

MDCMS Admin Guide

Change and Distribution Management for IBM i

Midrange Dynamics

Copyright © 2023 Midrange Dynamics

Table of contents

1. MDCMS	3
1.1 Welcome to the MDCMS Admin Guide	3
1.2 Overview of the MDCMS Manual	4
1.3 Starting MDCMS	5
1.4 Setting up MDCMS	7
1.4.1 Setting up MDCMS	7
1.4.2 Application Groups	9
1.4.3 Promotion Levels	14
1.4.4 Attributes	27
1.4.5 Commands	45
1.4.6 Scripts	63
1.4.7 Attribute Templates	66
1.4.8 Data Copy Templates	91
1.4.9 Field Procs to Auto Reapply Templates	92
1.4.10 Developer Library Naming Templates	95
1.4.11 Object Approval Templates	99
1.4.12 IBMi Locations	103
1.4.13 Distribution Levels	114
1.4.14 Interface Settings	119
1.4.15 System Settings	120
1.4.16 MD Service Jobs	123
1.4.17 Job Settings	132
1.4.18 Logging	135
1.4.19 User Groups	136
1.4.20 Project Costs	138
1.4.21 Push Settings Data to Locations	140
1.4.22 Send Settings to Remote System	143
1.4.23 Receive Settings from Remote System	144
1.4.24 Create Config Deployment Settings	150
1.4.25 MDCMS Configuration Report	154

1. MDCMS

1.1 Welcome to the MDCMS Admin Guide

This is part of the MDCMS Change and Distribution Management User Manual from Midrange Dynamics.

Version of guide: 8.6.13

This guide is comprised of these sections:

- [Overview of the MDCMS Manual](#)
- [Starting MDCMS](#)
- [Setting up MDCMS](#)
- [Application Groups](#)
- [Promotion Levels](#)
- [Attributes](#)
- [Commands](#)
- [Scripts](#)
- [Attribute Templates](#)
- [Data Copy Templates](#)
- [Field Procs to Auto Reapply Templates](#)
- [Developer Library Naming Templates](#)
- [Object Approval Templates](#)
- [OS/400 Locations](#)
- [Distribution Levels](#)
- [Interface Settings](#)
- [System Settings](#)
- [MD Service Jobs](#)
- [Job Settings](#)
- [Logging](#)
- [User Groups](#)
- [Project Costs](#)
- [Push Settings Data to Locations](#)
- [Send Settings to Remote System](#)
- [Receive Settings from Remote System](#)
- [Create Config Deployment Settings](#)
- [MDCMS Configuration Report](#)

You can download a PDF version of this guide [here](#).

1.2 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.

1.3 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.

```

MDCMS                               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

1.4 Setting up MDCMS

1.4.1 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
  10  Interface Settings               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

Various Templates that can be applied to attributes or other entities.

Option 6: IBMi Locations

Remote Location definitions for communicating over DDM and/or transferring RFPs.

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 10: Interface Settings

Configure the interface between MDCMS and 3rd-party tools Jira, ServiceNow and Synon/2E and to configure the REST service APIs provided by MDCMS for exchanging information with external tools.

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 (deprecated) - generate an excel file with a sheet for each configuration file in MDCMS.

1.4.2 Application Groups

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

```

MDCAPPL                                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=View 7=Rename A=Linked Apps L=Levels

Opt  Appl  Description                                RFP Start Lnk Cst Jrn Trg Stm
-   MD2K  MD2000 Interface Applications              160002  Y  N  Y  N  N
-   ACCT  XYZ Accounting Package                     80002   Y  Y  Y  Y  Y
-   IBUS  International Business System              490000  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. Any child elements like levels, attributes, etc. are not copied.

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

7=Rename - Rename the application code to a new value. When renamed, the application code in all related tables for configuration, activity and history are also renamed. The original value is only retained in API logs for audit reasons.

If the flag Rename in Synced Locs is set to Y, the application code will also be renamed on each location defined in the ibmi-locations Locations settings that actively connect via DDM.

A=Linked Apps - Manage the list of Applications that contain objects that reference objects existing in the selected Application

L=Levels - list all promotion levels defined for the selected application

Application Code

This is a 6-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. If the new version of the file already contains a constraint of the same name, the new version of the constraint will remain in place and not be overwritten by the old version.

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 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.

Allow RFP Compile Resume

This flag determines what should occur if an exception occurs in an RFP during the Submit (bundle) phase, when multiple objects are on the RFP and the compile/validation process for at least one of the objects was successful.

Y - The RFP Status will be set to SE=Submission Error and the developer can make corrections to the source or object in error or any object request after the one in error. Any requests in the RFP that were already processed are in a lock state. Once the RFP is submitted for promotion again, it will resume at the errored object request, which can save a lot of time for the developer when the RFP is very large.

If an object needs to be added to the RFP or if a processed object needs to be modified, the RFP will need to be Reset from status SE back to status 01 using the Reset option on the RFP.

N - If an error occurs, the entire RFP will be automatically reset back to status 01. Once the RFP is submitted for promotion again, it will start over from the beginning.

Auto-Merge RFP in Send List

When a user requests to submit an RFP for promotion, MDCMS checks if any of the objects in the RFP are currently requested to be sent to other levels within open RFPs in the Send List. If any are found, this flag determines what should occur.

O - Optional - the developer will be given the option to have the RFPs in the Send List auto-merge into the new RFP or to leave the existing RFPs separate.

Y - The open RFPs in the Send List will always merge into the new RFP once it is installed.

N - The open RFPs in the Send List will always remain separate. Since the Send is dynamic, though, the prior RFPs will send the newest version of the source or object. Manual merging directly in the Send List is still possible for authorized users.

Auto-Merge Received RFP

When a sent RFP is received onto the target partition, MDCMS checks for object request conflicts for each received object request. For each conflict, the following rules are applied in the order listed:

- If object checked out for modification locally for the target level, the received object will be requested in unlocked mode.
- Orphaned object requests (requests not on an RFP) will be automatically deleted and replaced with the received request.
- If object requested for a different application, the received object will be requested in unlocked mode.
- If object is from a prior send of the same RFP, the entire RFP will be replaced by the newly received RFP.
- If object requested for an RFP that is beyond status 01 (requests assigned), the received object will be requested in unlocked mode.
- Otherwise: the value of this parameter determines what to do with the conflict
 - Y - the existing RFP will be merged with the newly received RFP with the newly received objects having priority over the existing objects in the case of duplicates. The description of the received RFP will be appended to the existing description, if different.
 - N - no automatic merging - all newly received objects will stick together in a new RFP and any duplicate objects will be requested in unlocked mode.

Auto-Delete LFs in Unmanaged Lib

When an RFP is requested to be submitted for deployment, MDCMS checks if there are any unrequested logical files that are based on requested physical files. If this is the case, and the logical file resides in an unmanaged library, it can be automatically deleted during the installation phase. An unmanaged library is a library that isn't the target for any MDCMS attributes. A typical use case are indexes that are generated by the system for performance reasons.

Y - automatically delete unrequested, dependent logical files residing in unmanaged libraries

N - prompt the user to decide if specific logical files should be deleted or not

Auto-End Jobs Locking Files

During the installation phase of an RFP, MDCMS attempts to get a lock on all files that are to be installed. If a job is locking one of the files, this parameter specifies if MDCMS should automatically end that job.

S - Automatically end QSQRVR or QZDASOINIT jobs only (default)

N - Do not automatically end jobs locking files to be installed

Y - Automatically end any jobs locking files to be installed

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 fields. The format will be project-task.subtask. LICPGM consists of 2 7-character fields that are separated from each other on the screen, so if the value is more than 7 characters, it will be split between the 2 fields.

If there are multiple tasks assigned to an object, the object's LICPGM will get stamped with the lowest 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

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

F3=Exit  F11=Output

Bottom

```

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

1.4.3 Promotion Levels

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

```

CMC220                                COMPANY NAME                                4.09.06
SCRN1                                Promotion Level Maintenance                    7:37:14

Filters:  Appl Lvl Description              Job Desc  Nxt BsO Chk RFP RFP RFP RFP
           _____  _____  _____  _____  Lvl Lvl Out Rcv Sbm Apr Ins
Type options, press Enter.
2=Edit 3=Copy 4=Delete 5=View 7=Rename C=Clean J=JOB D L=Libraries
P=Placeholders V=Validate X=XREF

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

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

Bottom

```

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 and optionally copy all attributes, commands, scripts, distribution levels and Level Placeholders to a new level as well. See the following Sections for more information:

- Specify Library Names for Copied/Received Levels
- Update Attribute Templates for Copied/Received Levels
- Specify Level Placeholder Values for Copied/Received Levels

4=Delete - Delete a Promotion Level

5=Display - Display the parameters for a Promotion Level

7=Rename - Rename the level number to a new value. When renamed, the level number in all related tables for configuration, activity and history are also renamed. The original value is only retained in API logs for audit reasons.

C=Clean - Delta Level Cleanup Menu. From here, a full Reset or the source, object and data libraries can be performed, or stranded object and source requests can be reported on and selected to be deleted. See section Delta Level Cleanup for more details.

J=JOB D - Display/Modify 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.

P=Placeholders - View/Define custom placeholder variables to be used, with a different value possible for each variable and promotion level.

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 6-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 3-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 and deploying objects for an application installation.

Press F4 on the field to browse the list of existing job descriptions or to create a new job description.

To create job descriptions from MDCMS, you must be authorized to MDSEC code 11 (System Settings) and your user profile requires a minimum of change authority to the CRTJOB command. When changing/deleting job descriptions, sufficient authority must exist for the specific object.

The MDCMS Job Description maintenance screen provides access to the following key parameters:

- Job Queue - the job queue to submit deployment jobs (RFPs) to by default. It's recommended that each Promotion Level has its own Job Queue and that the queue is limited to 1 active job to limit the risk of compiles missing new information in a concurrent RFP. F4 can be pressed on the Job Queue to create/modify job queues.
- User - the user that the RFP job will run under, which is typically the owner of the application environment.
- Description
- Library List - the library list that will be used to be able to locate the appropriate source and objects in the correct order during the compile phase or if executing commands for exit point processes.

If other job description parameters need to be viewed/modified, press F10=All Parameters from the detail screen.

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.

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.

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

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:

- 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.
- 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.

Exist Only

This flag is relevant when a Based on Level is defined.

Y - only prompt for resolution of an object in this level when the object already exists within the level's chain. This is recommended when the Based On resolution features are to be used for a level that is a delta of the based on level but contains only certain custom objects rather than all changes for a new version of those objects.

N - prompt for resolution for existing or new objects. This is recommended when using Based On resolution features for new versions of an application.

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 with Exist Only=N.

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.

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

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.

Target OS Release

The value used for compile placeholder ##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

Auto Receive

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 Approve

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 - Approvals for all attributes in the level will require that 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.

Authority is granted per level in MDSEC with codes 42 (RFPs submitted by different user) and 52 (RFPs submitted by same user).

T - Approvals for all attributes in the level will be based on Object Approval Templates

Y - Approval to install occurs automatically, except when Objects are included for an attribute requiring User or Template approval

Example:

TEST Application Environments are commonly used by programmers - set flag to 'Y'

PRODUCTION Application Environments usually require approval - set flag to 'N' or 'T'.

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 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

Promotion Level Considerations

- 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.
- 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.
- 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.
- 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.

Level Build/Cleanup

This Build/Cleanup Menu is requested by using option C for a Promotion Level in the Promotion Level listing.

Option 1 - Generate Residual Delta Objects List

This option collects a list of all objects in the level's libraries/folders (based on the Attribute definitions) that were installed using an MDCMS attribute applied to an Object Deletion Template.

The level must be defined as a Delta Object Level for this option to be enabled.

An object will be added to the collection if it doesn't have an active request to migrate from the level.

Press Enter to submit the generation to batch. Once finished, the Last Run/Status column will show the date and time of the run. The results can be viewed/managed using Option 2.

Option 2 - Work with Residual Delta Objects List

This option lists all objects collected in option 1.

Fields

Option / Field	Description
Result Code	MDCMS assigns a result code to each entry based on information collected. The list of all possible codes is available by pressing F4 on the Result filter field.
Obj Higher Lvl	The level number in the chain of levels above the selected level where the object also exists. If a number isn't displayed in the detail screen, then the object doesn't exist above the selected level.
Req Higher Lvl	The level number in the chain of levels above the selected level where an object request for the object exists. If a number isn't displayed in the detail screen, then the object isn't requested above the selected level.
Req in Send RFP	An active RFP number in the send listing that contains the object to be sent from this level
Deleted by	The user and date/time that selected to delete the object using this option
Last Installed	The date/time of the most recent installation of the object into the selected level.
RFP	The RFP used for the most recent installation of the object into the selected level.
User	The user assigned to the most recent installation of the object into the selected level.
Project	The project/task/subtask of the most recent installation of the object into the selected level.
Attribute	The MDCMS attribute assigned to the most recent installation of the object into the selected level.

Options

4=Delete - Delete the object from the library or folder

5=View - View full details of the object

H=History - bring up the Installation History screen for the given object

X=MDXREF - bring up the MDXREF screen for the given object

Function Keys

F8=WRKJOB - Work with the submitted job used to collect the data, if still on the system

F9=Delete All - Delete all objects in the list based on the current filter values at the top of the screen

F15=Print - Create an MD report containing all objects in the list based on the current filter values at the top of the screen. Afterwards, use F11 to view/print/export the report.

Option 3 - Generate Residual Delta Source List

This option collects a list of all source in the level's libraries/folders (based on the Attribute definitions) that were installed using an MDCMS attribute applied to a Source Deletion Template.

The level must be defined as a Delta Source Level for this option to be enabled.

A source will be added to the collection if it doesn't have an active request to migrate from the level.

Press Enter to submit the generation to batch. Once finished, the Last Run/Status column will show the date and time of the run. The results can be viewed/managed using Option 4.

Option 4 - Work with Residual Delta Source List

This option lists all objects collected in option 3.

Fields

Option / Field	Description
Result Code	MDCMS assigns a result code to each entry based on information collected. The list of all possible codes is available by pressing F4 on the Result filter field.
Src Higher Lvl	The level number in the chain of levels above the selected level where the source also exists. If a number isn't displayed in the detail screen, then the source doesn't exist above the selected level.
Req Higher Lvl	The level number in the chain of levels above the selected level where an object request for the source exists. If a number isn't displayed in the detail screen, then the source isn't requested above the selected level.
Req in Send RFP	An active RFP number in the send listing that contains the source to be sent from this level
Deleted by	The user and date/time that selected to delete the source using this option
Last Installed	The date/time of the most recent installation of the source into the selected level.
RFP	The RFP used for the most recent installation of the source into the selected level.
User	The user assigned to the most recent installation of the source into the selected level.
Project	The project/task/subtask of the most recent installation of the source into the selected level.
Attribute	The MDCMS attribute assigned to the most recent installation of the source into the selected level.

Options

4=Delete - Delete the source from the source file or folder

5=View - View full details of the source

H=History - bring up the Installation History screen for the given object of the installed source

X=MDXREF - bring up the MDXREF screen for the given object of the source

Function Keys

F8=WRKJOB - Work with the submitted job used to collect the data, if still on the system

F9=Delete All - Delete all sources in the list based on the current filter values at the top of the screen

F15=Print - Create an MD report containing all sources in the list based on the current filter values at the top of the screen. Afterwards, use F11 to view/print/export the report.

Option 5 - Full Level Build/Reset

This option does the following:

- All libraries, source files and IFS folders are automatically created (when not already existing) and authority is applied to them based on parameters available in the confirmation screen.
- provides the option to delete any source, non-database objects and IFS files from one or more selected libraries, if the level is defined as a delta level.
- Provides the option to create/refresh any database objects based on another level or to delete the database objects in one or more selected libraries, if the level is defined as a delta level.

Initial Build/Reset Screen Fields

Option / Field	Description
Remove All Source	Y=all source in selected libraries/folders for the level will be deleted
Remove All IFS Objects	Y=all IFS files residing directly in the selected IFS folders will be deleted
Including Subfolders	Y=If removing IFS Objects, any subfolders will be recursively deleted too
Remove All Non-DB Objects	Y=all system objects in selected libraries for the level will be deleted if they aren't a data area, physical file or logical file
Database Object Handling	1=do nothing with data areas, physical files or logical files 2=clear the data any existing physical files 3=all data areas will be replaced by those in the selected from Level, physical and logical files will be removed in not in the selected from Level, will be replaced if not the same format as the version in the selected from Level, and copied from the select from Level if not existing in the delta level. Additionally, any existing data will be cleared. 4=all data areas will be replaced by those in the selected from Level, physical and logical files will be removed in not in the selected from Level, will be replaced if not the same format as the version in the selected from Level, and copied from the select from Level if not existing in the delta level. Additionally, the records in the tables will be refreshed with the data in the selected from Level. 5=Remove Objects=all data areas, physical files and logical files in the selected libraries will be removed
Replace DB with Object from Level	The level number in the same Application that contains the Database objects to replicate from
Auth Template New Libraries	The MDCMS Object Authority template to apply to any libraries created by the Reset function
Auth Template New Folders	The MDCMS Object Authority template to apply to any folders created by the Reset function
New Source Files from Level	The level number in the same Application that contains the source files to use as a reference for the length of new source files to create in the target level

Once the parameters have been set, press Enter to continue to the list of folders and libraries that are to be included in the Reset process. By default, none of the entries will be included. Use option 1=Include to include an entry or press F13 to include all entries. The entries are based on the attribute definitions for the selected delta level.

After the selections are made, press Enter to continue to the confirmation screen.

Press Enter to submit the reset process to batch. Once finished, the Last Run/Status column will show the date and time of the run. The object log can be viewed using Option 6 and the source log can be viewed using Option 7.

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.

Custom Level Placeholders

Placeholder variables can be defined per Promotion Level and then be used as replacement variables at runtime for commands, IFS/Remote scripts, Email bodies and SQL Scripts.

The following list screen is available using option P=Placeholders on a level in the Promotion Levels settings.

