# Oracle® Application Server Integration InterConnect

Adapter for SMTP Installation and User's Guide

10*g* Release 2 (10.1.2)

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Oracle Application Server Integration InterConnect Adapter for SMTP Installation and User's Guide, 10*g* Release 2 (10.1.2)

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# Contents

# Preface

This Preface contains these topics:



## Audience

*Oracle Application Server Integration InterConnect Adapter for SMTP Installation and User's Guide* is intended for system administrators of OracleAS Integration InterConnect who perform the following tasks:

- install applications
- maintain applications

To use this document, you need to know how to install and configure OracleAS Integration InterConnect.

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- *Oracle Application Server Integration InterConnect User's Guide*
- *Oracle Application Server Integration InterConnect Installation Guide*

## Conventions

The following text conventions are used in this document:

| Convention | Meaning |
|---|---|
| **boldface** | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| *italic* | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values. |
| `monospace` | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

# 1 Introduction

This chapter provides an overview on how to use Oracle Application Server Integration InterConnect (OracleAS Integration InterConnect) Adapter for Simple Mail Transfer Protocol (SMTP adapter). It contains the following topics:

- SMTP Adapter Overview
- SMTP Adapter System Requirements
- Known SMTP Adapter Limitations

## 1.1 SMTP Adapter Overview

The SMTP adapter enables an Oracle SMTP application to be integrated with other applications using OracleAS Integration InterConnect. The SMTP adapter is useful in all Enterprise Application Integration (EAI) environments where e-mail uses the Internet Message Access Protocol 4 (IMAP4) and SMTP. EAI is the integration of applications and business processes within the same company.

The SMTP adapter can monitor incoming messages in the form of e-mail placed on an IMAP server. The SMTP adapter is also capable of sending messages to SMTP servers. The payload type (the type of data being delivered to a destination) for this adapter is one of the following:

- Extensible Markup Language (XML) data
- Data definition description language (D3L) data

Figure 1–1 depicts the data flow of incoming messages from an IMAP server to OracleAS Integration InterConnect.

***Figure 1–1 Incoming Messages***

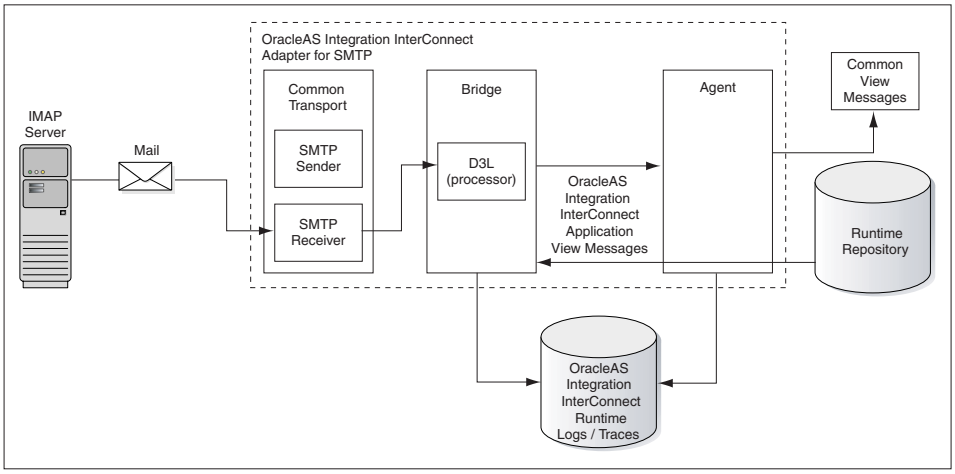
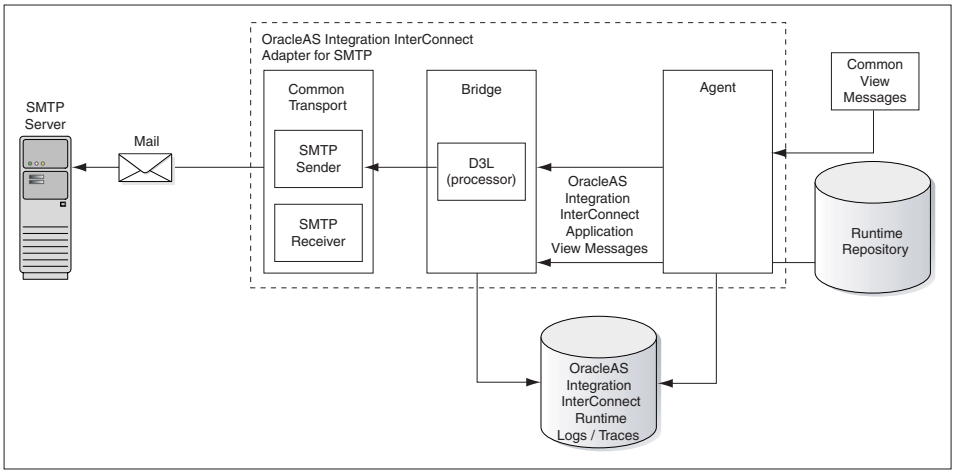



Figure 1–2 depicts the data flow of outgoing messages from OracleAS Integration InterConnect to an SMTP server.

***Figure 1–2 Outgoing Messages***




## 1.2 SMTP Adapter System Requirements

The following sections describe the system requirements for the SMTP adapter:

- Hardware Requirements
- Software Requirements

### 1.2.1 Hardware Requirements

Table 1–1 lists the hardware requirements for installing the SMTP adapter.

***Table 1–1 Hardware Requirements***

| Hardware | Windows 2000 | UNIX |
|---|---|---|
| Disk space | 400 MB | 400 MB |
| Memory | 512 MB | 512 MB |

### 1.2.2 Software Requirements

The following sections describe the software requirements for the SMTP adapter:

- Operating System Requirements
- JRE Requirements

#### Operating System Requirements

Table 1–2 lists the operating system requirements for installing the SMTP adapter.

***Table 1–2 Operating System Requirements***

| Operating System | Version |
|---|---|
| HP Tru64 | HP Tru64 UNIX (Alpha) 5.1b |
| HP-UX | HP-UX (PA-RISC) 11.11, 11.23 |
| IBM AIX | AIX (POWER) version 5.2 |
| Linux (x86) | Red Hat Enterprise Linux 2.1, 3.0<br>SuSE SLES8, SLES9 |
| Sun SPARC Solaris | Sun SPARC Solaris 2.8 and 2.9 |
| Microsoft Windows | Windows XP Professional, Windows 2000 (SP3 or higher) |

#### JRE Requirements

OracleAS Integration InterConnect uses Java Runtime Environment (JRE) 1.4, which is installed with its components.

## 1.3 Known SMTP Adapter Limitations

The SMTP adapter has the following limitations:

- The IMAP server with Secure Socket Layer (SSL) is not supported.
- Only a single endpoint is supported for incoming messages.
- The sending and receiving applications must support SMTP.
- Only IMAP4 server is supported in this release. Post Office Protocol 3 (POP3) is not supported.
- In case of multiple instances, ensure that each application instance has a separate receiving endpoint. Otherwise, different instances of adapters may attempt to process the same message concurrently.
- For messages of type D3L, the message must be one part Multipurpose Internet Mail Extension (MIME), with the data encoded in base64. If the incoming email contains more than one attachment, then only the first attachment is extracted as payload.

# 2

# Installation and Configuration

This chapter describes how to install and configure the SMTP adapter. It contains the following topics:



## 2.1 Installing the SMTP Adapter

The SMTP adapter must be installed in an existing Oracle home Middle Tier for OracleAS Integration InterConnect 10*g* Release 2 (10.1.2).

This section contains the following topics:



### 2.1.1 Preinstallation Tasks

Refer to the following guides before installing the SMTP adapter:

- *Oracle Application Server Installation Guide* for information about Oracle Universal Installer startup.
- *Oracle Application Server Integration InterConnect Installation Guide* for information on software, hardware, and system requirements for OracleAS Integration InterConnect.

> **Note:** OracleAS Integration InterConnect Hub is installable through the OracleAS Integration InterConnect Hub installation type. You must install the OracleAS Integration InterConnect Hub before proceeding with the SMTP adapter installation.

### 2.1.2 Installation Tasks

To install the SMTP adapter:

1. In the Available Product Components page of the OracleAS Integration InterConnect installation, select **OracleAS Integration InterConnect Adapter for SMTP 10.1.2.0.2**, and click **Next**.
2. The Set Oracle Wallet Password page is displayed. Enter and confirm the password on the page, which will be used to manage OracleAS Integration InterConnect. Click **Next**.
   - Go to step 3 if installing the SMTP adapter in an OracleAS Middle Tier Oracle home that does not have an InterConnect component already installed. Ensure that the OracleAS Integration InterConnect hub has been installed.
   - Go to step 4 if installing the SMTP adapter in an OracleAS Middle Tier Oracle home that has an existing InterConnect component. Ensure that it is a home directory to an OracleAS Integration InterConnect component.
3. The Specify Hub Database Connection page is displayed. Enter information in the following fields:
   - Host Name: The host name of the computer where the hub database is installed.
   - Port Number: The TNS listener port for the hub database.
   - Database SID: The System Identifier (SID) for the hub database.
   - Password: The password for the hub database user.
4. Click **Next**. The Specify SMTP Adapter Name page is displayed.
5. Enter the application to be defined. Blank spaces are not permitted. The default value is `mySMTPApp`.

