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This chapter explains the general configurations required in SAP MII, such as user management and basic Java WebAS administration, along with system management and security services.

2 Administrating and Configuring SAP MII

As SAP MII is a development and a deployment platform for manufacturing composites running on SAP NetWeaver, administration and configuration of the server is an important and regular activity to ensure smooth operations.

In this chapter, you learn how to create users, assign required roles, and configure other aspects of SAP NetWeaver J2EE WebAS for running SAP MII. You also learn about the system administration and security configurations of SAP MII using the System Management and System Security menu options.

2.1 User Management and WebAS Administration in SAP MII

SAP MII 12.0 is installed on SAP NetWeaver 7.0 J2EE WebAS with a minimum support package stack level of SP14. You need to configure the sizing of the hardware according to the SAP NetWeaver 7.0 J2EE sizing guide, using the Quick Sizer tool available in the SAP Service Marketplace at http://service.sap.com/quicksizer. The usage type of the SAP NetWeaver installation is Application Server Java.

<table>
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<td>A sample production installation setup of SAP MII 12.0 is as follows:</td>
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<tr>
<td>Hardware</td>
</tr>
<tr>
<td>▶ Server Hardware—DB/CI - IBM 9119 server</td>
</tr>
<tr>
<td>▶ Number of CPUs—4</td>
</tr>
<tr>
<td>▶ RAM—6GB, Swap space—47GB</td>
</tr>
<tr>
<td>▶ System Disk—122GB</td>
</tr>
</tbody>
</table>
The SAP NetWeaver J2EE engine on which SAP MII is installed might also have the SAP Enterprise Portal installed, which can be used as the portal for MII. If SAP Enterprise Portal is installed on the same WebAS as SAP MII, sizing must be done accordingly.

From SAP MII 12.0, the user management is handled by the SAP NetWeaver J2EE WebAS User Management Engine (UME). The following user roles are required and created by the MII installation:

- XMII Users
- XMII Developers
- XMII Administrators

You need to assign the users of SAP MII to at least one of the preceding roles. Assign the XMII Administrators role only to the systems administrators, the XMII Developers role to the developers who develop the composite applications using SAP MII Workbench, and the XMII Users role to all users running applications developed on SAP MII. These three roles are used in the development objects security by default, but apart from these roles, you can create project- or application-specific roles in the UME and can use them to assign security permissions to development objects.

To create new users and assign the MII roles, open the User Administration Screen from `http://<servername>:<port>/useradmin` and click on Create User or on Copy to New User, if an existing user needs to be copied. In the Assigned Roles tab, add the required SAP MII roles as mentioned previously or any other roles required, as seen in Figure 2.1. You can also use external Lightweight Directory Access Protocol
(LDAP) or Central User Administration (CUA) engines for the user management by connecting the SAP NetWeaver UME with it.

Logging and tracing functionality is also provided by the SAP NetWeaver logging service, which is used by SAP MII for logging purposes. You can view the system logs from the SAP NetWeaver Administrator (NWA). To view the logs, open SAP NetWeaver Administrator (http://<servername>:<port>/nwa) and navigate to Analysis • Debug • Logs & Traces. The application ID for SAP MII is sap.com/xapps~xmii~ear, which you can use to filter the logs. By default, the tracing level is set to Error for the SAP MII application, which means only logs of type error are logged. You can change the tracing level if required for debugging purposes. To set the tracing level, navigate to SAP NetWEVER ADMINISTRATOR • SYSTEM MANAGEMENT • CONFIGURATION • LOG CONFIGURATION. Select Tracing Locations from the Show dropdown list, then select Root Location • COM • SAP • XMII from the tree view, and if required, change the log severity level to any other option available in the dropdown list, as shown in Figure 2.2. The trace severity level can be set to any one of the following options:
Administrating and Configuring SAP MII

- All: Logs messages of any severity
- Debug: Used for debugging purposes, with extensive and low-level information
- Path: For tracing the execution flow; for example, used in the context of entering and leaving a method and looping and branching operations
- Info: Informational text, mostly for echoing what has already been performed
- Warning: The application can recover from an anomaly and fulfill the required task, but needs attention from a developer/operator
- Error: The application can recover from an error, but it cannot fulfill the required task because of the error
- Fatal: The application cannot recover from an error, and the severe situation causes fatal termination
- None: Logs no messages

Two trace locations are present under XMII as Illuminator and Xacute, as shown in Figure 2.2, for which you can configure the trace severity levels. Xacute logs all messages related to Business Logic Services Transactions, and Illuminator logs the rest, such as Query Templates and Display Templates.

![Figure 2.2](image_url)
SAP MII uses RFC or BAPI interfaces to connect to enterprise systems such as SAP ERP. Both SAP Java Connector (SAP JCo) and SAP Java Resource Adapter (JRA) are provided in SAP MII for executing RFC and BAPI from Advanced Business Application Programming (ABAP) systems. SAP JCo needs to be installed separately in SAP MII 12.0 till SPS03, but from SPS04 separate installation of SAP JCo is not required.