```

MDCLVAR          COMPANY NAME          2.04.19
SCRN1            Custom Level Placeholders 17:09:19

Filters:  Appl  Lvl  Placeholder Description      Value
Type options, press Enter.
2=Edit   3=Copy  4=Delete  5=View

Opt Appl Lvl ID      Description      Value
-   TEST 10 MYTIME   My time in seconds to compl 910
-   TEST 30 OTHLIB   the other library           california
-   TEST 50 OTHLIB   Other Library                MMORGAN

F3=Exit  F6=Add

Bottom

```

Screen Definitions:

Filters

Filter the list of Placeholders based on the values entered into the individual fields. For the Placeholder, Description, and Value filters, a Placeholder will be listed if any part of the field matches the value entered in the filter.

Option

2=Edit - Change the description or value of a placeholder for the level

3=Copy - Copy a placeholder

4=Delete - Delete a placeholder

5=View - Display the placeholder details

Placeholder Parameters:

Application

This is a 4 character abbreviation of an Application Group to be used by MDCMS.

The Application Group must exist - see Application Groups.

Install Level

This is a 2-digit numeric identification of the Promotion Level. The level must exist - see Promotion Levels.

Placeholder

The placeholder ID, which must be 6 alphanumeric characters in length and not already be defined in the list of fixed placeholders or as Placeholder IDs for Project/Task Custom fields.

Description

A description of the Placeholder for the level.

Value

The replacement value for the placeholder to be used at runtime for the command or script.

MDUPDLWC - Update Level Placeholder Value command

MDCMS is delivered with a command-based API that allows external tools or applications to update the value for existing Level Placeholders.

The MDCMS command is named **MDUPDLWC** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command.

Successful MDUPDLWC transactions are logged in file MDCMS(ENV)/MDDLVARHST and visible from Settings->Logging.

MDUPDLWC Parameter Table

Name	Type	Length	Description
Name	Type	Length	Valid Values and Format
Placeholder	CHAR	6	unique ID - Required
Application	CHAR	6	*ALL - Apply the update to existing entries for all applications otherwise - Apply the update to existing entries for the specific application
Level Number	DEC	3	0 - Apply the update to existing entries for all application levels otherwise - Apply the update to existing entries for the specific application level
New Placeholder Value	CHAR	160	The value to apply to existing placeholder entries
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. Special values: *DFT - default instance (no suffix) *SAME - the current instance based on the library list

1.4.4 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 options 17 or 18 from the settings menu.

MDCCMEM		COMPANY NAME						4.09.18			
Filters:		Attribute Maintenance						12:52:42			
App/Lvl	Type	Attribute	Desc	Object Lib	Src Lib	Src File	Sq	C	D	L	
Type options, press Enter.											
2=Edit 3=Copy 4=Delete 5=View 7=Rename C=Cmd/Scrp D=Dest L=Links											
T=Templates											
Opt	Appl	Lvl	Type	Attribute	Object Lib	Src Lib	Src File	Sq	C	D	L
—	MD	10	*CMD	ACMD	MDADMT	MDADMT	QCMSRC	9	Y		Y
—	MD	11	*CMD	ACMD	MDADMT	MDADMT	QCMSRC	9	Y		
—	MD	12	*CMD	ACMD	MDADM71	MDADM71	QCMSRC	9	Y	Y	
—	MD	13	*CMD	ACMD	MDADMT	MDADMT	QCMSRC	9	Y		
—	MD	14	*CMD	ACMD	MDADM712	MDADM712	QCMSRC	9	Y		
—	MD	15	*CMD	ACMD	MDADM712	MDADM712	QCMSRC	9	Y	Y	
—	MD	30	*CMD	ACMD	MDADMP	MDADMP	QCMSRC	9	Y		
—	MD	50	*CMD	ACMD	MDADM	MDADM	QCMSRC	9	Y		
—	MD	10	*CMD	CCMD	MDCMST	MDSRCT	MCCMD	9	Y		
More...											
F3=Exit F4=Browse F5=Refresh F6=Add F8=Toggle Desc F9=Gen Dft Attr											

Filters

The entry of values into one or more of the filter fields will result in a subsetting 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=View - Display the parameters of an attribute

R=Rename - Rename the attribute code to a new value. When renamed, the attribute in all related tables for configuration, activity and history are also renamed. The original value is only retained in API logs for audit reasons.

C=Cmd/Scrp - Edit the default compile and installation commands or scripts for an attribute

D=Dest - View/edit the options of what should be sent to target systems (source, object, both, or neither) for the specific attribute.

L=Links - Edit the list of attributes that should be prompted to check out, when a programmer checks out an object for this attribute

T=Templates - View/edit the templates to be assigned to the attribute for replication, deletion, etc...

Appl

This is a 6-character abbreviation of an Application Group to be used by MDCMS.

The Application Group must exist - see Application Group Maintenance.

Level

This is a 3-digit numeric identification of the Promotion Level as defined in the Promotion Level Maintenance.

Type

Option / Field	Description
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. 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. 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.
*PIPE	A MDCMS object type to contain objects that will be built, tested and deployed using a Pipeline server such as Azure, Bamboo, Bitbucket, GitLab or Jenkins. MDOpen is required to define the Pipeline servers as well as the Pipelines to apply to the attribute.
*REMOTE	A MDCMS object type to physically deploy objects that reside on non-IBM i platforms using FTP. MDOpen is required to define the FTP servers and request the objects.
*SOURCE	A MDCMS object type to handle source-only items such as copybooks.
*SQLALS	An SQL Alias using the SQL name for the alias. Additionally, use the For Database and For Library fields for the attribute to define the location of the table or view that the alias points at for the given level. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the alias at installation time. Enter a valid Object Authority template, which is applied to the DDM file created on behalf of the SQL Alias.
*SQLCST	An SQL Constraint using the SQL name for the constraint. 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. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the function at installation time. It's recommended to define the SQL long schema name for the Object Library value (if different than system library name) for functions to avoid having to look it up at installation time.
*SQLIDX	An SQL Index using the SQL name for the index.
*SQLMQT	An SQL Materialized Query Table using the SQL name for the table. 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. A compile command (typically RUNSQLSTM) must be defined for the attribute to create the procedure at installation time. It's recommended to define the SQL long schema name for the Object Library value (if different than system library name) for procedures to avoid having to look it up 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. 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

Option / Field	Description
*SQLTAB	An SQL Table using the SQL name for the table.
*SQLTRG	An SQL Trigger using the SQL name for the. A RUNSQLSTM command of type 3 (Post-Installation) must be defined for the attribute to create the trigger at installation time. Enter a valid Object Authority template, which is applied to the CLE program created on behalf of the SQL Trigger.
*SQLUDT	An SQL User Defined Type using the SQL name for the type.
*SQLVAR	An SQL Variable using the SQL name for the variable. 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.

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:

- Standard IBMi object attributes or source types are, for example, RPG, CBL, PF, LF, DSPF, PRTF.
- 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.

Description

An optional description to further clarify the purpose of the attribute

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 an attribute that has source defined for it at lower levels, but the source and object shouldn't be deployed to this level or higher. Instead, only the request record will travel with the RFP without actions being taken. This is typically used for copybooks or ILE modules on a production system where the source or modules aren't allowed/needed, but when the RFP returns to the copy of production on the development system, then source will be indirectly pulled from the delta development environment for deployment into the production copy environment.

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. *DTAGRP attributes require a minimum of 1 generation.

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.

Allow *NONE

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

Y = when an object request of the given attribute is checked out, *NONE as a value is allowed because the data will already be in the library for the target level.

N = the developer library to migrate the data from must be defined for the checkout request.

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## placeholder 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.

T - If an RFP contains a request for the given attribute, approval will be based on Object Approval Templates, 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 and *FILE.

*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 = 7

SQL Views (*SQLVW) are set to sequence 6, which is why display and printer files are 7, as they may reference field definitions in views.

Acceptance Group Type

If MDWorkflow is licensed for the partition, a user group type can be defined for the attribute. When defined, once objects of the given attribute are installed into the target level, a member of the group defined for the impacted project(s) must review and then accept the results of the installation before the RFP can continue to the next level in the migration path.

This group type will be in addition to any Acceptance Group Types defined for all objects for the level. This way, this additional acceptance is only necessary for these special attributes. For example, a DBA group may need to review configuration data or database changes in the test environment before the RFP can be promoted to QA.

Ignore Dependencies

Y - Any non-Database Relation dependencies over a file, module, service program or copybook Object Request of the given attribute will not be considered when checking for missing dependencies during the RFP Pre-Submit Warning process and they will not be auto requested when using Continuous Integration from Git. The dependencies will still be shown when explicitly asking to request dependencies for an Object Request.

N - All dependencies will be considered for an Object Request of the given attribute.

Copy from Library

This parameter is displayed for *DATA and *DTAGRP attributes. If a library name is entered, data will be copied from that library down to the developer library at checkout rather than from the target library of the attribute.

For Database

The name of the Relational Database for an SQL Alias to point to. Press F4 to select from the list of defined RDB entries. The value of this field corresponds to placeholder **##RMTRDB##**, which should be placed in the SQL script to dynamically handle the location of the target table or view when the CREATE ALIAS script is invoked.

For Library

The system name of the Library for an SQL Alias to point to. The value of this field corresponds to placeholder **##RMTLIB##**, which should be placed in the SQL script to dynamically handle the location of the target table or view when the CREATE ALIAS script is invoked.

Function Keys:

F3=Exit

F4=Browse - Browse the list of valid values for a field.

F6=Add - Add an environment attribute

F8=Toggle Desc - toggle the listing display between a single line per row without the attribute description and a 2nd line per row with the attribute description

F9=Gen Dft Attr - Generate default attributes for a promotion level

Templates for Attribute

Various templates can be assigned to an attribute to affect its behaviour based on the definition of the template. This eliminates the need to generate complex definitions individually for each attribute. The template screen automatically appears in the 2nd step of adding a new attribute. To view/modify the templates assigned to an existing attribute, use option T=Templates.

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

IFS Source Authority Template

If an attribute is defined to deploy source to an IFS folder (source file = *IFS), then an Object Authority template of type IFS needs to be assigned to the attribute. The IFS file will then have the template's authority applied at the time of deployment.

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:

- 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.
- 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 to minimize downtime during the deployment of database changes, and the attribute is a *FILE, *SQLIDX, *SQLTAB or *SQLVW type, a MDRapid template can be applied to the attribute to indicate when and how MDRapid should be launched for files using that attribute.

Code Review

If the source code for an object request of this attribute should undergo an automatic Code Review by a tool such as SonarQube once it has been deployed into this level, a Code Review template can be applied. Code Review templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Code Review Template field.

Automated Testing

If the object requests of this attribute should undergo Automated Testing by MDTest or Testbench from Original Software once it has been deployed into this level, an Automated Testing template can be applied. Automated Testing templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Automated Testing Template field.

Git Commit

If the source code (or IFS file) for object requests of this attribute should be committed to a local Git Repository and then pushed to the Git origin server. The commit/push will occur once the RFP is installed for any code that is different from the code already in the repository. The Git Commit template processing can also automatically create branches to hold the changes and create Pull Requests to merge the changes into another branch. Git Commit templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Git Commit Template field.

SQL Package Template

SQL Package Templates manage the location and existence of SQL Packages for Programs and Service Programs containing embedded SQL statements. SQL Package Templates can be applied to *MODULE and *PGM attributes to ensure the correct target library for the SQL Packages on the CRTSQL* commands and SQL Package Templates can be applied to *PGM and *SRVPGM attributes for automatically creating and deleting SQL Packages during RFP deployment of the programs.

*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 from the first member 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.

Note: If you wish to migrate records from a different member of a multi-member file, the *DATA attribute type should be used instead.

```

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      PRDCOD        3A  BILLYN      FIX      REP  N
-  MDALIC      CSTNBR        7N      PRDCOD        3A  BILLYN      FIX      REP  Y

F3=Exit  F5=Refresh  F6=Add

Bottom

```

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

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 (fields without a fixed value defined) 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 value for an alphanumeric field should be blanks, enter special value *EMPTY for that field.

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.

After pressing Enter to Request a Data Group value with option M or N, a confirmation screen will be displayed with the following 2 parameters:

Copy Data from Dev Library

*NONE - the data already exists in the initial level and the collection is copied from that level to any higher levels when subsequent RFPs are installed.

Otherwise, enter the name of the Developer Library that the data will be copied from.

Copy Data to Dev Library

N - nothing will be copied to the Developer Library

Y - if the Data Group files do not exist in the Developer Library, they will be created. Once existing the current applicable records in the target library for level will be copied to the files in the Developer Library.

***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. Since Robot Schedule exists once per partition, it is best to be an application containing a single level per partition.

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 Schedule.

Object Library

The library that contains the Robot Schedule database. This is typically ROBOTLIB.

Allow *NONE

This must be set to Y.

The remaining field values depend on your preferences. 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 distribute those changes to product instances on other partitions.

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 originating system that contains the schedule job to be exported, the **Copy Data from Library** parameter should be set to *NONE as it is not necessary to copy any data to the user's 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 originating system to the various target systems. 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 installation of the RFP occurs on 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 user's 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.

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                                04.09.19
SCRN1                                Generate Standard Attributes                10:37:46

Appl/Level . . . . TEST01 100
Object Library . . . . . Name, *NONE
Obj Auth Template . *DFT400__ Name

Source Library/Dir. _____
Name, *NONE, *TEMPIFS, *TEMPMBR
IFS Src Auth Templ. *DFTIFS__

Check/Select Usage. N                N=No, S=Yes via Sys Catalog, X=Yes via MDXREF
Update Existing . . _                Y/N

Attribute Prefix . *NONE              Prefix, *NONE
or Suffix . . . *NONE                Suffix, *NONE

Filter by:
  Object Category . _____        1=Database, 2=Non-Database, 3=Interface
  Object Type . . . _____
  Sytem Attribute . _____

Enter=Continue  F3=Exit  F4=Browse

```

The first screen is used to get the default settings for all common attributes that are to be generated. After Enter is pressed, the next screen is displayed where the attributes may be selected.

