successfully sent to one or more remote systems |
| 7 | Send Error | runs in case the send of an RFP fails to complete successfully |
| 8 | Post-Receive | runs after an RFP has been successfully received from a remote system |
| 9 | Receive Error | runs in case the receipt of an RFP fails to complete successfully |
| R | Receive Warning | runs in case the receipt of an RFP completes, but with warnings |

Sequence
The sort sequence of the command at run time, in case multiple commands for the same type are defined.

Ignore Errors
Y – Continue with RFP processing even if the command fails. Flag will always be Y for type 3.
N – Cease and Rollback RFP processing if the command fails

Keep MD Libs in Libl
N – The MD Libraries (MDCMS and MDXREF) are removed from the library list before the command is invoked. This assures that any MD Objects with the same name as your objects are not used.
Y – The MD Libraries are left in the library list. This is necessary when MD Objects, such as interface programs, MDMAIL or MDMAILF, are needed to process the command.

Location to run Cmd
The location that the command should be run, allowing for commands to be run only for certain environments. Enter a valid Location ID or press F4 to select a location from the list.

Otherwise, select from one of the following special values:
*ALL – run the command on every level in the migration path
*LOCAL – run the command on any level on this system
*LOCLVL – run the command only for this level
*REMOTE – run the command on any level everywhere but this system

Run as User Profile
By default, commands executed during an RFP run under the profile of the user profile defined on the job description of the application level for the RFP. If a specific command should run under the authorities of a different user, that user ID can be entered here. As a safety precaution, the user placing a value in this field must have authority to use that entered user profile in order to save the command definition.

Command
The IBM i or user-defined command to be performed. Enter the name of the command and then press F4 to fill in the keywords.

Some wildcard parameter values may be used and are substituted by MDCMS at run-time. The wildcard value may be typed directly into the command or the cursor may be positioned in the command and F7 pressed to insert the value from a list. The full list of values are in this manual in the Attribute Command section.

## 5.4 RFP Scripts

An entry of 'C' for an RFP activates the MD Detail Command Maintenance function for a specific RFP. Then, F10 can be pressed to access the list of scripts to be executed for this specific RFP.

```
CMC171                          COMPANY NAME                          4.09.15
SCRN1                       Scripts for this RFP                     15:54:04

Appl/Lvl: ACCT 10  RFP: 1031 demo 42

Type options, press Enter.
 2=Edit   3=Copy   4=Delete   5=View   S=Script Content

 Opt Type Seq Script
  _   2    1 /ifs-stop-tomcat.sh
  _   3    1 /ifs-start-tomcat.sh


                                                                    Bottom
 F3=Exit   F6=Add   F12=Previous
```

Type
The Type value designates when a script should run

| | | |
|---|---|---|
| 2 | Pre-Installation | runs prior to installing objects into the environment |
| 3 | Post-Installation | runs after the installation of objects is complete |

Sequence
The sort sequence of the script at run time, in case multiple scripts for the same type are defined.

Ignore Errors
Y – Continue with RFP processing even if the script fails.
Flag will always be Y for type 3.
N – Cease and Rollback RFP processing if the script fails

Attribute for Settings
The name of the MDCMS attribute containing the IFS or server connection settings to be used during the execution of the script.

Replace Wildcards
N – The script doesn't contain wildcard values to be replaced by runtime values when executed
Y – Replace wildcard values in the script at run time

Loc. to run Script
The location that the command should be run, allowing for commands to be run only for certain environments. Enter a valid Location ID or press F4 to select a location from the list.

Otherwise, select from one of the following special values:
*ALL – run the command on every level in the migration path
*LOCAL – run the command on any level on this system
*LOCLVL – run the command only for this level
*REMOTE – run the command on any level everywhere but this system

Wait for Response
Y – MDCMS waits until the Remote server confirms completion of the script execution
N – MDCMS continues without waiting for a response from the remote server

Submit Job
Y – Submit the IFS Script execution to a separate job. MDCMS will not wait for a response in this case, but instead continue with RFP processing.
N – the ifs script execution runs within this job

Job Name
The name of the submitted job that will process the IFS script

Job User
The user profile of the submitted job that will process the IFS script

Job Queue
The name and library of the Job Queue to receive the submitted job

Script Subfolder
The relative path of the script, if it isn't directly located in the script root folder.

Script
The name of the script file located in IFS

## 5.5 Promoting an RFP

Once 1 or more objects are assigned to an RFP, the Request for Promotion may be submitted. This is done by pressing **F7** from the Object Manager or **F7** from the RFP Manager.

The list of all RFPs in status 01 (Open, one or more request records assigned to RFP) is displayed. The filter and command handling of this list is identical to the RFP Control list.

Enter a '1' for one or more RFP numbers to promote them.

MDCMS then immediately runs an extensive series of checks on the contents of the RFP. If any warnings or errors are found, a screen is displayed detailing the exception and providing some options to correct them directly from the screen. Warnings can be ignored, though some warnings require specific MDSEC authority to be able to ignore. Errors must be resolved be the RFP can be submitted.

For automatically submitted RFPs, the RFP is only checked for error exceptions.

| Excp. ID | Description |
|---|---|
| ERROR 1 | Source not found for Recompile requests. For any object with an attribute containing source, MDCMS checks in the target source library, migration chain, based-on levels and source search template for the source. |
| ERROR 2 | Unlocked Object Requests. Every object request in an RFP must be in a locked state in order to submit the RFP |
| ERROR 3 | Object not found for Update requests. MDCMS checks in the target object library, migration chain, based-on levels and object search template for the object. |
| ERROR 4 | Uncommitted Object Requests. For *REMOTE and *IFS requests where the file originates from outside the system, the file must first be committed to MDCMS using MDOpen. |
| ERROR 5 | Incomplete Deletion requests for contents of an IFS Directory that has been requested for deletion. Every folder and file within the requested directory must also be requested for deletion. This can be done recursively by re-requesting to delete the directory and selecting to include contents. |
| ERROR 6 | Object Requests not assigned to a Project. Every object request in an RFP must be assigned to at least one project in order to submit the RFP. |
| ERROR 7 | Objects not matching the criteria for an Object Group. If MDWorkflow Object Groups are defined and the target level requires membership for every object in a group, then the Object Group rules need to be modified to include the target Object name or location. |
| ERROR 8 | MDWorkflow acceptance not granted in prior level for objects in RFP. The submission of an RFP into the next level depends on every RFP containing any of the RFP's objects in the prior level to have been accepted, if MDWorkflow Acceptance is enabled for the prior level. |
| ERROR 9 | Project/Task Status outside Boundary for Action. If Status Boundaries are defined for the target level to limit when and RFP can be submitted, each Project, Task or Subtask (depending on the boundary definition) that is assigned to requests in the RFP must be within the defined range. |
| WARNING 1 | Missing Dependencies for Modified Files. For any modified file, along with the logical and reference files over that file, each dependency that isn't part of the RFP is listed.<br>See the MDXREF manual for more information about the usage codes.<br><br>If the dependency is a program or module, and that dependant has record-level |

| | |
|---|---|
| | access to the file, this warning won't be permitted to be ignored, unless **MDSEC code 35** is granted to the user for the target level of the RFP. |
| WARNING 2 | Missing Programs for Modified Source Members. For any *SOURCE request, all programs or modules that copy the source (copybook), but aren't requested in the RFP, are listed. |
| WARNING 3 | Missing Programs for Modified Modules. All ILE Programs and Service Programs that bind a requested module, but aren't included in the RFP, are listed. |
| WARNING 4 | Missing Programs for Modified Service Programs. All ILE Programs that require a requested service program, but aren't included in the RFP, are listed. |
| WARNING 5 | Objects to be migrated are older than the existing objects. If a non-compiled object has been requested to be imported, but the source change date on that object is older than the object already in the target application, then the object is listed. This is to help flag when a vendor sends the wrong version of an object. |
| WARNING 6 | Objects already requested for Next Level. The listed objects are already requested for promotion at the next level from the target level of this RFP. The result of continuing with the promotion is that the changes in this RFP will overwrite the changes requested in the prior RFP(s).<br><br>If the existing requests for the next level are by a different user than the user(s) that requested the objects for this RFP, the user submitting this RFP must be granted **MDSEC code 55** (Merge Other Users into RFP) in order to continue.<br><br>If the existing requests for the next level are for a different project than the projects for this RFP, the user submitting this RFP must be granted **MDSEC code 56** (Merge Other Projects into RFP) in order to continue.<br><br>If the existing requests for the next level are for different tasks than the tasks for this RFP, the user submitting this RFP must be granted **MDSEC code 57** (Merge Other Project Tasks into RFP) in order to continue.<br><br>If authorized, and this RFP is set to create the requests for the next level, the user must choose if the existing RFPs should be automatically merged into this RFP when finished.<br>N=don't auto-merge – the existing RFPs remain active and any objects that were already requested won't be part of this RFP at the next level.<br>Y (recommended)=auto-merge – all existing RFPs that conflict with this RFP will be automatically merged into this RFP for the next level. The existing RFPs will then be automatically closed. |
| WARNING 7 | Objects already requested for next level that won't be overwritten. Lists all object requests that promote from a different level than the target level of this RFP or that are already in the process of being installed.<br><br>The existing RFPs remain active and any objects that were already requested will be requested in the new RFP for the next level in Unlock Mode. |
| WARNING 8 | Objects already in Send Queue. The listed objects are already requested to be sent to target systems in other RFPs for this target level. The result of continuing with the promotion is that the changes in this RFP will overwrite the changes requested to be sent in the prior RFP(s).<br><br>If the existing requests in the send queue are by a different user than the user(s) that requested the objects for this RFP, the user submitting this RFP must be granted **MDSEC code 55** (Merge Other Users into RFP) in order to continue. |

| | |
|---|---|
| | If the existing requests in the send queue are for a different project than the projects for this RFP, the user submitting this RFP must be granted **MDSEC code 56** (Merge Other Projects into RFP) in order to continue.<br><br>If the existing requests in the send queue are for different tasks than the tasks for this RFP, the user submitting this RFP must be granted **MDSEC code 57** (Merge Other Project Tasks into RFP) in order to continue.<br><br>If authorized, and this RFP is set to send, the user must choose if the existing RFPs should be automatically merged into this RFP when finished.<br>N=don't auto-merge – the existing RFPs remain active. The objects will be in the old and new RFPs in the send queue.<br>Y=auto-merge – all existing RFPs that conflict with this RFP will be automatically merged into this RFP in the send queue. The existing RFPs will then be automatically closed.<br><br>If your organization prefers that an auto-merge of RFPs in the Send List should ALWAYS or NEVER happen, the choice can be locked down across the entire system. To lock the choice, use command **MDLCKAMGS.**<br>**MDLCKAMGS** Option (OPT):<br>*MANUAL – The developer will choose whether or not to Auto-Merge RFPs at RFP Submission time (default)<br>*AUTOYES – The option to Auto-Merge RFPs in the Send List will ALWAYS be used<br>*AUTONO - The option to Auto-Merge RFPs in the Send List will NEVER be used |
| WARNING 9 | Objects in process of being Installed. Any compiled object that is being installed at the same time in another RFP (due to recompiles) is listed to indicate that an unintended version of the object may end up in the target object library. |
| WARNING 10 | Objects that have been deployed to an Emergency Level. Each object that was deployed to an emergency level since the last time it was deployed to the target level is listed. This is to keep visibility on the emergency deployments, in case those changes need to be retrofitted into the standard version. |
| WARNING 11 | Dependencies in Linked Apps for Modified Files. Objects that exist in linked applications that depend on files in this RFP. |
| WARNING 12 | Programs in Linked Apps for Modified Copybooks. Objects that exist in linked applications that depend on source copybooks in this RFP. |
| WARNING 13 | Programs in Linked Apps for Modified Modules. Objects that exist in linked applications that depend on modules in this RFP. |
| WARNING 14 | Programs in Linked Apps for Modified Service Programs. Objects that exist in linked applications that depend on service programs in this RFP. |
| WARNING 15 | Recompiles based on Uninstalled Requests. This warning indicates when objects are requested for recompile in this RFP, that are based on source in a different level, but that source hasn't been deployed yet to that based-on level. This usually indicates that the RFP for that level should be installed before continuing with this RFP. |
| WARNING 16 | Objects Installed Since Checkout. Objects are listed that have been installed into the target level between the time that the object on this RFP was checked out in the originating level and now. This is to provide awareness that potentially other project work had passed through this level in the meantime. |
| WARNING 17 | Missing IFS Files for Requested System Objects. IFS Files that reference a system object that is requested for modify or delete in the RFP, when the IFS File itself isn't included in the RFP.<br>If you should never be warned about a given IFS File in the list, option I=Ignore can be used to permanently skip the warning for that specific file. If it should ever be important in the future, it can be unignored from the MDOpen IFS reference view. |

| | |
|---|---|
| WARNING 18 | IFS File References in Linked Applications. IFS Files that reference a system object that is requested for modify or delete in the RFP, when the IFS File itself is part of a linked application.<br>If you should never be warned about a given IFS File in the list, option I=Ignore can be used to permanently skip the warning for that specific file. If it should ever be important in the future, it can be unignored from the MDOpen IFS reference view. |

If any of the listed conditions are true, a screen will appear for each warning or error allowing for the correction or confirmation of the issue.

Once all errors have been corrected, the following confirmation screen will appear with the default submission parameters, based on the job description for the promotion level.

```
CML400                          COMPANY NAME                              4.09.06
SCRN1                 Submit Confirmation and Override                    07:06:37

                            Parameters    Override
  Jobname  . . . . . .  .   CMS001894
  Job Description  . . . .  MD30
    Library  . . . . . .      QGPL

  Submission Date  . . . .  *CURRENT      __________    *CURRENT, Date
  Submission Time  . . . .  *CURRENT      __________    *CURRENT, Time
  Installation Date  . . .  *CURRENT      __________    *CURRENT, Date
  Installation Time  . . .  *CURRENT      __________    *CURRENT, Time
  Place in Job Queue . . .  *YES         ____          *YES, *NO
  Job Queue  . . . . . .    QBATCH       __________
    Library  . . . . . .      QGPL         __________
  Hold in Job Queue  . . .  *NO          ____          *YES, *NO
  Delay Delete Prior Obj..  *NO          ____          *YES, *NO

Enter=Confirm   F12=Cancel
```

Submission Date
*CURRENT – submit the RFP today
date – schedule the submission for the entered date. If the job is immediately placed in the job queue, be certain that an IPL does not occur between now and the scheduled date

Submission Time
*CURRENT – submit the RFP at this time
time – schedule the submission for the entered time

Installation Date
If the level for the RFP allows for automatic approval and installation, the date and time of the installation can also be controlled when performing the initial submission.
*CURRENT – install the RFP on the same day that the bundling process is complete
date – schedule the installation for the entered date.

Installation Time
*CURRENT – install the RFP as soon as the bundling process is complete
time – schedule the submission for the entered time

Place in Job Queue
*YES – the job will be submitted immediately to the job queue and scheduled for the entered date/time

*NO – the job is intended to be submitted no sooner than the scheduled date/time by the MDSBMRFP process. The status of the RFP is changed to SP for Submission Pending.

Job Queue
The name and library of the job queue to use if placed in a job queue

Hold in Job Queue
*YES – the job will be placed in the job queue in hold status so that something can release the job at a later time
*NO – the job will be placed in the job queue in released status for automatic processing

Delay Delete Prior Obj
*YES – the temporary library holding the prior version of the installed objects will not be deleted until the following day. This allows active jobs to continue using the prior version of programs that were already invoked by those jobs.
*NO – the temporary library will be deleted as soon as the installation is complete

## 5.6 The RFP Installation Process

Once a request for promotion has been submitted, the actual process of installing the new or modified source and objects takes place. Listed below are the steps that this process goes through and the result of each step.

### 5.6.1 The Source/Object Preparation Steps

Temporary MDCMS libraries (naming based on system settings for temp libraries + the RFP number) are created to handle the entire process so that no permanent changes take place until MDCMS is certain that all is ready.

Pre-Steps:
1- Process Pre-Compile commands for *RFP attributes
2- Process Pre-Compile commands for this RFP

Object Steps processed in full for each object before continuing to next object:
1- The source or non-compiled object is checked for existence.
2- If new or modified source is to be compiled, the existing source is copied to a backup library and the new version of the source is copied to the target source file/ifs path
3- Process Pre-Compile commands for object or attribute
4- Process Compile commands for object or attribute
5- Process Post-Compile commands for object or attribute
6- Validate that object has been created into temporary packaging library
7- Validate the Data Transformation for mapping existing records to new version of a file
8- Add Comments to the source in the packaging library, if requested for an attribute assigned to a Source Comment template

Post-Steps:
1- Process Post-Compile commands for this RFP
2- Process Post-Compile commands for *RFP attributes
3- Sign source and objects, if enabled for system, to ensure that manual changes are detected
4- Warn about any level check issues, if enabled for level
5- Warn and stop process if insufficient disk space is available to deploy file changes

If a failure occurs during these steps, a message will be sent to the user that submitted the job describing why the failure occurred and the Compile Error exit point will be triggered. For additional detail, the RFP log and the spooled files for the job should be reviewed. The RFP will remain at status 01 and can be re-requested from the RFP Manager. If the RFP is not in status 01, it will need to be reset using option 7 in the RFP Manager.

### 5.6.2 Source and Object Signing

MDCMS uses an SHA-1 encryption algorithm with a HMAC key unique to each distinct object migration chain to create a 1-way signature for each source and object that has been prepared to be installed. The initial signature is applied when it is installed into the initial promotion level and this signature is compared to the newly generated signature at higher levels.

If the signature does not match, then this indicates that the source or object was manually modified since installation in the prior level. MDCMS will then require that an authorized user approves the installation before the installation steps will be started.

MDCMS uses a java program running under job name MDSIGN(instance) to perform the signature process. The job queue to be used for this job is, by default, the same as for the RFP. If this job should be submitted to a different queue, it can be defined in Data Area MDCMS/MDSTRSIGN whereby characters 1-10 contain the job queue name and characters 11-20 contain the job queue library. The default value of *JOBD will cause the job to be submitted to the job queue defined for the job description.

If the signing job does not function, troubleshooting can be performed by running command MDTESTSIGN from a command line within MDCMS.

Command MDENDSIGN can be used to cleanly end MDSIGN.

## 5.7 Approving a Promotion

An RFP is first submitted for promotion which prepares the source and objects for deployment in a temporary library. If there are no errors, the installation process checks the Promotion Level parameters and if the Automatic RFP Approval flag is set to 'N', or the RFP contains attributes that require approval, the RFP status is set to '02' - Approval Pending. An authorized user must then approve the promotion before it can be installed. To do this, toggle to the Approve list using F8 in the RFP Manager.

The list of all RFPs in status 02 are displayed.

Enter a '1' for a RFP number to approve it. If the auto-install flag is set to 'Y' for the promotion level, then a confirmation screen will be displayed for the submission of the installation of the promotion.

The user must have authority to MDSEC code 42 for the application if the RFP was submitted by someone else.

The user must have authority to MDSEC code 52 for the application if the RFP was submitted by that same user.

Enter a '7' to remove the temporary promotion library and to set the RFP back to status '01'.

## 5.8 Launching MDRapid

Once approval is granted, and the RFP contains one or more files that should have their data copied prior to installation, the installation process checks the Promotion Level parameters and if the Automatic Launch MDRapid is set to 'N' the RFP status is set to 'CP' - Copy Pending. An authorized user must then launch MDRapid to begin the Copy process. To do this, toggle to the Install list using F9 in the RFP Manager.