   **Note:** You can change the application name in iStudio after installation. In such case, you need to specify the password corresponding to new application name in the Oracle Wallet.

   For more informtion, refer to the following sections in Appendix A, "Frequently Asked Questions":

   - Section A.3, "The SMTP adapter is not starting. What could be the reason?"
   - Section A.6, "How do I secure my passwords?"
6. Click **Next**. The Specify SMTP Adapter Usage page is displayed.
7. Select one of the options and go to the step specified.

| If You Select... | Then Click Next and Go to Step... |
|---|---|
| Configure for both sending and receiving messages | 8 |
| Configure for sending messages ONLY | 8 |
| Configure for receiving messages ONLY | 10 |

**Note:** You can change the values for these selections later by editing the parameter settings in the `adapter.ini` file.

8. Enter the following information in the Configure Sending Endpoint Information page:
   - Email Address: The e-mail address of the outgoing SMTP server to which OracleAS Integration InterConnect sends messages. Enter the e-mail address as follows:

     ```
     username@hostname
     ```

   - Outgoing Mail Server: The hostname of the outgoing SMTP server to which OracleAS Integration InterConnect sends messages
9. Click **Next**. The installation page that is displayed next is based on the selection made in Step 7:

| If You Selected... | Then Go to Step... |
|---|---|
| Configure for both sending and receiving messages | 10 |
| Configure for sending messages ONLY | 12 |

10. Enter the following information in the Configure Receiving Endpoint Information page:
    - Username: The user name account of the IMAP server from which the OracleAS Integration InterConnect receives messages.
    - Password: The password for the user name account.
    - Incoming Mail Server: The hostname of the IMAP server from which OracleAS Integration InterConnect receives messages.This information is required for polling the user name account and sending information back to OracleAS Integration InterConnect.

    **Caution:** For testing purposes, do not specify a personal e-mail account as the receiving endpoint. During run time, the SMTP adapter connects to the IMAP server and removes messages in the folder specified by the receiving endpoint. Oracle recommends that you create a dedicated e-mail account for testing and deploying this adapter.
11. Click **Next**. The Summary page is displayed.
12. Select **Install** to install the SMTP adapter. The following table lists the platform and the directory in which the SMTP adapter will be installed.

| Platform | Directory |
|---|---|
| Windows | *ORACLE_HOME*\intergration\interconnect\adapters*Application* |
| UNIX | *ORACLE_HOME*/integration/interconnect/adapters/*Application* |

    *Application* is the value specified in Step 5.
13. Click **Exit** on the Installation page to exit the SMTP adapter installation.

## 2.1.3 Postinstallation Tasks

The installation process creates the `adapter.ini` file that consists of configuration parameters read by the SMTP adapter at startup. The configuration parameter settings are suitable for most SMTP application environments. To customize the `adapter.ini` file parameter settings for the SMTP application, refer to the following sections:

- Customizing the Payload Type
- Customizing the Sending Endpoints
- Customizing the Receiving Endpoints

### 2.1.3.1 Customizing the Payload Type

Payload data is the data sent between applications. To change the payload type from the default of XML to D3L, edit the parameters in the `adapter.ini` file.

To customize the payload data type:

1. Set the `ota.type` parameter to the payload type `D3L`. For example:

   ```
   ota.type=D3L
   ```

2. Copy the D3L XML files associated with the SMTP application to the directory in which the `adapter.ini` file is located.
3. Set the `ota.d3ls` parameter to specify the D3L files associated with the SMTP application. For example:

   ```
   ota.d3ls=person1.xml,person2.xml
   ```

> **See Also:** `ota.type` and `ota.d3ls` parameter descriptions in Table 2–9 for additional information

### 2.1.3.2 Customizing the Sending Endpoints

To customize the sending endpoints (destinations) for messages, edit the following parameters in the `adapter.ini` file.

1. Set the `smtp.sender.content_type` parameter to the message content type to use. For example:

   ```
   smtp.sender.content_type=plain/text
   ```

2. Set the `smtp.sender.character_set` parameter to the message character set to use. For example:

   ```
   smtp.sender.character_set=iso-2022-jp
   ```

> **See Also:** Table 2–9, " SMTP Adapter-Specific Parameters"

### 2.1.3.3 Customizing the Receiving Endpoints

To customize the receiving IMAP endpoints for messages, edit the following parameters in the `adapter.ini` file.

1. Set the `smtp.receiver.exception_folder` parameter to the folder name that can store files. For example:

   ```
   smtp.receiver.exception_folder=error_messages
   ```

This parameter is not automatically set to a default value during installation. The IMAP administrator must create this folder. Leave this setting blank if you do not want to save these files.

2. Set the `smtp.receiver.polling_interval` parameter to the time interval in milliseconds to poll the IMAP server for messages. This parameter automatically defaults to a value of `10000` during installation. For example:

```
smtp.receiver.polling_interval=20000
```

3. Set the `smtp.receiver.max_msgs_retrieved` parameter to the maximum number of messages to retrieve in a polling session. This parameter automatically defaults to a value of `10` during installation. For example:

```
smtp.receiver.max_msgs_retrieved=30
```

**See Also:** Table 2–9, " SMTP Adapter-Specific Parameters"

## 2.2 Installing Multiple SMTP Adapters in the Same Oracle Home

To install multiple instances of the SMTP adapter in same Oracle home, use the `copyAdapter` script located in the *`ORACLE_HOME`*`/integration/interconnect/bin` directory.

**Usage**: `copyAdapter` *`app1 app2`*

For example, you have one instance of SMTP adapter with name `mySMTPApp` installed on a computer. To install another instance of the SMTP adapter with name `mySMTPApp1` in the same Oracle home, use the following command:

```
copyAdapter mySMTPApp mySMTPApp1
```

The `copyAdapter` script is copied to the following `bin` directory only during Hub installation:

- UNIX: `ORACLE_HOME/integration/interconnect/bin`
- Windows: `ORACLE_HOME\integration\interconnect\bin`

If you need to use this script to create multiple adapters on a spoke computer, then copy the script to the `bin` directory on the spoke computer, and edit the script to reflect the new Oracle home.

After running the `copyAdapter` script, If you want to manage or monitor the newly installed adapter through Oracle Enterprise Manager 10*g* Application Server Control Console, then you need to modify the `opmn.xml` file by adding information about the new instance. For example, you have created a new instance of the SMTP adapter `mySMTPApp1` by using the `copyAdapter` script. To manage the `mySMTPApp1` adapter through Enterprise Manager, perform the following:

1. Navigate to the *`MiddleTier`*`\bin` directory and run the following command to stop the Enterprise Manager:

```
emctl stop iasconsole
```

2. Next, specify the information about this new instance in the `opmn.xml` file located in the *`ORACLEMIDDLETIER_HOME`*`/opmn/conf` directory as follows:

```
<process-type id="mySMTPApp1" module-id="adapter" working-dir="$ORACLE_
HOME/integration/interconnect/adapters/mySMTPApp1" status="enabled">
       <start timeout="600" retry="2"/>
       <stop timeout="120"/>
```

```
        <port id="icadapter_dmsport_range" range="15701-15800"/>
        <process-set id="mySMTPApp1" restart-on-death="true" numprocs="1">
             <module-data>
                 <category id="start-parameters">
                     <data id="java-parameters" value="-Xms8M"/>
                     <data id="class-name"
                      value="oracle.oai.agent.service.AgentService"/>
                 </category>
                 <category id="stop-parameters">
                     <data id="java-parameters" value="-mx64m"/>
                     <data id="class-name"
                      value="oracle.oai.agent.proxy.ShutdownAgent"/>
                     <data id="application-parameters"
                      value="persistence/Agent.ior"/>
                 </category>
             </module-data>
        </process-set>
</process-type>
```

The `opmn.xml` file would appear like this:

```
<process-type id="mySMTPApp" module-id="adapter" working-dir="$ORACLE
_HOME/integration/interconnect/adapters/mySMTPApp" status="enabled">
        <start timeout="600" retry="2"/>
        <stop timeout="120"/>
        <port id="icadapter_dmsport_range" range="15701-15800"/>
        <process-set id="mySMTPApp" restart-on-death="true" numprocs="1">
             <module-data>
                 <category id="start-parameters">
                     <data id="java-parameters" value="-Xms8M"/>
                     <data id="class-name"
                      value="oracle.oai.agent.service.AgentService"/>
                 </category>
                 <category id="stop-parameters">
                     <data id="java-parameters" value="-mx64m"/>
                     <data id="class-name"
              value="oracle.oai.agent.proxy.ShutdownAgent"/>
              <data id="application-parameters"
               value="persistence/Agent.ior"/>
          </category>
      </module-data>
  </process-set>
</process-type>

<process-type id="mySMTPApp1" module-id="adapter" working-dir="$ORACLE
_HOME/integration/interconnect/adapters/mySMTPApp1" status="enabled">
        <start timeout="600" retry="2"/>
        <stop timeout="120"/>
        <port id="icadapter_dmsport_range" range="15701-15800"/>
        <process-set id="mySMTPApp1" restart-on-death="true" numprocs="1">
         <module-data>
           <category id="start-parameters">
               <data id="java-parameters" value="-Xms8M"/>
               <data id="class-name"
                value="oracle.oai.agent.service.AgentService"/>
           </category>
           <category id="stop-parameters">
                <data id="java-parameters" value="-mx64m"/>
                <data id="class-name"
                 value="oracle.oai.agent.proxy.ShutdownAgent"/>
                <data id="application-parameters"
```

```
                value="persistence/Agent.ior"/>
            </category>
          </module-data>
        </process-set>
</process-type>
```