In addition, SAP JRA is provided in SAP NetWeaver as an add-on to SAP JCo, which you can use for executing BAPI/RFC from SAP MII Business Logic Transactions. It is recommended you use JRA over JCo because it provides a number of advantages, such as load balancing, connection management, data buffering, and the connection properties are managed by the SAP WebAS in the case of the JRA, and thus, no user level configuration in SAP MII is needed by the user unlike SAP JCo. To use SAP JRA you need to install it as an add-on and then configure it separately for each ABAP system from where the BAPI/RFC will be executed.

The JRA library is available on the system where SAP NetWeaver has been installed under the following folder:

\<Drive\>\usr\sap\<SID>\sys\global\ra\sapjra.rar

To deploy it on the NetWeaver WebAS, you would need to use DeployTool, which can be started using the batch file provided under \<drive\>\usr\sap\<SID>\JC<XX>\j2ee\deploying\DeployTool.bat. After DeployTool has been launched, open a new project, give it a name, and browse to the Deployer tab. Select DEPLOY • EAR • LOAD MODULE, select the sapjra.rar file, and click OK. Select the sapjra.rar entry in the left pane to view its properties and browse to the Server Settings property on the right. Select the Auth Type as “Caller Impersonation.” You can configure the other JRA properties now or later through Visual Administrator, as described later in this chapter. Connect to the WebAS you want to deploy the library to using DEPLOY • CONNECT and Deploy the Library using, DEPLOY • DEPLOYMENT • DEPLOY MODULE. Enter an application name, which can be any value of your choice, and when asked, select Yes to start the application. SAP JRA library should be successfully deployed into the server.

To configure SAP JRA in NetWeaver, use the following steps:

1. Open the SAP NetWeaver Visual Administrator from the following SAP J2EE Engine installation path: \<Drive\>\USR • SAP • <SYSID> • JC70 • J2EE • ADMIN • GO.BAT.
2. Log on to Visual Administrator.

3. Open the Services node on the left in the tree under the required server name, and select the Connector Container service.

4. Open the tree on the Runtime tab and select sap.com/sapjra.rar.

5. Under the Properties tab, specify the connection details for an ABAP system, as shown in Figure 2.3.

![SAP JRA Configuration in Visual Administrator](Figure 2.3)

You need to install Universal Data Server (UDS) or SAP MII UDS 4.0 separately in a server having either Microsoft Windows XP Service Pack 2 or later or Microsoft Windows Server 2003 Service Pack 1 or later. You can use UDS to retrieve data from Supervisory Control and Data Acquisition (SCADA) systems and historical data systems that support the industry standard OPC Data Access (DA) and OPC Historical Data Access (HDA) interfaces. SAP MII UDS also provides data connec-
tivity to OLE DB-compliant data sources such as Microsoft Access and Excel. The various connectors for these systems are configured in the SAP MII UDS Admin Console, which is then used in the data servers configuration in SAP MII. You also need to deploy the different database drivers to be used by the data servers separately using the JDBC Drivers menu, which is explained further in Section 2.2.12 JDBC Drivers.

After you’ve got all that installed and configured, you can access SAP MII via the following URL: http://<servername>:<port>/XMII/Menu.jsp. The server name is the SAP NetWeaver J2EE WebAS hostname, and port is the corresponding HTTP port.

Now that you understand how to create users and configure the WebAS for SAP MII, it’s time to move on to the SAP MII configurations using the System Management menu.

2.2 System Management of SAP MII

In SAP MII you can configure the system-wide settings under the System Management menu and enable the SAP MII administrator to manage and monitor the global configurations.

System Management in SAP MII mainly constitutes of the following tasks or menu options:

- System Administration
- System Jobs
- Scheduler
- Schedule Editor
- Active Sessions
- Custom Attributes
- Custom Attribute Mapping
- Configurations
- Projects
- Custom Actions
The next sections delve deeper into each of these tasks and to see how each can be configured.

### 2.2.1 System Administration

You can use the System Administration menu, as seen in Figure 2.4, to set global system property values. You need to assign the Admin and SystemEditor security services to a user, explained in Section 2.3.1 System Security, to enable access to the System Administration menu.

![System Administration Menu](image)

Figure 2.4  System Administration

The system properties explained in Table 2.1 are available for configuration in System Administration.
<table>
<thead>
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<th>Property</th>
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<tr>
<td>Description</td>
<td>A short text description of the configuration settings.</td>
</tr>
<tr>
<td>Language</td>
<td>Sets the default system language.</td>
</tr>
<tr>
<td>Name</td>
<td>A name that also acts as an identifier for the configuration settings.</td>
</tr>
<tr>
<td>ProxyBypassList</td>
<td>A comma-separated list of server names or IPs for which the proxy server should be bypassed.</td>
</tr>
<tr>
<td>ProxyBypassLocal</td>
<td>Indicator for whether the proxy server should be bypassed for servers in the same network.</td>
</tr>
<tr>
<td>ProxyHost</td>
<td>The hostname or IP of the proxy server.</td>
</tr>
<tr>
<td>ProxyPort</td>
<td>The port to which the proxy server defined above is listening.</td>
</tr>
<tr>
<td>ProxyUserName</td>
<td>Proxy authentication information, the user name to log on to the proxy server.</td>
</tr>
<tr>
<td>ProxyUserPassword</td>
<td>Proxy authentication information, the password for the user name declared previously.</td>
</tr>
<tr>
<td>ResolveMachineName</td>
<td>Indicator for whether SAP MII resolves and logs the machine name of the requesting system. If unchecked, only the IP is logged.</td>
</tr>
<tr>
<td>RunInterval</td>
<td>Duration in hours that defines the interval at which the message cleanup rules run (see Section 3.2).</td>
</tr>
<tr>
<td>SessionTimeOut</td>
<td>Duration in minutes after which idle user sessions are terminated by SAP MII.</td>
</tr>
</tbody>
</table>