The list of all RFPs in status CP or 03 are displayed.

Enter a '1' for a RFP number with status CP to launch it. A confirmation screen with the following fields is displayed:

Auto-Install Objects when Data Copy Complete
Y – Yes, the install steps should begin automatically once all data has been copied
N – No, an authorized user must schedule the installation
W – Yes, auto-install if the data copy finishes within the Time Window

Time Window for Auto-Install
The minimum and maximum Date/Time that the Copy process must finish within in order for the RFP to auto-install. If the RFP finishes outside of the window, then an authorized user must schedule the installation. Exit point commands can be defined for the level to notify the group when the Data Copy is finished.

Once Enter is pressed, the MDRapid jobs are submitted to the job queue defined by the MDRapid template and MDCMS monitors the progress. Once a physical file has completed the copy process, MDCMS builds the dependent logical files. Once all files are prepared for installation, the status of the RFP is switched to 03.

## 5.9 MDRapid Console

If one or more Files in an RFP are to use MDRapid for copying the data, then option D=Rapid Sts can be in front of the RFP, or in front of the file request, once the status of the RFP has reached at least CP=Copy Pending. That option brings up the following screen:

```
CMC247                          MD T 8.1 dev                            1.03.18
SCRN1                       MDRapid Copy Status                        19:00:48

Appl: TEST  Lvl: 10  RFP:    1539                      Start: 01.03.18 19:00:11
Status: 03-Waiting for Installation                      End: 01.03.18 19:00:19

Type options, press Enter.
 5=Details  E=End  H=Hold  I=Init+Restart  J=Job  R=Restart
  Target     Source     F                                  Usage   Est/Actual End
O File       Library    T Status      Initial Recs  Pct hh:mm:ss   Date   Time
_ MDALIC     TEST8O_10  P Sync/Idle            724 100          01.03.18 19:00
_ MDALIC     TEST8O10R1 P Sync/Idle            724 100          01.03.18 19:00
_ MDALIC     TEST8O10R2 P Sync/Idle            724 100          01.03.18 19:00
_ MDACSTL1   TEST8O_10  L LF Built                100          01.03.18 19:00
_ MDACSTL1   TEST8O10R1 L LF Built                100          01.03.18 19:00
_ MDACSTL1   TEST8O10R2 L LF Built                100          01.03.18 19:00
_ MDALIC1    TEST8O_10  L LF Built                100          01.03.18 19:00
_ MDALIC1    TEST8O10R1 L LF Built                100          01.03.18 19:00
_ MDALIC1    TEST8O10R2 L LF Built                100          01.03.18 19:00
_ MDALIC2    TEST8O_10  L LF Built                100          01.03.18 19:00
_ MDALIC2    TEST8O10R1 L LF Built                100          01.03.18 19:00
                                                                      More...
F3=Exit   F5=Refresh   F17=Top   F18=Bottom
```

Option
5 – view additional information about the MDRapid process for the file. This is particularly helpful to see the complete error reason if the status for the job is in error or to see the number of synced transactions or temp library name where the data population is occurring.
E – End the MDRapid job for the file
H – Hold the MDRapid job for the file
I – clear all data in the new version of the file and restart the job from the beginning of the copy process
J – view details of the processing job for a physical file or for the MDRapid Monitor
R – restart the job at the point where it left off when last ended

Target File
The name of the file being prepared, or the value Monitor for the MDRapid monitor job

Source Library
The location of the data origin file that the records are being copied from, which is also the library that the file will then be deployed to during the installation phase.

F T (File Type)
P – Physical file
L – Logical file
M – Monitor job

Status

| | |
|---|---|
| Pending | The file hasn't begun processing yet |
| Resetting | A reset to Copy Pending has been requested for the RFP |
| Reset | A reset to Copy Pending has completed for the RFP |
| Launch Err | Error occurred trying to submit the launch of the file for MDRapid processing |
| Copying | The current data in the origin file is being copied to the new version of the file |
| Copy Held | A user has held the copy job |
| Copy Ended | The copy job has ended without reaching completion |
| Copy Error | Error occurred during the copy of data |
| Copy Resume | A user has requested that a copy job resume processing |
| LF Building | A logical file is in the process of getting built over its physical file(s) |
| LF Built | A logical file has finished the build process |
| LF Error | Error occurred during the logical file build |
| Syncing | The copy process is complete and outstanding Journal transactions are in the process of being synced to the new version of the file |
| Sync/Idle | All copying and transaction syncing is complete, will continue to sync new transactions as they occur |
| Sync Held | A user has held the sync job |
| Sync Ended | The sync job has ended without reaching completion |
| Sync Error | Error occurred during the sync of journal transactions |
| Sync Resume | A user has requested that a sync job resume processing |
| Finish Pending | The RFP install job has requested the sync job to finish any outstanding transactions and then end so that the deployment of the files can occur. |
| Sync Comp | The job for the file has completed so that the installation can proceed |
| Running | The monitor job is actively observing the individual file jobs |
| Monitor Held | A user has held the monitor job |
| Monitor Ended | The monitor job has ended |
| Monitor Error | Error occurred |
| Monitor Resume | A user has requested that the monitor job should resume processing |

Initial Recs

The total number of records across all members in the live physical file at the time that the MDRapid job for the file is started

Pct

The percentage of records that have been copied to the new version of the file. 100% will show once all records have been copied and all outstanding journal transactions have been processed.

Usage

The amount of time that has elapsed in order to copy the initial set of records to the new version of the file in hours:minutes:seconds format.

Est/Actual End Date Time

Physical files - If still running, an estimate of when the copy of the initial set of records will complete. Once the copy process is complete, the actual completion date/time is displayed.

Logical Files - The date/time when the logical file was built

Monitor - If still running, and an install window was defined, the start of that window is displayed. If MDRapid is complete, then the actual date/time when installation began is displayed.

## 5.10 Installing a Promotion

Once any compile, approval and MDRapid steps are complete, the installation process checks the Promotion Level parameters and if the Auto-Install flag is set to 'N', the RFP status is set to '03' – Waiting to Install. An authorized user must then select the promotion for installation before the objects are actually installed into an application. To do this, toggle to the Install list using F9 in the RFP Manager.

The list of all RFPs in status CP or 03 is displayed.

Enter a '1' for a RFP number with status 03 to install it. A confirmation screen will be displayed for the submission of the installation of the promotion. If the RFP installation job is not placed in the Job Queue, then the status is changed to IP for Installation Pending and will wait until the RFP Installer API (MDINSRFP) submits the RFP.

The user must have authority to MDSEC code 44 for the application if the RFP was approved by someone else.

The user must have authority to MDSEC code 53 for the application if the RFP was approved by that same user.

Enter a '7' to remove the temporary promotion library and to reset the RFP back to status '01'.

### 5.10.1 The Installation Steps

Pre-Steps:
1. Process Pre-Installation commands for *RFP attributes
2. Process Pre-Installation commands and scripts for this RFP
3. Process Pre-Installation commands and scripts for objects and object attributes
4. If MDRapid is running, lock target files and end MDRapid processing

Object Steps processed in full for each object before continuing to next object:
1. Backup prior version of source and object
2. Move new version of source and object to target locations
3. Set object authorities
4. Stamp object with MDCMS metadata information

Post-Steps
1. All prior members for modified physical files are copied to the new file using Data Transformation, if enabled. If disabled, CPYF with option *map/*drop will be used unless an overriding data copy command is specified.
   If MDRapid was used for a file, then this step already occurred prior to installation, so only a simple move is required.
2. All constraints, journals and system (non-SQL) triggers are reapplied (if the file flags indicate to do so). If a logical file is being replaced, all prior members of the file are created for the new file (if the file flag indicates to do so).
3. Process Post-Installation commands and scripts for objects and object attributes
4. Process Post-Installation commands and scripts for this RFP
5. Process Post-Installation commands for *RFP attributes
6. Update MDXREF information for the installed source and objects
7. If the Application Level is tied to X-Analysis libraries in MDXREF, the deployed objects will be passed to the MDXANI service for the asynchronous update of object information in X-Analysis for those libraries.

If an exception occurs during the Pre-Steps or Object Steps, any completed portion of the installation is automatically rolled back, a message will be sent to the user that submitted the job describing why the failure occurred, and the Install Error exit point will be triggered. The RFP will be set back to status 03 and can be reselected for Installation.

If a warning occurs, or an exception occurs during the Post-Steps, the RFP will continue (unless the post-install command/script is set to not ignore the exception), but will be flagged with a warning exception status and the Install Warning exit point will be triggered.

### 5.10.2 The Archiving/Cleanup Steps

1. All replaced source is archived. Replaced objects will be zip compressed and archived to the MDCMS IFS path, if they are not compiled from source.
2. If the installation occurred at a checkout level and the RFP is defined to remove the source or objects from the developer's library and/or from an import library, the removal is performed at this time.
3. Delta Source and Objects are removed from other levels based on the templates assigned to the object attributes in this RFP. They are left in place if the version in the delta level is different than the version in the target level, unless the delta level is also flagged as an emergency level.
4. Installation History records are created for each object.
5. The finished Request detail records are removed.
6. The temporary libraries and spool files are deleted unless the parameters specify to keep them.

### 5.10.3 The Next Level Preparation Steps

1. If a Distribution Level is defined for the RFP's promotion level, the RFP is placed in the send list. If Auto-Send is set to Y for this Level, the RFP will immediately be sent to all Target Levels where the Default flag is set to Y.
   If other RFPs containing one or more of the same objects are open in the send list, and this RFP was flagged to auto-merge, then the other RFPs will be merged into this new RFP.
2. New Request records are created for the next level on the same system, if direct migration is defined and the object attribute exists further up the chain.
3. A new RFP number is generated and automatically assigned to the new Request records.
4. If an object is already requested for the next level, and auto-merge was set to No during the RFP submission, a Request record will not be created and a warning condition will be generated. If auto-merge was set to Yes, the other RFPs will be merged into this new RFP and a warning isn't flagged.
5. If Auto-Submit is set to Y for the next level, and no errors exist at the next level, and Workflow acceptance of this RFP is not required, the new RFP is submitted to batch.

## 5.11 MDWorkflow Acceptance of Installed Promotion

If MDWorkflow Acceptance Group Types are defined for the RFPs promotion level, then the groups assigned for acceptance for the Projects contained in the RFP must sign off on the installed changes before the RFP may continue to the next step. A next step would be submission to the next level on this system and/or sending to target levels on other systems.

To perform MDWorkflow acceptance, either use the MDWorkflow web application or use option A=Accpt Test from the RFP listing for the installed RFP.

```
CMC263                            MD T 74 6.1                          24.04.16
SCRN1                          RFP Test Status                         18:14:47

Appl/Lvl: TEST 30 Test Status: 0-Ongoing
     RFP:    1061 data areas

Type options, press Enter.
 A=Accept  C=Comments  G=Group Info  I=In Progress  R=Reject  U=Undo

Opt Project      Group Type Group      User       Status     Date     Time  Cmt
 _  LIBRARYPROJ  MARKETING  MARK-CH
 _  LIBRARYPROJ  TESTER     TEST 1     MMORGAN    Accepted 23.04.16 18:03:15 Y




                                                                       Bottom
F3=Exit   F5=Refresh
```

Options

A=Accept – accept the RFP for the project entry. You must belong to the defined group for the project to perform acceptance or rejection. Every entry must be accepted before acceptance confirmation can be granted.
C=Comments – view/edit comments for the project entry
Group Info – If a group isn't yet defined for the project, and you have authority to edit projects, the group (and optionally user) can be selected. If a group is already defined, the information about the group is displayed.
I=In Progress – specify that you are testing the results for the project entry. The entry is then reserved for you.
R=Reject – reject the RFP for the project entry. If any entry is rejected, the entire RFP can be confirmed for rejection.
U=Undo – Undo the provisional acceptance or rejection of a project entry. This also frees the entry to be worked on by another member of the group, if not for a specific user for the project.

Confirm Acceptance/Rejection

Once all entries are accepted, or any entry is rejected, F10 must then be pressed by an authorized user (MDSEC code 46 for the RFPs Application). This then confirms the status for the RFP, which will either of the following:

2 - MDWorkflow acceptance complete – next step in process for RFP is freed, as long as all objects in RFP aren't waiting for acceptance in another RFP
9 – MDWorkflow rejection complete – next step in process for RFP has been deleted. Corrections must be brought up to this level to allow objects to continue.

## 5.12 MDSBMRFP – RFP Submission command

MDCMS is delivered with a command-based API similar to the Installer API. The difference with the Submitter API is that RFPs will be submitted when they have status 01 (Objects assigned to RFP) and/or status SP (Submission Pending). This API allows external processes, such as End-of-Day, to submit some or all RFPs for promotion.

The Object Checking and Compilation portion of a Promotion will be performed for the selected RFP(s). If no problems are encountered, the Auto-Approve and Auto-Install flags for the Promotion Level will be checked. If one of the flags is set to N, the process stops, otherwise the RFP will be installed. The API does not fail if no RFPs are currently waiting to be submitted.

This allows a business to embed the MDCMS Submission process into its remote systems for clean, hands free processing.

The MDCMS command is named ***MDSBMRFP*** and is located in library MDCMS*.

If the submission of an RFP is not successful, its status returns to 01 and the objects in the environment remain the same as they were prior to the submission.

All MDSBMRFP API transactions are logged to file MDCMS/MDDSRFP.

***MDSBMRFP*** Parameter Table

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code or *ALL for any application |
| FROMLVL | INTEGER | 2 | Minimum Application Level to consider |
| TOLVL | INTEGER | 2 | Maximum Application Level to consider |
| FROMRFP | INTEGER | 7 | Minimum RFP Number to consider |
| TORFP | INTEGER | 7 | Maximum RFP Number to consider |
| PEND | CHAR | 4 | Include Pending RFPs<br>*YES = RFPs with status SP are also considered<br>*NO = only RFPs with status 01 are considered<br>*ONLY = only RFPs with status SP are considered |
| SCHDT | CHAR | 8 | Pending until Scheduled Date<br>*CURRENT = include RFPs with a scheduled date that is not greater than the current date<br>Or, enter a date in YMD format to designate the maximum allowed scheduled date |
| PROJ | CHAR | 12 | Project Filter – only submit RFP if one or more Objects in the RFP are requested for the Project |
| TASK | INTEGER | 5 | Task Filter – only submit RFP if one or more Objects in the RFP are requested for the Project Task |
| STSK | INTEGER | 5 | Subtask Filter – only submit RFP if one or more Objects in the RFP are requested for the Project Subtask |
| USER | CHAR | 10 | The User Profile ID to be displayed in Installation History.<br>*CREATOR = same user that created the RFP number<br>*USER = same user that called the API<br>A specific User Profile |
| CONT | CHAR | 4 | Continue Submitting RFPs if a RFP Fails<br>*YES = any further RFPs will be submitted<br>*NO = this API stops submitting RFPs |

| | | | |
|---|---|---|---|
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDSBMRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

## 5.13 MDAPRRFP – RFP Approver command

MDCMS is delivered with a command-based API that allows external processes to approve some or all RFPs. An RFP must have status 02 (Waiting for Approval) in order to be considered by the API.

By default, users are not authorized to use this command. Authority can be granted from the MDSEC Command Security feature.

The MDCMS command is named ***MDAPRRFP*** and is located in library MDCMS*.
All MDAPRRFP API transactions are logged to file MDCMS/MDDARFP.

MDAPRRFP Parameter Table

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code or *ALL for any application |
| RFP | INTEGER | 7 | Specific RFP Number – if left blank, then the range of RFP numbers will be considered |
| RFPT | CHAR | 8 | Specific RFP Type - the type of specific RFP number passed in parameter RFP.<br>*CURRENT = the current number for an RFP<br>*FROM = The RFP number refers to the RFP installed into the prior level, which then automatically generated the RFP with a different number to be deleted.<br>*ORIG = Each RFP to be deleted originated from the specified RFP number, which was installed into the initial level for a chain of migrations across systems. |
| FROMLVL | INTEGER | 2 | Minimum Application Level to consider |
| TOLVL | INTEGER | 2 | Maximum Application Level to consider |
| FROMRFP | INTEGER | 7 | Minimum RFP Number to consider |
| TORFP | INTEGER | 7 | Maximum RFP Number to consider |
| PROJ | CHAR | 12 | Project Filter – only install RFP if one or more Objects in the RFP are requested for the Project |
| TASK | INTEGER | 5 | Task Filter – only install RFP if one or more Objects in the RFP are requested for the Project Task |
| STSK | INTEGER | 5 | Subtask Filter – only install RFP if one or more Objects in the RFP are requested for the Project Subtask |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDINSRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor. |

| | | | |
|---|---|---|---|
| | | | *NONE = An exception message will not be returned to the calling program's message queue. |

## 5.14 MDINSRFP – RFP Installer command

MDCMS is delivered with a command-based API that allows external processes, such as End-of-Day, to install some or all RFPs. An RFP must have status 03 (Ready for Installation) and/or status IP (Installation Pending) in order to be considered by the API. The API does not fail if no RFPs are currently waiting to be installed. This allows a business to cleanly embed the MDCMS Installation process into its nightly or weekend batch processing so that conflicts are avoided.

The MDCMS command is named ***MDINSRFP*** and is located in library MDCMS*.

If the installation of an RFP is not successful, its status returns to 03 and the objects in the environment remain the same as they were prior to the installation. This API allows the option of automatically rolling back all RFPs that were installed prior to the RFP which failed.

All MDINSRFP API transactions are logged to file MDCMS/MDDIRFP.

MDINSRFP Parameter Table

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code or *ALL for any application |
| FROMLVL | INTEGER | 2 | Minimum Application Level to consider |
| TOLVL | INTEGER | 2 | Maximum Application Level to consider |
| FROMRFP | INTEGER | 7 | Minimum RFP Number to consider |
| TORFP | INTEGER | 7 | Maximum RFP Number to consider |
| PEND | CHAR | 4 | Include Pending Installs<br>*YES = RFPs with status IP are also considered<br>*NO = only RFPs with status 03 are considered<br>*ONLY = only RFPs with status IP are considered |
| SCHDT | CHAR | 8 | Pending until Scheduled Date<br>*CURRENT = include RFPs with a scheduled date that is not greater than the current date<br>Or, enter a date in YMD format to designate the maximum allowed scheduled date |
| PROJ | CHAR | 12 | Project Filter – only install RFP if one or more Objects in the RFP are requested for the Project |
| TASK | INTEGER | 5 | Task Filter – only install RFP if one or more Objects in the RFP are requested for the Project Task |
| STSK | INTEGER | 5 | Subtask Filter – only install RFP if one or more Objects in the RFP are requested for the Project Subtask |
| USER | CHAR | 10 | The User Profile ID to be displayed in Installation History.<br>*APPROVER = same user that approved RFP for Installation<br>*USER = same user that called the API<br>A specific User Profile |
| CONT | CHAR | 4 | Continue Installing RFPs if an Installation Fails<br>*YES = any further RFPs will be installed<br>*NO = this API stops Installing RFPs |
| ROLLBACK | CHAR | 4 | Rollback any RFPs that were already installed by the API prior to the RFP that has failed.<br>*YES = The prior RFPs will be rolled back (only valid if CONT=*NO)<br>*NO = The prior RFPs remain installed |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to |

| | | | |
|---|---|---|---|
| | | | place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDINSRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

## 5.15 MDRBRFP – RFP Rollback command

MDCMS is delivered with a command-based API that allows an external CL program, such as a program within End-of-Day, to rollback a specific RFP. An RFP must have already been installed in order to be considered by the API.