3. Save the `opmn.xml` file.
4. Navigate to the *`MiddleTier`*`\opmn\bin` directory and run the following command to reload the OPMN:

   ```
   opmnctl reload
   ```

5. You can start the `mySMTPApp1` adapter by using the following command

   ```
   opmnctl startproc ias-component="InterConnect" process-type="mySMTPApp1"
   ```

6. Navigate to the *`MiddleTier`*`\bin` directory and run the following command to start the Enterprise Manager:

   ```
   emctl start iasconsole
   ```

7. Login to the Oracle Enterprise Manager 10*g* Application Server Control Console to view and manage the newly installed or copied adapter. For information about how to use Oracle Enterprise Manager 10*g* Application Server Control Console , refer to the *Oracle Application Server Integration InterConnect User's Guide*

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**Note:** While installing multiple adapters in the same computer, the copyadapter script does not create entries for the new adapter's password in the Oracle Wallet. You need to manually create a password for this new adapter using the Oracle Wallet Manager. To store the password in Oracle Wallet, use the following format:

```
ApplicationName/password
```

The number of entries is dependent on the type of adapter. For example, Database Adapter needs two entries whereas AQ Adapter needs only one entry. For more information about how to manage your passwords in Oracle Wallet, refer to Section A.6, "How do I secure my passwords?"in Appendix A, "Frequently Asked Questions"

---

## 2.3 Configuring the SMTP Adapter

After installing the SMTP adapter, you can configure it according to your requirements. The following tables describe the location and details of the configuration files.

Table 2–1 describes the location where the adapter is installed.

***Table 2–1 SMTP Adapter Directory***

| Platform | Directory |
|---|---|
| UNIX | *`ORACLE_HOME`*`/integration/interconnect/adapters/Application` |
| Windows | *`ORACLE_HOME`*`\integration\interconnect\adapters\Application` |

Table 2–2 describes the various executable files of the SMTP adapter.

*Table 2–2 SMTP Executable Files*

| File | Description |
|---|---|
| `start.bat` (Windows) | Does not use parameters; starts the adapter. |
| `start` (UNIX) | Does not use parameters; starts the adapter. |
| `stop.bat` (Windows) | Does not use parameters; stops the adapter. |
| `stop` (UNIX) | Does not use parameters; stops the adapter. |

**See Also:** "SMTP Adapter Error Codes" on page 3-10 for a list of error codes

Table 2–3 describes the SMTP adapter configuration files.

*Table 2–3 SMTP Configuration Files*

| File | Description |
|---|---|
| `adapter.ini` (Windows) | Consists of all initialization parameters the adapter reads at startup. |
| `adapter.ini` (UNIX) | Consists of all initialization parameters the adapter reads at startup. |

**See Also:** Appendix B, "Example of the adapter.ini File"

Table 2–4 describes the directories used by the SMTP adapter.

*Table 2–4 SMTP Directories*

| Directory | Description |
|---|---|
| `logs` | The adapter activity is logged in subdirectories of the `logs` directory. Each new run of the adapter creates a subdirectory for the `log.xml` log file. |
| `persistence` | The messages are made available in this directory. Do not edit this directory or its files. |

## 2.3.1 Ini File Settings

The following `.ini` files are used to configure the SMTP adapter:

- hub.ini Files
- adapter.ini Files

### 2.3.1.1 hub.ini Files

The SMTP adapter connects to the hub database using parameters in the `hub.ini` file located in the `hub` directory. Table 2–5 gives a description and an example for each parameter.

*Table 2–5 hub.ini Parameters*

| Parameter | Description | Example |
|---|---|---|
| hub_host | The name of the computer hosting the hub database. There is no default value. The value is set during installation. | hub_host=mpscottpc |
| hub_instance | The SID of the hub database. There is no default value. The value is set during installation. | hub_instance=orcl |
| hub_port | The TNS listener port number for the hub database instance. There is no default value. The value is set during installation. | hub_port=1521 |
| hub_username | The name of the hub database schema (or user name). The default value is ichub. | hub_username=ichub |
| repository_name | The name of the repository that communicates with the adapter. The default value is InterConnectRepository. | repository_ name=InterConnectRepos itory |

### Oracle Real Application Clusters hub.ini Parameters

When a hub is installed on an Oracle Real Application Clusters database, the parameters listed in Table 2–6 represent information about additional nodes used for connection and configuration. These parameters are in addition to the default parameters for the primary node. In Table 2–6, x represents the node number which can range from 2 to the total number of nodes in a cluster. For example, if the cluster setup contains 4 nodes, then x can be a value between 2 and 4.

*Table 2–6 Oracle Real Application Clusters Hub.ini Parameters*

| Parameter | Description | Example |
|---|---|---|
| hub_host*x* | The host where the Real Application Clusters database is installed. | hub_host2=dscott13 |
| hub_instance*x* | The instance on the respective node. | hub_instance2=orcl2 |
| hub_num_nodes | The number of nodes in a cluster. | hub_num_nodes=4 |
| hub_port*x* | The port where the TNS listener is listening. | hub_port2=1521 |

### 2.3.1.2 adapter.ini Files

The agent component of the SMTP adapter reads the adapter.ini file at runtime to access SMTP adapter parameter configuration information. Table 2–7 gives a description and an example for each parameter.

***Table 2–7 adapter.ini Parameters***

| Parameter | Description | Example |
|---|---|---|
| `agent_admin_port` | Specifies the port through which the adapter can be accessed through firewalls.<br>Possible value: Any valid port number<br>Default value: None | `agent_admin_port=1059` |
| `agent_delete_file_cache_at_startup` | Specifies whether to delete the cached metadata during startup. If any agent caching method is enabled, then metadata from the repository is cached locally on the file system. Set the parameter to `true` to delete all cached metadata on startup.<br>Possible values: `true` or `false`<br>Default value: `false`<br>**Note:** After changing metadata or DVM tables for the adapter in iStudio, you must delete the cache to guarantee access to new metadata or table information. | `agent_delete_file_cache_at_startup=false` |
| `agent_dvm_table_caching` | Specifies the Domain Value Mapping (DVM) table caching algorithm.<br>Possible values:<br>■ `startup`: Cache all DVM tables at startup. This may take a while if there are a lot of tables in the repository.<br>■ `demand`: Cache tables as they are used<br>■ `none`: No caching. This slows down performance<br>Default value: `demand` | `agent_dvm_table_caching=demand` |
| `agent_log_level` | Specifies the amount of logging necessary.<br>Possible values:<br>■ `0`=errors only<br>■ `1`=status and errors<br>■ `2`=trace, status, and errors<br>Default value: 1 | `agent_log_level=2` |
| `agent_lookup_table_caching` | Specifies the lookup table caching algorithm.<br>Possible values:<br>■ `startup`: Cache all lookup tables at startup. This may take a while if there are a lot of tables in the repository<br>■ `demand`: Cache tables as they are used<br>■ `none`: No caching. This slows down performance<br>Default value: `demand`. | `agent_lookup_table_caching=demand` |
| `agent_max_ao_cache_size` | Specifies the maximum number of application object metadata to cache.<br>Possible value: An integer greater than or equal to `1`<br>Default value: `200` | `agent_max_ao_cache_size=200` |
| `agent_max_co_cache_size` | Specifies the maximum number of common object metadata to cache.<br>Possible value: An integer greater than or equal to `1`<br>Default value: `100` | `agent_max_co_cache_size=100` |