Application

This is a 6-character abbreviation of an Application Group to be used by MDCMS.

The Application Group must exist - see Application Group Maintenance.

Press F4 with the cursor on the field to select a defined Application/Level pair

Level

This is a 3-digit numeric identification of the Promotion Level as defined in the Promotion Level Maintenance.

Press F4 with the cursor on the field to select a defined Application/Level pair

Object Library

The name of the library where the objects are stored.

Press F4 with the cursor on the field to select a library already defined in MDXREF. If the library isn't in MDXREF, press F11 to select from all libraries on the partition for the given namespace.

The object library doesn't have to already exist. MDCMS will prompt to create the library for you. If you don't want to create the library at this time, but would like to define the attributes to use for the library, command key F8 will be provided to skip the library creation.

Special values:

*NONE - no object destination to be defined for the attributes.

Obj Auth Template

The Object Authority template to apply to the attributes to be generated using this process. When an object of the given attribute is deployed to the target Application Level, the object authority rules defined by the template will be applied to the object.

Press F4 with the cursor on the field to manage and select a Template ID.

Source Library/Dir

The name of the library or IFS Directory where the source is stored.

The source library doesn't have to already exist. MDCMS will prompt to create the library for you. If you don't want to create the library at this time, but would like to define the attributes to use for the library, command key F8 will be provided to skip the library creation. MDCMS will not automatically create a source IFS folder.

Special values:

*NONE - no source destination to be defined for the attributes

*TEMPIFS - temporary source to be stored in the IFS and then discarded as soon as the RFP deployment is complete.

*TEMPMBR - temporary source to be stored in a source file and then discarded as soon as the RFP deployment is complete.

IFS Source Auth Template

The Object Authority template to apply to IFS source folders for the attributes to be generated using this process. When IFS source of the given attribute is deployed to the target Application Level, the object authority rules defined by the template will be applied to the IFS source file.

Press F4 with the cursor on the field to manage and select a Template ID.

Check/Select Usage

If and how the existence of objects matching a given attribute should be checked in the target library.

N=No - don't check for the types of objects that exist in the target library

S=Yes via Sys Catalog - the IBM system catalog for the target library will be checked. This can take some time but doesn't require that the cross-referencing is already built over the library. Any attributes that match objects in the library will be automatically selected for inclusion.

X=Yes via MDXREF - the MDXREF information for the target library will be checked. This is very fast, but requires that the cross-referencing is already built over the library. Any attributes that match objects in the library will be automatically selected for inclusion.

Update Existing

N - if the attribute already exists for the application level, don't overwrite it

Y - if the attribute already exists for the application level, overwrite it with the default parameters for the attribute

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.

Filter by Object Category

- 1 - limit the attribute listing to standard database attributes
- 2 - limit the attribute listing to standard non-database attributes
- 3 - limit the attribute listing to interface attributes (JDE World and Synon/2E)

Filter by Object Type

limit the attribute listing to attributes of an entered type, such as *PGM

Filter by System Attribute

limit the attribute listing to attribute names containing the entered value

Once the information is entered on the initial screen, press Enter to continue to the attribute listing.

```

MDCCMED                                COMPANY NAME                12.07.20
SCRN2                                Generate Standard Attributes  20:19:10

Appl: MD    Lvl: 13  Object Lib: MMORGAN    Source Lib: MMORGAN

Type options, press Enter.
1=Select    W=Work with Objects

  Object   System
Opt Type   Attribute Description
-  *MODULE RPGMOD    RPG Module
-  *PGM     RPG       OPM RPG Program
-  *PGM     RPGLE     ILE RPG Program
-  *PGM     SQLRPG    OPM SQL RPG Program
-  *PGM     SQLRPGLE  ILE SQL RPG Program
-  *SOURCE  RPGLESRC  ILE RPG Copybook
-  *SOURCE  RPGSRC    OPM RPG Copybook

Enter=Continue    F5=Refresh    F12=Back

Bottom

```

Use option 1 to select each attribute that should be generated.

Option W can be used for attributes pertaining to actual objects for further review of the contents of the object library.

Once the selections have been made, press Enter to verify the selections and modify any of the properties for specific attributes.

```

MDCCMED                      MD Dev                      12.07.20
SCRN3                        Generate Standard Attributes  20:25:44

Appl: MD    Lvl: 13  Object Lib: MMORGAN
                Source Lib: MMORGAN

Make any adjustments and press Enter to generate attributes

Object  System  MDCMS  Gen Comp  Source
Type    Attribute Attribute Stat  Commands File
*MODULE RPGMOD  RPGMOD____ NEW    Y      QRPGLSRC_____
*PGM    RPGLE   RPGLE____ NEW    Y      QRPGLSRC_____
*PGM    SQLRPGLE SQLRPGLE__ NEW    Y      QRPGLSRC_____
*SOURCE RPGLESRC RPGLESRC___ NEW    N      QRPGLSRC_____
                                           Bottom

Enter=Confirm  F4=Browse  F12=Back

```

The attribute name can be changed for specific attribute.

If the attribute is applicable for a source member, the source file name can be changed. If the source file doesn't exist, MDCMS will prompt to create it. This can be ignored by using F8 when it appears.

If the attribute is applicable for source in the IFS, a subfolder can be selected for the attribute which is relative to the parent path of the source folder entered on the first screen.

F4 can be used to browse the list of source files or subfolders.

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 be 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.

1.4.5 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

Filters:  Appl  Lvl  Attribute  Type  Command  Description
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 Cnds  F8=Description  F9=Gen RFP Cnds  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.

Description

Enter a string here to limit the listing to commands with a description containing that string.

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 objects with a specific or generic name. 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 are not 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=Description/Command - Toggle the listing between the command to execute and the description of the command.

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.

Add or Change display

```

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

Appl/Lvl.: _____ Desc: _____
Attribute: _____ *gen*, *RFP, *ALL Run For Modifications: Y Y/N
Type.....: _____ Recompiles...: Y Y/N
Sequence.: _____ Deletes.....: N Y/N
Frequency: _ 0=Object, R=RFP Updates.....: N Y/N
User Prof: _____ Ignore Errors.....: N Y/N
Obj Type.: *ANY *ANY, type Keep MD Libs in Lib1.: N Y/N
Spec Def.: Y Y=Run if specific def exists Placeholders in SQL.: N Y/N
Command
CRTCLPGM PGM(##OBJLIB##/##OBJNAM##)SRCFILE(##SRCLIB##/##SRCFIL##)_____
_____
_____
_____
F4=Browse F7=Insert Placeholder F12=Previous
  
```

Screen Definitions:

Appl/Lvl

The Application Group and Level that the attribute resides in.

Desc

An optional description of the command

Attribute

This field indicates which MDCMS Attribute(s) defined for the target level that the Command Definition should be applied to.

*RFP - the command will run once each time a promotion is run, regardless of the objects contained in the RFP.

Specific Attribute - The command definition is for a specifically defined MD Attribute, such as CLLE

Generic Attribute - The command definition is for any MD Attribute that matches the generic naming pattern. For example SQL*LE would mean that the command is applied to every attribute starting with SQL and ending with LE.

*ALL - all attributes for the target level are defined to use this command.

When a generic attribute value or the *ALL value is used, the Object Type can be set to a specific type. For example, if the command definition should be applied to every program attribute, then set Attribute to *ALL and Obj Type to *PGM.

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

Column 1	Column 2	Column 3
B	Pre-Object Request Validation	runs when a user or process attempts to request (checks out) an object. Command MDCHKOBJ must be used and this provides an organization with the ability to add custom validation rules before a request can be created. See section MDCHKOBJ API for more information.
M	Object Request	runs after an object is successfully requested (checked out)
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. 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 placeholders 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	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).
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

Column 1	Column 2	Column 3
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.
IR	RFP Ready to Install	Runs once one of the following situations occurs: Submit and Approval phases are complete and MDRapid isn't necessary and the installation isn't automatic. MDRapid has reached the sync point and installation isn't automatic
2	Pre-Installation	runs prior to installing objects into the environment
3	Post-Installation	runs after the installation of objects is complete, but before the application is considered free to use again. If command fails, it can be flagged to roll back the installation.
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.
Q	Installation Archive/Cleanup	Runs when the installation is complete and the application is considered free to use again. When the command is defined at the RFP level, it can be used for post-installation notification or other activities that won't trigger a rollback if the command fails. When the command is defined at the Object/Attribute level, it can be used to perform additional processing on the archived source and objects. For example, command MDCMPPFM can be invoked to generate a comparison report between the prior and new code in source members.
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
CB	Code Review Starting	Runs immediately prior to MDCMS sending source to a code review tool. This occurs during the cleanup phase of an RFP
CC	Code Review Completed Clean	Runs once a SUCCESS status is returned to MDCMS from the code review tool
CD	Code Review Completed Dirty	Runs once a FAIL status is returned to MDCMS from the code review tool
CE	Code Review Technical Error	Runs if a technical error occurs while trying to run a code review
TB	Automated Testing Starting	Runs immediately prior to MDCMS initiating automated testing. This occurs during the cleanup phase of an RFP
TC	Automated Testing	Runs once a SUCCESS status is returned to MDCMS from the automated testing tool

Column 1	Column 2	Column 3
	Completed Clean	
TD	Automated Testing Completed Dirty	Runs once a FAIL status is returned to MDCMS from the automated testing tool
TE	Automated Testing Technical Error	Runs if a technical error occurs while trying to run automated testing
5	Pre-Send	runs prior to sending an RFP to one or more remote systems. It will either run once per send batch or once per target location, depending on the frequency flag.
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. The command is run separately for each target location. Placeholder ##SVFLOC## could, for example, be used to filter by the location ID, if a column in the table contains that value.
6	Post-Send	runs after an RFP has been successfully sent to one or more remote systems. It will either run once per send batch or once per target location, depending on the frequency flag.
7	Send Error	runs in case the send of an RFP fails to complete successfully. It will either run once per per send batch or once per target location, depending on the frequency flag.
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.
Y	All Dft Send Locations Installed or Ignored	Runs when all default locations for a sent RFP have installed or have been ignored. This is the optimal command type for the MDUPDSTS command to indicate that tasks involved with an RFP are complete.
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
Z	Object Request Deleted	Runs when an object request is deleted (except when normally deployed as part of an RFP).

Command Types **A, E, F, G, H, I, J, L, R, V, W, S, T, X, CB, CC, CD, CE, TB, TC, TD, TE, 5, 6, 7, 8, and 9** are only valid at the RFP Level (Usage Attribute = *RFP).

Sequence

The sort sequence of the command at run time, in case multiple commands for command type are defined. The sequence is used across all levels of specificity such that less specific commands can run before or after more specific commands if the sequence number is lower or higher. See the Spec Def parameter for more information.

Frequency (Command Type 1, P, 2, 3 or 4 when for Attributes)

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.

Frequency (Command Type 5 or 6 when for *RFP)

B - The command will run each time an RFP is sent to a batch of target locations

L - The command will run for each target location that is sent to during a batch run.

User Prof

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.

Ignore Errors

Y - Continue with RFP processing even if the command fails.

N - Cease and Rollback RFP processing if the command fails

Will always be ignored unless for 1, C, P, 2, D, U and 3

Obj Type

Only include the command for attributes of the given type (Ignored for *RFP commands)

*ANY - include for any object type

Keep MD Libs in Libl

N - The MD Libraries (MDCMS, MDSEC 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.

Spec Def

N - The command will not run if a more specific command of the same command type is defined.

Y - The command will run even if a more specific command of the same command type is defined.

Order of Specificity (from most specific to least specific)

- A command defined for a specific object
- A command defined for objects of a generic naming pattern
- A command defined for a specific attribute
- A command defined for attributes of a generic naming pattern
- A command defined for attribute *ALL

Example 1 - A compile command defined at the attribute level will typically be set to N, so that if a compile command is defined at the object level, the attribute level command will not run.

Example 2 - A post-compile command may be set to Y when it is needed for all program attributes, including those with post-compile commands defined for specific objects or attributes.

Placeholders in SQL

N - The SQL member or IFS file used by a RUNSQLSTM command does not contain MDCMS placeholders - no conversion will occur

Y - The SQL member or IFS file used by a RUNSQLSTM command contains MDCMS placeholders - MDCMS will create a temporary copy of the script and convert the placeholders in the copy to the actual runtime values. This flag should also be set to Y when a script is used for any of the MDCMS *SQL type attributes to create those objects, even if a placeholder isn't present, so that MDCMS can automatically qualify the object.

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

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 placeholder parameter values may be used and are substituted by MDCMS at run-time. The placeholder 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 Placeholder - Insert placeholder value into command string at the location of the cursor. A list of all fixed placeholder values followed by all placeholders for custom fields will be displayed to select from.

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 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.

Fixed Command Placeholder Values

The fixed placeholder parameters are:

Column 1	Column 2	Column 3	Column 4	Column 5
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. For SQL entities, this will be the SQL long name for the library.
##SYSLIB##	CHAR	10	System Name of an Object Library	The 10-Character System name for an object library, when required for use in a command instead of the SQL long name for SQL entities.
##OBJNAM##	CHAR	128	Object name	Name of the requested Object
##SYSNAM##	CHAR	10	System Name of an Object	The 10-Character System name for an object, when required for use in a command instead of the SQL long name for SQL entities.
##OBJTYP##	CHAR	7	Object type	Object Type for the requested object
##OBJATR##	CHAR	10	Object Attribute	The system attribute of the object (not the MDCMS attribute)
##OBJDSC##	CHAR	50	Object Description	The object description
##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	128	Source Name	The name of the source member or IFS file for the requested object
##SRCATR##	CHAR	10	Source Attribute	The system attribute, or source type, of the source member (not the MDCMS attribute)
##SRCDSC##	CHAR	50	Source Description	The source member description
##APPLIC##	CHAR	6	Application code	The Application Code of the RFP
##PROVLV##	INT	3	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	

Column 1	Column 2	Column 3	Column 4	Column 5
				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 placeholder is used.
##SERVER##	CHAR	50	Server	The target server address for a *REMOTE object or the server name for a *IFS object.
##RMTRDB##	CHAR	18	Remote Relational DB for Alias	The target database of the table or view that an SQL Alias should point to
##RMTLIB##	CHAR	10	Remote Library for Alias	The system name of the target library of the table or view that an SQL Alias should point to
##GITBRN##	CHAR	80	Git Branch	The name of the Git Branch that an object request originated from.
##GITREV##	CHAR	40	Git Revision	The Git Revision hash of the commit that an object request originated from

Column 1	Column 2	Column 3	Column 4	Column 5
##GITSVR##	CHAR	10	Git Server ID	The MDCMS Git server ID that an object request originated from
##GITURL##	CHAR	240	Git Server URL	The Git URL defined for the MDCMS Git Server that an object request originated from
##SVNREV##	CHAR	11	SVN Revision	The string representation of the SVN Revision number that an object request originated from
##SVNSVR##	CHAR	10	SVN Server ID	The MDCMS SVN server ID that an object request originated from
##SVNURL##	CHAR	240	SVN Server URL	The SVN URL defined for the MDCMS Git Server that an object request originated from
##PRIOBJ##	CHAR	128	Prior Version of Object Name	The object name of the prior version of the object at archiving time. Used only with the Q command type.
##PRILIB##	CHAR	240	Prior Version of Object Library	The library/folder containing the prior version of the object at archiving time. Used only with the Q command type.
##PRISLB##	CHAR	240	Prior Version of Source Library	The library/folder containing the prior version of the source at archiving time. Used only with the Q command type.
##PRISFL##	CHAR	10	Prior Version of Source File	The source file containing the prior version of the source at archiving time. Used only with the Q command type.
##PRISNM##	CHAR	128	Prior Version of Source Name	The source name of the prior version of the source at archiving time. Used only with the Q command type.
##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

Column 1	Column 2	Column 3	Column 4	Column 5
##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 placeholder is only applicable for command type O or 6.
##SVFTGT##	CHAR	80	Target Address of Sent Savefile	The Location Address that an RFP is sent to. This placeholder is only applicable for command type O or 6.
##SVFNAM##	CHAR	80	Sent Savefile Name	The name of the savefile that has been sent to a location. This placeholder is only applicable for command type O or 6.
##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

Column 1	Column 2	Column 3	Column 4	Column 5
##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
##PRJTSK##	CHAR	20	Project Task String	Complete String of Project/Task ID in format of Project-Task.Subtask
##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

Column 1	Column 2	Column 3	Column 4	Column 5
##JIRREF##	CHAR	20	Jira ID	The Jira Issue ID for the task or subtask
##JIRURL##	CHAR	160	Jira URL	The URL to the Jira Issue for the task or subtask
##SNOREF##	CHAR	20	ServiceNow ID	The ServiceNow incident ID for the task or subtask
##SNOURL##	CHAR	160	ServiceNow URL	The URL to the ServiceNow incident for the task or subtask

Special Placeholder Operators

For any placeholder, including custom level or project placeholders, special operators can be included in the placeholder string just before the trailing ## or ++ characters. The following special operators are available to use only a portion of the runtime value for the placeholder:

(position, length) can be used to use only the substring of a value.