The MDCMS command is named ***MDRBRFP*** and is located in library MDCMS*.

***MDRBRFP*** Parameter Table

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code |
| RFP | INTEGER | 7 | RFP Number |
| USER | CHAR | 10 | The User Profile ID to be displayed in Installation History.<br>*INSTALLER = same user that installed the RFP<br>*USER = same user that called the API<br>A specific User Profile |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format:<br>MDRBRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

## 5.16 MDDELRFP – RFP Deletion command

MDCMS is delivered with a command-based API that allows an external CL program, such as a program within End-of-Day, to delete (reset) RFPs. If the RFP has already been installed, or a job is currently compiling or installing the RFP, it will not be considered by the API.

The MDCMS command is named ***MDDELRFP*** and is located in library MDCMS*.

All MDDELRFP API transactions are logged to file MDCMS/MDDDRFP.

***MDDELRFP*** Parameter Table

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code<br>*ALL = The RFPs to delete can belong to any application |
| RFP | INTEGER | 7 | Specific RFP Number – if left blank, then the range of RFP numbers will be considered |
| RFPT | CHAR | 8 | Specific RFP Type - the type of specific RFP number passed in parameter RFP.<br>*CURRENT = the current number for an RFP<br>*FROM = The RFP number refers to the RFP installed into the prior level, which then automatically generated the RFP with a different number to be deleted.<br>*ORIG = Each RFP to be deleted originated from the specified RFP number, which was installed into the initial level for a chain of migrations across systems. |
| FLVL | INTEGER | 2 | From Level - the lower limit for the level number to delete from |
| TLVL | INTEGER | 2 | To Level - the upper limit for the level number to delete from |
| FRFP | INTEGER | 7 | From RFP – the minimum RFP number to be deleted |
| TRFP | INTEGER | 7 | To RFP – the maximum RFP number to be deleted |
| PROJ | CHAR | 12 | Project - specifies the Project that must be assigned to one or more of the objects in an RFP for that RFP to be considered. |
| TASK | INTEGER | 5 | Task - Specifies the Project Task that must be assigned to one or more of the objects in an RFP for that RFP to be considered. If TASK > 0, then the Project ID must also be passed. |
| STSK | INTEGER | 5 | Subtask - Specifies the Project Subtask that must be assigned to one or more of the objects in an RFP for that RFP to be considered. If STSK > 0, then the Project ID and Project Task must also be passed. |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to |

| | | | |
|---|---|---|---|
| | | | fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format:<br>MDDELRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

# 6 RFP History

The RFP History screen lists all RFPs that have completed installation in descending order. The screen is identical to the RFP Manager screen. The RFPs can be toggled on this screen between historical and active using **F10**.

## 6.1 Rolling back a Promotion from within RFP History

To rollback part or all of an RFP from Object History, enter option R in front of any installed RFP.

A list of all objects assigned to the RFP will be displayed. Each object which still has the prior version of the source or object, or each object that is new, will have the ability of being rolled back. Enter a *1=Select for Rollback* in front of each object to rollback or press *F13=Select all available* to select all available objects.

A new RFP will be automatically generated and all selected objects will be assigned to it. The Submit Confirmation and Override panel will then appear for the promotion or scheduling of the Rollback RFP. The promotion will delete new objects, recreate deleted objects, bring modified objects back to the prior version, and recompile objects that were originally set as *RECOMPILE. As with a normal RFP, a rollback RFP will also archive the source/objects it replaces.

## 6.2 Target Locations for Installed RFP

Option T can be used from RFP History to view the send status for each of the defined target levels based on the promotion level of the installed RFP. If the RFP in the Send List is still open, the RFP can also be sent directly from this screen.

# 7 Object History / Archive

Historical information is kept in MDCMS for every object that is promoted. The Installation History / Archive process is used to view the history of installed or deleted objects and to retrieve or rollback prior versions of objects.

```
CMC540                          COMPANY NAME                              10/19/11
SCRN1              Installation History/Archive Retrieval                  6:02:01
Filters:
 Appl Lvl   RFP Attribute  Programmer Project        Task STask  Rsn Installed
 ____ __  _____ __________ __________ ____________  _____  _____  _  _________

Type options, press Enter.
 5=Details  C=Compare Src  R=RFP  7=Get Prior Src  8=Get Prior Obj  9=Rollback
   _________                                                          Pri
   Object    Installed Appl/Lvl Attribute  Programmer   RFP Project    R S O
_  ACCTPG01   8/21/96  MD2K 10  RPG        MMUCKLEY   20028 VAT        R
_  ACCTPG02   9/28/96  MD2K 10  CBL        MMORGAN    20017 VAT     +  M Y
_  ACCTPG02   9/03/96  MD2K 10  CBL        MMUCKLEY   20058 P288394    M Y
_  ACDRHDL    9/03/96  MD2K 90  CLP        MMUCKLEY   20059 P293823    D Y Y
_  PKT1037    8/17/96  ACCT 10  PRTF_WIDE  MMUCKLEY   20010 VAT        M Y
_  MTU553     6/06/96  MD2K 10  DSPFSE     MMORGAN    20008 A382KS9    M Y
_  SENTPGM    8/11/96  MD2K 10  CMD        MMORGAN    20007 VAT        M Y
                                                                     More...
 F2=Full Name   F4=Browse   F8=Audit Reports   F11=View Output   F15=Print
```

All of the previously installed objects are displayed and subsetted using the filters at the top of the display.

If the promotion of an object results in the change or deletion of previously existing source, the previous version of the source will be archived. Installation History stores up to 99 generations of the source for each object at each promotion level. If an object is not compiled from source code, then the object itself is compressed and archived in the IFS directory MDCMS/ARCHIVE. The number of generations to store is set within the promotion level maintenance function.

Options

**5=Details** – Display the Installation History Detail.

**C=Compare** – Place this option in front of 1 entry containing archived source to compare that source to the source that currently exists in the source file for the attribute.
Place this option in front of 2 entries containing archived source to compare those 2 versions to each another.

**R=RFP** – Toggle to the RFP History, filtered to the selected RFP, in order to view additional information about the RFP or the objects in that RFP.

**7=Get Prior Src** – Prompt the user for a location for the archived source to be copied to. The source can be copied to any library that is not managed by MDCMS or to a spooled file.

**8=Get Prior Obj** – Prompt the user for a location for the archived object to be copied to. The object can be copied to any library (or folder for IFS objects) that is not managed by MDCMS.

**9=Rollback** – Rollback selected object and/or other objects for same RFP as selected object.

Filters:
Entering a value into one of the filters fields will cause the list to be re-displayed and subsetted to show only archive records that match the entered filter field values.

**Appl** –Application.
**Lvl** – Application Level.
**RFP** – Request for Promotion number.
**Attribute** – The object Attribute used for the promotion.
**Programmer** – The Programmer assigned to the Object Request.
**Project** – The Project associated with the Object Request.
**Task** – The Project Task associated with the Object Request.
**Subtask** – The Project Subtask associated with the Object Request.
**Rsn** – The Reason for the Object Request. Possible values are M=Modify, R=Recompile, U=Update and D=Delete
**Installed** – the date that the promotion was installed

Position to:
The Position to field appears as  above the Object column. Entering a value into the Position to field will position the contents of the subfile to the first record in the current list of archived records that is greater than, or equal to, the entered value.

Function Keys:
**F2=Full Name** – Displays full name of object when F2 is pressed when cursor is within the Object name field. This can be useful for IFS object names that exceed the length of the Object field within the display.
**F3=Exit**
**F4=Browse** – Browse a list of available filter entries depending upon which filter the cursor is positioned to. For example, to browse the RFP list, place cursor on RFP filter field and press **F4**.
**F8=Audit Reports** – MDCMS Audit Reports menu. Generate customizable audit reports for what has been installed either within, or outside of, MDCMS.
**F11=View Output** – Display the MD Output panel and other spool files.
**F15=Print** – Print a list of promotion records to a spooled file based on filters in current display.

### 7.1 Rolling back a Promotion from within Object History

To rollback part or all of an RFP from Object History, enter option 9 in front of any installed object that is part of the RFP.

A list of all objects assigned to the RFP will be displayed. Each object which still has the prior version of the source or object, or each object that is new, will have the ability of being rolled back. Enter a *1=Select for Rollback* in front of each object to rollback or press *F13=Select all available* to select all available objects.

A new RFP will be automatically generated and all selected objects will be assigned to it. The Submit Confirmation and Override panel will then appear for the promotion or scheduling of the Rollback RFP. The promotion will delete new objects, recreate deleted objects, bring modified objects back to the prior version, and recompile objects that were originally set as *RECOMPILE. As with a normal RFP, a rollback RFP will also archive the source/objects it replaces.

## 7.2 Installation History Audit Report

To generate a report over promoted objects from within MDCMS, press **F8** from the Installation History screen and select **option 1 MDCMS Installation History** from the MDCMS Audit reports menu. The following prompt screen is then displayed:

```
CMC541                          COMPANY NAME                              10/19/11
SCRN3                    Installation History Report                      6:02:01

Select and sequence fields and record filters, press Enter.
Use F7 to load a definition, F9 to save a definition

                                                                          Sort
Seq Field           Minimum    Maximum                                    A/D
_10 Install Date    *PM        __________ YYYYMMDD,*PY,*PM,*Pn D,*CY,*CM    A
_20 Application     __________ __________                                  A
_30 Level           80         90                                         A
___ Programmer      __________ __________ *gen*eric*                       A
___ Approver        __________ __________ *gen*eric*                       A
___ Approval Date   __________ __________ YYYYMMDD,*PY,*PM,*Pn D,*CY,*CM  A
___ Installer       __________ __________ *gen*eric*                       A
___ Install Time    __________ __________ HHMMSS                          A
___ RFP Number      __________ __________                                  A
___ Project         __________ __________ *gen*eric*                       A
___ Task            __________ __________                                  A
___ Subtask         __________ __________                                  A
___ Object Name     __________ __________ *gen*eric*                       A
___ Object Type     __________ __________                                  A
                                                                  More ...
F3=Exit    F4=Browse    F5=Refresh    F7=Load Def    F9=Save Def    F11=View Output
```

This screen allows you to define your own report. The report may consist of any or all of the listed fields and any or all promotion records may be selected and sorted as you choose. The report definitions may then be saved and used again in the future from this screen or from a command line.

Seq
Each field with a sequence number > 0 will be included in the report. The columns of the report are ordered by the sequence number. The sorting of the records is also based on the order of the sequence fields.

Minimum
The smallest value that the corresponding field may contain, unless the value is a special value or a generic value.

Special Values:

- *PY – the date must fall within the previous year (only valid for date fields)
- *PM – the date must fall within the previous month (only valid for date fields)
- *Pn – all object changes occurring during the previous n (1-9) days (only valid for date fields)
- *CY – the date must fall within the current year (only valid for date fields)
- *CM – the date must fall within the current month (only valid for date fields)
- M – the object must have been selected for a modification request (only valid for reason)
- D – the object must have been selected for a deletion request (only valid for reason)
- R – the object must have been selected for a recompile request (only valid for reason)
- U – the object must have been selected for an update request (only valid for reason)

Generic Values:

The wildcard value * may be used multiple times anywhere within a string to limit records to occurrences where the field contains the string. For example, *3XJ* will select all records where the value 3XJ is contained somewhere within the field string. *XJ will select all records where the value XJ is contained at the end of the field string. Wildcards may be used for all alphanumeric fields, except Object Type and Reason.

Maximum

The largest value that the corresponding field may contain. This field must be left blank if a special or generic value was entered in the Minimum field.

Sort

A – Sort this field in ascending (A->Z) order.
D – Sort this field in descending (Z->A) order.

**NOTE:** Only the first 10 columns will be considered for sorting.

Function Keys:

**F3=Exit** – Exit the prompt screen.
**F4=Browse** – Browse the list of available entries depending upon which field the cursor is positioned.
**F5=Refresh** – Reset the definition back to the initial settings
**F7=Load Def** – Load a definition from the list of saved definitions
**F9=Save Def** – Save the entered configuration as a report definition. The saved definition may then be reused anytime in the future from within MDCMS or from a command line. See the chapter on MDRUNRPT for more information about running reports from a command line.
**F11=View Output** – Display the MD Output panel and other spool files.

When the report runs, optimized SQL routines are used against the MDCMS tables so that the report is created very quickly, even if several years of data are to be inspected.

## 7.3 Audit Report of Object Changes outside of MDCMS

### 7.3.1 Designing/Running Audit Report from Online Generator

To generate an audit report of object changes that have occurred outside of MDCMS, press **F8** from the Installation History screen and select option 2 from the report menu. The following prompt screen is then displayed:

```
CMC542                              COMPANY NAME                              09/04/05
SCRN1                  Modifications outside of MDCMS Report                  10:37:52

Select and sequence fields and record filters, press Enter.
Use F7 to load a definition, F9 to save a definition
                                                                              Sort
Seq Field            Minimum    Maximum                                       A/D
 10 Date             __________ __________  YYYYMMDD, *PM, *Pn D, *CM, *CD     A
 20 Time             __________ __________  HHMMSS                            A
 30 User             __________ __________  *gen*eric*                        A
 40 Object Library   __________ __________  *gen*eric*                        A
 50 Object Name      __________ __________  *gen*eric*                        A
 60 Object Type      __________ __________                                    A
 70 Program          __________ __________  *gen*eric*                        A
 80 Job              __________ __________  *gen*eric*                        A
 90 Reason           __________ __________  CREATE, DELETE                    A
100 Sequence Number  __________ __________                                    A
    Application      __________ __________
    Level            __________ __________



                                                                          Bottom
F3=Exit    F4=Browse    F5=Refresh    F7=Load Def    F9=Save Def    F11=View Output
```

This screen allows you to define your own report. The report may consist of any or all of the listed fields and any or all object changes may be selected and sorted as you choose. The only exceptions are the application and level fields. These fields may not appear in the report, as they are only used as selection criteria. If records are limited to a specific application or level, then only object libraries used by attributes in the application/level are evaluated.

The report configurations may then be saved as definitions and used again in the future from this screen or from a command line.

Seq
Each field with a sequence number > 0 will be included in the report. The columns of the report are ordered by the sequence number. The sorting of the records is also based on the order of the fields.

Minimum
The smallest value that the corresponding field may contain, unless the value is a special value or a generic value.

Special Values:

- *PM – all object changes occurring during the previous month (only valid for date fields)
- *Pn – all object changes occurring during the previous n (1-9) days (only valid for date fields)
- *CM – all object changes occurring during the current month (only valid for date fields)
- *CD – all object changes occurring during the current day (only valid for date fields)
- CREATE – report only created objects (only valid for reason)
- DELETE – report only deleted objects (only valid for reason)

Generic Values:

The wildcard value * may be used multiple times anywhere within a string to limit records to occurrences where the field contains the string. For example, *3XJ* will select all records where the value 3XJ is contained somewhere within the field string. *XJ will select all records where the value XJ is contained at the end of the field string. Wildcards may be used for all alphanumeric fields, except Object Type and Reason.

Maximum

The largest value that the corresponding field may contain. This field must be left blank if a special or generic value was entered in the Minimum field.

Sort

A – Sort this field in ascending (A->Z) order.
D – Sort this field in descending (Z->A) order.

Function Keys:

**F3=Exit**
**F4=Browse** – Browse the list of available entries depending upon which field the cursor is positioned.
**F5=Refresh** – Reset the definition back to the initial settings
**F7=Load Def** – Load a definition from the list of saved definitions
**F9=Save Def** – Save the entered configuration as a report definition. The saved definition may then be reused anytime in the future from within MDCMS or from a command line. See the chapter on MDRUNRPT for more information about running reports from a command line.
**F11=View Output** – Display the MD Output panel and other spool files.

### 7.3.2 Troubleshooting the Audit Report

In order for the audit report of object changes to be accurate, it is important that the following system settings are in place:

1) The system value for Auditing control (WRKSYSVAL QAUDCTL) must be set to at least *AUDLVL. It is also recommended that the value *OBJAUD is included.
2) The system values for Security auditing level (WRKSYSVAL QAUDLVL) must be set to at least *CREATE and *DELETE.
3) The journal object QAUDJRN must exist and a journal receiver must be attached.
4) The current chain of journal receivers that exist on the system need to cover the time frame for the desired reporting range.
5) Objects will only be considered for the report if they reside in libraries or IFS-directories that are designated as Object Libraries in the MDCMS Attributes settings. If a desired library/directory is not reported, then create at least one attribute for that library/directory in the MDCMS Setup Menu option 3. This requirement exists to avoid excessive reporting of temporary libraries and directories.

# 8 Project Manager

## 8.1 Project Listing

```
CMC227                          COMPANY NAME                                10/18/11
SCRN1                         Project Listing                               12:22:20
FILTERS
Appl: ____          Requester.: _________   Description.....: _____________
Pri.: _   Sts: _    Assn User:  _________   Project Type....: _______
                                            Pos to Project..: _________
Type options, press Enter.
 1=Select 2=Edit  3=Copy  8=Chg Status  G=Groups  H=Hours  O=Objects...
                                                    Create  Exp Comp
Opt Project      Appl  Requester   Assign to Pr St Proj Type   Date     Date   T
 _  VAT          ACCT  MMORGAN     MMORGAN   2  3  *DFT     28.01.07  14.02.07 Y
     Version 6.0
 _  SAVERESTORE  OPER  MMORGAN     MMORGAN   3  5  *DFT     11.02.07  31.03.07 Y
     Save and Restore functions



                                                                        Bottom
 F3=Exit    F4=Browse    F5=Refresh    F6=Add    F8=Reports    F9=Closed Projects
 F10=Sort by Comp. Date    F11=View Output    F17=Top    F18=Bottom  F23=More Opts
```

The Project Listing display is accessed from main menu option 6 or by pressing **F4** from the Object Manager when the cursor is on a Project field.

**NOTE:** Not all functions of the Project Management system are available within the 5250 UI. Refer to the MDWorkflow web application documentation for those features available within MDWorkflow or MDOpen.

Filters

The Project Listing is filtered by the fields at the top of the display. If the Status (Sts) filter is left blank, only Projects with an open status will be displayed. Press F9 to display closed Projects.

The description filter will list all Projects that have matching text in the title. For example, enter PRINT to list only Projects with print somewhere in the title. The description filter is not case sensitive.