***Table 2–7 (Cont.) adapter.ini Parameters***

| Parameter | Description | Example |
|---|---|---|
| `agent_max_dvm_table_cache_size` | Specifies the maximum number of DVM tables to cache.<br>Possible value: An integer greater than or equal to `1`<br>Default value: `200` | `agent_max_dvm_table_cache_size=200` |
| `agent_max_lookup_table_cache_size` | Specifies the maximum number of lookup tables to cache.<br>Possible value: An integer greater than or equal to `1`<br>Default value: `200` | `agent_max_lookup_table_cache_size=200` |
| `agent_max_message_metadata_cache_size` | Specifies the maximum number of message metadata (publish/subscribe and invoke/implement) to cache.<br>Possible value: An integer greater than or equal to `1`<br>Default value: `200` | `agent_max_message_metadata_cache_size=200` |
| `agent_max_queue_size` | Specifies the maximum size to which internal OracleAS Integration InterConnect message queues can grow.<br>Possible value: Any integer greater than or equal to `1`<br>Default value: `1000` | `agent_max_queue_size=1000` |
| `agent_message_selector` | Specifies conditions for message selection when the adapter registers its subscription with the hub.<br>Possible value: A valid Oracle Advanced Queue message selector string (such as `'%,aqapp,%'`)<br>Default value: None | `agent_message_selector=%,aqapp,%` |
| `agent_metadata_caching` | Specifies the metadata caching algorithm.<br>Possible values:<br>■ `startup`: Cache everything at startup. This may take time if there are a lot of tables in the repository<br>■ `demand`: Cache metadata as it is used<br>■ `none`: No caching. This slows down performance<br>Default value: `demand` | `agent_metadata_caching=demand` |
| `agent_persistence_cleanup_interval` | Specifies how often to run the persistence cleaner thread in milliseconds.<br>Possible value: Any integer greater than or equal to `30000` milliseconds<br>Default value: `60000` | `agent_persistence_cleanup_interval=60000` |
| `agent_persistence_queue_size` | Specifies the maximum size of internal OracleAS Integration InterConnect persistence queues.<br>Possible value: Any integer greater than or equal to `1`<br>Default value: `1000` | `agent_persistence_queue_size=1000` |
| `agent_persistence_retry_interval` | Specifies how often the persistence thread retries when it fails to send an OracleAS Integration InterConnect message.<br>Possible value: Any integer greater than or equal to `5000` milliseconds<br>Default value: `60000` | `agent_persistence_retry_interval=60000` |

***Table 2–7 (Cont.) adapter.ini Parameters***

| Parameter | Description | Example |
|---|---|---|
| agent_pipeline_from_hub | Specifies whether to activate the pipeline for messages from the hub to the bridge. If you set the pipeline to false, then the file persistence is not used in that direction.<br>Possible value: true, false<br>Default value: false | agent_pipeline_from_hub=false |
| agent_pipeline_to_hub | Specifies whether to activate the pipeline for messages from the bridge to the hub. If you set the pipeline to false, then the file persistence is not used in that direction.<br>Possible value: true, false<br>Default value: false | agent_pipeline_to_hub=false |
| agent_reply_message_selector | Specifies the application instance to which the reply must be sent. This parameter is used only if multiple adapter instances exist for the given application and given partition.<br>Possible value: A string built using the application name (parameter:application) concatenated with the instance number (parameter:instance_number).<br>Default value: None | If application=smtpapp, instance_number=2, then agent_reply_message_selector=receipient_list like '%,smtpapp2,%' |
| agent_reply_subscriber_name | Specifies the subscriber name used when multiple adapter instances are used for the given application and given partition. This parameter is optional if only one instance is running.<br>Possible value: The application name (parameter:application) concatenated with the instance number (parameter:instance_number)<br>Default value: None | If application=smtpapp and instance_number=2, then agent_reply_subscriber_name=smtpapp2 |
| agent_subscriber_name | Specifies the subscriber name used when this adapter registers its subscription.<br>Possible value: A valid Oracle Advanced Queue subscriber name.<br>Default value: None | agent_subscriber_name=smtpapp |
| agent_throughput_measurement_enabled | Specifies if the throughput measurement is enabled. Set this parameter to true to activate all throughput measurements.<br>Default value: true | agent_throughput_measurement_enabled=true |
| agent_tracking_enabled | Specifies if message tracking is enabled. Set this parameter to false to turn off all tracking of messages. Set this parameter to true to track messages with tracking fields set in iStudio.<br>Default value: true. | agent_tracking_enabled=true |
| agent_use_custom_hub_dtd | Specifies whether to use a custom DTD for the common view message when handing it to the hub. By default, adapters use a specific OracleAS Integration InterConnect DTD for all messages sent to the hub.<br>Set this parameter to true to have the adapter use the DTD imported for the message of the common view instead of the OracleAS Integration InterConnect DTD.<br>Default value: None | agent_use_custom_hub_dtd=false |

*Table 2–7 (Cont.) adapter.ini Parameters*

| Parameter | Description | Example |
|---|---|---|
| application | Specifies the name of the application to which this adapter connects. This must match with the name specified in iStudio while creating metadata.<br>Possible value: Any alphanumeric string<br>Default value: None | application=smtpapp |
| encoding | Specifies the character encoding for published messages. The adapter uses this parameter to generate encoding information for the encoding tag of transformed OracleAS Integration InterConnect messages. OracleAS Integration InterConnect represents messages internally as XML documents.<br>Possible value: A valid character encoding<br>Default value: UTF-8<br>When there is no existing encoding in the subscribed message, this parameter will be used to explicitly specify the encoding of the published message.This parameter will be ignored when the encoding already exists in the subscribed message. | encoding=Shift_JIS |
| external_dtd_base_url | Specify the base URL for loading external enitites and DTDs. This specifies to the XML parser to resolve the external entities in the instance document using the given URL.<br>Possible value: A URL<br>Default value: The URL of the current user directory | external_dtd_base_url=file://C:\InterConnect10_1_2\adapters\AQApp\ |
| instance_number | Specifies the instance number to which this adapter corresponds. Specify a value only if you want to have multiple adapter instances for the given application with the given partition.<br>Possible value: Any integer greater than or equal to 1<br>Default value: None | instance_number=1 |
| nls_country | Specifies the ISO country code. The codes are defined by ISO-3166.<br>Possible value: A valid code. A full list of the codes is available at http://www.chemie.fu-berlin.de/diverse/doc/ISO_3166.html<br>Default value: US<br>**Note**: This parameter specifies date format. It is applicable only for the date format. | nls_country=US |
| nls_date_format | Specifies the format for date fields expressed as string.<br>Possible value: Any valid date format pattern as shown in Table 2–8 for the definitions of the format characters.<br>Default value: EEE MMM dd HHmmss zzz yyyy | Date format pattern dd/MMM/yyyy can represent 01/01/2003.<br>nls_date_format=dd-MMM-yy<br>Multiple date formats can be specified as num_nls_formats=2<br>nls_date_format1=dd-MMM-yy<br>nls_date_format2=dd/MMM/yy |

***Table 2–7 (Cont.) adapter.ini Parameters***

| Parameter | Description | Example |
|---|---|---|
| nls_language | Specifies the ISO language code. The codes are defined by ISO-639.<br>Possible value: A valid code. A full list of these codes is available at http://www.ics.uci.edu/pub/ietf/http/related/iso639.txt<br>Default value: en<br>**Note**: This parameter specifies date format. It is applicable only for the date format. | nls_language=en |
| partition | Specifies the partition this adapter handles as specified in iStudio.<br>Possible value: Any alphanumeric string<br>Default value: None | partition=germany |
| service_class | Specifies the entry class for the Windows service.<br>Possible value: oracle/oai/agent/service/AgentService<br>Default value: None | service_class=oracle/oai/agent/service/AgentService |
| service_classpath | Specifies the class path used by the adapter JVM. If a custom adapter is developed and, the adapter is to pick up any additional jar files, then add the jar files to the existing set of jar files.<br>Possible value: A valid PATH setting<br>Default value: None<br>This parameter is only for Microsoft Windows. | service_classpath=D:\oracle\oraic\integration\interconnect\lib\oai.jar;D:\oracle\oraic\jdbc\classes12.zip |
| service_jdk_dll | Specifies the Dynamic Link Library (DLL) that the adapter JVM should use.<br>Possible value: A valid jvm.dll<br>Default value: jvm.dll<br>This parameter is only for Microsoft Windows. | service_jdk_dll=jvm.dll |
| service_jdk_version | Specifies the JDK version that the adapter Java VM should use.<br>Possible value: A valid JDK version number<br>Default value: 1.4<br>This parameter is only for Microsoft Windows. | service_jdk_version=1.4 |
| service_max_heap_size | Specifies the maximum heap size for the adapter JVM.<br>Possible value: A valid JVM heap size<br>Default value: 536870912<br>This parameter is only for Microsoft Windows. | service_max_heap_size=536870912 |
| service_max_java_stack_size | Specifies the maximum size to which the JVM stack can grow.<br>Possible value: A valid JVM maximum stack size<br>Default value: Default value for the JVM<br>This parameter is only for Microsoft Windows. | service_max_java_stack_size=409600 |

*Table 2–7 (Cont.) adapter.ini Parameters*

| Parameter | Description | Example |
|---|---|---|
| service_max_native_stack_size | Specifies the maximum size to which the JVM native stack can grow.<br>Possible value: The valid JVM maximum native stack size<br>Default value: Default value for the JVM<br>This parameter is only for Microsoft Windows. | service_max_native_size=131072 |
| service_min_heap_size | Specifies the minimum heap size for the adapter JVM.<br>Possible value: The valid JVM heap size<br>Default value: 536870912<br>This parameter is only for Microsoft Windows. | service_min_heap_size=536870912 |
| service_num_vm_args | Specifies the number of service_vm_arg*number* parameters specified in JVM.<br>Possible value: The number of service_vm_arg*number* parameters<br>Default value: None<br>This parameter is only for Microsoft Windows. | service_num_vm_args=1 |
| service_path | Specifies the environment variable PATH. The PATH variable before starting the Java Virtual Machine (JVM). Typically, list all directories that contain necessary DLLs.<br>Possible value: The valid PATH environment variable setting<br>Default value: None<br>This parameter is only for Microsoft Windows. | service_path=%JREHOME%\bin;D:\oracle\oraic\bin |
| service_vm_arg*number* | Specifies any additional arguments to the JVM. For example, to retrieve line numbers in any of the stack traces, set service_vm_arg1=java.compiler=NONE. If a list of arguments exists, then use multiple parameters as shown in the example, by incrementing the last digit by 1.<br>Possible value: A valid JVM arguments.<br>Default value: None.<br>This parameter is only for Microsoft Windows. | service_vm_arg1=java.compiler=NONE<br>service_vm_arg2=oai.adapter=.aq |

Table 2–8 shows the reserved characters used to specify the value of the nls_date_format parameter. Use these characters to define date formats.