For example, placeholder ++PROJID(1,6)++ will result in a value containing only the first 6 characters of the project ID. Or, ++PROLVL(3,1)++ will result in a value containing the 3rd digit of a promotion level.

(TLZ) can be used to trim any leading zeroes from a value.

For example, placeholder ++RFPNBR(TLZ)++ will result in a value containing the RFP number without any leading zeroes.

MDCHKOBJ - Validate Object Request command

The Validate MDCMS Object Request command provides the parameters necessary for MDCMS to invoke a custom validation program prior to the completion of an Object Request.

A custom validation program can be used to provide an info, warning or error message to the developer when attempting to check out an object. To do so, this command must be defined for a specific Object command or for an attribute command using command type B=Pre-Object

Request Validation.

Command MDCHKOBJ 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 object request is performed.

The B 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:

Name	Type	Length	Description
Description	Direction	Type	Length
MDCMS Application Code	INPUT	CHAR	6
MDCMS Level Number	INPUT	PACKED-DEC	3,0
Object Name	INPUT	CHAR	128
Relative Path of Object	INPUT	CHAR	240
Object Type	INPUT	CHAR	7
MDCMS Attribute	INPUT	CHAR	10
Target Object Library	INPUT	CHAR	240
Target Source Library	INPUT	CHAR	240
Target Source File	INPUT	CHAR	10
User Requesting the Object	INPUT	CHAR	10
MDCMS Reason. D=Delete, M=Modify, N=New, R=Recompile, U=Update	INPUT	CHAR	1
Project ID	INPUT	CHAR	12
Task Number	INPUT	PACKED-DEC	7,0
Subtask Number	INPUT	PACKED-DEC	7,0
Message Text containing any information that the user should be notified about in regards to the Object Request. Return blanks if a message shouldn't be displayed.	OUTPUT	CHAR	360
Message Severity 10=informational message only 20=warning message, but user can continue with the Object Request 30=error message, Object not allowed to be requested	OUTPUT	PACKED-DEC	2,0

Name	Type	Length	Description
KEYWORD	Description	Type	Length
PGMNAM	Program Name - The name of the Custom Program to be invoked in order to provide additional validation of the Object Request beyond what is already performed by MDCMS.	CHAR	10
PGMLIB	Program Library - Specifies the library where the Custom Program resides. *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. *LVL - the library list of the job description for the target level of the request *CURRENT - the current library list when the request option occurs	CHAR	8

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:

Name	Type	Length	Description
Description	Direction	Type	Length
MDCMS Application Code	INPUT	CHAR	6
MDCMS RFP Number	INPUT	PACKED-DEC	7,0
Message Text containing any information that the user should be notified about in regards to the RFP. Return blanks if a message shouldn't be displayed.	OUTPUT	CHAR	360
Message Severity 10=informational message only 20=warning message, but user can continue with RFP 30=error message, RFP not allowed to be submitted	OUTPUT	PACKED-DEC	2,0

Name	Type	Length	Description
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. *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. *RFP - the library list of the job description for the target level of the RFP *CURRENT - the current library list when the submit option is requested is used	CHAR	8

1.4.6 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

Add or Change display

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

Column 1	Column 2	Column 3
2	Pre-Installation	runs prior to installing objects into the environment
3	Post-Installation	runs after the installation of objects is complete

Replace Placeholders

N - The script doesn't contain placeholder values to be replaced by runtime values when executed

Y - Replace placeholder 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

1.4.7 Attribute Templates

Attribute Templates are distinct definitions that can be used for one or more Attributes across Applications and Levels.

Attribute Templates are used to configure management of:

- Object Authority
- Source and Object Replication
- Source and Object Search
- Source and Object Deletion from lower Delta environments
- MDRapid usage
- Automated insertion of comments into Source comments
- Automated Code Review
- Automated Testing
- Automated Commits to Git Repositories
- SQL Packages

These templates are accessible from the Setup Menu option 5 or by pressing F4 on the corresponding template field for an Attribute.

Object Authority Templates

An Object Authority Template defines the system object authorities to be applied when:

- Objects are installed into a library, IFS folder or a remote server folder
- IFS source code is installed into an IFS folder
- Developer Libraries and Source Files are created for Developer Library Naming templates
- MDCMS temporary Receive, Install, Rollback and backup libraries
- SQL Packages created using SQL Package templates

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 0=Other Usage									
Opt	Template	Oth	Type	Obj Owner	Obj Auth	Auth List	Primary Group	Other Users	
—	*DFTIFS		IFS	*JOB	*OBJREF	*NONE			
—	*DFTRMT		REMOTE	*FTP	*NONE	*NONE			
—	*DFT400		OS400	*JOB	*CHANGE	*NONE			
—	IFS1	Y	IFS	*JOB	*OBJEXIST +	TLIST1		1	
—	IFS2	Y	IFS	*SAME	*SAME	*SAME	*SAME	1	
—	OS4B	Y	OS400	MMORGAN	*USE	*NONE		1	
—	OS4C	Y	OS400	*SAME	*SAME	*SAME	*SAME	1	
—	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.

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
- O - List all usage of the template by elements that aren't attributes

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
- F8=Show Desc/Show Info - toggle the listing between template information and template description
- 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 *JOBID 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

Option / Field	Description
*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)

Option / Field	Description
*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

Option / Field	Description
*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)

Option / Field	Description
*OBJALTER	Object Alter Authority
*OBJEXIST	Object Existence Authority
*OBJMGT	Object Management Authority
*OBJREF	Object Reference Authority

IFS Data Authorities

Option / Field	Description
*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

Option / Field	Description
*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

Other Object Authority Template Usage

Besides Attributes, Object Authority Templates can also be used for:

- Developer Libraries and Source Files are created for Developer Library Naming templates
- MDCMS temporary Receive, Install, Rollback and backup libraries
- Objects deployed to replication libraries as part of an Object Replication template
- SQL Packages created using SQL Package templates

To view/configure other usage of a template, enter option O=Other Usage from the Object Authority template listing.

```

MDCT00A                                T86 Dev/Test                                4.12.25
Filters:                                Other Object Authority Template Usage        12:15:29

Template: DEVLIB                        Search (freetext): _____

Type options, press Enter.
C=Configure

Opt Usage      ID      Description
- Dev Lib      TEST01/100 trunk with proj/task
- Temp Lib     CLM/110   Claims October DEV
- Temp Lib     CLM/111   Claims November DEV
- Obj Repl     none
- SQL Pkg      none

F3=Exit  F5=Refresh

Bottom

```

Screen Definitions:Search (freetext)

The entry of a value in this field will filter all rows so that only those containing the value will be displayed.

Usage

Dev Lib - Developer Library Naming Templates for automatically created developer libraries and source files

Temp Lib - MDCMS temporary Receive, Install, Rollback and backup libraries

Object Replication - Objects deployed to replication libraries as part of an Object Replication template

SQL Pkg - SQL Packages created using SQL Package templates

Options

C - Configure the usage of Object Authority templates for the given usage type.

Object Authority for Temporary MD Libraries

MDCMS creates temporary libraries during the deployment and installation process to:

- Receive objects from another system
- Package objects for installation
- Store prior version of objects
- Rollback objects

The authority applied to the temporary library is based on an Object Authority template and the template used can differ for each promotion level. To assign an authority template to levels, enter option O=Other Usage from the Object Authority template listing and then enter option C=Configure on a Temp Lib usage row.

```

MDCTLOA                                COMPANY NAME                25.11.19
Filters:                               Object Authority for Temporary MD Libraries 21:34:40
  Appl Lvl Description                 Template
  _____ OSNEW_____

Type options, press Enter.
1=Assign Level Libraries to Template: OSNEW_____

Opt Appl Lvl Description                 Template
-   TEST 10  T8 Dev Trunk                OSNEW
-   TEST 11  T8 Branch 1                 OSNEW
-   TEST 12  T8 Branch 2                 OSNEW
-   TEST 30  T8 QA (local)                OSNEW
-   TEST 31  T8 QA Branch 1              OSNEW
-   TEST 32  T8 QA Branch 2              OSNEW
-   TEST 50  T8 Prod (local)              OSNEW
-   TSTB 10  Test level 10                OSNEW
-   TSTB 25  Emergency for v10            OSNEW
-   TSTB 30  Test 30                     OSNEW
-   TSTB 50  Test 50                     OSNEW

F3=Exit   F4=Browse   F5=Refresh   F13=Repeat Opt

Bottom

```

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 Level to Template - enter a valid template name in the field above the list and then place a 1 next to each level that should have that template assigned to it. The Template Type must be OS400.

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 levels

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    Y   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     Y   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  F8=Show Desc  F10=Attributes

```

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

F8=Show Desc / Show Info - Toggle listing between the template description and replication info

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 IBM i

OS400 - Object Replication definition for standard IBMi or SQL objects

Description

A description of the template

Project/Task

The objects to be replicated to a specific Replication library/folder can be filtered so that they are only included if the object is changed on behalf of specified projects, tasks or subtasks.

When a location is added to a replication template, or if no projects are set in the filter list, then the objects aren't limited to a specific set of projects.

To filter by project, use option 2 to edit the library/folder and press F8 to view/manage the Project Filter list.

If a Project is added to the filter list without a task or subtask, then an object will be included if it was assigned to the project directly or any task or subtask in the project.

If a Project is added to the filter list with a specific task number, but without a subtask, then an object will be included if it was assigned to the task directly or any subtask in the task.

If a Project is added to the filter list with a specific task and subtask number, then an object will be included only if it was assigned to the subtask directly.

There is no limit to the number of Projects, Tasks and Subtasks in the filter list and an object only needs to be assigned to one of the entries in the list to be included.

Library

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

generic - dynamically include any libraries that match the generic naming pattern.

*ALL - dynamically include all user libraries. This value is only valid for updating existing objects.

When a generic or *ALL value is used, any library beginning with # or Q will be omitted. If a library beginning with # or Q should be replicated to, the library must be specifically defined for the template.

Folder

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

Server

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

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## placeholder by commands and scripts for an IFS file using the attribute.

Add Object by Default

Y - by default, if the object doesn't yet exist in the library, it will be added.

N - by default, if the object doesn't yet exist in the library, it will not be added.

B - by default, if the object doesn't yet exist in the library, it will be added unless the object is a logical file and any of the Based-on files for that logical file are missing in the target library.

The default can be overridden for specific object requests using option O=Object Replication Rules for an object request in the Object Manager

Update Object by Default

Y - by default, if the object already exists in the library, it will be updated.

N - by default, if the object already exists in the library, it will not be updated.

The default can be overridden for specific object requests using option O=Object Replication Rules for an object request in the Object Manager

Run Install Cmd/Script

Y - if any object or attribute pre-/post-commands are defined, they will be repeated for the object in the replication library.

N - if any object or attribute pre-/post-commands are defined, they will not be repeated for the object in the replication library.

Ignore Delete Template

Y - any delete template defined for the attribute will be ignored so that the object remains in the replication location.

N - if a delete template is defined for an attribute to delete from a level used by this replication template, the deletion will also occur for the object in the replication location.

Ignore Errors

Y - if the replication of the object to the target location fails during installation time, a warning condition will be flagged, and the RFP will continue with the installation.

N - if the replication of the object to the target location fails during installation time, the RFP will automatically roll back.

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.

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:
  Type  Library      File
  _____
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

F3=Exit  F4=Browse  F5=Refresh  F6=Add  F8=Show Desc  F10=Attributes
Bottom

```

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

F8=Show Desc / Show Info - Toggle listing between the template description and replication info

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

Description

A description of the template

Project/Task

The source to be replicated to a specific Replication library/folder can be filtered so that they are only included if the source is changed on behalf of specified projects, tasks or subtasks.

When a location is added to a replication template, or if no projects are set in the filter list, then the source aren't limited to a specific set of projects.

To filter by project, use option 2 to edit the library/folder and press F8 to view/manage the Project Filter list.

If a Project is added to the filter list without a task or subtask, then source will be included if it was assigned to the project directly or any task or subtask in the project.

If a Project is added to the filter list with a specific task number, but without a subtask, then source will be included if it was assigned to the task directly or any subtask in the task.

If a Project is added to the filter list with a specific task and subtask number, then source will be included only if it was assigned to the subtask directly.

There is no limit to the number of Projects, Tasks and Subtasks in the filter list and source only needs to be assigned to one of the entries in the list to be included.

Library/File

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

Ignore Delete Template

N - if a delete template is defined for an attribute to delete from a level used by this replication template, the deletion will also occur for the source in the replication location.

Y - any delete template defined for the attribute will be ignored so that the source remains in the replication location.

Ignore Errors

N - if the replication of the source to the target location fails during installation time, the RFP will automatically roll back.

Y - if the replication of the source to the target location fails during installation time, a warning condition will be flagged, and the RFP will continue with the installation.

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:

- The target library for the attribute
- If the promotion level is a delta level, the higher levels will be checked in ascending order
- If the level is based on another level, the based-on level and its higher levels are checked in ascending order
- 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   Y  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   Y  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.

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:

- The target source file/directory for the attribute
- If the promotion level is a delta level, the higher levels will be checked in ascending order
- If the level is based on another level, the based-on level and its higher levels are checked in ascending order
- 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
-  IBSMODP    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 subsetting 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.