Options
**1=Select** – Return the selected Project back to the requesting process. This option will only appear when using F4=Browse in the Project field of the Object Manager panel.
**2=Edit** – Edit the Project's detail information.
**3=Copy** – Copy the details of a Project to a new Project ID.
**5=Display** – View the Project's detail information.
**8=Chg Status** – Select a new status for the Project from a list of possible status codes, based on authority and current status. **NOTE:** If the new status closes the Project, a warning will be given if the Project still has open Tasks or Subtasks. The user can bypass the warning by pressing Enter and all Tasks and Subtasks will also be closed.
**G=Groups** – Acceptance and Technical Groups assigned to project. Option only available when MDWorkflow is licensed.
**H=Hours** – View and enter hours worked on behalf of the project.
**O=Objects** – View a list of objects that are or were modified for the selected Project.
**T=Tasks** – View and manage the tasks for a Project.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse list of valid values for the Filter fields.
**F5=Refresh**
**F6=Add** – Add a new Project.
**F8=Reports** – Define or run a Project or Task Report.
**F9** – Toggles display between **Active Projects** and **Closed Projects**.
**F10** – Toggles display between **Sort by Comp. Date** and **Sort by Project**.
**F11=View Output** – Display the MD Output panel and other spool files
**F17=Top** – Position cursor to top of list.
**F18=Bottom** – Position cursor to bottom of list.
**F23=More Opts** – View additional options available for a Project

## 8.2 Project Details

```
CMC281                          COMPANY NAME                                10/18/11
SCRN1                           Edit Project                                12:37:15
                                                                              Date
Project.....: SAVERESTORE              Requested by.: MMORGAN      11.02.07
Project Type...: *DFT_____ Appl OPER   Authorized by: MMORGAN      11.02.07
Assign to Group: NORAMTEST User MMORGAN Work Started.: MMORGAN     11.02.07
Priority.....: 3  Medium               Test Ready...: MMORGAN      15.02.07
Exp. Completion: 31.03.07              Approved by..: MMORGAN      15.02.07
Status.....: 5  Changes Approved       Closed by....:
Hours Expected.: ______18.0            Hours Used...:        12.00
Project Title
Save and Restore functions_____________________________________________________

Project Description
for internal use_______________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

                                                                          More...
F3=Exit    F4=Browse    F11=View Output
```

All Project information available within the 5250 client can be displayed or edited from this screen.

The Project Listing display is accessed by pressing **F4** from the Object Manager when the cursor is on a Project field or via option 6 from the MDCMS Main Menu.

**NOTE:** Not all functions of the Project Management system are available within the 5250 UI. Refer to the MDWorkflow web application documentation for those features only available within MDWorkflow or MDOpen.

Project
A 12 character field to uniquely identify the project

Project Type
The type of project, in order to categorize it and to apply pre-defined rules, custom fields and status codes for the project (if MDWorkflow is used). Press F4 on the Project Type field to manage the Project Types.

Appl
The primary application that the project will be used for. This is an optional field and if an application code is entered, requests for objects in other applications may still be assigned to this application.

Assigned to Group
The primary MDWorkflow Group that has been assigned to perform the work for this project. This screen only displays the primary value for this field. Use option G=Groups to view/manage all groups for the project.

User
The primary programmer to perform the work for this project. This is an optional field and other programmers may also perform work for the project, if the project type allows for it.

Priority
- 1 - Critical
- 2 - High
- 3 - Medium
- 4 - Low
- 5 - Optional

Exp. Completion
The date the project is expected to be complete

Status
- 1 - Project Opened
- 2 - Project Authorized
- 3 - Work in Process
- 4 - Ready for Testing
- 5 - Changes Approved
- 6 - Project Complete
- 9 - Project Cancelled

If the MDWorkflow license is active, additional status codes may be created and used.

Requested by
Authorized by
Work Started
Test Ready
Approved by
Closed by
For all these fields it will list the User that set each status and the date that the status was set.

Hours Expected
The number of hours that are expected to be needed to complete the project.

Hours Used
The sum of all hours entered to date for the project.

Project Title
A brief description of the Project.

Project Description
A full description of the Project.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse list of valid values for available fields.
**F11=View Output** – Display the MD Output panel and other spool files

### 8.2.1 Project Types

```
MDCPRJT                          MD T 8 6.1                              4.04.17
SCRN1                          Project Types                             22:18:50
                                                        Tasks
Pos: _________  Filter by Desc: _____________          Allow: _   Limit Requests: _
                                                      Require: _
Type options, press Enter.
 1=Select  2=Edit  3=Copy  4=Delete  5=Display  T=Transitions
                                                                 Tasks    Limit
Opt  Proj Type  Description                                     Alw Req  Request
 _   *DFT       Default                                         Y   N      N
 _   NOTASKS    no tasks allowed                                N   N      Y
 _   ONLYTASKS  Require request for task                        Y   Y      Y
 _   Z-TYPE     Z-Type                                          Y   N      N


                                                                          Bottom
F3=Exit   F6=Add
```

Project Types are means to categorize projects and to set certain rules for projects of a given type. Every project must have a Project Type defined for it.

The listing to view and manage project types is reached by pressing F4 on the Project Type field in the Project screen.

Project Type
A 10-character identifier for a type of project

Description
Description of the Project Type

Allow Tasks
If Tasks are allowed to exist for this Project Type
Y – Tasks may be created
N – Tasks are not allowed. All work must be performed at the Project level

Require Requests be assigned to Tasks
If objects can be deployed directly for a Project, or if a Task must exist and applied to any checkouts before the RFP can be processed.
Y – Tasks must be created and assigned to every Object Request assigned to a project of this type prior to submission. Allow Tasks must also be set to Y if this flag is set to Y.
N – Object Requests are allowed to be assigned directly to the Project.

Limit Object Requests to Assigned Users
If developers are limited from assigning Object Requests to a Project of this type.
Y – Only developers that have been assigned to the Project, either directly or as a member of an assigned group, are allowed to assign Object Requests to the Project.
N – Any developer can assign Object Requests to a Project of this type.

Options
**2=Edit** – change the type properties
**3=Copy** – copy to a new type
**4=Delete** – remove the type
**T=Transitions** – specify the allowed Project Status Transitions permitted for the Project Type

### 8.2.2 Project Groups

```
CMC261                              MD T 74 6.1                          24.04.16
SCRN1                          Project Group Listing                     17:45:51

Project: DEMO       Demo project

Type options, press Enter.
 2=Edit  4=Delete  G=Group Info

Opt  Role        Type        Req  Group       User
 _   Acceptance  MARKETING    Y   MARK-CH
 _   Acceptance  RLSMGR       Y
 _   Acceptance  TESTER       Y   TEST 1      MMORGAN
 _   Technical   PROGRAMMER       PGMR 1
 _   Technical   PROGRAMMER       PGMR 2      MMORGAN




                                                                        Bottom
F3=Exit   F5=Refresh   F6=Add   F9=Save as Default
```

If a valid MDWorkflow license exists for the partition, option G can be used from Project Listing to view/manage all acceptance and technical groups for a project.

Role
A - Acceptance/Test – The role is used to perform acceptance testing on RFPs that impact the project once the RFP is installed for a level requiring MDWorkflow acceptance before the RFP can continue to the next step in the migration path.

T – Technical – The role is used to carry out work on behalf of the project.

Type
The User Group Type assigned to the role

Req
Whether or not the Group Type is required for the Project in order to be able to deploy an RFP all the way to production.

Group
A user group of the given group type. A group is mandatory for an Acceptance role entry, but is optional for technical roles.
Multiple user groups can be added to a project for the same group type. During RFP acceptance, members of any included group for same project can accept or reject an RFP.

User
If the group is blank, any user registered in MDSEC can be added to a project for a technical role.
If the group is entered, the user field can be blank to mean that any member of the group can be involved with the project. Otherwise, the user must belong to the group and then the project is intended for that specific user.
Multiple entries of specific users can be added for the same user group to a project.

Options
**2=Edit** – change the group or user for a group type entry
**4=Delete** – remove a group or user from the project
**G=Group Info** – Display the User Group listing positioned to the entry selected

Function Keys:
**F3=Exit**
**F5=Refresh**
**F6=Add** – Add a group and/or user to the project
**F9=Save as Default** – Save the current list of groups and users to your profile. When you create a new project, the list will automatically be applied to that project.

### 8.2.3 Project/Task Status Codes

The list of valid Status codes for Projects and Tasks can be viewed by pressing F4 on the Status filter in the Project and Task list views or by pressing F4 on the Status field in the Project and Task detail views.

If a valid MDWorkflow license exists for the partition, additional Status codes can be created and status behaviour can be modified.

Status Code
A one-character unique code for the status

Sort Sequence
The order of the code in the list. Any active status must have a sort sequence < 800 and any closed status must have a sort sequence >= 800.
The sort sequence is also important when defining status ranges for custom fields or status boundaries.

Description
A description of the status code

Use in Projects
Y – the status can be applied to a project
N – the status can't be applied to a project

Use in Tasks
Y – the status can be applied to a task or subtask
N – the status can't be applied to a task or subtask

Ending Status
Y – the status indicates that the project or task is closed. No further work is allowed when ended.
N – the status indicates that the project or task is still ongoing.

Allow Auto-Update
Y – Automated commands are permitted to update a project or task to this status. The commands that apply are:
MDUPDPROJ
MDUPDSTS
MDUPDTASK

N – this status can't be automatically applied to a project or task

Allow Man.-Update
Y – Authorized users are permitted to update a project or task to this status via the MDCMS, MDOpen or MDWorkflow views.

N – this status can't be manually applied to a project or task

Manual Group Type
If entered, limit the users that can manually set this status to members of a group of the given type that is involved with the project or task.

Options
**2=Edit** – change the status properties
**3=Copy** – copy the properties of an existing status to a new status code
**4=Delete** – delete a status code – only allowed for custom status codes
**T=Transitions** – manage the list of status codes from which the project or task can transition to this status. See Section Project/Task Status Transitions for more information.

Function Keys:
**F3=Exit**
**F5=Refresh**
**F6=Add** – Add a new status code
**F8=Sort by Code/Seq** – Toggle the listing to be ordered by Code or Sort Sequence
**F9=Boundaries** – Limit when an RFP can be processed based on the status of the Projects or Tasks that are impacted by the RFP. See Section Project/Task Status Boundaries per Level for more information.
**F10=Triggers** – Automatically initiate the submit, approve, install or send of RFPs for a Project or Task when the status of the Project or Task changes. See Section Project/Task Status Triggers per Level for more information.

### 8.2.4 Project/Task Status Transitions

By default, every status can transition to every other status for any given Project or Task Type, assuming authority, activity and mandatory field entry is otherwise in a permissible state.

However, for each Project Type and Task Type, the workflow of the projects, tasks and subtasks can be controlled by limiting which status codes can transition to other status codes.

For example, you may wish to have all tasks of type ABC limited to the following flow:
1-Opened
-> 2-Authorized
-> 3-Work in Progress ->
4->Ready to Test
-> Testing Complete or E-Errors found during Testing or 3-Work in Progress
-> 7-Closed

This can be done from the Status Transitions screen, which is accessible with option T from the Project Type or Task Type listings.

NOTE: a valid MDWorkflow license must exist for the partition to define Status Transitions.

Options
F=Codes to Transition from – specify which status codes can transition to the selected status
T=Codes to Transition to – specify the list of valid status codes values to change to from the selected status

### 8.2.5 Project/Task Status Boundaries per Level

Barriers can be put in place to limit when an RFP can be processed based on the status of the Projects or Tasks that are impacted by the RFP. The list of defined Boundaries can be viewed/managed by pressing F9 in the Project/Task Status Codes list.

NOTE: a valid MDWorkflow license must exist for the partition to define Status Boundaries.

Boundaries are checked when a submit, approve, install or send action is requested for an RFP. MDCMS then checks if a Boundary definition exists for that action for the level of the RFP.
If found, MDCMS verifies if the status of each Project or Task or Subtask impacted by the RFP is within the permitted range defined by the Boundary.

The status is checked for the lowest element assigned to each object in the RFP.
For example, if object ABC is assigned directly to a Project, then the Project Status is checked. If object XYZ is assigned to a Project Task, then the Task Status is checked, but the Project Status is ignored.

If at least one of the impacted projects or tasks have a status outside the allowed range, then the requested action will be denied.

Application
The target application of the RFP

Level
The application level of the RFP

RFP Action
1 – when an RFP is submitted for validation and building of the deployment package
2 – when an RFP is approved
3 – when an RFP is installed
4 – when an RFP is sent to a target location

Minimum Status
A valid status code that marks the minimum boundary of the range based on the sort sequence of the code. If blank, then any status below the maximum is allowed.

Maximum Status
A valid status code that marks the maximum boundary of the range based on the sort sequence of the code. If blank, then any status above the minimum is allowed.

Options
**2=Edit** – change the boundary
**3=Copy** – copy the properties of an existing boundary to a new boundary
**4=Delete** – delete a boundary

Function Keys:
**F3=Exit**
**F6=Add** – Add a boundary

### 8.2.6 Project/Task Status Triggers per Level

Triggers can be put in place to automatically initiate the submit, approve, install or send of RFPs for a Project or Task when the status of the Project or Task changes. The list of defined Triggers can be viewed/managed by pressing F10 in the Project/Task Status Codes list.

NOTE: a valid MDWorkflow license must exist for the partition to define Status Triggers.

Triggers are checked whenever a status changes for a Project, Task or Subtask.

Application
The target application of the RFP

Level
The application level of the RFP

RFP Action
1 – when an RFP is submitted for validation and building of the deployment package
2 – when an RFP is approved
3 – when an RFP is installed
4 – when an RFP is sent to a target location

New Status
The new status value that has just been transitioned to

From Status
The prior value of the status. Leave blank to trigger the action when transitioning from any status to the new status. Otherwise, enter a value to limit the transitions causing the trigger. A Trigger record can be created for each transition if multiple from values, but not all from values, are necessary.

Project Trigger
Y – trigger the action when the status was changed on a project
N – not applicable at the project level

Task Trigger
Y – trigger the action when the status was changed on a task
N – not applicable at the task level

Subtask Trigger
Y – trigger the action when the status was changed on a subtask
N – not applicable at the subtask level

Merge RFPs
This parameter is considered for the RFP Submit and Send actions

Y – if multiple RFPs containing the Project, Task or Subtask are ready to be submitted or sent, merge them into a single RFP prior to triggering the action.
N – submit or send each RFP separately

Submit Immed
This parameter is considered for the RFP Submit and Install actions

Y – submit the RFP to the job queue immediately for processing
N – place the RFP in pending status, to be picked up at the appropriate time by the MDSBMRFP or MDINSRFP commands.

Options
**2=Edit** – change the trigger
**3=Copy** – copy the properties of an existing trigger to a new trigger
**4=Delete** – delete a trigger
**5=View** – view the parameters of a trigger

Function Keys:
**F3=Exit**
**F6=Add** – Add a boundary

## 8.3 Project Task/Subtask Listing

```
CMC224                          COMPANY NAME                                10/18/11
SCRN1                           Task Listing                                12:37:15
FILTERS
Proj: PROJNAME          Requester.: MMORGAN     Description: ____________________
Pri : _   Sts: _        Assn User.: ROGERS_     Task Type  : ___________
                                                Pos to Task: _____
Type options, press Enter.
 1=Select  2=Edit  3=Copy  4=Cancel  5=Display  9=Close  O=Objects  S=Subtasks
                                                          Create
Opt  Task  Type        Requester    Assign to   Pri  Sts    Date    Due Date   STsks
 _       1  INT_FIX     MMORGAN      ROGERS       3    1    8/18/11  10/01/11      12
     Fix accounting program ACT001.
 _       2  DEL_FIX     MMORGAN      ROGERS       3    1    9/22/11                 5
     Delete obsolete program ACT009.
 _       3  DOC CHANGE  MMORGAN      ROGERS       3    1    9/22/11
     Change documentation for tasks 1 and 2.



                                                                          Bottom
F3=Exit   F4=Browse   F5=Refresh   F6=Add    F9=Closed Tasks
F10=Sort by Due Date  F11=View Output   F17=Top    F18=Bottom
```

If necessary, projects can be granulated by tasks, which can be further granulated by subtasks.

The Project Task Listing display is accessed with option T from the Project Listing. Subtasks are then accessed with option S from the Task Listing.

The fields and handling for tasks and subtasks are largely the same as for projects. The only key difference is that the project can have any number of involved groups, but the task/subtask are limited to one assigned group (or user) and one test group (or user). The task-level groups and users do not have to be part of the groups at the project level.

FILTERS
Requester
Filter the listing by the Tasks Requester or leave blank to see all tasks for all Requesters.

Description
Filter the listing by a Tasks Description.

Pri - Priority
Filter listing by available Priority values.
1 - Critical
2 - High
3 - Medium
4 - Low
5 - Optional

Sts - Status
Filter listing by available Status values.

1 - Created
2 - Modified
3 – Email Sent
4 – Work in Progress
5 – Ready to Test
6 – Testing in Progress
7 – Testing Complete
8 – Closed
9 - Cancelled

If the MDWorkflow license is active, additional status codes may be created and used.

Assn User
Filter the listing by the user assigned to the task.

Task Type
Filter the listing by the Task Type.

Pos to Task
Position the listing to the selected Task.

Options
**1=Select** – Return the selected Task (and Project) back to the requesting process. This option will only appear when using F4=Browse in the Project field of the Object Manager panel.
**2=Edit** – Edit the Tasks detail information.
**3=Copy** – Copy the details of a Task to a new Task.
**5=Display** – View the Tasks detail information.
**8=Chg Status** – Select a new status for the Task from a list of possible status codes, based on authority and current status. **NOTE:** If the new status closes the Task, a warning will be given if the Task still has open Subtasks. The user can bypass the warning by pressing Enter and all Subtasks will also be closed.
**H=Hours** – View and enter hours worked on behalf of the Task.
**O=Objects** – Display requested objects for Task.
**S=Subtasks** – Display a list of Subtasks for the selected Task.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse list of valid values for available fields.
**F5=Refresh**
**F6=Add** – Add a Task to the selected Project.
**F9=Closed Tasks** – Display a listing of closed Tasks for selected Project.
**F10=Sort by Due Date** – Sort the Task listing by the value of Due Date.
**F11=View Output** – Display the MD Output panel and other spool files
**F17=Top** – Position the display to the Top.
**F18=Bottom** – Position the display to the Bottom.

### 8.3.1 Task Types

```
MDCTSKT                          MD T 8 6.1                            5.04.17
SCRN1                            Task Types                           15:58:36

Pos: __________ Filter by Desc: ____________________ Limit: _

Type options, press Enter.
 1=Select  2=Edit  3=Copy  4=Delete  5=Display  T=Transitions
                                                                      Limit
Opt  Task Type   Description                                         Requests
 _   ADMIN       Administration                                        N
 _   CHG_FUN     Change existing Function                              N
 _   COSMETIC    Cosmetic Fix                                          N
 _   DEMO        Product Demonstration                                 N
 _   FUN_ERROR   Functional error                                      N
 _   INSTALL     Installation                                          N
 _   LICENSE     Product License                                       N
 _   NEW_FUN     New Function                                          N
                                                                     More...
F3=Exit   F6=Add
```

Task Types are means to categorize tasks and to set certain rules for tasks of a given type. Every task must have a Task Type defined for it.

The listing to view and manage task types is reached by pressing F4 on the Task Type field in the Task screen.

Task Type
A 10-character identifier for a type of task

Description
Description of the Task Type

Limit Object Requests to Assigned Users
If developers are limited from assigning Object Requests to a Task of this type.
Y – Only developers that have been assigned to the Task, either directly or as a member of an assigned group, are allowed to assign Object Requests to the Task.

N – Any developer can assign Object Requests to a Task of this type, unless they aren't involved with the Project and the Project Type has limited Object Requests.