*Table 2–8 Reserved Characters for the nls_date_format Parameter*

| Letter | Description | Example |
|---|---|---|
| G | Era designator | AD |
| y | Year | 1996 or 96 |
| M | Month in year | July or Jul or 07 |
| w | Week in year | 27 |
| W | Week in month | 2 |
| D | Day in year | 189 |
| d | Day in month | 10 |

*Table 2–8 (Cont.) Reserved Characters for the nls_date_format Parameter*

| Letter | Description | Example |
|---|---|---|
| F | Day of week in month | `Number 2` |
| E | Day in week | `Tuesday` or `Tue` |
| a | a.m./p.m. marker | `P.M.` |
| H | Hour in day (0-23) | `0` |
| k | Hour in day (1-24) | `24` |
| K | Hour in a.m./p.m. (0-11) | `0` |
| h | Hour in a.m./p.m. (1-12) | `12` |
| m | Minute in hour | `30` |
| s | Second in minute | `55` |
| S | Millisecond | `978` |

### SMTP Adapter-Specific Parameters

Table 2–9 lists the parameters specific to the SMTP adapter.

*Table 2–9 SMTP Adapter-Specific Parameters*

| Parameter | Description | Example |
|---|---|---|
| `bridge_class` | Specifies the entry class for the SMTP adapter.<br>A value must be specified and cannot be modified later.<br>Possible value: `oracle.oai.agent.adapter.technology.TechBridge`.<br>Default value: None | `bridge_class=oracle.oai.agent.adapter.technology.TechBridge` |
| `ota.d3ls` | Specifies the list of data definition description language (D3L) XML files used by the bridge. Each business event handled by the bridge must have its own D3L XML file. When a new D3L XML file is imported in iStudio for use by an application using the SMTP adapter, the parameter must be updated and the SMTP adapter restarted.<br>Default value: None | `ota.d3ls=person.xml, person1.xml` |
| `ota.receive.endpoint` | Specifies the receiving endpoint URL for the SMTP adapter. The URL is written as follows:<br>`imap://`*`username`*`@`*`imapHostName`*<br>Default value: None | `ota.receive.endpoint=imap://joe@server10` |
| `ota.send.endpoint` | Defines the sending endpoint URL for the SMTP adapter. The URL is written as follows:<br>`mailto:`*`username`*`@`*`hostname`*<br>Default value: None | `ota.send.endpoint=mailto:joe.one@test.com` |
| `ota.time_format` | Specifies the format in which you want to define the timestamp. The format options are identical to `java.text.SimpleDateFormat`. If you don't want to define the `smtp_sender_customizer_class` parameter, but still want to define the subject line generation, then use this parameter.<br>Default value: None | `ota.time_format=yyyyMMddHHmmss` |

*Table 2–9 (Cont.) SMTP Adapter-Specific Parameters*

| Parameter | Description | Example |
|---|---|---|
| ota.time_format_couuntry_code | Specifies the country code.<br>If ota.time_format is null, then the other two will be ignored and the timestamp will be in milliseconds. If ota.time_format is not null and if either this parameter or the ota.time_format_language_code parameter is null, then the default value for both the parameters is used, ignoring the values given.<br>Possible value: A valid ISO country code as mentioned in java.util.Locale<br>Default value: None | ota.time_format_couuntry_code=FR |
| ota.time_format_language_code | Specifies the language code.<br>If ota.time_format is null, then this parameter will be ignored and timestamp will be in milliseconds. If ota.time_format is not null and if either this parameter or ota.time_format_couuntry_code parameter is null, then default value for both the parameters is used, ignoring the values given.<br>Possible value: A valid ISO language code as mentioned in java.util.Locale.<br>Default value: None. | ota.time_format_language_code=fr |
| ota.type | Specifies the type of payload this adapter handles. Each business event handled by the bridge must have its own D3L XML file. Whenever a new D3L XML file is imported in iStudio for use by an application using the SMTP adapter, the parameter must be updated and the SMTP adapter restarted<br>Possible value: XML or D3L.<br>Default value: XML. | ota.type=XML |
| smtp.receiver.customizer_class | Specifies the class name for customization. Used by the SMTP receiver.<br>Default value: oracle.oai.aget.adapter.technology.DefaultReceiverCustomizer | smtp.receiver.customizer_class=MySMTPSenderCustomizer |
| smtp.receiver.exception_folder | Specifies a mail folder in which to put e-mails that cannot be processed successfully. This mail folder must be created by the IMAP server administrator.<br>Possible value: A valid mail folder name<br>Default value: None | smtp.receiver.exception_folder=error |
| smtp.receiver.max_msgs_retrieved | Specifies the maximum number of messages to be retrieved in each polling session.<br>Possible value: An integer greater than 0<br>Default value: 30 | smtp.receiver.max_msgs_retrieved=10 |

*Table 2–9 (Cont.) SMTP Adapter-Specific Parameters*

| Parameter | Description | Example |
|---|---|---|
| smtp.receiver.password | Specifies the user password for the IMAP server. This password can also be encrypted by running the encrypt tool and renaming this parameter to encrypted_smtp.receiver.password.<br>Possible value: A valid password string.<br>Default value: None.<br>**Note**: All passwords are stored in Oracle Wallet. Refer to Section A.6, "How do I secure my passwords?" in Appendix A, "Frequently Asked Questions" for more details on how to modify and retrieve the password using Oracle Wallet. | smtp.receiver.password=smtpuser |
| smtp.receiver.polling_interval | Specifies the time interval during which to poll the IMAP server (in milliseconds).<br>Possible value: An integer greater than 0<br>Default value: 60000 (60 seconds) | smtp.receiver.polling_interval=10000 |
| smtp.receiver.protocol | Specifies the e-mail protocol to use. For this release, the only possible value is imap.<br>Default value: None | smtp.receiver.protocol=imap |
| smtp.sender.character_set | Specifies the character encoding for the message.<br>Default value: None | smtp.sender.character_set=iso-2022-jp |
| smtp.sender.content_type | Specifies the content type of e-mail messages (RFC 822 header field).<br>Default value: None | smtp.sender.content_type=plain/text |
| smtp.sender.customizer_class | Specifies the class name for customization. Used by the SMTP sender.<br>Default value: oracle.oai.agent.adapter.technology.SMTPDefaultSenderCustomizer | smtp.sender.customizer_class=MySMTPSenderCustomizer |
| smtp.sender.smtp_host | Specifies the SMTP host to use in sending messages.<br>Default value: None. | smtp.sender.smtp_host=smtp1.foo.com |
| smtp.sender.subject_rule | Specifies the rule for generating subject. Used by the SMTP sender.<br>Default value: %APP%%PART%_%TIME% | smtp.sender.subject_rule=Message_from_%APP%_%EVENT%_%TIME% |

## 2.4 Uninstalling the SMTP Adapter

To uninstall the SMTP adapter, perform the following:

1. Navigate to the *MiddleTier*\opmn\bin directory.
2. Run the following command to check the adapter status.

   ```
   opmnctl status
   ```

3. If the SMTP adapter instance that you want to remove is running, stop it by using the the following command:

   ```
   opmnctl stopproc ias-component="InterConnect" process-type="SMTPApp"
   ```

   where SMTPApp is the name of the SMTP adapter instance.

4. Navigate to the *MiddleTier*\bin directory and run the following command to stop the Enterprise Manager:

```
emctl stop iasconsole
```

5. Carefully, remove the adapter process-type entry from the opmn.xml file located in the *MiddleTier*\opmn\conf directory. For example, to remove an SMTP adapter instance mySMTPApp1, delete the following information specific to the adapter instance:

```
<process-type id="SMTPApp1" module-id="adapter" working-dir="$ORACLE_
HOME/integration/interconnect/adapters/SMTPApp1" status="enabled">
       <start timeout="600" retry="2"/>
       <stop timeout="120"/>
       <port id="icadapter_dmsport_range" range="15701-15800"/>
       <process-set id="mySMTPApp1" restart-on-death="true" numprocs="1">
            <module-data>
                <category id="start-parameters">
                    <data id="java-parameters" value="-Xms8M"/>
                    <data id="class-name"
                     value="oracle.oai.agent.service.AgentService"/>
                </category>
                <category id="stop-parameters">
                    <data id="java-parameters" value="-mx64m"/>
                    <data id="class-name"
                     value="oracle.oai.agent.proxy.ShutdownAgent"/>
                    <data id="application-parameters"
                     value="persistence/Agent.ior"/>
                </category>
            </module-data>
       </process-set>
</process-type>
```

6. Save the opmn.xml file.

7. Navigate to the *MiddleTier*\opmn\bin directory and run the following command to reload the OPMN:

```
opmnctl reload
```

8. Navigate to the *ORACLE_HOME*\integration\interconnect\adapters directory and delete the folder that was created for the removed adapter instance.