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

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

```

Screen Definitions:Filters

The entry of a value into the level filter fields will result in a subsetting 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

FieldsTemplate

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

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.

MDRapid Usage Templates

An MDRapid Usage Template defines the Job Queue, job priority and number of parallel jobs for the MDRapid batch jobs 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 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 Min Rcd Cnt Job Queue Max Cpy LFs Only Journal Pri Workload
_  RAPID      Y   1,000,000 MDCMS          5   N          55 MDRAPID

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

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 Name

A 10-Character name for the template definition.

Atr

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

Minimum Record 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. The value can be set to 0 to always use MDRapid.

Job Queue

When MDRapid runs, a single monitor job is submitted for the entire RFP and a job is submitted for each target physical and logical 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.

Max Parallel Copy Jobs

The data for each physical file in an RFP being copied using MDRapid gets its own copy job to allow for parallel copying to speed up the process. However, data copies are Database- and CPU-intensive processes, so to throttle resource consumption, the maximum number of parallel copy jobs for an RFP can be set. A number between 5 and 10 is recommended, depending on resources available. MDRapid then starts n copy jobs for the files in the RFP in descending order of the number of records in the file so that the largest files start first. Once the copy step is finished for a file, the next pending copy job is started.

If the value for the Max Parallel Copy Jobs is 0, then the default of 5 will be used.

Use for Standalone LFs

If MDRapid should be used for logical files when the physical files they are based on aren't in the RFP. This is useful when the files will be replicated to many libraries in order to speed up the installation of those replications. This flag will be considered for a logical file, if the template is applied to the logical file's attribute for the target promotion level.

Job Run Priority

The run priority can be set for the jobs that are submitted by MDRapid so that they get more or less resource priority than other jobs on the system.

If the value for the Job Run Priority is 0, then the default of 20 will be used.

Workload Group

The name of a Workload Group can be defined for an MDRapid Template. Workload Groups define the maximum number of Processors used by a job assigned to the group. All jobs using the template will be assigned to the Workload Group, if entered.

Use command ADDWLCGRP to add a Workload Group.

MDRapid Journal

A persistent Journal to use when the live version of a table isn't already journaled or when MDRapid needs to journal the new version of the table to track inserts. If blank, MDRapid will automatically create a journal in the RFP temporary install library named MDRAPIDJRN.

MDRapid Journal Library

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

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 attributes defined to contain source stored as members in source files. The attributes must also be for a level that allows checkout, since MDCMS only allows modifications to source from the lowest level of a migration path.

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

Opt  Template  Atr  Lft  Rgt  Top  Delimiters  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 right 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.

Placeholders - placeholders are special values delimited by ++ that are replaced at runtime with MDCMS values. Position the cursor and press F7 to insert a placeholder into the comment field.

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

Code Review Templates

A Code Review Template defines the parameters for interacting with SonarQube to perform automated Code Review of source code that has been deployed to the target level for assigned attributes. Code Review templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Code Review Template field.

Automated Testing Templates

An Automated Testing Template defines the automated testing steps to take for deployed programs and service programs that have been deployed to the target level for assigned attributes. Automated Testing is available in conjunction with the MDTest and TestBench products. Automated Testing templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Automated Testing Template field.

Git Commit Templates

A Git Commit Template is used to replicate source or IFS objects to a Git Repository when an RFP is installed. The template can also auto-create feature branches and pull requests on the origin server. This feature is useful for keeping a copy of source/objects in Git, triggering a pipeline from Git, or ensuring that changes that originated in Git are synced back to the origin server when modifications are made to the code directly on the IBM i.

Git Commit templates must be defined using MDOpen, but the list of defined templates can be viewed and selected from by pressing F4 on the Git Commit Template field.

SQL Package Templates

SQL Package Templates manage the location and existence of SQL Packages for Programs and Service Programs containing embedded SQL statements.

SQL Package Templates are applied to *MODULE and *PGM attributes to ensure the correct target library value is used for the SQL Packages on the CRTSQL* commands.

SQL Package Templates are applied to *PGM and *SRVPGM attributes to automatically create and delete SQL Packages during RFP deployment of the programs/service programs.

During the RFP Installation phase for a program or service program attribute assigned to an SQL Package Template:

- When requested for deletion, all SQL Packages for that program will be deleted.
- When requested for modification or recompile, all SQL Packages for the replaced program will be deleted and an SQL Package for each bound module containing SQL statements will be created.

All SQL Package activity is logged in the RFP Deployment Log and if a create or delete fails, the RFP and the Log Entry will be flagged as a warning, and the RFP will continue.

```

MDCTMSP                                T86 Dev/Test                                4.12.25
SCRN1                                  SQL Package Templates                        12:29:53
                                         Used by:
                                         Appl  Lvl
                                         _____

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

Opt Template  Atr Description                                Library
- TESTDLIB    Y  Test app with package in diff lib          TEST500PKG
- TESTPLIB    Y  Test app with package in program lib        *PGM

                                         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

F21=Sys Command - provide a system command line

FieldsTemplate Name

A 10-Character name for the template definition.

Atr

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

Description

A description of the SQL Package template.

SQL Package Library

The name of the library that the package should be defined to reside in when the module or program is created.

MDCMS will replace or append the SQLPKG parameter to the create command and set this value in it when the compile command is run for the RFP.

*PGM - The library will be the same as the final target library for the module or program.

If the SQLPKG parameter already exists, the library name will be replaced by this name for the RFP compile, but the package name will be retained.

For the compile into a developer library, the library portion of the SQLPKG parameter will be set to *OBJLIB to force it into the same developer library as the module or program to ensure the target environment isn't already impacted.

This processing will occur for MDCMS compile commands with the following names:

CRTSQLCBLI

CRTSQLCI

CRTSQLCPPI

CRTSQLRPGI

Object Auth Template

The Object Authority template used to apply object authority to SQL packages created by the SQL Package template.

*PGM - Use the same Object Authority template that the program or service program attribute uses.

Use Deletion Template

Y - if a deletion template is assigned to the program or service program attribute, then delete the SQL packages for the delta program when the delta program is deleted.

N - don't delete the SQL packages for a delta program, even if it is deleted by a deletion template

Default Collection

The value to use for the Default Collection parameter (DFTRDBCOL) on the CRTSQLPKG command

Query Proc Time Limit

The time limit, in seconds, for Query processing. MDCMS will set this for the RFP job using the CHGQRYA command prior to creating the SQL packages.

*SAME - don't change the limit for the job

*NOMAX - set the time limit to unlimited

Query Proc Stg Limit

The temporary storage limit, in Megabytes, for Query processing. MDCMS will set this for the RFP job using the CHGQRYA command prior to creating the SQL packages.

*SAME - don't change the limit for the job

*NOMAX - set the temporary storage limit to unlimited

End Jobs locking Pkg

Y - if a package to be deleted is locked by other jobs, MDCMS will automatically end those jobs

N - if a package to be deleted is locked by other jobs, MDCMS will flag the entry as a warning and not process the delete/create of SQL Packages for that program.

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

F3=Exit   F4=Browse   F5=Refresh   F13=Repeat Opt
More...
```

Screen Definitions:

Filters

The entry of values into one or more of the filter fields will result in a subsetting 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

1.4.8 Data Copy Templates

A Data Copy 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.

Full instructions for Data Copy Templates are available [here](#).

1.4.9 Field Procs to Auto Reapply Templates

When a table containing Field-Level Procedures (Field Procs) is modified, MDCMS can automatically apply the Field Proc definitions to the new version of the file. The Field Procs to Auto Reapply Templates define the criteria to use to select which Field Procs should be auto-reapplied.

When one or more Field Procs meet the selection criteria for a table to be deployed, MDCMS will automatically alter the table to set the field proc definitions prior to copying the existing data from the original version of the table. This ensures that the column's data will continue to be manipulated in the same way that it was before.

When used in conjunction with MDRapid, the manipulation (typically for field encryption) occurs while the application is still live so that the downtime window remains as short as possible.

In order to know where Field Procs are currently used in your database, and which programs that they call, you can use the following SQL statement:

```
SELECT SYSTEM_TABLE_SCHEMA, SYSTEM_TABLE_NAME, SYSTEM_COLUMN_NAME, FIELD_PROC, CAST(PARMLIST AS CHAR(3000))
AS PARMLIST FROM QSYS2/SYSFIELDS
```

The Field Procs to Auto Reapply templates can be modified from the MDCMS Setup Menu option 5=Templates -> option 22= Field Procs to Auto Reapply.

Field Procs Template Maintenance

Field Procs Templates for Auto Reapply Screen:

MDCTMFP		MD T 8.2 remote				14.04.20	
SCRN1		Field Procs Templates for Auto Reapply				13:11:51	
Filters:							
Description	Pgm Lib	Pgm Name	File Lib	File Name	Field Name	Dif	Err
Type options, press Enter.							
2=Edit 3=Copy 4=Delete 5=View 7=Rename							
Opt	Template	Pgm Lib	Pgm Name	File Lib	File Name	Field Name	Apply Ign
—	CRYPTO	CRYPTO	CRRP*	*ALL	*ALL	*BY	N N
—	CRYPTOALL	CRYPT*	*007	*ALL	*ALL	*ALL	N Y
							Bottom
F3=Exit		F5=Refresh		F6=Add		F8=Show Description	
F21=Sys Command							

Filters

The entry of values into one or more of the filter fields will result in a subsetting 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

Function Keys

F3=Exit

F6=Add - Add a new Template Definition

F8=Show Description/Show Details - toggle the listing between description and template details

F21=Sys Command - access a command line

Fields

Template

A 10-Character name for the template definition

Description

A 50-Character optional description of the template

Ignore Errors

Y = If the ALTER TABLE statement fails to apply the field procs to the new version of the table, a warning will be placed in the deployment log, but the RFP will continue.

N = If the ALTER TABLE statement fails to apply the field procs to the new version of the table, the RFP will roll back and end.

Automatically Reapply Field Proc when for Program Library

A Field Proc invokes a specific ILE program in a specific library. Use the filter to limit reapplying Field Procs to programs residing in certain libraries.

*ALL - don't filter by program library

generic - use the * symbol at the beginning and/or ending of the value to limit to libraries starting with, ending with, or containing the value.

Automatically Reapply Field Proc when for Program Name

A Field Proc invokes a specific ILE program. Use the filter to limit reapplying Field Procs to programs of a certain name.

*ALL - don't filter by program name

generic - use the * symbol at the beginning and/or ending of the value to limit to program names starting with, ending with, or containing the value.

Automatically Reapply Field Proc when for File Library

Use the filter to limit reapplying Field Procs to files residing in certain libraries.

*ALL - don't filter by file library

generic - use the * symbol at the beginning and/or ending of the value to limit to libraries starting with, ending with, or containing the value.

Automatically Reapply Field Proc when for File Name

Use the filter to limit reapplying Field Procs to files of a certain name.

*ALL - don't filter by file name

generic - use the * symbol at the beginning and/or ending of the value to limit to names starting with, ending with, or containing the value.

Automatically Reapply Field Proc when for Field Name

Use the filter to limit reapplying Field Procs to fields of a certain name.

*ALL - don't filter by field name

generic - use the * symbol at the beginning and/or ending of the value to limit to names starting with, ending with, or containing the value.

Reapply when Field Length or Type is Different in New Version of File

The parameter list for some field procs may be incorrect, if the length, number of decimals or field type changes. Use this flag to decide if a field proc should be reapplied in the case of such a change.

Y = Apply the Field Proc to the new table, even if the length, decimals or type changes.

N = Do not apply the Field Proc to the new table if the length, decimals or type changes.

1.4.10 Developer Library Naming Templates

By default, the name of the developer library or folder used to make modifications to source code will be the same name as the user profile of the developer and can then be set per user and level.

However, if the library should instead be a shared development library based on a Project, Task, Subtask, RFP or some other entity, then a Developer Library Naming Template can be created and applied to one or more levels to define the naming pattern to be used.

The Developer Library Naming templates can be modified from the MDCMS Setup Menu option 5=Templates -> option 23=Developer Library Naming.

Developer Library Naming Template Maintenance

Developer Library Naming Templates Screen:

```

MDCTMDL          T84 Demo Dev/QA          14.04.22
SCRN1            Developer Library Naming Templates 22:41:08
Filters
Description: _____ Pattern: _____ Used by: Appl Lvl
Type options, press Enter.
  2=Edit  3=Copy  4=Delete  5=View

Opt Appl  Lvl  Template Description          Require at CO
- TEST01 *ANY any other TEST01 level with user/spec ifs  N  N  N  N
- TEST01 110 branch 1 with proj/lvl/task                Y  Y  N  N
- TEST01 120 branch 2 with level placeholder            N  N  N  Y

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

Filters

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

Used by

To see which template, if any, would be applied to a specific application level, enter the value for the application and level and press Enter.

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

Function Keys

F3=Exit

F4=Browse list of possible values for the Application and Level

F6=Add - Add a new Template Definition

F21=Sys Command - access a command line

Developer Library Naming Template Fields

Application

The application that will be using this template. Set to *ANY if any application should use the template

Level

The level that will be using this template. Set to 0 if any level should use the template.

When a checkout request is being created, MDCMS will apply a template in the following order:

- A template exists exactly matching the Application and Level
- A template exists exactly matching the Application and the Template Level is set to 0
- A template exists exactly matching the Level and the Template Application is set to *ANY
- A template exists and the Template Application is set to *ANY and the Template level is set to 0

If none of the 4 combinations exist, the default naming per user and target level will be applied.

Description

A 50-Character optional description of the template

Object Library Naming Pattern

*USER = the default naming per user and target level will be applied

Otherwise, specify any combination of fixed values together with MD, Project, Task, Level or Custom placeholders. Use F7 to select a placeholder from a list and insert it into the pattern at the current cursor position.

Example Library Naming Pattern:

```
++PROJID(1,4)+++PROLVL(2,2)+++TASKID(TLZ)++
```

In this example, the library name will be:

the first 4 characters of the Project ID for the object request

- the 2nd and 3rd digits of the promotion level
- the Project Task number for the object request with any leading zeroes trimmed from it.

Source Library Naming Pattern

*SAME = use the same value as for the Object Library Naming Pattern

*USER = the default naming per user and target level will be applied

Otherwise, specify any combination of fixed values together with MD, Project, Task, Level or Custom placeholders. Use F7 to select a placeholder from a list and insert it into the pattern at the current cursor position.

Object Folder Naming Pattern

*USER = the default naming per user and target level will be applied

Otherwise, specify any combination of fixed values together with MD, Project, Task, Level or Custom placeholders. Use F7 to select a placeholder from a list and insert it into the pattern at the current cursor position.

Example Folder Naming Pattern:

```
/home/++APPLIC++/dev/++PROJID++/++TASKID(TLZ)++
```

In this example, the folder name for IFS objects will be:

Parent directory of /home

- child directory of the application code
- child directory of dev
- child directory of the Project ID for the object request
- child directory of the Project Task number for the object request with any leading zeroes trimmed from it

Source Folder Naming Pattern

*SAME = use the same value as for the Object Folder Naming Pattern

*USER = the default naming per user and target level will be applied

Otherwise, specify any combination of fixed values together with MD, Project, Task, Level or Custom placeholders. Use F7 to select a placeholder from a list and insert it into the pattern at the current cursor position.

When Task is Closed, Auto-Delete

The recommended approach with temporary libraries and folders is that they are based on a Project Task and persist for the life of the task. If this is how you have defined the naming pattern, MDCMS can automatically delete after the associated task is closed. The deletion will occur during the next run of the MDCLEAN job after the closing.

Libraries:

N - Any libraries created to contain the checked-out source and objects will remain on the partition until they are manually deleted.

Y - The MDCLEAN service job will automatically delete the library once the associated task is closed.

Folders:

N - Any IFS Folders created to contain the checked-out source and objects will remain on the partition until they are manually deleted.

Y - The MDCLEAN service job will automatically delete the folder once the associated task is closed.

Authority Template for new Libraries

MDCMS will automatically create the library if it doesn't exist and can apply ownership and user authority based on an Authority template. Objects that are compiled into the library using MDCMS will also use the template to apply authority to those objects.

*USER - don't apply a template - the user of the job will be the owner of the library

Otherwise, the name of an OS400 Authority Template. Press F4 to select from a list.

Authority Template for new Src Files

MDCMS will automatically create Source Files in the library if they don't exist and can apply ownership and user authority based on an Authority template.

*USER - don't apply a template - the user of the job will be the owner of the source file.