Table 2.1  System Properties

The Language property in SAP MII System Administration is overridden by the logged on user’s locale or language attribute, if set.

To enable localization features, SAP MII reads the language settings in the following order until it finds one:

- Locale attribute of the user, set in the SAP User Management Engine (UME)
- Language attribute of the user, set in the SAP User Management Engine (UME)
- The browser's language
The Language property in SAP MII System Administration menu
- The Java Virtual Machine (JVM) language.

**Note**
If your organization accesses the Internet through a corporate firewall or proxy, we advise that you configure the proxy settings in the System Management screen. This configuration enables you to access any HTTP service or Web service on the Internet through SAP MII. For example, if you want to create a composite application that wants to geo-code a particular street address and in turn display the location on the map, you would need to access the Yahoo! geo-coding Web service and also the Google Maps service, and the proxy configuration in SAP MII is the only way to access them behind a firewall.

### 2.2.2 System Jobs

System jobs are tasks that run in the background at regular intervals and perform internal maintenance of the SAP MII server and content.

This menu option displays a list of the default system jobs running on the SAP MII server.

You find three default jobs running on any SAP MII server.

- **SessionLogger**: Runs every 30 minutes and logs system usage via the number of active users and the number of unique users.
- **SecurityObjectReferenceCleaner**: Runs once every 7 days; checks for and deletes invalid system and server permission roles, custom attribute roles, and users in the respective database tables.
- **TempFileCleaner**: Runs once an hour and cleans up the temporary files table.

### 2.2.3 Scheduler

The Scheduler menu, shown in Figure 2.5, provides overview and information about all the tasks that are scheduled by the user. It wakes up every 500 milliseconds to check for jobs that are ready to run and then executes them. Using the scheduler, any Business Logic Transaction can be executed periodically to do various activities, such as pull data from manufacturing plant-floor systems by data queries, execute a Web service or RFC, and calculate and update a KPI.
The Scheduler screen displays the following information about the scheduled jobs:

- **Status**: The status of the job. The values can be Stopped, Pending, and Running.
  - Stopped: The job is currently stopped. Tasks that are not enabled have this status.
  - Pending: The job is scheduled and pending its next run.
  - Running: The scheduled job is running at the current moment.
- **ID**: The Job ID of the scheduled job.
- **Name**: The name of the job as set in the Schedule Editor.
- **Next Run Time**: The time when this scheduled job will run next.
- **Transaction**: The full path of the Business Logic Transaction that has been scheduled to run.
- **Description**: The description of the job as set in the Schedule Editor.

Other than the information just mentioned, the Scheduler also enables the administrator or any user with appropriate rights to view the Job Run Schedule and the Job Run History. These functionalities are provided in the last column of the Scheduler view. The Job Run Schedule functionality displays a schedule of the
next 20 scheduled times the job is going to be run. The Job Run History displays
details of the previous execution attempts of the scheduled job with the status,
duration, and details.

### 2.2.4 Schedule Editor

You can use the Schedule Editor to schedule a Business Logic Transaction to be
executed at regular intervals. You need to assign the ScheduleEditor security ser-
vice to a user to enable access to the Scheduler Editor screen, as seen in Figure
2.6. Any job that is scheduled using the Schedule Editor appears in the Scheduler
overview previously explained in Section 2.2.3 Scheduler.

![Schedule Editor](image)

**Figure 2.6 Schedule Editor**

The parameters explained in Table 2.2 are available when you are configuring a
new SAP MII scheduled job.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The scheduled job's name.</td>
</tr>
<tr>
<td>Description</td>
<td>A description of the job, what it is supposed to do.</td>
</tr>
<tr>
<td>Enabled</td>
<td>When checked, enables the job to run periodically according to the cron pattern. The job is not scheduled if this checkbox is not checked.</td>
</tr>
</tbody>
</table>

**Table 2.2 Scheduler Configuration Properties**
System Management of SAP MII | 2.2

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction</td>
<td>The Business Logic Services (BLS) Transaction that will be scheduled to run.</td>
</tr>
<tr>
<td>Run As Username</td>
<td>The user whose credentials are used to run the job.</td>
</tr>
<tr>
<td>Run As Password</td>
<td>The password of the user mentioned previously.</td>
</tr>
<tr>
<td>Parameters</td>
<td>The input parameters, if any, of the Transaction selected previously are displayed here. The user should ideally enter the values of the input parameters which would be used while running the transaction as a scheduled job.</td>
</tr>
<tr>
<td>Pattern</td>
<td>A cron pattern that determines the schedule of the job to be run.</td>
</tr>
</tbody>
</table>

Table 2.2  Scheduler Configuration Properties (Cont.)