9. Navigate to the *MiddleTier*\bin directory and run the following command to start the Enterprise Manager:

```
emctl start iasconsole
```

# 3

# Design-Time and Run-Time Concepts

This chapter describes the design-time and run-time concepts for the Simple Mail Transfer Protocol (SMTP) adapter. It contains the following topics:



## 3.1 SMTP Adapter Design-Time Concepts

The SMTP adapter can handle XML and D3L structured payloads, such as pure XML data with strings beginning with `<xml . . .`, and binary data described by a D3L XML file.

### 3.1.1 XML Payload

You can import a Document Type Definition (DTD) or XML Schema Definition (XSD) in iStudio to determine how the SMTP adapter parses a received XML document into an OracleAS Integration InterConnect application view event. In addition, you can use the XSD or DTD to describe how an inbound application view message is converted to an XML document. Use the message type option XML when defining a new integration point in any of the event wizards.

Ensure that the `ota.type` parameter in the `adapter.ini` file is set to `XML`, instead of `D3L`.

When the SMTP adapter operates in the XML payload mode, no transformations are performed on the messages between native view and application view. Any Extensible Stylesheet Language Transformations (XSLT) should be performed either before sending an XML document to OracleAS Integration InterConnect or after receiving one from OracleAS Integration InterConnect.

### 3.1.2 D3L Payload

The SMTP adapter performs a two-way conversion and transformation of messages between application view and native format.

An application based on the SMTP adapter can use the iStudio Message Type D3L and the iStudio D3L Data Type Import options when importing a data type. In this case,

messages received or sent by the SMTP adapter must adhere to the fixed byte-level layout defined in a D3L XML file.

The D3L Data Type Import option can also define common view data types.

> **See Also:** *Oracle Application Server Integration InterConnect User's Guide*, Appendix B, for additional information on D3L and common view datatypes

## 3.2 SMTP Adapter Run-Time Concepts

This section describes the key run-time components of the SMTP adapter. It contains the following topics:

- SMTP Receiver
- SMTP Sender
- SMTP Adapter Message Format

### 3.2.1 SMTP Receiver

The SMTP adapter receives incoming messages from a single receiving endpoint, which is an e-mail address on an Internet Message Access Protocol (IMAP) server.

The endpoint is of the form: `imap://`*`username`*`@`*`imapHostName`*

During each polling interval, the SMTP receiver:

- Polls the IMAP server for incoming e-mails
- Processes each e-mail
- Transforms the e-mail message into a transport message processed by the SMTP bridge. You can configure the maximum number of e-mails processed for each session through the `smtp.receiver.max_msgs_retrieved` parameter of the `adapter.ini` file.

The polling interval is configured using the `smtp.receiver.polling_interval` parameter of the `adapter.ini` file.

The SMTP bridge uses the D3L XML file based on name/value pairs or magic value message header attributes (a sequence of bytes in the native format message header). The SMTP bridge uses this information to parse from the native message to an OracleAS Integration InterConnect message object and translate it to an application view event. The agent converts the application view event to a common view event and passes it to OracleAS Integration InterConnect for further routing and processing.

Once the message is successfully passed to OracleAS Integration InterConnect, the corresponding e-mail residing on the IMAP server is marked to be deleted, and is deleted at the end of each session. An exception folder on the IMAP server can be specified for storing the unsuccessfully processed e-mails. The exception folder can be set using the `smtp.receiver.exception_folder` parameter in the `adapter.ini` file. If no exception folder is set, then the mail is deleted.

The properties for the SMTP receiver are defined in the `adapter.ini` file in `smtp.receiver.*` format.

**Note:** The adapter subscribing to an event should be started before any other adapter can publish that event. If you publish an event before starting the subscribing adapter, then the event would not be delivered to the subscribing adapter.

**See Also:**

- *Oracle Application Server Integration InterConnect User's Guide*, Appendix B, for additional information on D3L name-value pair and magic value message header attributes
- Figure 1–1, "Incoming Messages" on page 1-2
- "SMTP Adapter-Specific Parameters" on page 2-16

### 3.2.2 SMTP Sender

The SMTP adapter consists of the SMTP bridge and the run-time agent. When the agent has a message to send to an endpoint, the bridge is notified. The bridge then uses D3L XML to perform the conversion of the common view object to the native format. The native format message is then sent through the SMTP transport layer to an SMTP endpoint.

The SMTP adapter's sending endpoint is written as follows:

```
mailto:username@hostname
```

The subject header of each message sent by the SMTP adapter is automatically generated by the adapter and is in the following syntax:

```
SMTP_adapter_application_namepartition-time_stamp
```

You can specify a rule for generating the subject when the SMTP adapter sends an email. To use this feature, add the parameter, `smtp.sender.subject_rule`, in the `adapter.ini` file. The adapter recognizes the following tokens:

- `%APP%`: application name
- `%BO%`: business object name
- `%EVENT%`: corresponding event name
- `%MV%`: message version
- `%PART%`: partition number
- `%TIME%`: time stamp
- `%TYPE%`: message type

For example,

```
smtp.sender.subject_rule=Message_from_%APP%_%EVENT%_%TIME%
```

This rule instructs the SMTP adapter to generate subject with the following pattern:

```
Message_from_your app name_event name_current time stamp
```

The SMTP adapter supports sending outgoing messages from OracleAS Integration InterConnect to multiple SMTP endpoints. The multiple endpoints feature enables sending messages to various remote mail servers.

An endpoint is associated with a subscribing event in iStudio by adding the transport properties for the SMTP endpoint as metadata for the event. This is done using the Modify Fields function of the Subscribe Wizard - Define Application View dialog box. After associating an endpoint and an event, the message from the subscribing event is sent to the SMTP endpoint.

When using the multiple endpoint feature with `XML` data type, you must use the `Generic` event type, instead of `XML`. Using the `Generic` event type enables you to enter the metadata for the endpoints using the Modify Fields feature associated with iStudio.

Table 3–1 shows how metadata is associated with an event called `sendOrder` that sends messages to an e-mail account `scott@tiger.com`.

***Table 3–1 SendOrder Event Metadata***

| Parameter | Description |
|---|---|
| `ota.endpoint=sendOrderAppEP` | Specifies a unique endpoint name set in iStudio |
| `ota.send.endpoint=mailto:scott@tiger.com` | Specifies the sending endpoint for the SMTP adapter |

**Note:** The `sender` properties are not inherited from the `adapter.ini` file.

If no metadata is associated with an event in iStudio, then the endpoint specified by the `ota.send.endpoint` parameter in the `adapter.ini` file is used as the default endpoint.

The properties for the SMTP sender are defined in the `adapter.ini` file in `smtp.sender.*` format.

**See Also:**

- Figure 1–2, "Outgoing Messages" on page 1-2
- "SMTP Adapter-Specific Parameters" on page 2-16
- Chapter 4 of the *Oracle Application Server Integration InterConnect User's Guide* for information on adding transport properties as metadata in iStudio

## 3.2.3 SMTP Adapter Message Format

This section describes how to extract and send messages to the SMTP adapter for different types of payloads.

If the SMTP adapter operates in D3L mode, then the message format is binary or plain text. The message must be sent or received as one part Multipurpose Internet Mail Extension (MIME), with the data encoded in base64. Example 3–1 shows how to send the message to the SMTP adapter in MIME format using the `JavaMail` API.

***Example 3–1 Sending Messages to the SMTP Adapter***

```
Message smtpMessage = new MimeMessage(session);
String msg = new String("This is a test.");
MimeBodyPart part = new MimeBodyPart();

// create a multipart object
```

```
Multipart mp = new MimeMultipart();
DataSource dataSource = new BytesDataSource(msg.getBytes());
part.setDataHandler(new DataHandler(dataSource));
part.setHeader("Content-Transfer-Encoding", "base64");
mp.addBodyPart(part);
smtpMessage.setContent(mp);
...
Transport.send(smtpMessage);
```

In Example 3–1, `BytesDataSource` is a user-written class that implements the `DataSource` class, which represents a data source consisting of a byte array. Refer to the `JavaMail` API for additional information.

Example 3–2 shows how to extract the multipart message sent from the SMTP adapter when it operates in D3L mode.

***Example 3–2 Extracting Messages Sent from the SMTP Adapter***

```
Object o  = message.getContent();
Multipart mp = (Multipart)o;

// The message is contained in the
// first part.
BodyPart part = mp.getBodyPart(0);
InputStream is = (InputStream)part.getContent();

// extract the data from input stream.
...
```

When the SMTP adapter operates in XML mode, the message is sent or received in simple text format, as described in RFC 822. To send a message to the SMTP adapter, use the `javax.mail.Message.setText()` method in the `JavaMail` API.

## 3.3 Customizing the SMTP Adapter

You can customize the adapter behavior by implementing the following interfaces:

- `oracle.oai.adapter.agent.technology.ReceiverCustomizer`
- `oracle.oai.adapter.agent.technology.SMTPSenderCustomizer`

### 3.3.1 The ReceiverCustomizer Interface

You can use the `ReceiverCustomizer` interface to customize the `TransportMessage` object that is received by the SMTP adapter. The `TransportMessage` object represents the native message that the transport layer receives or sends.