Otherwise, the name of an OS400 Authority Template. Press F4 to select from a list.

ASP Device for new Libraries

MDCMS will automatically create the library if it doesn't exist into the ASP defined here.

*SYSTEM - create the library in the system ASP

Otherwise, the name of an ASP device.

Authority Template for new Folders

MDCMS will automatically create the folder path if it doesn't exist and can apply ownership and user authority based on an Authority template.

*USER - don't apply a template - the user of the job will be the owner of each new folder in the path

Otherwise, the name of an IFS Authority Template. Press F4 to select from a list.

Require Project at Checkout

If Y, MDCMS won't allow a modification request to proceed unless a Project has been selected for the request.

Require Task at Checkout

If Y, MDCMS won't allow a modification request to proceed unless a Project Task has been selected for the request.

Require Subtask at Checkout

If Y, MDCMS won't allow a modification request to proceed unless a Project Subtask has been selected for the request.

Require RFP at Checkout

If Y, MDCMS won't allow a modification request to proceed unless an RFP has been selected for the request.

1.4.11 Object Approval Templates

Object Approval Templates provide a means of defining which groups of users must approve an RFP, before the RFP can be installed. Object Approval Template assignments are done at the Object level rather than Attribute level in order to allow for finer granularity.

In order for the templates to be used in the RFP process, the target level and/or target attributes of the RFP must set Auto-Approve to T=Templates.

The Developer Library Naming templates can be modified from the MDCMS Setup Menu option 5=Templates -> option 24=Object Approvals.

To manage the Template Headers and Approval Groups, you must have MDSEC authority to code md/22.

Object Approval Template Header Maintenance

Object Approval Templates Screen:

MDCTMRA	T86 Dev/Test				8.01.25
SCRN1	Object Approval Templates				12:41:27
Filters:					
Template	Description	Owner	Approver	Obj Name	Obj Type
Type options, press Enter.					
2=Edit 3=Copy 4=Delete 5=View 7=Rename A=Approvers 0=Objects					
Opt	Template	Description	Owner	Approvers	Assigned
—	JUSTDEVS	Just Developer approvals	IBMDEV	1	3
—	NEEDAPR	Need approval		2	
—	TEST1	Test objects 1	EUROAPP	2	4
—	TEST2	Test objects 2	PGMR 1	2	7
F3=Exit F5=Refresh F6=Add F21=Sys Command					Bottom

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

- 2 - Edit an existing Template definition
- 3 - Copy the definition for a Template to a new Template name. The Approvers will also be copied.
- 4 - Delete a Template definition
- 5 - Display all details of the Template definition
- 7 - Rename a Template definition
- A - View/Manage the list of Approval Groups for the Template
- O - View/Manage the list of Assigned Objects for the Template

Function Keys

F3=Exit

F5=Refresh the listing

F6=Add - Add a new Template Definition

F21=Sys Command - access a command line

Object Approval Template Header Fields

Template ID

A unique 10-character identifier for the template

Description

A 50-Character description of the template

Business Owner Type

G - The business owner is a user group defined in User Groups

U - The business owner is a specific user defined in MDSEC

Business Owner

The optional User Group or User that is designated as the Owner (from a business perspective) of all objects assigned to the Template. Use F4 to select a value from User Groups or MDSEC Users, depending on the Business Owner Type.

Allow *ANY/*gen* Value

Y - the Object Name, Object Type and/or Target Library Folder values for object assignments may be set to *ANY or have a generic value using *value* in order to assign entire groups of objects to the template based on a naming pattern.

N - the Object Name, Object Type and Target Library Folder values must be for a specific object

Allow no Approvers

Y - Objects can be assigned to the Template if no Approval Groups are defined for the Template. This means that any such objects on an RFP will be automatically approved for installation.

N - Objects can't be assigned to the Template until at least 1 Approval Group is defined for it.

Require Recomp Approval

Y - Objects requested for recompile (or Update) will require approval for installation

N - Objects requested for recompile (or Update) will be automatically approved for installation

Require Delete Approval

Y - Objects requested for deletion will require approval for installation

N - Objects requested for deletion will be automatically approved for installation

Approval Groups for an Object Approval Template

View/Manage the list of Approval Groups registered for a Template by using option A=Approvers from the Object Approval Templates screen. One member of each group will be required to approve the installation of an RFP if one or more objects on the RFP are assigned to the Template.

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

3 - Add an Approval Group to the Template based on the name of the selected group.

4 - Remove a Group from the Template

G - Group Def - View/Manage the details and users belonging to the User Group

Function Keys

F3=Exit

F5=Refresh the listing

F6=Add - Add an Approval Group to the Template

F21=Sys Command - access a command line

Approval Template Group FieldsApproval Group

The ID of a valid User Group

Application

The application(s) that require that the user group provides approval. A generic value can be used. If multiple specific applications require approval for the template, then add additional group records.

*ANY - any application will require the group

Level

The promotion level(s) that require that the user group provides approval. A generic value can be used. If multiple specific levels require approval for the template, then add additional group records. The format of a level number is 3-digit numeric.

*ANY - any promotion level will require the group

Assigned Objects for an Object Approval Template

View/Manage the list of Objects assigned to a Template by using option O=Objects from the Object Approval Templates screen. When an object is included in an RFP, one member of each Approval Group defined for the template will be required to approve the installation of the RFP.

MDCMS weighs the values for the Object name, Object Type and Application so that specific object values have priority over *generic* values and *generic* values have priority over *ANY values when determining which template the object on an RFP belongs to.

To manage any Object Assignments, you must have MDSEC authority to code md/23.

When you don't have global authority to code 23, you can still add/remove object assignments when you have authority to code 23 for the lowest Promotion Level for a specific Application value.

Filters

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

Options

3 - Add an Object to the Template based on the values of the selected object

4 - Remove an Object from the Template

5 - View the full values for the Object Name, Type and Target Library/Folder

8 - Move the object to a different Template

Function Keys

F3=Exit

F5=Refresh the listing

F6=Add - Add an Object to the Template

F21=Sys Command - access a command line

Object Fields

Object Type

The type of Object based on MDCMS attribute types. Press F4 to select from a list.

If the Template allows *ANY/*gen* values, *ANY can be used to indicate any type of object. Generic naming patterns are not allowed for the Object Type.

Object Name

The name of the Object. Press F4 to select from a list.

If the Template allows *ANY/*gen* values, *ANY can be used to indicate any object name and *val* can be used for naming patterns for the object. The values are not case sensitive.

Application

The Application group that the object belongs to.

If the Template allows *ANY/*gen* values, *ANY can be used to indicate any application. Generic naming patterns are not allowed for the application.

1.4.12 IBMi Locations

The IBMi 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		MD Dev		4.08.26	
SCRN1		IBMi Locations		22:32:35	
Filters				Dst	
Loc ID	Description	Address	Group	Psh Pul St Mtd Snd 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 T=Test U=User Mapping					
Opt	Loc ID	Description	Sort Seq	Push Job	Pull Job Stg Mtd Job A WF Cmp E
└	*LOCAL	MD Dev	1	1	N LCL Y Y N N
└	MDDEMO	MD Demo	2	1	N FTP 1 Y N N N
└	MDRESTSAVF	MDRest4i Patch from P82			N SFO Y N N N
└	MDRPTFP12	MDRest4i Patch from P12			N SFO Y N N N
					Bottom
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.

T=Test - Test the DDM connection from this location to the remote location and provide an overview of the connection configuration to ensure everything is correct on both sides of the connection.

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.

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, source comparison and local branch distribution 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

MDPUSH 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.

MDPULL 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.

This user requires either *ALLOBJ authority, or the user should be granted *CHANGE authority to all *FILE objects in MDCMS, MDSEC and MDXREF on the target location.

If authority is specifically granted to this user on the library objects, it's important to reapply the authority when an upgrade of MDCMS is performed.

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. Pressing this will also refresh the Version, Build Date and Install Date information of MDCMS on the remote location that is shown in the local Location display.

F14=Show/Hide New PW - if adding or modifying the value for the password, press F14 to see the entered value for the field. This will not show the currently stored value of the password for security reasons.

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

Column 1	Column 2	Column 3
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 For use on the *LOCAL location only. Typically used when sending promotions from the top of a deployment branch to the bottom of the trunk. 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 using MDOpen. The connection information is then pulled from that entry.	Remote Server Location Address
OBJ	ObjectConnect (SAVRSTOBJ). Transfer using command SAVRSTOBJ, if ObjectConnect is installed and configured on both systems. If DDM is defined for the Location, MDCMS can automatically receive the file on the target. Otherwise, use MDRCVSNA for user *SAVF to listen for new RFPs to receive on the target.	The Control Point name of the remote system. It can be unqualified if for the same Network ID, otherwise use format NNNN.CCCCCCCC where N is the Network ID and C is the Control Point name. This information can be viewed using command DSPNETA on the remote system.
OPT	Optical Device	Device Name
SFF	Save File with Full RFP Information for manual distribution to other systems that use MDCMS. 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 OR 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.

MDSEND Job#

If the selected distribution method will transfer RFPs to a remote location, a number between 1 and 9 should be specified. This number corresponds to the MDSSEND job to transfer the built save file asynchronously to the location. During the RFP Send process, one job runs per RFP that saves the source, objects and metadata to a save file. Then, the transfer of this save file is passed to the MDSSEND job defined for the target location. This concurrent processing provides a much lower amount of time to complete the transfer of RFPs to multiple locations.

Set the number of MDSEND jobs to start in the services settings to match the highest job# defined in the location settings.

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. V6R1M0)

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.

When to Send

Determines when and whether to send an RFP to the target level. This value can be overridden for each Distribution Level.

A - Automatically send to the target level as soon as the RFP is installed into the distribution level

G - Automatically send to the target level as soon as all quality gates for the installed RFP are open.

Quality Gates: MDWorkflow Acceptance, Task Status Boundary, Code Review or Automated Testing

M - When manually sending an RFP, the target level will be selected by default. The target level will also be selected when a Task Status Trigger to Send RFPs is executed.

N - When manually sending an RFP, the target level will not be selected by default. A trigger will not cause a send to the target level and an RFP will auto-close even if the target level hasn't been sent to.

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), because a compile will not occur on the target. If Send Source for Modifications is set to D, database objects will not be sent as a compile is expected.

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)

D - Source should only be sent for Database objects, as only they will be compiled on the target

Send Source for Recompiles

Y - Source will be compiled on the target system, but it is not 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)

Send *MODULE attributes

Y - *MODULE attributes will be sent to target system (Option O)

N - *MODULE 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.

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)

Additional Distribution Settings for FTP

Connection User

The profile on the remote IBM i partition 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.

If authority is specifically granted to this user on the library objects, it's important to reapply the authority when an upgrade of MDCMS is performed.

Password

The password for the user on the remote system. Depending on the password settings on the target system, the password may be case-sensitive and up to 40 characters in length.

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.

Additional Distribution Settings for ObjectConnect

Remote ASP Device

The ASP device on the remote system containing the MDCMS instance

*SYSBAS - MDCMS is installed on the system base ASP

The alphanumeric device ID for the ASP

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

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:

Separately purchase and Install GoAnywhere™ from Linoma Software

If GoAnywhere™ is installed to a library with a name other than GOANYWHERE, then change the value of Data Area MDCMS(instance)/MDGOALIB

Define a FTPS, SFTP, or SCP Server resource for the remote partition that MDCMS must deploy to

Define a IBM i Server resource for the remote partition that MDCMS must deploy to

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

Import the XML file into the Projects list

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.

Repeat steps 3 - 7 for each additional remote partition

Project XML

```
<project name="MDCMS_SEND_1" mainModule="Main" version="1.0" logLevel="debug"
onError="abort">
<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" />
```

Send MDCMS RFP/Settings to Remote Server 1

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                            —

F3=Exit  F5=Refresh

Bottom

```

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.

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.

MDLOCPWD - Change Password for MD Locations

MDCMS is delivered with a command-based API that provides for the systematic update of the password stored for the user defined for the MDCMS OS/400 Location DDM Remote user and/or MDCMS OS/400 Location FTP Connection User.

The MDCMS command is named **MDLOCPWD** and is located in library MDCMS*.

MDLOCPWD Parameter Table

Name	Type	Length	Description
Name	Type	Length	Description
USER	CHAR	10	The name of the user defined for one or more OS/400 locations in MDCMS on the local partition.
PWD	CHAR	40	The new, mixed-case password to use when connecting to the location. The password is updated for the MDCMS OS/400 entry only - it doesn't change the actual password for the user profile on the remote system.
LOC	CHAR	10	The Location ID of the OS/400 location entry to update. In order for the password to be updated, the location ID value must match (or be *ALL) and the user must match.

1.4.13 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
- When to Send
- Target Release
- Data Compression
- Target Attribute Rules

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

Opt  Appl  Lvl  Location  Description  Tgt  Target
    -  TEST 10  MD71      MD 7.1      Lvl Dft Release Method
    -  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

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

Bottom

```

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'.

Editable Fields for a Distribution Level

Most of the fields can be set at the location prior to the creation of the Distribution Level and those values will be automatically attributed to the Distribution Level when it's created. If a field value for the Location is changed after the Distribution Level already exists, that value will not be updated in the Distribution Level. Any Distribution Level that has exceptions to the default location values can be edited here.

Ignore Non-Branch

This field is only set for individual Distribution Levels.

N (default) - Send RFPs from the sending level to the target level, regardless if the RFP originated in the same branch as the sending level or not.

Y - Only Send the RFP to the target level if it originated in the same branch (chain of levels) as the sending level. This provides an automated method to avoid looping between levels when replicating objects between the trunk and branches.

Local Dist Reason

This field is only set for individual Distribution Levels and only appears when the Distribution Method is LCL (local).

S=Standard (default) - the target local level is to be treated as a standard level as when distributing to a remote level.

D=DB Sync - Send any database requests to the target level in order to sync the branch of that level with the database objects and to recompile any existing dependencies over the database objects in the branch.

If development or test branches are defined that contain their own persistent Database libraries, it is recommended to create a Distribution Level from the copy of the production level on the local partition to the lowest level for each of those branches. It is also recommended to set Auto-Send to Y for the production copy level and Default to Send should be set to Y for the distribution level.

When the send occurs, MDCMS will only include object requests for *DTAARA, *FILE (PF-DTA or LF) or any of the *SQL types (except *SQLSCR and *SQLPKG). Additionally, a DB object request will be omitted from the send if the same object is currently checked out for modify or delete in the target level.

When the receipt occurs, MDCMS will automatically add recompile requests for any dependencies that exist in any level of the branch of the target level and will then auto-submit the RFP at each level for the branch. This keeps the entire process automated unless an error occurs or manual approval or installation is required.

M=Merge with Trunk - the sending level is the top of a Branch and the target level is the bottom of the Trunk. Once the reason is set to M, the source code in any RFPs sent to the Trunk level will be automatically check for conflicts and the target RFP will require that the conflicts are resolved in the MDOpen Compare with Branch dialog before the target RFP will be allowed to be promoted.

N=Non-Git Requests - the sending level may contain object requests that originated in Git along with object requests that didn't originate in Git. The send to the target level should only contain those object requests that didn't originate in Git. Those that did originate in Git will be pushed directly to the target level from Git via a Merge from a Pull-Request.

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.

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.

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: _____
  S=Source  O=Object  B=Both  N=Neither  R=Request Only  Type options, press Enter.