Options
**2=Edit** – change the type properties
**3=Copy** – copy to a new type
**4=Delete** – remove the type
**T=Transitions** – specify the allowed Task/Subtask Status Transitions permitted for the Task Type

## 8.4 Project/Task Hours Used

```
CMC268                              MD T 8 6.1                              6.04.17
SCRN1                        Project/Task Hours Used                        09:39:19
Filter by
Project: DEMO033_____ Task/STask: ______ ______  Date Range: _________ - _________
                              Phase: ______             User: ___________
Type options, press Enter.                            Comment: ____________________
 2=Edit  3=Copy  4=Delete  5=View                Total Hours:         28.00

Opt    Date    Project       Task STask User       Phase Hours  Comments
 _   30.03.17 DEMO033                  MMORGAN    DOC    3.00  info
 _   28.03.17 DEMO033                  MMORGAN    FUN    3.00  initial draft
 _   28.03.17 DEMO033                  MMORGAN    TEC   20.00  Customer DOCS
 _   24.03.17 DEMO033                  REN        REQ    2.00

                                                                        Bottom
F4=Browse  F6=Add  F7=Today  F8=This Week  F9=This Month  F10=Prior Month
```

The Project/Task Hours Used listing provides an overview of hours worked based on a variety of filters and provides the means to enter hours worked. This display is accessed is 2 ways:

1) Using the H=Hours option for a Project, Task or Subtask. This listing then filters the entries by default to show the hours worked for that Project, Task or Subtaski.
2) Pressing **F19** from the Object Manager. This listing then filters the entries by default based on the filters used the last time this screen was entered from the Object Manager.

Filters
The Hours Used Listing is filtered by the fields at the top of the display.

The comment filter will list all entries that have matching text in the comment. For example, enter PRINT to list only entries with print somewhere in the title. The comment filter is not case sensitive.

Total Hours
The sum of all records listed based on the filter criteria

Options
**2=Edit** – Edit the number of hours or Comments for an entry
**3=Copy** – Copy an existing entry to a new entry
**4=Delete** – Delete an entry
**5=View** – View the details of the entry

Function Keys:
**F3=Exit**
**F4=Browse** – Browse list of valid values for the Filter fields.
**F5=Refresh**
**F6=Add** – Add a new entry
**F7=Today** – change the date range filters to show only today
**F8=This Week** – change the date range filters to show only the current week
**F9=This Month** – change the date range filters to show only the current month
**F10=Prior Month** – change the date range filters to show only the prior month

### 8.4.1 Time Entry

```
CMC268                              MD T 8 6.1                              6.04.17
SCRN2                               Time Entry                             09:56:40


Date  . . . . . .  06.04.17

Project . . . . .  DEMO03        Demo project 03
Task  . . . . . .      1         implement changes
Subtask . . . . .      1         test to see if the subtasks are getting talli
Phase . . . . . .  FUN           Functional Design

User  . . . . . .  MMORGAN       Michael Morgan

Hours Worked  . .  7.5___

Comments  . . . . _____________________________________________________________
_____________________________________________________


F4=Browse   F11=View Output   F12=Previous   F21=Sys Command
```

A new time entry can be added or modified from this screen.

Date
The date the work occurred. Required Field.

Project
The project for which the work was performed. Required Field. Enter value or press F4 to select from list of Projects that you are authorized to see.

Task
If work was performed for a task within the project, enter that number here or press F4 to select from a list.

Subtask
If work was performed for a subtask within the project task, enter that number here or press F4 to select from a list.

Phase
The project phase used to categorize the type of work performed. Required Field. Enter value or press F4 to select from the list of Project phases. Also Press F4 on this field in order to create or modify the list of Project Phases.

User
The MDSEC ID of the user that performed the work. Required Field. Enter value or press F4 to select from list of users.

Hours Worked
The number of hours for that day that were worked for the combination of project, task, subtask, phase and user. The number to the left of the decimal point are the number of hours and the number to the right of the decimal point is the percentage of an hour. Required Field.

Comments
Free text to further describe the work performed.

## 8.5 Project Report Generator

To generate a report over Projects from within MDCMS, press **F8** from the Project Listing screen select option 1 for Project Reports. The following prompt screen is then displayed:

```
CMC285                          COMPANY NAME                              10/18/11
SCRN1                         Project Report                              17:01:13

Select and sequence fields and record filters, press Enter.
Use F7 to load a definition, F9 to save a definition
                                                                          Sort
Seq Field           Minimum      Maximum                                  A/D
___ Project         ____________ ____________ *gen*eric*                    A
___ Title           ____________ ____________ *gen*eric*                    A
___ Exp. Completion ____________ ____________ YYYYMMDD, *PY, *PM, *CY, *CM  A
___ Priority        ____________ ____________                               A
___ Status          ____________ ____________                               A
___ Application     ____________ ____________ *gen*eric*                    A
___ Requester       ____________ ____________ *gen*eric*                    A
___ Date Created    ____________ ____________ YYYYMMDD, *PY, *PM, *CY, *CM  A
___ Assigned Group  ____________ ____________ *gen*eric*                    A
___ Assigned User   ____________ ____________ *gen*eric*                    A
___ Test Group      ____________ ____________ *gen*eric*                    A
___ Test User       ____________ ____________ *gen*eric*                    A
___ Closed by User  ____________ ____________ *gen*eric*                    A
___ Date Closed     ____________ ____________ YYYYMMDD, *PY, *PM, *CY, *CM  A
                                                                        Bottom
F3=Exit   F4=Browse   F5=Refresh   F7=Load Def   F9=Save Def   F11=View Output
```

This screen allows you to define your own Project Report. The report may consist of any or all of the listed fields and any or all Projects may be selected and sorted as you choose. The report definitions may then be saved and used again in the future from this screen or from a command line.

Seq
Each field with a sequence number > 0 will be included in the report. The columns of the report are ordered by the sequence number. The sorting of the records is also based on the order of the sequence fields.

Minimum
The smallest value that the corresponding field may contain, unless the value is a special value or a generic value

Special Values:

- *PY – the date must fall within the previous year (only valid for date fields)
- *PM – the date must fall within the previous month (only valid for date fields)
- *CY – the date must fall within the current year (only valid for date fields)
- *CM – the date must fall within the current month (only valid for date fields)

Generic Values:

The wildcard value * may be used multiple times anywhere within a string to limit records to occurrences where the field contains the string. For example, *3XJ* will select all records where the value 3XJ is contained somewhere within the field string. *XJ will select all records where the value XJ is contained at the end of the field string.

Maximum
The largest value that the corresponding field may contain. This field must be left blank if a special or generic value was entered in the Minimum field.

Sort
A – Sort this field in ascending (A->Z) order.
D – Sort this field in descending (Z->A) order.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of available entries depending upon which field the cursor is positioned.
**F5=Refresh** – Reset the definition back to the initial settings
**F7=Load Def** – Load a definition from the list of saved definitions
**F9=Save Def** – Save the entered configuration as a report definition. The saved definition may then be reused at anytime in the future from within MDCMS or from a command line. See the chapter on MDRUNRPT for more information about running reports from a command line.
**F11=View Output** – Display the MD Output panel and other spool files.

## 8.6 Task Report Generator

To generate a report over Project Tasks from within MDCMS, press **F8** from the Project Listing screen select option 2 for Task Reports. The following prompt screen is then displayed:

```
CMC285                          COMPANY NAME                              10/18/11
SCRN1                         Project Report                              17:01:13

Select and sequence fields and record filters, press Enter.
Use F7 to load a definition, F9 to save a definition

                                                                          Sort
Seq Field           Minimum      Maximum                                  A/D
___ Project         ____________ ____________ *gen*eric*                    A
___ Task            ____________ ____________ 1-99999                      A
___ Subtask         ____________ ____________ 1-99999                      A
___ Due Date        ____________ ____________ YYYYMMDD, *PY, *PM, *CY, *CM A
___ Due Time        ____________ ____________ HHMMSS                       A
___ Priority        ____________ ____________                              A
___ Status          ____________ ____________                              A
___ Task Type       ____________ ____________ *gen*eric*                   A
___ Internal Ref    ____________ ____________ *gen*eric*                   A
___ Date Created    ____________ ____________ YYYYMMDD, *PY, *PM, *CY, *CM A
___ Time Created    ____________ ____________ HHMMSS                       A
___ Requester       ____________ ____________ *gen*eric*                   A
___ Assigned Group  ____________ ____________ *gen*eric*                   A
___ Assigned User   ____________ ____________ *gen*eric*                   A
                                                                   More...
```

This screen allows you to define your own Task Report. The report may consist of any or all of the listed fields and any or all Tasks may be selected and sorted as you choose. The report definitions may then be saved and used again in the future from this screen or from a command line.

Seq
Each field with a sequence number > 0 will be included in the report. The columns of the report are ordered by the sequence number. The sorting of the records is also based on the order of the sequence fields. The only exception is the Description field, which is not part of the sort.

Minimum
The smallest value that the corresponding field may contain, unless the value is a special value or a generic value

Special Values:

- *PY – the date must fall within the previous year (only valid for date fields)
- *PM – the date must fall within the previous month (only valid for date fields)
- *CY – the date must fall within the current year (only valid for date fields)
- *CM – the date must fall within the current month (only valid for date fields)

Generic Values:

The wildcard value * may be used multiple times anywhere within a string to limit records to occurrences where the field contains the string. For example, *3XJ* will select all records where the value 3XJ is contained somewhere within the field string. *XJ will select all records where the value XJ is contained at the end of the field string.

Maximum
The largest value that the corresponding field may contain. This field must be left blank if a special or generic value was entered in the Minimum field.

Task Description Field
Minimum – Tasks can be filtered by a generic value entered in the minimum field
Maximum – The maximum length of the description that will be in the report. The default length is 160 characters and a length of up to 600 characters is permitted.

Sort
A – Sort this field in ascending (A->Z) order.
D – Sort this field in descending (Z->A) order.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of available entries depending upon which field the cursor is positioned.
**F5=Refresh** – Reset the definition back to the initial settings
**F7=Load Def** – Load a definition from the list of saved definitions
**F9=Save Def** – Save the entered configuration as a report definition. The saved definition may then be reused at anytime in the future from within MDCMS or from a command line. See the chapter on MDRUNRPT for more information about running reports from a command line.
**F11=View Output** – Display the MD Output panel and other spool files.

## 8.7 Time Report Generator

To generate a report over Project Time Entries from within MDCMS, press **F8** from the Project Listing screen select option 3 for Time Reports. The following prompt screen is then displayed:

```
CMC258                          COMPANY NAME                              10/18/16
SCRN1                         Project Report                              17:01:13

Select and sequence fields and record filters, press Enter.
Use F7 to load a definition, F9 to save a definition
                                                                          Sort
Seq Field           Minimum      Maximum                                  A/D
___ Date            ____________ ____________ YYYYMMDD, *PM, *PW, *CM, *CW  A
___ Project         ____________ ____________ *gen*eric*                    A
___ Project Title   ____________ ____________ *gen*eric*                    A
___ Task            ____________ ____________ 1-99999                      A
___ Subtask         ____________ ____________ 1-99999                      A
___ Task Desc.      ____________ 160_________ Min=*gen*eric* / Max=Length
___ User            ____________ ____________ *gen*eric*                    A
___ User Desc.      ____________ ____________ *gen*eric*                    A
___ Phase           ____________ ____________ *gen*eric*                    A
___ Phase Desc.     ____________ ____________ *gen*eric*                    A
___ Hours Reported  ____________ ____________ 1 - 99                       A
___ Comments        ____________ ____________ *gen*eric*                    A
___ Cost per Hour   ____________ ____________ 1 - 99999                    A
___ Total Cost      ____________ ____________ 1 - 9999999                  A
                                                                       Bottom
F3=Exit   F4=Browse   F5=Refresh   F7=Load Def   F9=Save Def   F11=View Output
```

This screen allows you to define your own Time Entry Report. The report may consist of any or all of the listed fields and any or all entries may be selected and sorted as you choose. The report definitions may then be saved and used again in the future from this screen or from a command line.

Seq
Each field with a sequence number > 0 will be included in the report. The columns of the report are ordered by the sequence number. The sorting of the records is also based on the order of the sequence fields. The only exception is the Description field, which is not part of the sort.

Minimum
The smallest value that the corresponding field may contain, unless the value is a special value or a generic value

Special Values:

- *PM – the date must fall within the previous month (only valid for date fields)
- *PW – the date must fall within the previous week (only valid for date fields)
- *CM – the date must fall within the current month (only valid for date fields)
- *CW – the date must fall within the current week (only valid for date fields)

Generic Values:

The wildcard value * may be used multiple times anywhere within a string to limit records to occurrences where the field contains the string. For example, *3XJ* will select all records where the value 3XJ is contained somewhere within the field string. *XJ will select all records where the value XJ is contained at the end of the field string.

Maximum
The largest value that the corresponding field may contain. This field must be left blank if a special or generic value was entered in the Minimum field.

Task Description Field
Minimum – Tasks can be filtered by a generic value entered in the minimum field
Maximum – The maximum length of the description that will be in the report. The default length is 160 characters and a length of up to 600 characters is permitted.

Sort
A – Sort this field in ascending (A->Z) order.
D – Sort this field in descending (Z->A) order.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse the list of available entries depending upon which field the cursor is positioned.
**F5=Refresh** – Reset the definition back to the initial settings
**F7=Load Def** – Load a definition from the list of saved definitions
**F9=Save Def** – Save the entered configuration as a report definition. The saved definition may then be reused at anytime in the future from within MDCMS or from a command line. See the chapter on MDRUNRPT for more information about running reports from a command line.
**F11=View Output** – Display the MD Output panel and other spool files.

## 8.8 MDUPDPROJ – Create/Update Project command

MDCMS is delivered with a command-based API that allows external tools or applications to create and update Projects within MDCMS. This allows a business to continue using its existing Project Management tool, while being able to synchronize the data in the tool with the Project Manager that is embedded in MDCMS.

The MDCMS command is named ***MDUPDPROJ*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your Project Management tool, you can also directly call program ***MDUPDPROJ*** in library MDCMS. In this case, be certain that the parameters sent to the program exactly match the parameters in command MDUPDPROJ.

All MDUPDPROJ API transactions are logged to file MDCMS/MDDUPRJ.

**NOTE:** If Location Synchronization is used (MDCMS Settings option 6), the API will only need to be invoked for 1 system. The other partitions or physical systems will automatically be synchronized.

If a parameter value is not provided and the Project already exists, the existing value for the parameter will remain in place.

**MDUPDPROJ** Parameter Table

| Name | Type | Length | Valid Values and Format |
|---|---|---|---|
| Project ID | CHAR | 12 | unique ID |
| Project Type | CHAR | 10 | The Project Type to categorize the Project |
| Primary Appl | CHAR | 4 | The primary Application referenced by this Project |
| Assigned to Group | CHAR | 10 | Valid User Group |
| Assigned to User | CHAR | 10 | Specific User in Group or Valid user in MDSEC when group left blank |
| Priority | INTEGER | 1 | 1 – 5 |
| Expected Completion | INTEGER | 8 | YYYYMMDD |
| Status | CHAR | 1 | Unique ID |
| Project Title | CHAR | 80 | free format |
| Expected Hours | DEC | 9,2 | Number of hours expected to complete project |
| Expected Cost | DEC | 11,2 | Cost expected to complete project |
| Modification User | CHAR | 10 | IBMi USRPRF |
| MDCMS Instance | CHAR | 5 | Specifies the MDCMS environment that should be used for the API. The ID correlates to the suffix of the MDCMS library name.<br>Special values:<br>*DFT – default instance (no suffix)<br>*SAME – the current instance based on the library list |
| Extended Description | CHAR | 4000 | |

## 8.9 MDUPDPRJG – Update Project Group command

MDCMS is delivered with a command-based API that allows external tools or applications to add or remove an involved User Group from an existing Project in MDCMS.

The MDCMS command is named ***MDUPDPRJG*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your Project Management tool, you can also directly call program ***MDUPDPRJG*** in library MDCMS. In this case, be certain that the parameters sent to the program exactly match the parameters in command MDUPDPRJG.

Successful MDUPDPRJG transactions are logged in file MDCMS(ENV)/MDDTHST and visible from the Full History listing in the MDWorkflow web application.

**NOTE:** If Location Synchronization is used (MDCMS Settings option 6), the API will only need to be invoked for 1 system. The other partitions or physical systems will automatically be synchronized.

If the target Project is closed or if the Group or User aren't defined in MDCMS, the entry will not be processed.

**MDUPDPRJG** Parameter Table

| Name | Type | Length | Valid Values and Format |
|---|---|---|---|
| Project ID | CHAR | 12 | unique ID - Required |
| Group ID | CHAR | 10 | Valid User Group – Required |
| User ID | CHAR | 10 | A specific user that is a member of the group that will be involved with this project. Leave this parameter blank if any user that is a member of the group may be involved. |
| Role | CHAR | 1 | A - The role of Acceptance/Test will be applied. This indicates that the group/user will be responsible for accepting RFPs that have been installed in a level requiring acceptance before being allowed to migrate to the next level.<br><br>T - The role of Technical will be applied. This indicates that the group/user will be responsible for carrying out work on behalf of the project. |
| Option | CHAR | 7 | *ADD - Add the provided Group/User combination for the given Role to the Project. If the combination already exists, execution will be ignored.<br><br>*REMOVE - Remove the provided Group/User combination for the given Role from the Project. If the combination doesn't exist, execution will be ignored. |
| MDCMS Instance | CHAR | 5 | Specifies the MDCMS environment that should be used for the API. The ID correlates to the suffix of the MDCMS library name.<br>Special values:<br>*DFT – default instance (no suffix)<br>*SAME – the current instance based on the library list |

## 8.10 MDUPDTASK – Create/Update Task command

MDCMS is delivered with a command-based API that allows external tools or applications to create and update Tasks within MDCMS. This allows a business to continue using its existing Project Management tool, while being able to synchronize the data in the tool with the Project Manager that is embedded in MDCMS.

The MDCMS command is named ***MDUPDTASK*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your Project Management tool, you can also directly call program ***MDUPDTASK*** in library MDCMS. In this case, be certain that the parameters sent to the program exactly match the parameters in command MDUPDTASK.

All MDUPDTASK API transactions are logged to file MDCMS/MDDUTSK.

**NOTE:** If Project Synchronization is used (MDCMS Settings option 8), the API will only need to be invoked for 1 system. The other partitions or physical systems will automatically be synchronized.

If a parameter value is not provided and the Task or Subtask already exists, the existing value for the parameter will remain in place.

**MDUPDTASK** Parameter Table

| Name | Type | Length | Valid Values and Format | Required |
|---|---|---|---|---|
| Project ID | CHAR | 12 | unique ID | always |
| Task Number | INTEGER | 5 | 0 for new Task, > 0 for update | for update |
| Subtask Number | INTEGER | 5 | 0 for new Subtask (and new Subtask parameter set to *YES), > 0 for update | for update |
| New Subtask | CHAR | 4 | *NO – Call is relevant for a Task or to update an existing Subtask<br>*YES – Create a new Subtask | always |
| Task Type | CHAR | 10 | Valid Task Type code | for insert |
| Primary Appl | CHAR | 4 | MDCMS Appl | |
| Internal Ref Code | CHAR | 20 | Internal Reference Code | |
| Priority | INTEGER | 1 | 1 – 5 | for insert |
| Status | CHAR | 1 | Valid Task Status | |
| Due Date | INTEGER | 8 | YYYYMMDD | |
| Due Time | INTEGER | 6 | HHMMSS | |
| Assigned to Group | CHAR | 10 | Valid User Group | |
| Assigned to User | CHAR | 10 | Specific User in Group or Valid user in MDSEC when group left blank | |
| Test Group | CHAR | 10 | Valid User Group | |
| Test User | CHAR | 10 | Specific User in Group or Valid user in MDSEC when group left blank | |
| Expected Hours | DEC | 9,2 | Number of hours expected to complete task | |
| Expected Cost | DEC | 11,2 | Cost expected to complete task | |
| Modification User | CHAR | 10 | IBMi USRPRF | |
| MDCMS Instance | CHAR | 5 | Unique ID<br>*DFT – default instance (no suffix)<br>*SAME – the current instance based on the library list | |
| Extended Description | CHAR | 4000 | | for insert |

## 8.11 MDUPDCFLD – Update Project/Task Custom Field command

MDCMS is delivered with a command-based API that allows external tools or applications to add, update or remove a Custom Field value from an existing Project, Task or Subtask in MDCMS.