- If you wish to customize the `TransportMessage` object itself, then use the `customizeTransportMessage()` method. This method is called before the adapter processes the `TransportMessage` object.
- If you wish to modify the message itself, then implement the `customizeTransportMessage()` method. You must also implement the `createReplyMessage()` method and ensure that it returns a `null` value.

The following code describes the file structure of the `ReceiverCustomizer` interface.

```
package oracle.oai.agent.adapter.technology;
import oracle.oai.agent.adapter.transport.TransportMessage;
```

```
import oracle.oai.agent.adapter.sdk.Agent;
public interface ReceiverCustomizer {

   public void customizeTransportMessage(Agent agent, int receiverType,
                                          TransportMessage transportMessage);
   public String createReplyMessage(Agent agent, int status,
                                    TransportMessage receivedTransportMessage);
}
```

The following table summarizes the `ReceiverCustomizer` interface.

| Methods | Description |
|---|---|
| `customizeTransportMessage();` | Enables you to customize the transport message received by the adapter. It uses the following parameters:<br>■ `agent`: Log a message<br>■ `receiverType`: Information on the type of adapter<br>■ `transportMessage`: Customize the transport message received by the adapter |
| `createReplyMessage();` | Creates a reply message based on the status of the message received. It contains the following parameters:<br>■ `agent`: Log a message<br>■ `status`: Status of the message process. If the value is `TransportResponse.TRANSPORT_ACK`, then the message has been processed successfully. If the value is `TransportResponse.TRANSPORT_ERROR`, then the message has not been processed successfully.<br>■ `receivedTransportMessage`: Transport message received by the adapter. This parameter is used to transport headers in the transport message to create a meaningful message.<br>The return string contains the reply message. This method is used for backward compatibility for the SMTP adapter. However, for the SMTP adapter, you should return a `null` value with this method. |

***Example 3–3 Example of ReceiverCustomizer Interface***

The `MyReceiverCustomizer` class to remove the first line in the native message.

```
import oracle.oai.agent.adapter.sdk.Agent;
import oracle.oai.agent.adapter.transport.TransportMessage;
import oracle.oai.agent.adapter.transport.TransportException;
import oracle.oai.agent.adapter.technology.ReceiverCustomizer;

public class MyReceiverCustomizer implements ReceiverCustomizer {

// This example describes how to remove an extra line from an email
// that OracleAS Integration InterConnect does not understand.
   public void customizeTransportMessage(Agent agent, int receiverType,
                                          TransportMessage transportMessage)
   {
      String payload = transportMessage.getBodyAsString();
// For debugging purposes only, the following syntax removes the first line
// from the payload. Details of removeFirstLine() is not provided.
      agent.logTraceMessage("payload received = " + payload, null, null, null);
      String newPayload = removeFirstLine(payload);

      try {
         transportMessage.setBody(newPayload);
      }
```

```
      catch(TransportException te) {
      . . . .
      }
   }
// For the SMTP adapter, a null string from the following method will be returned.
   public String createReplyMessage(Agent agent, int status,
                                    TransportMessage receivedTransportMessage)
   {
   return null;
   }
}
```

### List of Methods for the TransportMessage Class

The following table provides a list of methods you can use for the `TransportMessage` class.

| Method | Description |
|---|---|
| `public String toString();` | Dump messages and headers. |
| `public void setTransportHeader(String name, String value);` | Set a transport-specific header. |
| `public Properties getTransportHeaders();` | Get all transport-specific headers and return a Properties object that contains all the transport headers. |
| `public void setBody(String body) throws TransportException;` | Set the body of the message. The body type will be set to `STRING`.<br>Parameters:<br>`body`: body of the message<br>It throws an exception of type `TransportException`. |
| public void setBody(InputStream in) throws TransportException; | Set the body of the message. The body type will be set to BYTES.<br>Parameters:<br>`InputStream`: Contains the message.<br>It throws an exception of type `TransportException` |
| public String getBodyAsString(); | Get the body of the message as `String` object. Return the message in `String` object. |
| public byte[] getBodyAsBytes(); | Get the body of the message as byte array. Return the message in `byte[]`. |
| public InputStream getBodyAsInputStream(); | Get the body of the message and return an `InputStream` object representing the body of the message. |

## 3.3.2 The SMTPSenderCustomizer Interface

You can use the `SMTPSenderCustomizer` interface to customize the subject name and payload of the `TransportMessage` object that is sent to the transport layer. The `SMTPSenderCustomizer` interface extends the `SenderCustomizer` interface. You must implement the `SMTPSenderCustomizer` interface by implementing the following two methods:

- `SMTPSenderCustomizer.customizeTransportMessage()`
- `SMTPSenderCustomizer.generateSubjectName()`

If you do not want to implement the `generateSubjectName() method`, then you can create a class that extends the `oracle.oai.agent.adapter.technology.SMTPDefaultSenderCustomizer` class, which is provided in the `oai.jar` file. In this case, you need to implement only the `customizeTransportMessage()` method.

#### 3.3.2.1 The SenderCustomizer Interface

The following code describes the file structure of the `SenderCustomizer` interface.

```
package oracle.oai.agent.adapter.technology;

import oracle.oai.agent.adapter.sdk.MessageObject;
import oracle.oai.agent.adapter.sdk.AttributeObject;
import java.util.Properties;
import oracle.oai.agent.adapter.sdk.Agent;
import oracle.oai.agent.adapter.transport.TransportMessage;

   public interface SenderCustomizer {

   public void customizeTransportMessage(Agent agent,
                                         TransportMessage transportMessage,
                                         MessageObject mobj,
                                         AttributeObject aobj);

   }
```

**Thw customizeTransportMessage method**

This method specifies how to customize the transport message for transporting the sender. The adapter creates a `TransportMessage` object for the transport layer to send, based on the `MessageObject` object sent by OracleAS Integration InterConnect.

This method contains the following parameters:

- `agent`: Log messages
- `transportMessage`: The `TransportMessage` object that the adapter has created for sending.
- `mobj`: The `MessageObject` from OracleAS Integration InterConnect.
- `aobj`: The `AttributeObject` from OracleAS Integration InterConnect.

This method does not return anything. You can change the payload with the `transportMessage` parameter.

#### 3.3.2.2 The SMTPSenderCustomizer Interface

The following code describes the file structure of the `SMTPSenderCustomizer` interface.

```
package oracle.oai.agent.adapter.technology;

import java.util.Date;
import oracle.oai.agent.adapter.sdk.MessageObject;
import oracle.oai.agent.adapter.sdk.AttributeObject;
import oracle.oai.agent.adapter.sdk.Agent;

   public interface SMTPSenderCustomizer extends SenderCustomizer {
      public String generateSubjectName(Agent agent,
                                        String rule,
```

```
                                        String app,
                                        String partition,
                                        Date time,
                                        MessageObject mobj,
                                        AttributeObject aobj);

}
```

#### The generateSubjectName method

This method generates an subject name for e-mail. It contains the following parameters:

- `agent`: Use the `Agent` object to log message.
- `rule`: Rule for generating subject. This parameter is read from `smtp.sender.subjectRule` in the `adapter.ini`file.
- `app`: The application name.
- `partition`: Partition.
- `time`: The time the OracleAS Integration InterConnect object is received.
- `mobj`: A `MessageObject` passed from OracleAS Integration InterConnect.
- `aobj`: An `AttributeObject` passed from OracleAS Integration InterConnect.

This method returns a string representing the subject name.

## 3.4 Starting the SMTP Adapter

The process for starting the adapter varies based on the operating system.

- To start the SMTP adapter on UNIX:
  1. Change to the directory containing the start script.

     ```
     cd ORACLE_HOME/integration/interconnect/adapters/Application
     ```

  2. Type **`start`** and press **`Enter`**.
- To start the SMTP adapter from Services on Windows.
  1. Access the Services window from the Start menu.
  2. Select the ***OracleHomeOracleASIntegrationInterConnectAdapter-Application*** service.
  3. Start the service.

---

**Note:** You can also start and stop the SMTP adapter using the IC Manager. Refer to *OracleAS Integration InterConnect User's Guide* for more details.

---

### 3.4.1 Log File of SMTP Adapter

You can verify the startup status by viewing the `log.xml` files. The files are located in the time-stamped subdirectory of the `log` directory of the SMTP adapter. Subdirectory names have the following form:

```
timestamp_in_milliseconds
```

The following is an example of the information about an SMTP adapter that started successfully:

```
The Adapter service is starting..
Registering your application (SMTPAPP)..
Initializing the Bridge oracle.oai.agent.adapter.technology.TechBridge..
Starting the Bridge oracle.oai.agent.adapter.technology.TechBridge..
Service started successfully.
```

## 3.5 Stopping the SMTP Adapter

The process for stopping the adapter varies based on the operating system.

- To stop the SMTP adapter on UNIX:
  1. Change to the directory containing the stop script.