Opt Attribute  Type  Object Library  Source Lib  Source File
0 CBL          *PGM  TSTOBJ30  TSTSRC30   QCBLSRC
0 CBLLE31      *PGM  TSTOBJ31  TSTOBJ31   QCBLESRC
0 CBLMOD       *MODULE TSTOBJ30  TSTSRC30   QCBLESRC
0 CBLMOD31     *MODULE TSTOBJ31  TSTOBJ31   QCBLESRC
0 CBL31        *PGM  TSTOBJ31  TSTOBJ31   QCBLSRC
0 CLLE31       *PGM  TSTOBJ31  TSTOBJ31   QCLSRC
0 CLMOD31      *MODULE TSTOBJ31  TSTOBJ31   QCLSRC
0 CLP          *PGM  TSTOBJ30  TSTSRC30   QCLSRC
0 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.

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

  Opt  Appl  Lvl  Location  Tgt  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 TEST80_30 BASOBJ30

Enter=Confirm  F6=Add  F12=Previous

Bottom

```

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

*NONE - the object request should not be sent to the target level.

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

1.4.14 Interface Settings



The **Interface Settings Menu** consists of several options that are used to configure the interface between MDCMS and 3rd-Party products as well as to configure the REST service APIs provided by MDCMS for exchanging information with external tools.

Option 1: Jira

Configure the interface between MDCMS and Jira to be able to share task information between the 2 products.

[View full instructions in the Wiki](#)

Option 2: ServiceNow

Configure the interface between MDCMS and ServiceNow to be able to share task information between the 2 products. [View full instructions in the Wiki](#)

Option 3: Synon/2E

Configure the interface between MDCMS and Synon/2E to be able to request source and objects for modification and deployment directly out of Synon/2E models.

[View full instructions in the Wiki](#)

Option 9: HTTP Servers

Configure the MD http servers for:

- providing REST APIs for use by MDOpen as well as webhooks for DevOps tools and APIs for other external use. An API server must be created on every partition that MDOpen will be connected to.

[View full instructions in the Wiki](#)

- Creating a Server instance of MDOpen for Web, so that MDOpen can be used from within a browser.

[View full instructions in the Wiki](#)

1.4.15 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

MD Service User Profile . . .	MDCONNECT	*MOWNER, Profile
Java Version	jdk71/64bit_	
Sign Objects	Y	Y/N
Default Initial Ref Label . . .	Initial Ref _____	

Temporary Library Prefixes:		Example
RFP Backup	SAV	SAV123456
RFP Installation	CMS	CMS123456
RFP Receipt	MD0	MD01123456
RFP Rollback	MDR	MDRB123456
Backup Lib Retention in days. _	5	0-999

MD Build Date	02.08.20
MD Installation Date	02.08.20

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.

MD Service User Profile

The technical user profile on this system to be used to run MDCMS service jobs.

*MOWNER - use the profile that owns the MDCMS product objects. This is typically MOWNER.

The user must have at least *JOBCTL and *SPLCTL special authorities and the user must have a valid password.

It is recommended to set the Initial program parameter to *NONE to avoid interactive usage.

If the user profile doesn't have the *ALLOBJ special authority, then the following commands should be run once when there are no locks on the product libraries:

```
CHGAUT OBJ('/QSYS.LIB/MDCMS.LIB/*') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*NONE)
```

```
CHGAUT OBJ('/QSYS.LIB/MDREP.LIB/*') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*NONE)
```

```
CHGAUT OBJ('/QSYS.LIB/MDSEC.LIB/*') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*NONE)
```

```
CHGAUT OBJ('/QSYS.LIB/MDXREF.LIB/*') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*NONE)
```

```
CHGAUT OBJ('/QSYS.LIB/MDCMS.LIB/*') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*NONE)
```

CHGAUT OBJ('/MDCMS') USER() DTAAUT(*RWX) OBJAUT(*ALL) SUBTREE(*ALL)

Replace with the ID of the service user. If MDCMS is installed on an ASP device, then prefix the path with the name of the device.

The MDINSSAVF command will automatically run these commands for future updates to the product.

*MDOWNER - use the profile that owns the MDCMS product objects. This is typically MDOWNER.

Java Version

The Java Virtual Machine version to be used by the MDCMS java routines. Press F4 to see the list of installed JVM versions in the QOPENSYS IFS folder. Use option 5 in front of a version and then use option 1 to select either 32bit or 64bit. Minimum allowed is JDK80.

Sign Objects

A hash signature is created for each IFS/Remote file and all source code during the bundle phase of an RFP.

Y - Require Approval to Install if the hash signature differs from what is expected, meaning that manual manipulation has occurred.

N - Do not compare the hash signatures and require approval.

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.

Internal Task Ref Label

The label to use for the Internal Reference Code field for tasks and subtasks. This label is then used in MDCMS, MDOpen and MDWorkflow.

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. When temporary libraries are generated by MDCMS, the authority for the library is set based on the Object Authority template applied to the Promotion Level related to the library. See Object Authority templates for more details.

Backup Lib Retention in days

The number of days to retain temporary backup libraries after the deployment of source and objects. Source and objects are archived automatically, but the data in modified tables isn't archived, so it can be helpful in emergency situations to be able to refer back to the prior version of the tables for a period of time.

If days = 0, the temporary libraries will be deleted immediately. Otherwise, the MDCLEAN service will delete them once a minimum age has been reached.

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

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.

1.4.16 MD Service Jobs

The MD Service Jobs 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.

The job user is the MD Service User defined in the System Settings.

Press F9 to toggle between listing only active services and listing all services

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 Services that generate logs

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.

The following services cannot auto-start and require the start command for the service to start:

MDKACE

MDPULL

MDSNOW

The following services can only auto-start if the webhook is defined in the server that they connect to:

MDAZUR

MDGIT

MDJIRA

The following RFP receive services can only auto-start if DDM connectivity is allowed from the RFP sending system to the receiving system:

MDRCVIFS

MDRCVRMT

MDRCVSNA

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 # Parallel Jobs

MDFTP, MDPULL, MDPUSH and MDSEND 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.

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.

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.:

Column 1	Column 2	Column 3
Service	Start Command	End Command
MDAZUR	MDCMS/MDSTRAZUR	MDCMS/MDENDAZUR
MDCLEAN	MDCMS/MDCLEAN	ends immediately upon completion
MDFTP	MDCMS/MDSTRFTP	MDCMS/MDENDFTP
MDGIT	MDXREF/MDSTRGIT	MDXREF/MDENDGIT
MDJIRA	MDCMS/MDSTRJIRA	MDCMS/MDENDJIRA
MDKACE	MDCMS/MDSTRKACE	MDCMS/MDENDKACE
MDLOG	MDCMS/MDSTRLOG	MDCMS/MDENDLOG
MDMAIL	MDSEC/MDSTRMAIL	MDSEC/MDENDMAIL
MDPULL	MDCMS/MDSTRPULL	MDCMS/MDENDPULL
MDPUSH	MDCMS/MDSTRPUSH	MDCMS/MDENDPUSH
MDRCVIFS	MDCMS/MDRCVIFS	MDCMS/MDENDRIFS
MDRCVRMT	MDCMS/MDRCVRMT	MDCMS/MDENDRRMT
MDRCVSNA	MDCMS/MDRCVSNA	MDCMS/MDENDRSNA
MDSEND	MDCMS/MDSTRSEND	MDCMS/MDENDSEND
MDSFTP	MDCMS/MDSTRSFTP	MDCMS/MDENDSFTP
MDSNOW	MDCMS/MDSTRSNOW	MDCMS/MDENDSNOW
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.

MDMAIL Additional Settings

MDCMS provides the ability to send emails via the MDMAIL java service. In order to configure the SMTP client to send emails directly from the partition, Edit the MDMAIL service with option 2 and then press F10 for more 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

WF URL in MDOpen. Y Y/N

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

Y - A column in the MDOpen Project, Task and Subtask list views will provide the URL icon to be clicked to open a browser to show the given element from within MDWorkflow.

N - The MDWorkflow URL column won't be visible in MDOpen

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

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.

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

Option / Field	Description
Email Address of Recipient (ADDR)	A specific email address *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. *NONE - the address or user parameters are used instead *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. *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. *NO - don't delete the attachment(s) *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. *SAME - the environment of the current library list will be used *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: a user defined group type *ACCGRP (default) - all Acceptance Groups for all Projects for the RFP *APRGRP - all users participating in the installation approval of an RFP. For levels using MDSEC roles for approval, all users authorized to approve for the level are included. For levels using Object Approval Templates, all users to participate based on the objects involved are included. *TECGRP - all Technical Groups for all Projects for the RFP *TSKASN - all assigned groups/users for all tasks for the RFP *TSKREQ - all creators for all tasks for the RFP *TSKTST - all test groups/users for all tasks for the RFP

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 placeholder values which are replaced by the actual MDCMS values at runtime. The placeholders 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

Option / Field	Description
Email Address of Recipient (ADDR)	A specific email address *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. *NONE - the address or user parameters are used instead *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. *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 TEXT - the email body has a plain text format 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. *NO - don't delete the attachment(s) *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. *SAME - the environment of the current library list will be used *DFT - the default environment will be used. This correlates to library MDCMS.
Use Placeholders (WCRD)	Whether or not to find and replace any placeholders in the email body. Any of the placeholder parameters in this command that are required as specific values must be present on the command definition. At a minimum, it's recommended that the (APPLIC), (PROLVL) and (RFPNBR) are included on the command definition. The email body can include any placeholder, including placeholders for custom fields. The placeholders 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. 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 placeholder value of ##APPLIC##.
Level (PROLVL)	The MDCMS Application Promotion Level represented by the placeholder value of ##PROLVL##.
RFP Number (RFPNBR)	The RFP number for this promotion represented by the placeholder value of ##RFPNBR##.
Object Request Number (REQNBR)	The MDCMS Object Request number represented by the placeholder value of ##REQNBR##. This is necessary when placeholders 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 placeholder value of '##PROJID##'.
Task Number (TASKID)	The MDCMS Project Task number represented by the placeholder value of ##TASKID##.
Subtask Number (STSKID)	The MDCMS Project Subtask number represented by the placeholder value of ##STSKID##.

Option / Field	Description
Object Library (OBJLIB)	The Object Library represented by the placeholder value of '##OBJLIB##'.
Source Library (SRCLIB)	The source library name represented by the placeholder value of ##SRCLIB##.
Source File (SRCFIL)	The source file name represented by the placeholder value of ##SRCFIL##.
Error Message (ERRMSG)	The error text explaining why an RFP failed. This is represented by the placeholder 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: a user defined group type *ACCGRP (default) - all Acceptance Groups for all Projects for the RFP *APRGRP - all users participating in the installation approval of an RFP. For levels using MDSEC roles for approval, all users authorized to approve for the level are included. For levels using Object Approval Templates, all users to participate based on the objects involved are included. *TECGRP - all Technical Groups for all Projects for the RFP *TSKASN - all assigned groups/users for all tasks for the RFP *TSKREQ - all creators for all tasks for the RFP *TSKTST - all test groups/users for all tasks for the RFP

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

Option / Field	Description
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.

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 FTP and FTPS transactions.

The MDSFTP service jobs are used to perform the SFTP transactions.

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

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

MDFTP Parameters

Option / Field	Description
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 *EXIST - check if a folder or file exists on the remote server *GET - copy a file from the remote server to the local IFS *PUT - copy a file from the local IFS to a remote server *DELETE - delete a folder or file on the remote server *MKDIR - create a folder on the remote server *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. *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. *SAME - the environment of the current library list will be used *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 *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 *LFIL - the name of the remote file is the same as the local file

1.4.17 Job Settings

```

MDCJOBS                      MD Dev                      25.04.20
SCRN1                        MD Job Settings             10:39:29

Default:
  Subsystem . . . . . MDCMS__
  Library . . . . . MDJOBCTL__

  Job Description Library . . . MDJOBCTL__
  Job Queue Library . . . . . MDJOBCTL__

  MD Report Job Queue . . . . . MDREPORT__
  Library . . . . . MDJOBCTL__

  MD Service Job Queue . . . . . MDSERVICE__
  Library . . . . . MDJOBCTL__

  MDOpen/MDWorkflow Job Queue . MDREP__
  Library . . . . . MDJOBCTL__

  MDXREF Build Job Queue . . . MDXREF__
  Library . . . . . MDJOBCTL__

F3=Exit   F4=Browse   F10=Job Descriptions   F21=Sys Command

```

The Job Settings screen provides the ability to easily define where the different sorts of jobs that are submitted by MD products should be run. This screen is available from option 12=Job Settings of the MDCMS Setup Menu.

In order to create subsystems or job queues from this screen, your user profile requires a minimum of change authority to the CRTSBSD or CRTJOBQ commands to create those elements. When changing/deleting subsystems or job queues, sufficient authority must exist for the specific object.

It is highly recommended to have a separate subsystem with its own set of job queues for MDCMS.

You can also list/manage job descriptions from the Job Settings screen by pressing F10.

Default Subsystem

The name and library of the subsystem that will be used by default for MD jobs. This is used for informational purposes as well as to pre-populate the subsystem parameter when creating a new job queue.

Press F4 to browse existing subsystems or create a new subsystem.

When creating a subsystem from the Job Settings wizard, the subsystem description, class and generic routing entry are each created and bound together for ease of administration.

Recommended number of Maximum Jobs for subsystem: 1000

If using MDCMS on a partition with multiple processors, it is also recommended to assign the subsystem to a Workload Group to limit the number of processors that MDCMS can utilize.

Default Job Description Library

The library where job descriptions by default will be stored. Job Descriptions are used in MDCMS per promotion level for the batch jobs to deploy objects. This is used for informational purposes as well as to pre-populate the job description library parameter when creating a new job description.

Press F4 to browse existing libraries.

Default Job Queue Library

The library where job queues by default will be stored. This is used for informational purposes as well as to pre-populate the job queue library parameter when creating a new job queue.

Press F4 to browse existing libraries.

MD Report Job Queue

The name and library of the job queue that will be used by submitted jobs that create report output in MDCMS, MDSEC and MDXREF.

Press F4 to browse existing job queues or create a new job queue.

When creating a job queue from the Job Settings wizard, the job queue and job queue entry are each created and bound together for ease of administration. You can also use the job queue wizard to switch the job queue to a different subsystem or change the number of maximum jobs.

Recommended number of Maximum Jobs for the MD Report Job Queue: 10

MD Service Job Queue

The name and library of the job queue that will be used by submitted MD Service jobs defined in the Services settings.

Press F4 to browse existing job queues or create a new job queue.

When creating a job queue from the Job Settings wizard, the job queue and job queue entry are each created and bound together for ease of administration. You can also use the job queue wizard to switch the job queue to a different subsystem or change the number of maximum jobs.

Recommended number of Maximum Jobs for the MD Service Job Queue: 100

MDOpen/MDWorkflow Job Queue

The name and library of the job queue that will be used by submitted jobs that are used to communicate with a MDOpen or MDWorkflow client session.

Press F4 to browse existing job queues or create a new job queue.

When creating a job queue from the Job Settings wizard, the job queue and job queue entry are each created and bound together for ease of administration. You can also use the job queue wizard to switch the job queue to a different subsystem or change the number of maximum jobs.

Recommended number of Maximum Jobs for the MDOpen/MDWorkflow Job Queue: 200

MDXREF Build Job Queue

The name and library of the job queue that will be used by submitted jobs that are used to refresh the cross-reference information in MDXREF.

Press F4 to browse existing job queues or create a new job queue.

When creating a job queue from the Job Settings wizard, the job queue and job queue entry are each created and bound together for ease of administration. You can also use the job queue wizard to switch the job queue to a different subsystem or change the number of maximum jobs.

Recommended number of Maximum Jobs for the MDOpen/MDWorkflow Job Queue: 5

MDWRKJOB - Work with Job Descriptions command

MDCMS is delivered with a command-based API that provides an improved experience for administrators to list and manage job descriptions.

The MDCMS command is named **MDWRKJOB** and is located in library MDCMS. It is not necessary to have the MD libraries in the library list prior to using this command.

The first time the command is invoked, the list is unfiltered and may take some time to load. The filter values are saved per user profile for the next use of the command.

In order to create job descriptions from this screen, your user profile requires a minimum of change authority to the CRTJOBDD command. When changing/deleting job descriptions, sufficient authority must exist for the specific object.

MDWRKJOBDD Parameter Table

Name	Type	Length	Description
KEYWORD	Description	Type	Length
ENV	MDCMS Environment ID	CHAR	4

1.4.18 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

Opt Log File   Library   Description                               Purge   Age
  _ 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    MDDELRFAP 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.

1.4.19 User Groups