You can create the cron pattern, which you use to determine the schedule, either manually or using the Build Pattern screen. The Build Pattern screen is invoked by clicking the Build Pattern button and enables creation of cron patterns with ease.

The screen has four tabs (Figure 2.7) and enables users to create jobs that run at intervals of seconds, hours, days, and months. You can further fine-tune the job schedule by configuring the parameters in each of the tabs.

Figure 2.7  Scheduler Build Pattern
For example, we can create a job schedule that runs at the forty-fifth minute of each hour between 8:00 a.m. and 6:00 p.m. on all days except Saturdays and Sundays. The way to do this is shown in Figure 2.7. In the Hourly tab of the Build Pattern screen, choose the From Hour...To Hour option in the Run Job options. Select 8 in the “From Hour” dropdown and 18 in the “To Hour” one. Now in the Run Within the Hour options, select At Minute, and then 45 from the dropdown list. Lastly, in the Run on Selected Days options, deselect Sun. and Sat. and then click on Save.

We now want to discuss how you can create a cron pattern manually. The cron pattern consists mainly of the following fields, separated by spaces: Second, Minute, Hour, Day of the Month, Month, and Day of the Week. Each of these fields can take a single value, a wildcard, comma-separated values, or a value range. The values that each of these fields accepts are as follows:

- Second and Minute: 0–59
- Hour: 0–23
- Day of the Month: 1–31
- Month: 0–11, with a value of zero (0) for January
- Day of the Week: 1–7 with a value of one (1) for Sunday
- Other than the values just mentioned, you can also use an asterisk (*) to denote every instance of that field, such as every second or every minute.
- Comma-separated values (for example, 25,26,27) in the Day of the Month field denotes every twenty-fifth, twenty-sixth, and twenty-seventh of the month.
- A value range (for example, 2–5) in the Day of the Week field denotes Monday, Tuesday, Wednesday, and Thursday of the week.
- You should note that comma-separated values and value ranges can be combined together (for example, 5,10–15,20). In the Day of the Month field, this would signify the fifth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, and twentieth days of the month.

With all of these options, you can also use a step modifier (/). The step modifier indicates which values can be used in the ranges. For example, 4–36/4 in Minutes denotes that the job runs from the fourth to the thirty-sixth minute every hour at an interval of 4 minutes, that is, every fourth, eighth, twelfth, sixteenth, twentieth, twenty-fourth, twenty-eighth, thirty-second, and thirty-sixth minute of the hour.
Now try to analyze the cron pattern that was created by the preceding example: 0 45 8–18 ** 2,3,4,5,6. A zero (0) in the first field means that job runs on the first second of every forty-fifth minute, which is the second field. The value in the hour field is a range 8–18, which denotes the hours from 8:00 a.m. to 6:00 p.m. The values for Day of the Month and Month are both asterisks (*), which means the job executes for every day of the month and for every month of the year. Lastly, the Day of the Week has a comma-separated list 2,3,4,5,6, which stands for Monday (2) to Friday (6), but not Saturday (7) or Sunday (1).

### 2.2.5 Active Sessions

The Active Sessions menu displays a list of currently logged in users and their details. You need to assign the Admin security service to a user to enable access to the Active Sessions screen.

The Active Sessions screen displays the following information regarding the currently logged in user:

- **Login Name:** The username of the logged on user.
- **Full Name:** The complete name of the logged on user.
- **Email:** The email ID of the logged on user.
- **Created:** The date and time of the first access of the user account.
- **Last Access Time:** The date and time when the user account was last accessed.
- **Expiration Date:** The date and time when the logged on user's session timeouts.

### 2.2.6 Custom Attributes

Custom attributes are custom variables that you can add to an SAP MII role or user. The values of these variables can be accessed at runtime in the Business Logic Services (BLS) as session variables and can influence the logic of the application by allowing different branches of logic according to the value of the custom attribute.

In the Custom Attribute screen in Figure 2.8, clicking on the New button brings up the custom attribute configuration screen.
The parameters explained in Table 2.3 are available when you are creating a custom attribute.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the custom attribute.</td>
</tr>
<tr>
<td>Description</td>
<td>Brief text describing the custom attribute.</td>
</tr>
<tr>
<td>Required</td>
<td>Checkbox to denote whether or not the custom attribute is mandatory. If checked, the default value needs to be assigned in the custom attribute configuration. This value is mapped to all roles and users.</td>
</tr>
<tr>
<td>Type</td>
<td>This denotes the type of field that is displayed on the custom attribute mapping page for roles and users. Values can be Text, Date, List, and RadioButton.</td>
</tr>
<tr>
<td>Field Size</td>
<td>The length of the text box if the custom field type selected above is Text. Accepts integers between 1 and 1000.</td>
</tr>
</tbody>
</table>