The MDCMS command is named ***MDUPDCFLD*** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command. If you are unable to invoke a command from your Project Management tool, you can also directly call program ***MDUPDCFLD*** in library MDCMS. In this case, be certain that the parameters sent to the program exactly match the parameters in command MDUPDCFLD.

Successful MDUPDPRJG transactions are logged in file MDCMS(ENV)/MDDTHST and visible from the Full History listing in the MDWorkflow web application.

**NOTE:** If Location Synchronization is used (MDCMS Settings option 6), the API will only need to be invoked for 1 system. The other partitions or physical systems will automatically be synchronized.

If the target Project is closed or if the custom field isn't defined in MDCMS, the entry will not be processed.

**MDUPDCFLD** Parameter Table

| Name | Type | Length | Valid Values and Format |
|---|---|---|---|
| Project | CHAR | 12 | unique ID - Required |
| Task | DEC | 5 | Task Number – Leave as 0 if Custom Field is to be applied directly to the Project. |
| Subtask | DEC | 5 | Subtask Number – Leave as 0 if Custom Field is to be applied directly to the Project or Task. |
| Field Name | CHAR | 10 | The Name of the Field to add, update or remove for this Project/Task |
| Option | CHAR | 7 | *UPDADD - If a value already exists for the given field, it will be updated with the field provided. Otherwise, the value will be added for the field.<br><br>*ADD - If a value is already defined for the field, the existing value will be retained.<br><br>*REMOVE - Remove any exiting value from the Field for the given Project/Task. If a field value doesn't exist, execution will be ignored. |
| Alphanumeric Value | CHAR | 160 | The value to apply for the given field in character format.<br><br>The maximum length of an alphanumeric field is 160 characters or the defined length of the field, whichever is shorter. Use this for fields of type:<br>String<br>Checkbox (Y or N)<br>DropDownList (the code value, not the description)<br>URL |
| Numeric Value | DEC | | The value to apply for the given field in decimal format.<br><br>The maximum length of a numeric field before the |

| | | | |
|---|---|---|---|
| | | | decimal point is 15 digits. The maximum length after the decimal point is 9 digits. The actual maximum depends on the definition of the field. Use this for fields of type:<br>Number<br>Date (format YYYYMMDD)<br>Time (format HHMMSS) |

## 8.12 MDUPDSTS – Update Status for RFP Projects/Tasks command

It is often useful, that the status for a Project or Task automatically updates to a new value when an RFP reaches a certain point in the migration path. To facilitate this, command MDUPDSTS is provided to use as an exit point (such as a Post-Installation command) to update any Projects or tasks that were impacted by the RFP.

All MDUPDSTS transactions are logged to file MDCMS/MDDUSTS.

**MDUPDSTS** Parameter Table

| | |
|---|---|
| Application (AGP) | The Application targeted by the RFP |
| RFP Number (RFP) | The RFP Number whose activity requires a status change to projects and tasks assigned to object requests in the RFP. |
| New Status Code (STS) | The new project/task status code to be applied<br>The status code must be defined and be allowed for automatic updates.<br><br>If the status code is marked as a closing status, no open object requests may remain in the Object Manager for a given Project or Task. |
| Apply to Projects (PROJ) | Specifies if projects in the RFP should be updated with the new status.<br>*YES – the status will be updated for Projects<br>*NO – the status will not be updated for Projects |
| Apply to Tasks (TASK) | Specifies if Tasks in the RFP should be updated with the new status.<br>*YES – the status will be updated for Tasks<br>*NO – the status will not be updated for Tasks |
| Apply to Subtasks (STSK) | Specifies if Subtasks in the RFP should be updated with the new status.<br>*YES – the status will be updated for Subtasks<br>*NO – the status will not be updated for Subtasks |
| Include for Current Status (CSTI) | Specifies a list of status codes to compare to the current status of a project, task or subtask. If the current status matches one of the codes in the list, the status for the project, task or subtask will be updated to the new status.<br><br>If the list is empty, then any current status is permitted.<br><br>You can specify 50 values for this parameter. |
| Exclude for Current Status (CSTE) | Specifies a list of status codes to compare to the current status of a project, task or subtask. If the current status matches one of the codes in the list, the status for the project, task or subtask will NOT be updated to the new status.<br><br>If the list is empty, then any current status is permitted.<br><br>You can specify 50 values for this parameter. |
| Environment ID (ENV) | Specifies the MDCMS environment that should be used for the API.<br>The ID correlates to the suffix of the MDCMS library name.<br>*DFT – the default environment will be used. This correlates to library MDCMS.<br>*SAME – the environment of the current library list will be used |

# 9 MDXREF

*MDXREF* is a tool used to view the inter-relationship between objects. This includes what and how programs use files, what and how files relate to one another, the complete process flow of applications, etc. See the MDXREF User Manual for instructions and more information.

# 10 Send Promotion to Remote System

```
MDRLWSD                          COMPANY NAME                                11/20/11
SCRN1                  Send Promotion to Remote System                       10:37:41
Filters:
 Appl: TEST   Rcvd: _    Project: ____________   Object: ___________________
 Lvl.: 10     Inst: _    Task...: _____          User..: __________
 Stat: __     Prob: _    Subtask: _____          RFP...: _______
                         Cmd/Scr: _ / _          Desc..: ___________________
Type options, press Enter.
 1=Send  2=Edit  3=Copy  7=Reset  9=Close    C=Cmd/Scrp  H=History  M=Merge
                                 O=Objects  S=Spools    T=Target Locs
   Appl    RFP  Lvl User      Installed St R I P Description
_  ACCT  20368  90  MMORGAN     3/14/97 01       Fix to receivables process
_  ACCT  20594  90  MMORGAN     3/16/97 02 P   W Euro Currency preparation
_  ACCT  20643  90  BTERRELL    3/16/97 01       Decimal data problem
_  ACCT  20653  90  MMORGAN     4/09/06 03       Load workfiles with info



                                                                        Bottom
 F3=Exit    F4=Browse    F5=Refresh    F6=Add    F8=Sort by Date    F10=History
```

It is possible to control applications across IBMi systems or logical partitions via MDCMS, as long as a licensed copy of MDCMS exists on each of the systems involved.

The first step for specifying what is to be sent where is to define the distribution levels (see the sections for OS/400 Locations and Distribution Levels for instructions).

If a promotion is installed into an Application/level, the RFP with all of its installed objects and commands will appear in the list as long as:

1) the application/level has at least 1 defined distribution level
2) the flag, Place RFP in Send Promotion List, is set to Y for the RFP

For each entry, the application, RFP number, application level, RFP Manager, date installed, and description of promotion are listed.

The following additional columns are shown:

St

The send status of the RFP across all target levels.

RP – The installed RFP is pending MDWorkflow acceptance. Until acceptance occurs, none of the objects in the RFP can be sent to other locations.
00 – The RFP is empty – no objects assigned to RFP
01 – The RFP is ready, but not yet sent to any locations
02 – The RFP has been sent to some of the defined locations
03 – The RFP has been sent to all defined locations that normally expect to be sent to
04 – The send process is currently running for the RFP
05 – The RFP is closed in the Send List

R
If the receipt of the sent RFP has occurred for some or all of the locations. There must be a defined DDM push or pull connection defined between this location and a target location for this information to be available.

Blank – Receipt of RFP hasn't occurred or isn't known
P – the RFP has been received on a portion of the locations that it has been sent to
C – the RFP has been received on every location that it has been sent to

I
If the installation of the sent RFP has occurred for some or all of the locations. There must be a defined DDM push or pull connection defined between this location and a target location for this information to be available.

Blank – Installation of RFP hasn't occurred or isn't known
P – the RFP has been installed on a portion of the locations that it has been sent to
C – the RFP has been installed on every location that it has been sent to

P
If warnings or errors occurs during processing of the RFP on the target systems. There must be a defined DDM push or pull connection defined between this location and a target location for this information to be available.

Blank – problems haven't occurred or isn't known
W – warnings have occurred
E – errors have occurred

The entries may be filtered by large number of criteria. For most of the filters, F4 can be used to list and select a filter value.

The following options are available for each entry in the list:

**1=Send** – send the promotion package to remote systems. Any default send locations that haven't been ignored or already sent to will be pre-selected to send
**2=Edit** – edit the description or user of the promotion package
**3=Copy** – copy the RFP, including its object requests, to a new RFP
**7=Reset** – reset the status from 04=running back to 01 or 02. This can only be used if a send job ended abnormally.
**9=Close** – remove RFP from list.
A confirmation screen will be displayed before the promotion would actually be removed.
Closed RFPs can be reopened in the Send History screen.
If default target levels haven't been processed yet for the RFP, the user must be authorized to MDSEC function code 54 in order to be able to close the RFP.
**C=Cmd/Scrp** – add or edit RFP-Level commands and scripts for the promotion package.
**H=History** – View the Send History for the RFP
**M=Merge** – Merge 2 or more RFP Packages into 1 RFP. Enter an M for at least 2 RFP packages of the same application and level and then press Enter. A confirmation screen is shown where the target RFP number can be selected and the description of the merged package can be edited. All objects (and commands) of the selected RFPs will be merged into the target RFP. The other specified Packages will be emptied and closed once the merge is complete. Duplicate objects and commands will be eliminated automatically.
**O=Objects** – View/edit the objects contained in the promotion package. Specific objects (and commands) may be added or removed.
**S=Spools** – View any spool files from the most recent attempt to send the RFP.
**T=Target Locs** – view the send status for the target locations and individually send the promotion package if the status allows it.

Function Keys:
**F3=Exit**
**F4=Browse** – Browse list of valid values for a field (place cursor on appropriate field)
**F5=Refresh** – Refresh listing display
**F6=Add** – Manually add a promotion package to send
**F8=Sort by Date/Appl** – toggle the sort sequence for the listing between Appl/RFP ascending and Install Date descending
**F10=History** – View the Send History for all promotions

## 10.1 Promotion Objects Display

```
MDRLWSO                          COMPANY NAME                              10/19/11
SCRN1                         Promotion Objects                            10:37:03

Appl: TEST Lvl: 30 RFP:       4  Desc: Load workfiles with info

Type options, press Enter.
 2=Edit  3=Copy  4=Delete  5=View  C=Cmd/Scrp  P=Projects

Opt Object           Attribute  Type    C/S  Project        User       Rsn
 _  CALCAC1          CBL        *PGM         VAT          + MMORGAN     M
 _  CALCAC2          CBL        *PGM    Y    VAT            MMORGAN     D




                                                                      Bottom
 F3=Exit    F5=Refresh    F6=Add    F17=Top    F18=Bottom
```

This display, which is accessed by taking option O=Objects against an RFP on Send Promotion to Remote System panel, lists all source or objects within a promotion package that would be sent to a remote system. The reason for the promotion is listed with each entry. The reason may be M for a modification, R for a recompile, U for an Update or D for a deletion.

The following options are available for each entry in the list:
**2=Edit** – Edit the request parameters for the object. The parameters are equivalent to those that can be changed in the Object Manager – see Section 2 - Edit Request Details in the Object Manager chapter for more information.
**3=Copy** – add an object request to the RFP using the parameters for selected object as initial values
**4=Delete** – Remove the object from the promotion package
**5=View** – View the details of the object
**C=Cmd/Scrp** – Display and edit the commands and scripts to be sent with the object
**P=Projects** – Display and edit the projects that the object is assigned to

**F3=Exit**
**F5=Refresh** – refresh the list
**F6=Add** – add an additional object to the promotion package
**F17=Top** – position cursor to the top of the list
**F18=Bottom** – position cursor to the bottom of the list

## 10.2 Send Promotion Display

```
MDCLWSD                            COMPANY NAME                                10/19/15
SCRN3                    Send Promotion to Remote System                       10:37:38

Appl: ACCT  RFP: 20653  Lvl: 30  Desc: Load workfiles with info

Install Date: *CURRENT TimeZone  Loc.: __________  Lvl: __   Desc:  __________
Install Time: *IMMED__     T     User: __________  Fmt: ___  Addr:  __________
                                 Stat: ____        Prb: _    Group: __________
Type options, press Enter.
 1=Send  F=FTP Log  H=History  I=Ignore  P=Problems
                                                        Send / Ignore
Opt Location   Description               Lvl Stat Prb   Date   User       Fmt
 1  MD71       MD 7.1                    20  SERR  Y                      FTP
 1  SFO        Clean Save file           10  NONE                         SFO
 _  SFF        Full Save file            10  INST     10/18/15 MMORGAN    GOA


                                                                       Bottom
F3=Exit  F4=Browse  F5=Refresh  F8=Settings  F9=View Addr  F13=Unselect All
```

This is the confirmation screen for sending a promotion to one or more remote systems. This panel appears when option 1=Send or T=Target Locs is selected for an RFP on the Send Promotion to Remote System panel or from RFP History.

Install Date
The date that the install should take place on the target systems.
Set this value prior to using option 1 to process the send to the systems that should be installed at that time.

If the target level is set to automatic, it will be received, submitted and approved for installation immediately on the target system. Then a 2nd batch job will be submitted to batch that will be scheduled for the date/time provided.

If the target level is set to manual, then a user will need to carry out the manual steps, but the install date/time will default to the value provided in this screen.

*CURRENT - the installation will be scheduled for the same day that the submission completes on the target system.

Install Time
The time that the install should take place on the target systems.

*IMMED – the installation will begin as soon as installation approval is complete on the target system.

TimeZone
Indication of which location the entered Install Date/Time refers to.

L – schedule the date/time based on the time zone of the local (sending) system. If the target system is in a different time zone, the scheduled date/time will be adjusted accordingly. So, if the RFP is scheduled to install at 9pm EST because the local system is in New York, it will be installed at 6pm PST if the target system is in Los Angeles.

T – schedule the date/time based on the time zone of the target system. The scheduled date/time used on the SBMJOB command will match the value entered exactly. So, if the RFP is sent to 3 different locations and scheduled for 9pm, it will install at 9pm of the time zone of each of those systems.

Loc
Filter by the Location ID of the target system. Press F4 to select from a list.

User
Filter by the User ID that sent the RFP or Ignored a Location. Press F4 to select from a list.

Stat
Filter by the Status of the distribution for a Location. Press F4 to select from a list. The full description of possible status codes are available in section Send Status Values.

Lvl
Filter by the Level on the target system

Fmt
Filter by the Distribution Method. Press F4 to select from a list.

Prb
Whether or not problems have occurred during the send, receive or install of the RFP for the target level. Use Y to filter to only targets where problems occurred. Use N to filter to only targets where problems haven't occurred.

Desc
Filter by the Location Description. Any row will be displayed that contains the value anywhere within the description for its location.

Addr
Filter by the Location Address. Any row will be displayed that contains the value anywhere within the target address for its location.

Group
Filter by a Location Group. Press F4 when cursor is on the Group field to select and manage the Location Groups. Location Groups are used to provide a means of filtering a list of Locations by any definition necessary for the organization. Multiple locations can belong to a location group and multiple location groups can contain the same location.

Options
1 – Send the RFP to one or more target locations
F – View the FTP Log for the most recent attempt of sending by FTP to the selected location
H – View the Send History for the selected location
I – Ignore the target level for this RFP. If ignored, the auto-close function won't consider this level and will proceed with closing the RFP once the other default levels have been processed or ignored. The authority to ignore a target level is based on MDSEC function code 54.
P – View a list of any problems that have occurred during the send, receive or install of the RFP

Special Funtion Keys
F8 – View/Manage the Distribution Level settings
F9 – toggle the listing between viewing the location description and the target address
F13 – select or unselect all rows with option 1=Send

## 10.3 Manually add Promotion for Send

```
MDRLWSD                          COMPANY NAME                          10/19/11
SCRN5                  Manually add Promotion for Send                 10:37:03


            Application: ____
                  Level: __


           Existing RFP: ______

                         or

           New RFP Desc: ____________________________________________________
_____________________________________________________________________________
_________________________


F3=Exit    F4=Browse
```

One or more objects may be selected to be sent to a remote system without the prerequisite that the objects are first promoted. This panel is accessed by pressing **F6=Add** from the Send Promotion to Remote System display.

The above display will then be given. Enter the application and level (or press **F4=Browse** to browse the list of applications and their levels).

If the objects to send were promoted, enter the RFP number (or press **F4=Browse** to browse the list of RFP numbers from Installation History).

If the object or objects were not part of a promotion, leave the RFP number blank and enter a brief description of the promotion package.

Press **Enter** once the information is entered.

## 10.4 Add Object to Promotion

```
MDRLWSD                          COMPANY NAME                              10/19/11
SCRN6                      Add Object to Promotion                         10:37:03


 Appl: CSL   RFP:   1299  Lvl: 30  Desc: ACPRPT 501000 -> 500001


Reason . . .  _   D=Delete, M=Modify, R=Recompile, U=Update

Object . . .  ____________________________________________________________________


Attribute  .  __________
Project  . .  ____________
Task/Subtask  _____ _____
Sort Seq . .  _____


Rel. Path  .  ____________________________________________________________________


Enter=Confirm    F4=Browse    F12=Cancel
```

An object may be selected to be sent to a remote system without the prerequisite that the object is first promoted. Press **F6=Add** from the Promotion Objects display to add an object to an existing promotion package. This display will also be shown after a promotion is manually added.

Enter the reason, object name, object (or source) attribute and Project ID. Press **F4=Browse** to browse the list of objects, attributes, or projects. If the attribute is left blank, MDCMS will assign the last used attribute for the object.

Press **Enter** once the information is entered

## 10.5 Send History

```
MDCLWSL                          COMPANY NAME                                10/19/11
SCRN1                            Send History                                10:37:03
Filters:                                                 Tgt
 Appl Lvl    RFP Object     Project      Location    Lvl Fmt User       Stat Prb
 ____ __ _______ __________ ___________ __________ __  ___ __________ ____  _

Type options, press Enter.
 5=Details  C=Cmd/Scr  D=Dist Lvls  F=FTP Log  L=Locs  P=Problems  R=Reopen RFP

    Date     Time    Appl Lvl   RFP Distribution Queue   Lvl Trn User       Stat
_ 5.12.07 20:24:12 ACCT 30    351 chmdyn01              50  FTP MMORGAN    OK
_ 5.12.07 20:22:58 OPER 10  40036                           MMORGAN    NONE
_ 5.12.07 20:22:58 OPER 10  40035 chmdyn01                  SNA MMORGAN    FAIL
_ 5.12.07 20:22:58 OPER 10  40034 chmdyn01                  FTP MMORGAN    OK
_ 5.12.07 20:22:58 OPER 10  40033 chmdyn01                  FTP MMORGAN    OK
_ 5.12.07 20:22:58 OPER 10  40031 chmdyn01                  FTP MMORGAN    FAIL
_ 5.12.07 20:22:58 ACCT 10    335 chmdyn01                  FTP MMORGAN    OK
_ 5.12.07 20:22:58 ACCT 10    332                           MMORGAN    NONE



                                                                        Bottom
F4=Browse  F5=Refresh  F9=Toggle Desc  F11=View Output  F15=Print
```

This display will list the promotion send history for all promotions that have been attempted (since the installation of MDCMS version 6.2.4 or higher) plus all promotions that have been removed from the Send List without having been sent.