```

MDCGRPN          MD T 74 6.1          24.04.16
SCRN1            MD User Groups        15:13:19

Pos: _____ Filters _____ Type: _____ User: _____

Type options, press Enter.
2=Edit 3=Copy 4=Delete U=Users

Opt  Group      Type      Description      Dft  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            Y   2
-   PGMR 2      PROGRAMMER Programmer Group 2            6
-   RMCH        RLSMGR     Release Manager CH           2
-   TEST 1      TESTER     Test Group 1                 3

F3=Exit F4=Browse F5=Refresh F6=Add F9=Acceptance Group Types per Level
Bottom

```

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.

Dft

Y - when a project is created, or the workflow acceptance dialog is opened for unassigned groups, the group will be involved by default with the project for the given group type, if the group type is required for workflow acceptance.

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,

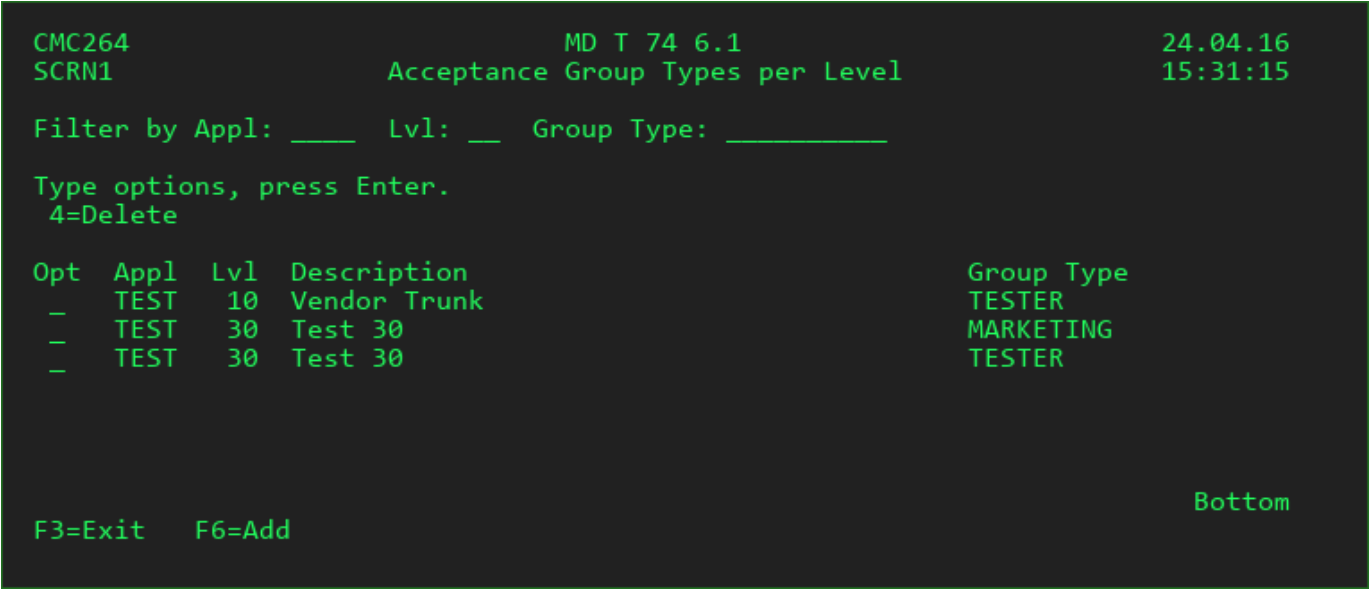
For each MDCMS Promotion Level, between 0 and n types of groups can be designated to be responsible for the acceptance of an installed RFP into that level. This means that each time an RFP, which is a package of objects, is installed into a specific level, 1

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.



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.

1.4.20 Project Costs

MDCPCST
SCRN1
MD T 8 6.1
Project Costs
4.04.17
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

F3=Exit F6=Add F10=Recalculate
Bottom

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.

1.4.21 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 Cnds 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 Cnds 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 for all applications or one application
- a level for all applications or one application

Attribute

*ALL - All attributes. When *ALL, any level placeholders will also be pushed

*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

Include RFP Commands

- Y - any *RFP commands defined for the selected level(s) will be included

Include MDXREF Libraries

- Y - the library list in the MDXREF build screen for the level will be populated

Include Source Libraries

- Y - the source parameters on the pushed attributes will be included
- N - the source library and file values will be removed from the attributes, unless for LF or any of the following MDCMS types: *SQLCST, *SQLFUN, *SQLIDX, *SQLMQT, *SQLPRC, *SQLSCR, *SQLTRG, *SQLUDT, *SQLVAR, *SQLVW

Include Compile Commands

- Y - all compile commands for the pushed attributes will be included
- N - the compile commands for the attributes will not be included, unless for LF or any of the following MDCMS types: *SQLCST, *SQLFUN, *SQLIDX, *SQLMQT, *SQLPRC, *SQLSCR, *SQLTRG, *SQLUDT, *SQLVAR, *SQLVW

Include Scripts

- Y - all pre- and post-install scripts for the pushed attributes will be included
- N - the pre- and post-install scripts for the attributes will not be included

Include Auth Templates

- Y - the definition of each Object Authority Template used by one or more of the pushed attributes will also be pushed
- N - the template definition won't be pushed, but will still be assigned to the attribute, even if it doesn't exist on the target location.

Include Replic Templates

- Y - the definition of each Source and Object Replication Template used by one or more of the pushed attributes will also be pushed
- N - the template definition won't be pushed, but will still be assigned to the attribute, even if it doesn't exist on the target location.

Include Search Templates

- Y - the definition of each Source and Object Search Template used by one or more of the pushed attributes will also be pushed
- N - the template definition won't be pushed, but will still be assigned to the attribute, even if it doesn't exist on the target location.

Include Delete Templates

- Y - the definition of each Source and Object Deletion Template used by one or more of the pushed attributes will also be pushed
- N - the template definition won't be pushed, but will still be assigned to the attribute, even if it doesn't exist on the target location.

Include Rapid Templates

- Y - the definition of each MDRapid Template used by one or more of the pushed attributes will also be pushed
- N - the template definition won't be pushed, but will still be assigned to the attribute, even if it doesn't exist on the target location.

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

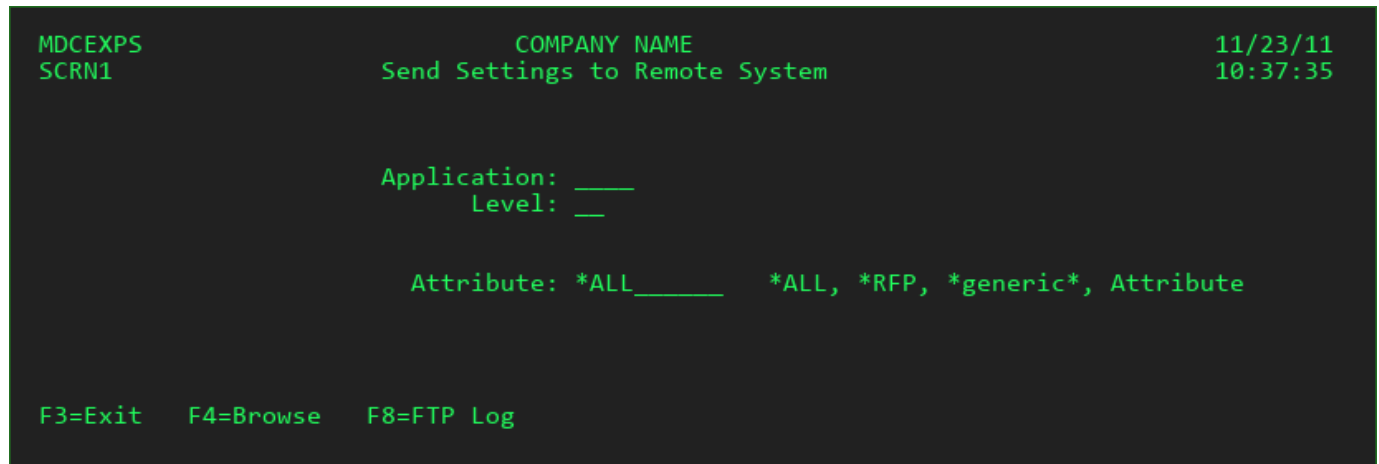
Once a definition is created, use option L to select one or more DDM Locations to push the information to.

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.

1.4.22 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).



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.

1.4.23 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

Select Application/Level for Receipt of Attributes

```

MDCIMPS                                COMPANY NAME                                04.09.21
SCRN1                                  Receive Settings from Remote System          10:37:05

Received:
Application . . . . . TEST01
Level . . . . . 100
Attribute . . . . . *ALL

Copy to:
Application . . . . . TEST01
Level . . . . . 400

Copy Compile Commands . Y Y=All, N=None, D=DB Only

F3=Exit  F4=Browse

```

Copy to Application

Enter the application code or press F4 to select from a list. If all attributes were sent, a new application code may be entered.

Copy to Level

Enter the application level or press F4 to select from a list. If all attributes were sent, a new application level may be entered.

If the attribute(s) already exist in the selected Application and Level, they will be overwritten with the information received from the remote system.

Copy Compile Commands

Y - all compile commands for the sent attributes will be received into the target level

N - none of the compile commands for the sent attributes will be received into the target level

D - only compile commands for Database objects will be copied. These include PF, LF and any *SQLxxx attributes.

Press Enter to continue.

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 SCRN2	COMPANY NAME Copy Level Settings	04.09.21 10:37:00
Received:		
Application	OPER Operations	
Level	30 Test environment for Operations	
Attribute	*ALL	
Job Description . .		
Library	OPER30 QGPL	
Copy to:		
Application	OPER Operations	
Level	90 Test environment for Operations_____	
Job Description . .		
Library	OPER30_____ name, *NONE	
	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.

Specify Library Names for Copied/Received Attributes

MDCIMPS SCRN3	COMPANY NAME Copy Attribute Settings	9.01.21 20:00:21
From Appl/Lvl: TEST01 100 Current value: _____		
To Appl/Lvl: TEST01 400 Replace with: _____ F10=Replace values		
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 Req, *TEMP=Temp Source for any, *TEMPDB=Temp Source DB		
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		

When a level is locally copied or is received from another location, the above screen is displayed to prompt for the library/folder names to be used in the new Level.

The left column for the Object Libraries lists the name of each distinct Object Library specified in the copied 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) for the target level.

If a find/replace naming pattern is possible to mass update all libraries/folders, the current value and replacement value can be entered at the top and then changed by pressing F10.

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.

*TEMPDB - remove the source definition for any non-database attributes and set the source library to *TEMP for database attributes.

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

F10 - replace values in list of libraries

Update Attribute Templates for New Level

```

MDCIMPT                               T84 Demo Production           3.07.22
SCRN1                                Update Attribute Templates for New Level  00:06:45

From Appl/Lvl: TEST01 100
To Appl/Lvl: TEST01 400

Type changes, press Enter.
*NONE=Remove Template from Attributes

Template Type      Template ID  Change to
Object Authority  *DFTIFS    *DFTIFS
Object Authority  *DFTRMT    *DFTRMT
Object Authority  *DFT400    *DFT400
Object Authority  INTIFS     INTIFS
Object Authority  OSNEW      OSNEW
Object Authority  OSPGP      OSPGP
Object Authority  OSTESEST  OSTESEST
Object Authority  WEB       WEB
MDRapid Usage    RAPID      RAPID

Enter=Confirm  F3=Exit  F4=Browse  F5=Refresh  F21=Sys Command

Bottom

```

When a level is locally copied or is received from another location, the above screen is displayed to prompt for the templates to be used for the attributes in the new Level.

Each currently applied distinct Template Type and Template ID is listed.

The Change to column allows the user to remove the template or to change the assignment to a different template.

Special Object Library values:

*NONE - remove template from Attribute. This value isn't allowed for Object Authority template types

Function Keys

F3 - cancel the update of the attribute templates

F4 - browse/edit the list of templates for the Template Type

F5 - reset the Template IDs to their original values

Specify Level Placeholder Values for Copied/Received Levels

```

MDCIMPW          T84 Demo Production          3.07.22
SCRN1            Copy Level Placeholders for New Level 13:13:52

From Appl/Lvl: TEST01 100 To Appl/Lvl: TEST01 400

Type changes, press Enter.
*NONE=Skip copy of placeholder

ID              Description
BBMDJC          Bitbucket Jenkins Credentials for mdcms8 repo
4859644b-9350-44c2-820f-ef6cc4dc51e1

CONXT           Context Path
TPH-Example-Path

MYTIME          My time in seconds to complete the job
910

PGMLIB          Program Library
TEST80_10

Enter=Confirm   F3=Exit   F5=Refresh   F21=Sys Command

Bottom

```

When a level is locally copied or is received from another location, the above screen is displayed to prompt for the placeholders and their values to be copied to the new Level. If the level being copied from didn't contain any placeholders, then this screen will not be displayed.

Special Placeholder values:

*NONE - don't copy the placeholder to the new level

Function Keys

F3 - cancel the copy of the placeholders

F5 - reset the Placeholders to their original values

1.4.24 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:

Option / Field	Description
Application Code (APPL)	The Application code to use for MDCMS product administration. Defaults to value MD If the application code already exists, any existing settings will not be updated, but any new attributes will be added. 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 MDCMS on a specific system. If the level already exists, any existing settings will not be updated, but any new attributes will be added. 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 (JOBQ)	Specifies the name of the job description to be applied to the level definition, if the level doesn't yet exist. Defaults to value MD90 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. Defaults to value QGPL 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. Defaults to value QBATCH 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. Defaults to value QGPL The library must already exist on the system.

MDCRTSET generates the following attributes:

Column 1	Column 2	Column 3
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 , 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 , , 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 , 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 , as the object name.
*DTAGRP	LOG	Deploy the Log Cleanup settings for a specific Log File
*DTAGRP	RPTDEF	Deploy a specific report definition
*DTAGRP	SECALL	Deploy all User Roles, Users and user authority defined in MDSEC. Any value can be used for the object name, since all records are included automatically.
*DTAGRP	SECRLE	Deploy the authorities for a specific User Role by specifying the role id as the object name. The users assigned to the role are not deployed.
*DTAGRP	SECUSR	Deploy the authorities for a specific User by specifying the user id as the object name. The roles that the user belongs to are not deployed.
*DTAGRP	SECUSERS	Deploy all users. Only new users are added on the target locations - any existing users aren't overwritten. Role MD_USER will also be applied to all users, if the job description user for the target level has been granted permission to execute command MDUPDUSR in MDSEC.
*DTAGRP	SERVICE	Deploy the Service Runtime settings for a specific service by specifying the service name as the object name.
*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. 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. 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	MAIL	Deploy an email body template file
*IFS	PATCH	Deploy a patch (mdupd_vv.rr_yyyymmddx.savf) and then automatically apply the patch

Column 1	Column 2	Column 3
*IFS	SCRIPT	Deploy a script template file

1.4.25 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:

Option / Field	Description
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 2 - Email the file to an address and/or user and/or user group 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. 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. Press F4 to select from a list

NOTE: It is highly recommended to create the MDCMS Configuration Report from MDOpen for VS Code, 8.6+ or MDOpen for RDi 8.7+, as there are many more configuration settings reported on and the report generation is substantially faster.