Table 2.3 Custom Attributes Configuration Properties
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation</td>
<td>Defines the validation type if the custom attribute is of the type Text. Validation methods are numeric and alphanumeric. Ensures that only text of the type set by the validation method is allowed as values for the custom attribute.</td>
</tr>
<tr>
<td>Values</td>
<td>Relevant only if the custom attribute type is Date, List, or RadioButton. A date format can be entered for date types whereas a pipe-separated (</td>
</tr>
<tr>
<td>Default Value</td>
<td>Denotes the default value of the custom attribute. Relevant only if the Required option is checked previously.</td>
</tr>
</tbody>
</table>

Table 2.3 Custom Attributes Configuration Properties (Cont.)

Custom attributes are like user variables. When you want to assign particular values to a user and make them available when the user logs in, you should use custom attributes. A typical business case would be if you want to make visible to the user only those production orders for the particular plant and work centers to which he is assigned. In this case you can create the values of the plant and work center as custom attributes and assign them to the users. This value can then be read at runtime and passed on to query templates or BLS Transactions for retrieving data filtered on the basis of these values. One such example is explained in Section 9.6 Autobind and Session Variables in SAP MII.

2.2.7 Custom Attribute Mapping

The Custom Attribute Mapping menu enables you to map a custom attribute to a role or a user that has been created using the Custom Attributes screen (Figure 2.8). You select the role or user by selecting the relevant tab in the Custom Attribute Mapping screen, as seen in Figure 2.9.

To map custom attributes to a user, select the user in the Users dropdown list and the custom attribute in the Attributes dropdown. Click on the Add button to add the custom attribute to the user, change the default value, if it has one, and click on Save to assign the attribute to the user. All required custom attributes are assigned to all users by default with their default values. You can change the value that is assigned in this case by manually mapping the attribute.
Assigning attributes to roles is similar to that of assigning them to users. However, you need to keep in mind the priority that is assigned to the role when assigning a custom attribute to it. The priority is selected from the Priority dropdown list and is set to a default value of 50 for every role. When a user is assigned multiple roles with the same custom attribute but with different values, SAP MII applies the role with the lowest priority (0) last. So, the custom attribute value associated with the role with the lowest priority gets mapped to the user in this case. The value of the custom attribute in the role also overrides the default value of any required custom attributes that might be associated with the user.

To delete a custom attribute that is associated with a user or role, you need to select the row of the custom attribute that you want to delete, click on the Delete button, and then click on Save to make the changes permanent.

### 2.2.8 Configurations

The Configurations screen, shown in Figure 2.10, provides the option of backing up the system configuration as a ZIP file (xmiibackup.zip) to a user-specified location on the local system and the ability to restore the system configuration from a similar backup archive. This feature is useful when you are transporting the configurations from one SAP MII installation to other (for example, from development
to production). You need to assign the ConfigurationManagement security service to a user to enable access to the Configurations screen.

![Configurations Backup](image)

Figure 2.10 Configurations Backup

According to the options that are checked on the screen, the respective configurations are exported to an XML file, and the corresponding file is included in the xmiibackup.zip archive when you click the Export button.

The configuration types explained in Table 2.4 are available for export or import in SAP MII.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>XML File</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Properties</td>
<td>The system properties are backed up in the file SystemProperties.xml.</td>
</tr>
<tr>
<td>Simulator Instances</td>
<td>Each instance is backed up as a separate XML file as &lt;SimulatorServerName&gt;.xml in a folder called Simulator_files in the archive. The default Simulator Instance is backed up as DefaultSimulator.xml.</td>
</tr>
</tbody>
</table>