Filters
Enter a value into a filter field to limit the listing to items matching the filter(s). Possible values may be selected by pressing F4=Browse while the cursor is positioned on the filter field.

Options
5=Details – View complete details of the send, including object and project information
C=Cmd/Scr – display the RFP-Level commands and scripts that were defined for the promotion
D=Dist Lvls – view/manage the settings for the Distribution Levels
F=FTP Log – If the Send was processed using FTP, the FTP log can be displayed in order to analyse and correct any connection problems.
L=Locs – Edit the Distribution Queue settings
P=Problems – display the list of any warnings or errors that occurred during the send or, if available, during the receipt and installation on the target system
R=Reopen RFP – Reopen the RFP so that it can be sent again

Function Keys:
**F4=Browse** – Browse possible values for a filter field
**F5=Refresh**
**F9=Toggle Desc** – Toggle the display between showing/hiding the RFP description
**F11=View Output** – Display the MD Output panel and other spool files
**F15=Print** – print the listing to a spooled file based on the currently entered filters

## 10.6 Send Status Values

The following status values are possible for a distribution of an RFP to a specific target level and is visible from the Target Location screen or from Send History.

**Status Values generated on Local System prior to, or during, Send Process:**

| | |
|---|---|
| NONE | Send not attempted |
| IGN | Target Ignored by user |
| SPND | Send has been submitted for processing and is waiting to begin |
| SPRG | Send in progress to target location |
| SENT | RFP has been successfully sent |
| SERR | An error occurred while trying to send the RFP |

**Status Values generated for distributed RFP on Target System and logged locally using DDM:**

| | |
|---|---|
| RCVD | RFP has been successfully received |
| RWRN | RFP has been received, but warnings occurred |
| RERR | An error occurred while trying to receive the RFP |
| SBMP | RFP has been submitted for the compile/bundle steps and is waiting to begin |
| SBM | RFP submission (compile/bundle steps) in progress |
| SBME | An error occurred while trying to bundle the RFP |
| APND | RFP is waiting for installation approval |
| APRV | RFP has been approved for installation |
| RAP | MDRapid data mapping in progress |
| IPND | RFP has been submitted for installation and is waiting to begin |
| IPRG | RFP Installation in progress |
| INST | RFP has been successfully installed |
| IWRN | RFP has been installed, but warnings occurred |
| IERR | An error occurred while trying to install the RFP |

**Special Filter Status Values for limiting the listings:**

| | |
|---|---|
| *ACT | Any active status – not IGN, INST or IWRN |
| *SND | Any send status |
| *RCV | Any receive status |
| *SBM | Any submit status |
| *APR | Any approve status |
| *INS | Any install status |

## 10.7 MDSNDRFP – Send RFPs command

Command **MDSNDRFP** in library MDCMS(env) provides the ability to schedule or programmatically send open RFPs to levels on target systems.

Restrictions:

- The RFP must be open in the send list and none of the objects in the RFP may be waiting for MDWorkflow acceptance or be blocked by a Status Boundary. The RFP will only be sent to unignored target levels where the installation hasn't completed yet.
- As a safety precaution, at least one of the following parameters must be passed with a value other than the default: APPL, FLVL, TLVL, FRFP, TRFP, LOC, LOCGRP, FTLVL, TTLVL or PROJ.

**MDSNDRFP Parameters**

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code or *ALL for any application |
| FLVL | INTEGER | 2 | Minimum Application Level to consider |
| TLVL | INTEGER | 2 | Maximum Application Level to consider |
| FRFP | INTEGER | 7 | Minimum RFP Number to consider |
| TRFP | INTEGER | 7 | Maximum RFP Number to consider |
| LOC | CHAR | 10 | The Location to send the RFP to<br>*ALLDFT = All target locations defined for the RFP's level that have the Default to Send property set to Y=Yes or M=Yes for Manual Send.<br>*ALL = All target locations defined for the RFP's level |
| LOCGRP | CHAR | 10 | The Location Group to send the RFP to. MDCMS will only send to locations that meet the value for parameter LOC and LOCGRP.<br>*ALL = the locations to send to aren't limited to a specific group |
| FTLVL | INTEGER | 2 | The minimum application level on the target system to send to |
| TTLVL | INTEGER | 2 | The maximum application level on the target system to send to |
| MERGE | CHAR | 4 | Specifies if, in the case of multiple RFPs for the same local level, they should be merged into a single RFP before sending. The merge will occur for each level and result in the lowest RFP number for the level being the container for all of the impacted objects.<br>*NO = each RFP will be sent separately<br>*YES = All RFPs for the same application level will be merged into the lowest RFP so that a single RFP is sent to the target locations for that level. |
| RESEND | CHAR | 4 | Specifies if an RFP should be sent to a target level, if it has already been sent to that level. If the installation completed for the target level, then the RFP won't be resent.<br>*NO = a target level will be omitted, if the RFP has already been sent to it<br>*YES = the RFP will be resent to a target level, even if it had been sent before, as long as the installation hasn't completed on the target level. |

| | | | |
|---|---|---|---|
| INSDT | CHAR | 8 | Specifies the date that the RFP should be scheduled to be installed on the target level. It will be sent immediately, and then, if the validation, compile and approval phase is ok, will be installed at the given date and time, if the target level is set to install automatically.<br><br>*CURRENT = the installation of the RFP will occur on the same date as the approval is given. If the installation time is set to *IMMED, the installation will occur immediately.<br><br>Otherwise, specify a date in format YYYYMMDD |
| INSTM | CHAR | 6 | Specifies the time of day that the RFP should be scheduled to be installed on the target level. It will be sent immediately, and then, if the validation, compile and approval phase is ok, will be installed at the given date and time, if the target level is set to install automatically.<br><br>*IMMED = the installation of the RFP will occur as soon as approval is given for the RFP on the target.<br><br>Otherwise, specify a time in format HHMMSS |
| TZONE | CHAR | 7 | Specifies if the scheduled install date/time is based on the time zone of the sending system or the time zone of the target system.<br>*TARGET = the installation date/time is based on the time zone of the target system.<br>*LOCAL = the installation date/time is based on the time zone of the local sending system. |
| PROJ | CHAR | 12 | Project Filter – only send RFP if one or more Objects in the RFP are requested for the Project |
| TASK | INTEGER | 5 | Task Filter – only send RFP if one or more Objects in the RFP are requested for the Project Task |
| STSK | INTEGER | 5 | Subtask Filter – only send RFP if one or more Objects in the RFP are requested for the Project Subtask |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDSBMRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

## 10.8 MDADDSOG – Add MDCMS Send Object Group command

Command **MDADDSOG** in library MDCMS(env) provides the ability to create an RFP in the Send list containing all objects associated with an MDWorkflow Object Group based on that group's object inclusion and exclusion rules.

If successful, the RFP will be available in the Send listing ready to be sent.

Each MDADDSOG transaction is logged in MDCMS/MDDASOG. In addition to displaying the input parameters, the log also shows the generated RFP Number, and, if an exception occurs, a short description of the error.

Restrictions:

- The user entered for parameter USER must have MDSEC authority to Edit RFPs in Send List (code 48) for the entered Application Level as well as authority to use the Project (and Task/Subtask, if entered).
- The user performing MDADDSOG must have at least *USE authority for the USER parameter profile.

**MDADDSOG Parameters**

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application to send from |
| LVL | INTEGER | 2 | Application Level to send from |
| OGRP | CHAR | 10 | The MDWorkflow Object Group |
| RFPD | CHAR | 160 | The description to be placed on the RFP in the Send List |
| PROJ | CHAR | 12 | A valid Project ID to be applied to each object |
| TASK | INTEGER | 5 | The optional Task Number within the Project to be applied to each object |
| STSK | INTEGER | 5 | The optional Subtask Number within the Project Task to be applied to each object |
| USER | CHAR | 10 | The User ID to apply to the Send RFP and its objects<br>*USER – the user of the job invoking the command |
| LOC | CHAR | 10 | The Location to send the RFP to by default when the send occurs<br>*ALL = All target locations defined for the RFP's level that have the Default to Send property set to Y=Yes or M=Yes for Manual Send. |
| TLVL | INTEGER | 2 | The target level of remote locations to send to by default.<br>0 = all defined target levels for all default locations or the specific location in parameter LOC. |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used when running the command. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| VREF | CHAR | 20 | Specifies the Vendor Generated Identifier in order for an external process to easily identify the transaction record in the MDDASOG table. Any value up to 20 characters in length can be used. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail. |

| | | | |
|---|---|---|---|
| | | | *DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDSBMRFP Exception. Object=<OBJN>, Vendor Reference=<VREF>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

## 10.9 MDTGTSUM – MD RFP Target Location Summary command

Command **MDTGTSUM** in library MDCMS(env) provides the ability to summarize the status of some or all target locations for the send of an RFP.

Each MDTGTSUM execution and result is logged in MDCMS/MDDTSUM.

Each result can also be passed to a routine of type command, java or program in JSON format for further processing.

**MDTGTSUM Parameters**

| Name | Type | Length | Description |
|---|---|---|---|
| APPL | CHAR | 4 | Application Code – required value |
| RFP | INTEGER | 7 | RFP Number – required value |
| LOC | CHAR | 10 | The Target Location to include in the summary<br>*ALLDFT = All target locations defined for the RFP's level that have the Default to Send property set to Y=Yes or M=Yes for Manual Send.<br><br>*ALL = All target locations defined for the RFP's level |
| LOCGRP | CHAR | 10 | The Location Group to include in the Summary.<br>MDCMS will only send to locations that meet the value for parameter LOC and LOCGRP.<br>*ALL = the locations to send to aren't limited to a specific group |
| RTNTYP | CHAR | 5 | The type of routine to invoke and pass the summary result to.<br>*NONE = A routine won't be invoked with the result. The result will only be written to a record in table MDDTSUM.<br><br>*CMD = Invoke a command with the JSON result. The command must consist of 1 character parameter of length 5800 with the keyword of RESULT.<br><br>*JAVA = Invoke a Java class or JAR file. The parameter type (PRMTYP) must be *FILE when using java. The file path is passed as a single argument to the java class.<br><br>*PGM = Call a program. 1 character parameter of length 5800 will be passed that contains the result in JSON format. |
| RTNPTH | CHAR | 160 | The path to the routine, if the routine type isn't *NONE.<br>When type = *CMD, the path should be the command name or library name/command name and nothing else<br>When type = *JAVA, the path should be the full IFS path of the java class or JAR file, including the file name.<br>When type = *PGM, the path should be the program name or library name/program name and nothing else |
| PRMTYP | CHAR | 7 | The type of parameter that is passed to the command, java class or program.<br><br>*STRING = The JSON structure is passed as a string. If the routine type (RTNTYP) is java, *STRING is invalid and *FILE will be used automatically. |

| | | | |
|---|---|---|---|
| | | | *FILE = The JSON structure will be written to an IFS file in the directory defined in parameter File Directory (FILDIR).<br>The file name is generated automatically with naming pattern: mdtgtsum_<appl>_<rfp>_<timestamp>.txt<br>the path of the file, including the directory and name, are passed to the routine instead of JSON string itself. The routine can then work with the file directly. |
| FILDIR | CHAR | 160 | If the Parameter Type (PRMTYP) is set to *FILE, the IFS directory where the file should be written is to be provided here.<br>The directory must already exist when the command is invoked. |
| ENV | CHAR | 4 | Specifies the MDCMS environment that should be used to place the Request. The ID correlates to the suffix of the MDCMS library name. For example, TEST correlates to library MDCMSTEST.<br>*CUR = the current environment – recommended when invoking this command from an MDCMS exit point.<br><br>*DFT = The default environment will be used. This correlates to library MDCMS. |
| EMSG | CHAR | 7 | Specifies if and to what extent an exception message should be returned to the calling program. An exception message occurs when an input parameter value is invalid, causing the addition of the request to fail.<br>*DIAG = A diagnostic message will be placed in the calling program's message queue in the following format: MDSBMRFP Exception. Object=<OBJN>, Reason=<the error reason><br>*ESCAPE = The full diagnostic message as described above will be placed in the calling program's message queue and then followed by escape message CPF0001 for which the calling program can monitor.<br>*NONE = An exception message will not be returned to the calling program's message queue. |

Example of the JSON Format of the MDTGTSUM result


```
{
  "application": "EXAM",
  "level": 50,
  "RFP": 1234567,
  "RFPDescription": "Example RFP sent to 2 locations",
  "locations": [
    {
      "id": "LOC1",
      "targetLevel": 60,
      "targetRFP": 5959,
      "severity": 10,
      "status": "INST"
    },
    {
      "id": "LOC2",
      "targetLevel": 65,
      "targetRFP": 6162,
      "severity": 20,
      "status": "IWRN"
    }
  ],
  "maximumSeverity": 20,
  "projects": [
    {
      "id": "PROJ1",
      "task": 1565,
      "subtask": 0
    },
    {
      "id": "PROJ3",
      "task": 0,
      "subtask": 0
    }
  ]
}
```


Severity values:
10=Ignored or Installed without Warnings
20=Installed with Warnings
25=Still Ongoing
30=Terminated due to Error

# 11 Receive Promotion from Remote System

```
MDLLWR1                          Company Name                          11/19/11
SCRN1                 Receive Promotion from Remote System             10:37:31


                    MD Filename: __________

                      Job Queue: *JOBD_____
                        Library:   __________

                Transmitted via: 1      1=SNA
                                        2=FTP/Other
                                        3=Tape
                                        4=Optical Device

                   Netfile User: QPGMR_____


 Enter=Confirm  F4=Browse  F10=Log  F11=Output  F12=Cancel  F21=Sys Command
```

If the automatic receipt of Promotions is not used (see Promotion Level settings and API's MDRCVIFS or MDRCVSNA), then MDCMS promotions sent from remote systems are received using the above display, which is option 9 from the MDCMS Main Menu.

Promotion packages may be received here via SNA, FTP, GoAnywhere, XCOM, tape, or optical device. MDCMS remembers which method was used the last time that a promotion was received. It is best to set the Transmitted via parameter (if incorrect) before entering the other information

MD Filename
Enter the name of the file containing the promotion. MD promotion packages are always named 'MD' and the 1-character Host ID of the sending system and the 6-digit RFP number. Press **F4=Browse** to browse the list of outstanding promotion packages.

Job Queue/Library
The actual receive job is submitted to batch. The subsystem job queue/library may be specified for the receive job.

Netfile User
If the promotion package was sent via SNA, and a specific Netfile user was entered (default is QPGMR) then that same user id must be entered here to receive the promotion.

If the promotion is transmitted via tape or optical device, an additional parameter for Tape Device and Optical Device will prior to confirmation. These parameters are required for receiving the promotion or for browsing the MD promotion packages that exist on each media.

Press **Enter** to submit the receive job.

The submitted job creates a temporary library with the same name as the file. All source and objects related to the promotion are placed in this temporary library. After the objects are installed, the temporary library is deleted.

New MDCMS request records are written for the source/objects and a new RFP number is generated for the received items. The Promotion will then be ready to be installed into the lowest level for the application, unless a higher target level was specified when the Promotion was sent.

If Auto-Submit for the Promotion Level is set to Y, then the compilation portion of the installation will begin as soon as the receipt has completed.

**Common Receive Exceptions**

1) Promotion Level not defined for the sent application and target level. The Promotion Level will need to be defined (or the settings sent from another system).
2) The job description assigned to the level is corrupt (missing library, job queue, user, authority, etc.). Verify the parameters of the job description.
3) If a sent object is already requested on this system, and the object is in the process of being installed (Status 02 or higher), then a new request record will not be written for the object and report MDRCVERR is generated. Receive Error Commands, if defined for the Promotion Level, will be processed.
4) If the attribute for a sent object is not defined on this system, then a new request record will not be written for the object and report MDRCVERR is generated. Receive Error Commands, if defined for the Promotion Level, will be processed.
5) If a sent object is already requested on this system from a different RFP, and the object is only in reserved status (Status 00 or 01), then the existing request will be modified to migrate the source/object from the temporary library of this promotion at installation time and a warning will be generated. Receive Warning Commands, if defined for the Promotion Level, will be processed.
6) If the same RFP is resent to this location and objects from the prior send are already requested in reserved status (Status 00 or 01), then the existing RFP will be deleted entirely and replaced by the resent RFP. A warning will be generated. Receive Warning Commands, if defined for the Promotion Level, will be processed.

## 11.1 RFP Receive Log

F10 can be pressed from the Receive Promotion screen to view a log of all attempts to automatically or manually receive an RFP onto this system.

For each attempt, any warnings or exceptions can be viewed.

If an RFP was successfully sent, and should have been automatically received, but doesn't appear in the receive log, then perform DSPMSG QSYSOPR to see the reason why the receive job couldn't be submitted.

## 11.2 MDRCVIFS – Receive RFP/Settings from IFS command

When RFPs or settings are received via MDFTP (MDF), GoAnywhere™ (GOA) or a manual Save File (SFF) deployment from another system, they must be staged in IFS Folder /MDCMS/SEND/(instance). Service ***MDRCVIFS - MDCMS Receive RFPs in IFS*** is then used to check for, and process, those RFP files. MDRCVIFS can be started from the Service List in the MDCMS Setup Menu, but is recommended to be started from a scheduled job using command MDRCVIFS.

**MDRCVIFS Parameters**

| | |
|---|---|
| Environment ID | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |
| Submit Job | *YES – a job named MDRIFS(env) will be submitted to the entered Job Queue<br>*NO – the MDRCVIFS process will run within the current job |
| Job Queue | *DFT – submit to the queue defined for the MDRCVIFS service<br>*JOBD – submit to the default queue for the running job profile<br>The name of the job queue to submit MDRCVIFS to |
| Job Queue Library | The library of the job queue to submit MDRCVIFS to or *LIBL if the job queue is located in the current library list |
| Delay between Checks | *DFT – the default number of seconds between checking the IFS folder for candidates that is defined for the MDRCVIFS service<br>The number of seconds to wait between checks (1-9999) |
| Time of Day to auto-end Job | *DFT – end at the time defined for the MDRCVIFS service<br>*NEVER – the MDRCVIFS job shouldn't end automatically – it should run until the job is forcibly ended.<br>A specific time to end in format HH:MM:SS |

## 11.3 MDRCVSNA – Receive RFP/Settings from SNA command

If promotions are sent via FTP, then MDCMS can automatically receive them without any additional processes. However, if promotions are sent via SNA, then an external process needs to be invoked, if hands-free automatic receipt of Promotions is desired.

Service ***MDRCVSNA - MDCMS Receive RFPs via SNA*** is then used to check for, and process, those RFP files. MDRCVSNA can be started from the Service List in the MDCMS Setup Menu, but is recommended to be started from a scheduled job using command MDRCVSNA.