Table 2.4 System Configuration Backup Properties
<table>
<thead>
<tr>
<th>Configuration</th>
<th>XML File</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Jobs</td>
<td>Each scheduled job is backed up as a separate XML file as &lt;ScheduleName&gt;.xml in a folder called Scheduler_Jobs in the archive.</td>
</tr>
<tr>
<td>Message Listeners</td>
<td>The Message Listeners configuration created in Message Services are backed up in the file MessageServers.xml.</td>
</tr>
<tr>
<td>System Permissions</td>
<td>The system permissions configured in security services are backed up in the file SystemPermissions.xml.</td>
</tr>
<tr>
<td>Message Listener Rules</td>
<td>The processing rules for message listeners created in Message Services are backed up in the file MessageProcessRules.xml.</td>
</tr>
<tr>
<td>Data Server Permissions</td>
<td>The security permissions for the data servers configured in security services are backed up in the file ServerPermissions.xml.</td>
</tr>
<tr>
<td>Message Listener Cleanup Rules</td>
<td>The cleanup rules created in Message Services are backed up in the file MessageCleanupRules.xml.</td>
</tr>
<tr>
<td>Data Servers</td>
<td>The data servers configured in Data Services are backed up in the file Servers.xml.</td>
</tr>
<tr>
<td>Localization</td>
<td>Localization settings are backed up as a separate XML file, &lt;Language&gt;.xml, in a folder called Localization in the archive.</td>
</tr>
<tr>
<td>SAP Servers</td>
<td>The SAP Server alias configurations created in Data Services are backed up in the file SAPServers.xml.</td>
</tr>
<tr>
<td>Link Objects</td>
<td>The navigation link objects configured in the visualization services are backed up in the file ContentMap.xml.</td>
</tr>
<tr>
<td>Time Periods</td>
<td>The time periods configured in Data Services are backed up in the file TimePeriods.xml.</td>
</tr>
<tr>
<td>Navigation</td>
<td>Each role or profile that has navigation profiles associated with it is stored as its corresponding XML file named &lt;Role&gt;.xml or &lt;User&gt;.xml in the corresponding ROLE or USER folder under a common Profiles folder.</td>
</tr>
<tr>
<td>Time Period Schedules</td>
<td>The time period schedules configured in Data Services are backed up in the file Schedules.xml.</td>
</tr>
<tr>
<td>Global</td>
<td>The global properties defined in the SAP MII installation are backed up in the file Globals.xml.</td>
</tr>
<tr>
<td>Unit Conversions</td>
<td>The unit conversion configurations are backed up in the file UnitConversions.xml.</td>
</tr>
<tr>
<td>Custom Attributes</td>
<td>The custom attributes configured in system administration are backed up in the file CustomAttributes.xml.</td>
</tr>
</tbody>
</table>

Table 2.4 System Configuration Backup Properties (Cont.)
In the case of an import, you need to browse for the backup archive file containing a previous export of the configuration from the local file system and click on Import to import the configuration archive file into SAP MII.

### 2.2.9 Projects

The Projects screen, shown in Figure 2.11, allows the SAP MII administrator (and any users with the ProjectManagement System security service assigned) to back up and restore SAP MII projects. This capability is useful when you are transporting the development content from one SAP MII installation to another, such as from development to production.

The Projects screen lists the various projects and their details such as their name, description, whether or not it is system project, when and by whom it was created, and options to delete (🗑️) and export (_exports) it as a compressed ZIP file.

![Figure 2.11 SAP MII Projects](image)

A project exported from SAP MII contains the project files in the same folder structure that has been defined in the SAP MII Workbench, along with an Export-Manifest.xml file that contains necessary metadata regarding the exported project.
The fields that are present in the ExportManifest.xml file are listed and explained in Table 2.5.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export_User</td>
<td>The user who exported the project.</td>
</tr>
<tr>
<td>Hidden_Project</td>
<td>Indicates if the project is a hidden project. Values can be true or false. A hidden project is not visible in the projects list.</td>
</tr>
<tr>
<td>Project_Created</td>
<td>The date and time when the project was created.</td>
</tr>
<tr>
<td>Project_Created_By</td>
<td>The user who created the project.</td>
</tr>
<tr>
<td>Project_Description</td>
<td>Description text of the project.</td>
</tr>
<tr>
<td>Project_Name</td>
<td>The name of the project.</td>
</tr>
<tr>
<td>System_Project</td>
<td>Indicates if the project is a system project. Values can be true or false. A system project cannot be deleted.</td>
</tr>
<tr>
<td>Timestamp</td>
<td>The date and time when the project was exported.</td>
</tr>
<tr>
<td>XMII_Version</td>
<td>The SAP MII version on which the project was created and exported.</td>
</tr>
</tbody>
</table>

Table 2.5 SAP MII Project Properties

You do not need to have an ExportManifest.xml to import a project into SAP MII. You can externally create the project structure and import it into SAP MII; however, you should note that if a project with the same project name as an existing project is imported into SAP MII, the existing project is overwritten, regardless of whether it is a system or a hidden project.

### 2.2.10 Custom Actions

You can use the Custom Action screen, shown in Figure 2.12, for managing custom action blocks used in Business Logic Services. You can refer to Section 9.1 Creating and Deploying a Custom Action Block, to understand how to develop new custom actions to be used in the Business Logic Services Transactions in SAP MII. Custom actions that have already been deployed can be deleted, and those that are new can be deployed using the options available on this screen. You need to assign the CustomActionUpload security service to a user to enable access to the Custom Actions screen.
To delete an already deployed custom action, choose the custom action by selecting the check box next to it and clicking on Delete. Deleted actions appear in the Custom Actions list marked as deleted until the server is restarted or another custom action is deployed.

New actions need to be uploaded and then deployed so that they show up in SAP MII Workbench. To upload a custom action Java Archive file into SAP MII, click on Upload to bring up the Custom Action Upload screen.

The Assembly File field should have the custom action assembly jar file location, and any dependency files should subsequently be entered on the dependency files fields. After it is saved, the custom action assembly file along with its dependant jars are uploaded to the SAP MII server. The uploaded actions now appear on the Custom Actions list with the status Not Deployed. To deploy these actions, choose the custom action by selecting the checkbox next to it and click on the Deploy button to deploy it. On deployment of an action, all transactions and queries running at that instance of the server is interrupted; the user sessions are not.
2.2.11 PDF Fonts

The PDF Fonts menu option appears only when the PDF actions have been deployed using the Custom Action upload, as explained in the previous section. The method for deploying these actions is explained in SAP Note 1109054. You use the PDF Fonts screen (Figure 2.13) to upload PDF fonts you can use in the PDF action blocks in the BLS Transactions.