**MDRCVSNA Parameters**

| | |
|---|---|
| SNA Netfile User | *DFT – the default SNADS user queue that the RFPs were sent to that is defined for the MDRCVSNA service<br>A valid SNADS user profile |
| Environment ID | The name of the MDCMS instance (or suffix) - *DFT refers to MDCMS being used in library MDCMS. For a different library suffix, this would be entered for the environment ID. |
| Submit Job | *YES – a job named MDRSNA(env) will be submitted to the entered Job Queue<br>*NO – the MDRCVSNA process will run within the current job |
| Job Queue | *DFT – submit to the queue defined for the MDRCVSNA service<br>*JOBD – submit to the default queue for the running job profile<br>The name of the job queue to submit MDRCVSNA to |
| Job Queue Library | The library of the job queue to submit MDRCVSNA to or *LIBL if the job queue is located in the current library list |
| Delay between Checks | *DFT – the default number of seconds between checking the SNADS queue for candidates that is defined for the MDRCVSNA service<br>The number of seconds to wait between checks (1-9999) |
| Time of Day to auto-end Job | *DFT – end at the time defined for the MDRCVSNA service<br>*NEVER – the MDRCVSNA job shouldn't end automatically – it should run until the job is forcibly ended.<br>A specific time to end in format HH:MM:SS |

# 12 Reporting

Reports (MD Output) generated within MDSEC, MDXREF and MDCMS can be viewed, printed, exported or emailed by pressing **F11** from most screens.

```
MDCOUTF                          MD Production 6.1                        10.03.12
SCRN1                                MD Output                            17:47:05
           User     Report   Object
Filter by: MMORGAN  ________ __________

Type options, press Enter.
 3=Copy to PF  4=Delete   5=Display   6=Print   E=Export

Opt User         Date     Time    Report  Object     Library        Length Width
 _   MMORGAN    24.02.11 17:36:18 PGMSRCH MDDCLWD    MDCMST            107    80
 _   MMORGAN    31.03.11  9:10:05 RFPHIST                              142    92
 _   MMORGAN    14.04.11 21:34:18 LIBCOMP MDCMS      MDCMST             28   120
 _   MMORGAN    23.05.11 20:50:20 COMPARE MDDCMSE    MDCMST            121   315
 _   MMORGAN    23.05.11 20:53:01 JOURNAL MDACST     MDADM              15   643
 _   MMORGAN    23.05.11 21:01:39 PGMSRCH MDDCMSD    MDCMST            200    80
 _   MMORGAN    29.09.11  9:23:16 PROJECT                               25    92
 _   MMORGAN    15.11.11 22:27:49 FLDLIST MDDTASK    MDCMST             56   112
 _   MMORGAN    22.02.12 13:42:05 JOURNAL MDAINV     MDADM              41   130
 _   MMORGAN     5.03.12 16:03:41 RFPHIST                              27    92


                                                                        Bottom
 F3=Exit   F4=Browse   F5=Refresh   F7=Spooled Output   F17=Top   F18=Bottom
```

Filters
Enter a value into a filter field to limit the listing to items matching the filter(s). Possible values may be selected by pressing **F4=Browse** while the cursor is positioned on the filter field.

Options
3=Copy to PF – Copy the detail contents of the report into a formatted table (DDS Physical File). This provides a simple means to extract information out of the MD database for use in SQL, Queries or programs.
4=Delete – permanently delete the report
5=Display – view the report contents directly in the screen
6=Print – print the report contents to a spooled file
E=Export – Export the report to a CSV, PDF, TXT or XLSX formatted file. The file can be placed in IFS or emailed to one or more recipients. See the parameters for command MDRUNRPT for more information.

Function Keys:
**F4=Browse** – Browse possible values for a filter field
**F5=Refresh**
**F7=Spooled Output** – Display and manage spooled files
**F17=Top** – Position Cursor to the first entry in the list
**F18=Bottom** – Position Cursor to the last entry in the list

## 12.1 MDRUNRPT – Run MD Report command

Certain reports within MDSEC, MDXREF and MDCMS allow for saved report definitions to be run directly from a command line. This gives the users the ability to schedule reports to be run on a periodic basis and to have the output automatically printed or exported. This is also helpful during Project testing to allow the same parameters to be quickly used after each phase of a test.

The following screen is displayed to get the report run parameters.

```
                          Run MD Report (MDRUNRPT)

 Type choices, press Enter.

 Report Name  . . . . . .  _______      COMPARE, JOURNAL, MDSEC...
 User Profile . . . . . .  __________   User Profile
 Report Definition  . . . . . .  ____________________________________________
 ______
 MDCMS Instance . . . . . .  *DFT       *DFT, *SAME, Instance
 Print result to spooled file . .  *NO  *YES, *NO
 Copy result to physical file . .  *NO  *YES, *NO
 Export result to IFS file  . . .  *NO  *YES, *NO
 Email result . . . . . .  *NO          *YES, *NO
 Filename . . . . . .  ____________________________________________
 ___________________________________
 Append Timestamp to filename . .  *YES *YES, *NO
 Directory  . . . . . .  ____________________________________________
 ___________________________________

 Report Format  . . . . . .  XLSX       CSV, PDF, TXT, XLSX
 csv Field Delimiter  . . . . . .  ','  Field Delimiter
 Address to receive Email . . . .  *NONE____________________________________
 ___________________________________
 User to receive Email  . . . . .  *NONE  User ID
 Group to receive Email . . . . .  *NONE  Group ID

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Report Name
COMPARE – the MDXREF Data Comparison Report
JOURNAL – the MD Journal Analysis Report
MDSEC – the MDSEC Authorization Report
NOTCMS – the MDCMS Audit Report listing object changes made outside of MDCMS
PROJECT – the MDCMS Project Report
PRJTASK – the MDCMS Project Task Report
PRJTIME – the MDCMS Project Time Entry Report
RFPHIST – the MDCMS Audit Report listing object changes made within MDCMS

User Profile
The name of the user profile that defined the report definition

Report Definition
The name of the report definition

Print result to spooled file
*NO – the resulting report will not be automatically printed to a spooled file
*YES – the resulting report will be automatically printed to a spooled file

Copy result to physical file
*NO – the resulting report will not be automatically exported to a physical file
*YES – the resulting report will be automatically exported to a physical file (table)

Export result to IFS file
*NO – the resulting report will not be automatically exported to an IFS file
*YES – the resulting report will be automatically exported to an IFS file

Email result
*NO – the resulting report will not be automatically emailed to recipients
*YES – the resulting report will be automatically emailed to recipients

Copy to Physical file
The name of the physical file (table) to contain the detail contents of the report. Each column in the report will be placed in a separate formatted field. If the file already exists, it will be replaced.

Copy to Library
The IBM i library that is to contain the Physical file

Filename
If the results are to be exported or emailed, this is the name of the IFS file to receive the results. The file type (.CSV, .PDF, .TXT or .XLSX) will be automatically appended to the end of the name.

Timestamp
*NO – a timestamp will not be appended to the file name
*YES – a timestamp in the format of YYYMMDD_HHMMSS will be appended to the file name

Directory
If the results are to be exported, this is the name of the IFS directory to receive the results. The directory path should begin with the root character "/".

Report Format
CSV – the exported report will be placed in a comma separated value file which can then be opened in Microsoft excel or similar spreadsheet programs.
PDF - the exported report will be converted to PDF. JVM 1.5 or higher is required
TXT – the exported report will be placed in a text file with the same layout as the on-line report.
XLSX – the exported report will be converted to the excel format. JVM 1.5 or higher is required

csv Field Delimiter
The character to be used to separate fields in a csv file

Address to receive Email
A specific email address to receive the report

User to receive Email
A user id to receive the report - the address for the user will be retrieved from the MDCMS email address table.

Group to receive Email
All users for the entered group id to receive the report – this parameter requires MDWorkflow groups to be present.

## 12.2 MDEXPFILE – Export Data command

The MDEXPFILE command provides the functionality to export the contents of any physical file to an Excel file.

The following screen is displayed to get the parameters.

```
                          MD Export File (MDEXPFILE)

 Type choices, press Enter.

 File Name  . . . . . .  __________    File
 Library  . . . . . . .  *LIBL        *LIBL, Library
 File Member  . . . . .  *FIRST       *FIRST, Member
 Report Header  . . . .  *FILETEXT_____________________________________________
 _____________________________

 Reorganize File  . . . . . .  *YES          *YES, *NO
 MDCMS Instance . . . . . . .  *DFT          *DFT, Instance
 Export result to IFS file  .  *NO           *YES, *NO
 Email result . . . . . . . .  *NO           *YES, *NO
 Filename . . . . . . . . . .  _____________________________________________
 _____________________________
 Append Timestamp to filename  *YES          *YES, *NO
 Directory  . . . . . . . . .  _____________________________________________
 _____________________________

 Format . . . . . . . . . . .  XLSX          CSV, XLSX
 csv Field Delimiter  . . . .  ','           Field Delimiter
 Address to receive Email . .  *NONE_____________________________________________
 _____________________________
 User to receive Email  . . .  *NONE         User ID
 Group to receive Email . . .  *NONE         Group ID

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=Hot to use this display
F24=More keys
```

Use **F9=All parameters** to see all available parameters for command.

File Name
The name of a physical file

Library
The location of the file or *LIBL to search the library list for the file

File Member
The name of the file member or *FIRST to use the first member in the file

Report Header
The title to place in the header of the excel file and in the subject line of the email. *FILETEXT will use the object description for the file.

MDCMS Instance
A 1-4 character string of the suffix for an existing instance of MDCMS or *DFT to use MDCMS

Export result to IFS file
*NO – the resulting report will not be automatically exported to an IFS file
*YES – the resulting report will be automatically exported to an IFS file

Email result
*NO – the resulting report will not be automatically emailed to recipients
*YES – the resulting report will be automatically emailed to recipients

Filename
If the results are to be exported or emailed, this is the name of the IFS file to receive the results. The file type (.csv or .xlsx) will be automatically appended to the end of the name.

Timestamp
*NO – a timestamp will not be appended to the file name
*YES – a timestamp in the format of YYYMMDD_HHMMSS will be appended to the file name

Directory
If the results are to be exported, this is the name of the IFS directory to receive the results. The directory path should begin with the root character "/".

Report Format
CSV – the exported report will be placed in a comma separated value file which can then be opened in Microsoft Excel or similar spreadsheet programs.
XLSX – the exported report will be converted to the excel format. JVM 1.5 or higher is required

csv Field Delimiter
The character to be used to separate fields in a csv file

Address to receive Email
A specific email address to receive the report

User to receive Email
A user id to receive the report - the address for the user will be retrieved from the MDCMS email address table.

Group to receive Email
All users for the entered group id to receive the report – this parameter requires MDWorkflow groups to be present.

## 12.3 MDEXPSPLF – Export Spooled File command

The MDEXPSPLF command provides the functionality to export any spooled file to a text or PDF file.

The following screen is displayed to get the parameters.

```
                    MD Export Spool File (MDEXPSPLF)

 Type choices, press Enter.

 Spool Name . . . . . .          _________     Spool Name
 Job Name . . . . . .            *CURRENT      *CURRENT, Job Name
 Job Number . . . . . .          _______       Job Number
 Job User . . . . . .            __________    Job User
 Spooled file number . . . . .   *LAST         *LAST, *USRD, 1-999999
 User Data . . . . . .           __________    User Data
 MDCMS Instance . . . . . .      *DFT          *DFT, Instance
 Format . . . . . .              PDF           PDF, TXT
 File Name . . . . . .           ____________________________________________
_____________________________________

 Append Timestamp to filename . .  *YES        *YES, *NO
 Report Title . . . . . .          ____________________________________________
 ____________________________________________________________________________
 _______
 Page Layout . . . . . .           *DFT          *DFT, AUTOMATIC, LANDSCAPE...
 Page Size . . . . . .             *DFT          *DFT, A3, A4, A5, B5...
 Add Page Number to each Page . .  *NO           *YES, *NO
 Export result to IFS file . . .   *NO           *YES, *NO
 Email result . . . . . .          *NO           *YES, *NO
 Directory . . . . . .             ____________________________________________
 ____________________________________
 Address to receive Email . . . .  *NONE_____________________________________
 ____________________________________
 User to receive Email . . . . .   *NONE         User ID
 Group to receive Email . . . . .  *NONE         Group ID

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
```

Use **F9=All parameters** to see all available parameters for command.

Spool Name
The name of a spooled file

Job Name
The name of the job that generated the spooled file or *CURRENT to look for the spooled file in the current job

Job Number
The number of the job that generated the spooled file

Job User
The user profile of the job that generated the spooled file Report Header

Spooled File Number
The number of the spooled file within the job
*LAST - use the most recently generated spooled file of the given name for the given job
*USRD – use the spooled file that has the same User Data value as the value in parameter USRD

User Data
The specific User Data value for the spooled file to select. Only applicable if parameter SPLNBR = *USRD

MDCMS Instance
A 1-4 character string of the suffix for an existing instance of MDCMS or *DFT to use MDCMS

Format
PDF – the spooled file will be converted to the PDF format. JVM 1.5 or higher is required
TXT – the spooled file will be converted to a text file

File Name
If the results are to be exported or emailed, this is the name of the IFS file to receive the results. The file type (.pdf or .txt) will be automatically appended to the end of the name.

Append Timestamp
*NO – a timestamp will not be appended to the file name
*YES – a timestamp in the format of YYYMMDD_HHMMSS will be appended to the file name

Report Title
The title to place in the header of the PDF file and in the subject line of the email

Page Layout
Values for PDF format:
*DFT – the layout defined in data area MDSEC(instance)/MDPDFLOUT
*SPLF – the layout based on the dimensions of the spooled file
AUTOMATIC – the layout is determined automatically based on the width of the spooled file
LANDSCAPE – the paper is rotated so that the wide edge is horizontal
PORTRAIT – the paper is rotated so that the wide edge is vertical

Page Size
Values for PDF format:
*DFT – the size defined in data area MDSEC(instance)/MDPDFSIZE
A3, A4, A5, B5, LEGAL, LETTER

Add Page Number to each Page
*NO – a page number will not be added to each page
*YES – a page number will be added to each page in the bottom right corner

Export result to IFS file
*NO – the resulting report will not be automatically exported to an IFS file
*YES – the resulting report will be automatically exported to an IFS file

Email result
*NO – the resulting report will not be automatically emailed to recipients
*YES – the resulting report will be automatically emailed to recipients

Directory
If the results are to be exported, this is the name of the IFS directory to receive the results. The directory path should begin with the root character "/".

Address to receive Email
A specific email address to receive the report

User to receive Email
A user id to receive the report - the address for the user will be retrieved from the MDCMS email address table.

Group to receive Email
All users for the entered group id to receive the report – this parameter requires MDWorkflow groups to be present.

# 13 MDCMS Product Data Tools

## 13.1 MDCLEAR – Clear all MDCMS Activity

Command MDCLEAR can be used to clear all activity (object requests, installation history, project information, etc…) for an instance while leaving all settings intact. This can be useful in testing a version of MDCMS and then clearing the test results before using the version in Production.

In order to run this command, the user must have MDSEC authority to application md/code 3.

After entering the command the following confirmation screen is displayed:

```
MDCCLRA                        Company Name                              11/19/11
SCRN1                      Clear ALL MDCMS Activity                      21:39:44

     WARNING!!! Pressing F10 will cause all of the following Files to be
                Cleared. The included files contain all information relating
                to Projects, RFPs, Object Requests and History.
                Settings are not cleared.

   Library      File         Description
   MDCMS        MDDCLWD      MDCMS - Send objects
   MDCMS        MDDCLWDM     MDCMS - Send Projects per Request
   MDCMS        MDDCLWH      MDCMS - Request for Promotion header
   MDCMS        MDDCLWM      MDCMS - Send Project description
   MDCMS        MDDCLWO      MDCMS - Send Object commands
   MDCMS        MDDCLWP      MDCMS - Manual Send Promotion number
   MDCMS        MDDCMSB      MDCMS Install Bound Objects - Reqn
   MDCMS        MDDCMSD      MDCMS Install Detail - Reqn
   MDCMS        MDDCMSDM     MDCMS - Projects per Request
   MDCMS        MDDCMSDP     MDCMS Pending Object Requests
   MDCMS        MDDCMSH      MDCMS - Request for Promotion
   MDCMS        MDDCMSM      MDCMS - Request for Modification
                                                                      More...
 F3=Exit    F10=Clear Activity
```

Function Keys:
**F3=Exit** – Leave screen without clearing the activity
**F10=Clear Activity** – Clear the contents of all listed files

## 13.2 MDMIGMD – Merge MDCMS Configuration and Activity Data

The MDCMS Merge Data (MDMIGMD) command copies configuration and activity data from one instance of MDCMS to another instance. This provides a quick way to merge work that was previously done across several instances into one instance.

MDCMS ensures that RFP numbers are unique. If the RFP number already exists in the target instance, a new number will be applied to the RFP details and objects in the RFP.

If active checkouts are to be copied, MDCMS verifies for locked modifications or deletes that the object isn't already locked in the target instance. If already locked, the object request is omitted.

The command should be run from a command line within the instance that is the target for the data to be copied to.

If configuration data will be copied, the application group must already be defined in the target and the level(s) to copy must NOT already be defined. Additionally, distribution levels will only be copied for OS/400 locations that are already defined in the target instance.

During the Merge process, configuration data is copied first, followed by activity data. Activity will only be copied if the level exists in the target instance, which occurs during the copy of the configuration data or if the level was already there.

It is recommended to back up the target MDCMS and MDXREF libraries prior to running this command, in case you aren't happy with the results.

Restrictions:

- You must have MDSEC authority for Application Group maintenance (md/3)
- The version of the from instance and target instance must be the same

**MDMIGMD** Parameter Table

| Title | Type | Description |
|---|---|---|
| From Product Instance | CHAR | the suffix of the MDCMS and MDXREF libraries containing the data to be copied from |
| Application | CHAR | the application to be included in the copy<br>*ALL – all applications that are defined in both the from instance and the target instance. |
| Minimum Level | DEC | The lower limit of the range of levels to be copied |
| Maximum Level | DEC | The upper limit of the range of levels to be copied |
| Migrate Configuration | CHAR | *YES – for each qualifying APP that already exists in the target and each qualifying level that doesn't already exist, the following information will be copied:<br>Levels, Attributes, Commands, Scripts, Templates used by copied attributes (if not already defined), Distribution Levels (for pre-defined OS/400 locations), Workflow Acceptance settings, MDXREF library list.<br><br>*NO – Configuration Data isn't copied |
| Migrate Active Checkouts | CHAR | *YES - For each Application and Level in the range that exists in the from and to instances, the active checkouts will be copied.<br>If an object is already locked on the target, it won't be copied for modifications and deletions. |

| | | |
|---|---|---|
| | | The copied information includes:<br>RFP (will get a new number if prior RFP number already exists in target instance), Object information, commands for RFP or Object, scripts for RFP or Object, Project information (if doesn't already exist).<br><br>*NO - Active Checkouts aren't copied |
| Migrate Install History | CHAR | *YES - For each Application and Level in the range that exists in the from and to instances, the installation history will be copied. This includes:<br>RFP (will get a new number if prior RFP number already exists in target instance), Object information, commands for RFP or Object, scripts for RFP or Object, archived source, Project information (if doesn't already exist), Deployment log.<br><br>Archived Objects, which are zipped and stored in the IFS, aren't migrated to the target instance. Refer to the original instance if an archived object needs to be restored.<br><br>*NO - Installation History isn't copied |
| Migrate Active Send Info | CHAR | *YES - For each Application and Level in the range that exists in the from and to instances, the open RFPs to be sent will be copied. The copied information includes:<br>RFP (will get a new number if prior RFP number already exists in target instance), Object information, commands for RFP or Object, scripts for RFP or Object, Project information (if doesn't already exist), Send History for targets attempted by open RFP.<br><br>*NO - Open RFPs to Send aren't copied |
| Migrate Send History | CHAR | *YES - For each Application and Level in the range that exists in the from and to instances, the RFP Send History will be copied. The copied information includes:<br>RFP (will get a new number if prior RFP number already exists in target instance), Object information, commands for RFP or Object, scripts for RFP or Object, Project information (if doesn't already exist), Send Log and Problem list.<br><br>*NO – Send History isn't copied |