To upload a PDF font into SAP MII, click on Upload to bring up the PDF Font Upload screen. Click on Browse to choose or enter the path of the PDF Font file in the dialog that pops up. After it is saved, the PDF Font appears in the PDF Fonts list. To delete an already uploaded PDF Font, select the checkbox next to it in the PDF Font list and click on Delete. After you have uploaded and deployed the custom action for generating PDF documents, you can use this menu to install custom PDF fonts that you want to use in the PDF documents generated by the BLS Transactions.

2.2.12 JDBC Drivers

You can use the JDBC Drivers menu, seen in Figure 2.14, to deploy Java Database Connectivity (JDBC) drivers for the databases connected by the data servers in SAP
MII. The overview screen displays information about the driver such as the JDBC driver file name, the deployment status, Created By identification, and a Created timestamp.

![JDBC Drivers Management](image)

**Figure 2.14** JDBC Drivers Management

To delete an already deployed JDBC driver, choose the driver by selecting the checkbox next to it and clicking on Delete. Deleted drivers appear as deleted in the JDBC Driver list until the server is restarted or another driver is deployed.

To upload a new JDBC driver, click on Upload, which brings up the JDBC Driver Upload screen.

Browse to select the JDBC driver you want to upload, and click on Save to upload it to the SAP MII server. The uploaded drivers now appear on the JDBC drivers list with the status Not Deployed. To deploy them, choose the driver by selecting the checkbox next to it and clicking on Deploy. On your deployment of a new driver, all transactions and queries running at any data server instance using the same driver are interrupted; the user sessions are not.

Depending on the database you want to connect to using the data servers (explained in Section 3.1 Data Servers: Connecting to the Manufacturing Plant Floor), and given all the different database vendors in the market today, the standard way to
connect to these databases would be to use the JDBC drivers that these vendors have made available. So if you want to connect to proprietary databases like IBM DB2, Microsoft SQL Server, or Oracle databases, a JDBC driver for that particular database is often the only option.

### 2.2.13 Applet Debugging

The Applet Debugging screen, shown in Figure 2.15, is a troubleshooting utility that allows the SAP MII applets to log debug messages on the Java Runtime Environment Console in the browser, if enabled. These console debug messages help developers in quickly figuring out the source of errors in case an applet does not work as expected and readily fix them.

![Applet Debugging Configurations](http://inld50106341/7053800/0XMII/Debug.jsp)

**Figure 2.15** Applet Debugging Configurations

To enable Applet Debugging, check on the Allow Applet Debugging option on the Applet Debugging popup window. The Applet Debugging session is valid only for the current session of the browser, and you need to have the Admin, SystemEditor, SystemSecurityEditor, and System Security roles for your user to debug applets.

You now know about the various configuration options available for administrators of SAP MII. In the next section, you learn about the security services, through which the administrator can control access of users to various services and menus of SAP MII.

### 2.3 Security Services in SAP MII

Because SAP MII is a development platform, you might need to control the access of the different functionalities and menu options available in SAP MII to different users. For example, you might want to provide the administration menu options such as System Management and Security Services to the administrator users and
the configuration and development menus such as Data Services and Message Services to the developers. You can use the security services in SAP MII to control user access on system functionality and data servers. You do this by granting or revoking users’ access to the SAP MII services, which form the backbone for the majority of the SAP MII functionality. The security services in SAP MII are of two types: system security and data access security.

2.3.1 System Security

The System Security screen, seen in Figure 2.16, enables the administrator to assign SAP MII services to the SAP MII roles defined in the User Management Engine (UME), which provides access to different functionalities of SAP MII. If the administrator doesn’t assign the roles to the services, the users cannot create or change the corresponding configurations, though they might be able to open the menu in read-only mode for some screens.

![Figure 2.16 System Security Configurations](image)

The SAP MII system security services are as follows:

- **Admin**: The most important service in SAP MII. Provides access to all system administration options. Only the Active Sessions and the Applet Debugging screen do not need this security service to be assigned to the user role.

- **Configuration**: Not related to any SAP MII screen. Enables the user to migrate configuration data from SAP MII 11.5 to 12.0.

- **ConfigurationManagement**: Enables users to import and export SAP MII system configurations using the Configurations menu under System Management.
• **ContentEditor**: Controls the ability to edit, import, and export web content using SAP MII Workbench. This service needs the Admin service to be assigned as well.

• **ContentList**: Enables users to list all content that they have developed or that have been assigned to them.

• **CustomActionUpload**: Enables users to upload custom actions using the Custom Action menu under System Management.

• **DataAccessSecurityEditor**: Enables access to the Data Access screen under the Security Services menu in SAP MII. This service needs the Admin service to be assigned as well.

• **DataBufferEntry**: Gives access to the Data Buffer Entries screen under the Data Services menu in SAP MII.

• **DataBufferJobs**: Enables access to the Data Buffer Jobs screen under the Data Services menu in SAP MII.

• **DynamicGraphicsEditor**: Enables you to create and edit Dynamic Graphics Objects via SVG using the SAP MII Workbench.

• **IlluminatorService**: The heart of Data Services of SAP MII. All SAP MII queries require it for retrieving data from their intended sources. Denying access to this security service causes all the data queries that use it to stop functioning when executed by that user and also prevents the user from creating and editing the data servers.

• **LocalizationEditor**: Enables the user to use the Localization menu under the Visualization Services menu category in SAP MII. This service needs the Admin service to be assigned as well.

• **MessageMonitor**: Enables access to the Message Monitor, Failed Messages, and Messages Without Rules menus under the Message Services menu category in SAP MII.

• **MessageRuleEditor**: Enables create, view, modify, and delete access to the Message Cleanup Rule Editor menu under the Message Services menu category in SAP MII.

• **MessageServerEditor**: Enables users to create, view, modify, and delete access to the Message Listeners menu under the Message Services menu category in SAP MII.
- **NavigationEditor**: Enables access to the Link Editor and the Navigation menus under the Navigation Services menu category. This service needs the Admin service to be assigned as well.

- **ProcessingRuleEditor**: Enables users to create, view, modify, and delete access to the Processing Rules Editor menu under the Message Services menu category in SAP MII.

- **ProjectManagement**: Enables access to the Project menu under the System Management menu category and the ability to import and export projects.

- **QueryCaching**: Enables users to use the query caching mechanism for query templates and allows access to the cached query results.

- **ScheduleEditor**: Enables access to the Schedule Editor menu under the System Management menu category, giving the ability to create, modify, and delete scheduled jobs.

- **Scheduler**: Enables users to start and stop the SAP MII scheduler from the Scheduler menu under the System Management menu category.

- **ServerEditor**: Enables access to the Data Servers menu under the Data Services menu category and the ability to create, modify, delete, and view Data Servers. This service also requires the Admin service.

- **SystemEditor**: Enables access to the System Administration, System Jobs, and Applet Debugging menus under the System Management menu category. This service requires the Admin service as well.

- **SystemInfo**: Mainly a reporting service that lists servers and modes that the servers support.

- **SystemSecurityEditor**: Enables access to the System Security menu under the Security Services menu category. This service needs the Admin service to be assigned as well.

- **TemplateEditor**: Controls access to edit any templates (for example, query, display, and so on) created in SAP MII Workbench.

- **TimeIntervalEditor**: Enables you to view, create, modify, and delete access to Time Periods and Time Period Schedules via their respective menus under the Data Services menu category.

- **WSMessageListener**: Lets you send HTTP XML messages to SAP MII using the XMIIMessageListener, which listens for HTTP posts. The XMIIMessageListener
can be found in the Message Listeners menu under the Message Services menu category.

- **XacuteDevelopment**: Controls the ability to view, create, modify, and delete transactions using SAP MII Workbench.

- **XacuteRuntime**: Controls the ability to invoke transactions, developed using SAP MII Workbench, through a URL.

To assign an SAP MII service to a role in the System Security menu, select the SAP MII service from the Available Services dropdown list. The roles that are available in UME appear on the list on the left of the screen; the ones that are already assigned to the selected service are in a list on the right. You can select the roles that need to be assigned and then assign them to the selected service by using the (>) or (>>) buttons. Similarly, you can un-assign a role from the selected service by selecting the role on the list on the right side and using the (<) or (<<) buttons to bring it to the list on the left. You can select multiple roles on either list by pressing the Shift or Control keys. The (<) and (>) buttons transfer the selected single or multiple rows, whereas the (<<) and the (>>) buttons transfer all entries on one list to the other. When the assignment or un-assignment has been done, click on Save.

### 2.3.2 Data Access

The Data Access screen, seen in Figure 2.17, enables the administrator to assign SAP MII user roles to the data servers defined using the Data Servers menu (explained in Section 3.1 Data Servers: Connecting to the Manufacturing Plant Floor) under the Data Services menu category. Without the roles assigned to the data server, no data query can be created or executed by the user using that specific data server.

To assign a data server to a role in the Data Access menu, select the data server from the Available Servers dropdown. All the data servers configured in the Data Servers menu appear in the dropdown list. The roles that can be assigned appear on the list on the left of the screen, and the ones that are already assigned appear in a list on the right. You can select the roles that need to be assigned to the required data server and transfer them by the method discussed previously. When the assignment or un-assignment has been done, click on Save.
In this chapter, you have learned how to create users and assign the required roles to them in the J2EE WebAS, how to configure the SAP J2EE logging options, and how to configure the SAP JRA adapter. You have also learned how you can use the System Management and the System Security menu options to configure the system and security options of SAP MII.

In the next chapter, you will learn how to connect to the manufacturing plant floor systems by creating data servers in SAP MII and how to configure the Message Services to receive RFC, IDoc, and HTTP XML messages from the enterprise systems.
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