     ```
     cd ORACLE_HOME/integration/interconnect/adapters/Application
     ```

  2. Type **`stop`** and press **`Enter`**.
- On Windows, stop the SMTP adapter from Services.
  1. Access the Services window from the Start menu.
  2. Select the ***OracleHomeOracleASInterConnectAdapter-Application*** service.
  3. Stop the service.

  You can verify the stop status of the SMTP adapter by viewing the `log.xml` files. These files are located in the time-stamped subdirectory of the `log` directory of the SMTP adapter.

## 3.6 SMTP Adapter Error Codes

This section defines the error codes (derived from the `JavaMail` exception) that the SMTP adapter returns in the event of an exception.

```
OTA-IMAP-1002
Reason: Authentication failed due to bad user name or password.
Action: Check user name or password.

OTA-IMAP-1003
Reason: Folder closed exception is thrown when a method is invoked on
an invalid Messaging Object or Folder Object.
Action: None.

OTA-IMAP-1004
Reason: Message removed exception. A method is invoked on an expunge message.
Action: None.

OTA-IMAP-1005
Reason: Read-only folder exception. Tried to write to a read-only folder.
Action: Check the properties of the folder. Make sure it has the correct write
privilege.

OTA-SMTP-1001
Reason: Message cannot be sent exception.
Action: Make sure the email address for sending is valid.
```

**See Also:** *Oracle Application Server Integration InterConnect User's Guide* for information on the retry action

# A

# Frequently Asked Questions

This appendix provides answers to frequently asked questions about the SMTP adapter.



## A.1 How do I know the SMTP adapter started properly?

View the `log.xml` file located in the time-stamped subdirectory of the SMTP adapter `logs` directory.

| On... | Change to... |
|---|---|
| UNIX | *ORACLE_HOME*`/integration/interconnect/adapters/`*Application*`/logs/`*timestamp_in_milliseconds* |
| Windows | *ORACLE_HOME*`\integration\interconnect\adapters\`*Application*`\logs\`*timestamp_in_milliseconds* |

## A.2 The SMTP adapter did not start properly: what is wrong?

View the exceptions in the adapter log file (`log.xml`).

The exceptions should provide information about what went wrong. It is possible that the SMTP adapter is unable to connect to the repository. Ensure the repository is started properly. The SMTP adapter will connect to the repository once it is started properly. You do not need to restart the Adapter.

> **See Also:** *Oracle Application Server Installation Guide* for instructions on starting the repository on UNIX and Windows

## A.3 The SMTP adapter is not starting. What could be the reason?

One reason can be that Oracle Wallet does not contain the password information corresponding to your application name. For example, during installation you defined the application name as `mySMTPApp`. Later, you changed the application name in iStudio to `SMTPApp`. In such case, you need to specify the password corresponding to the new application name `SMTPApp` in the Oracle Wallet. You can create password by using the `oraclewallet` command.

**See Also:** Section A.6, "How do I secure my passwords?"

## A.4 Is it possible to edit the SMTP adapter configuration settings created during installation?

Yes, edit the parameters in the `adapter.ini` file in the following directory:

| Platform | Directory |
|---|---|
| UNIX | *ORACLE_HOME*`/integration/interconnect/adapters/`*Application*`/` |
| Windows | *ORACLE_HOME*`\integration\interconnect\adapters\`*Application*`\` |

**Note:** All configuration parameters with the exception of `bridge_class` can be edited more than once.

**See Also:** "hub.ini Files" on page 2-8 for parameter information

## A.5 When I change an element in iStudio, such as mappings, it seems like the SMTP adapter uses old information. What is happening?

The SMTP adapter caches information from iStudio. The information is stored in the repository locally. If you change something in iStudio and want to view the change in the runtime, then you need to stop the SMTP adapter, delete the SMTP adapter cache files, and restart the SMTP adapter.

The SMTP adapter has a persistence directory which is located in the SMTP adapter directory. Deleting this directory when the SMTP adapter has been stopped should make it obtain the new metadata from the repository when started.

## A.6 How do I secure my passwords?

OracleAS Integration InterConnect uses Oracle Wallet Manager to maintain system passwords. When you install OracleAS Integration InterConnect, Oracle Wallet Manager is also installed and a password store is created. All passwords used by OracleAS Integration InterConnect components are stored in the password store. The password is stored in the Oracle Wallet in the following format:

```
ApplicationName/password
```

The `ApplicationName` is the name of the application, which is extracted from the `adapter.ini` file of the corresponding adapter. In the `adapter.ini` file, the

`application` parameter specifies the `ApplicationName` to which this adapter connects. The password for the application is also retrieved from the `adapter.ini` file.

The number of entries is dependent on the type of adapter. For example, Database adapter needs two entries whereas AQ Adapter needs only one entry. The following table lists the entries that will be created for each adapter:

| Adapter | Entry In Oracle Wallet |
|---|---|
| AQ | *ApplicationName*/aq_bridge_password |
| HTTP | *ApplicationName*/http.sender.password |
| HTTP | *ApplicationName*/sender.wallet_password |
| SMTP | *ApplicationName*/smtp.receiver.password |
| MQ | *ApplicationName*/mq.default.password |
| FTP | *ApplicationName*/file.sender.password |
| FTP | *ApplicationName*/file.receiver.password |
| DB | *ApplicationName*/db_bridge_schema1_password |
| DB | *ApplicationName*/db_bridge_schema1_writer_password |

You can create, update, and delete passwords using the `oraclewallet` command. When you run the command, it prompts you for the admin password.

You can use the following commands to manage your passwords:

- List all passwords in the store

  ```
  oraclewallet -listsecrets
  ```

- Create a password

  ```
  oraclewallet -createsecret passwordname
  ```

  For example, to create a password for the hub schema:

  ```
  oraclewallet -createsecret hub_password
  ```

- View a password

  ```
  oraclewallet -viewsecret passwordname
  ```

  For example, to view the password for the hub schema:

  ```
  oraclewallet -viewsecret hub_password
  ```

- Update a password

  ```
  oraclewallet -updatesecret passwordname
  ```

  For example, to update the password for the hub schema:

  ```
  oraclewallet -updatesecret hub_password
  ```

- Delete a password

  ```
  oraclewallet -deletesecret passwordname
  ```

  For example, to delete the password for the hub schema:

```
oraclewallet -deletesecret hub_password
```

## A.7 How can I deliver a message to a specific partition of the publishing adapter?

**Scenario**: SMTP adapter has two partitions `PAR1` and `PAR2`. You want to deliver event `create_customer` to partition `PAR1` and `add_customer` event to partition `PAR2`.

Perform the following tasks:

1. Assign event `create_customer` to partition `PAR1` and event `add_customer` to partition `PAR2`.
2. Configure two users in IMAP or POP3 server. For example `USER1` and `USER2`.
3. Configure the adapter with partition name `PAR1` to receive mails from `USER1` and adapter with partition name `PAR2` to to receive mails from `USER2`.
4. Publish the message for event `create_customer` to `USER1` and the event `add_customer` to `USER2`.

# B

# Example of the adapter.ini File

This appendix shows an `adapter.ini` example file for the SMTP adapter.

> **See Also:** "Configuring the SMTP Adapter" on page 2-7 for additional information on `adapter.ini` configuration parameters

This section shows an `adapter.ini` example file for the SMTP adapter.

```
#include <../../hub/hub.ini>

// *************
// ** Adapter **
// *************

// Application (as created in iStudio) that this Adapter corresponds to.
application=smtpapp1

// Partition (as created in iStudio) that this Adapter corresponds to.
partition=

// If you want to have multiple Adapter instances for the given application
// with the given partition, each Adapter should have an instance number.

//instance_number=2

// Bridge class
bridge_class=oracle.oai.agent.adapter.technology.TechBridge

// define the type of payload. Valid option is XML or D3L.
ota.type=D3L

// define the smtp sending endpoint
ota.send.endpoint=mailto:ipdev2@cc-sun.us.oracle.com

// define the smtp receiving endpoint
ota.receive.endpoint=imap://joe@server10

//--------------------------------------
// SMTP Sender initialization variables
//--------------------------------------

// specify the smtp host
smtp.sender.smtp_host=smtp1.foo.com

// Specify the content type for the email
// smtp.sender.content_type=plain/text
```

```
// Specify the character set for the email
// smtp.sender.character_set=iso-2022-jp

//----------------------------------------
// SMTP Receiver initialization variables
//----------------------------------------

// enter the email user's password
encrypted_smtp.receiver.password=1124110710711065108010941084107310701071108110690

// enter the email server protocol.
smtp.receiver.protocol=imap

// email folder name
smtp.receiver.folder=inbox

// polling interval in milli seconds
smtp.receiver.polling_interval=60000

// maximum number of messages that
// the receiver will retrieve for
// each polling session (default 30)
smtp.receiver.max_msgs_retrieved = 10

// exception folder for messages
// that are not processed successfully.
smtp.receiver.exception_folder= error

// A list of the D3L XML files used by this Bridge. Each business event handled
// by the Bridge must have it's own D3L XML file.
// Whenever a new D3L XML file has been imported in iStudio to be used by
// an application using the SMTP adapter, the following parameter must
// be updated and the adapter restarted.
ota.d3ls=person.xml, person1.xml


// *************
// ** Agent  ***
// *************

// Log level (0 = errors only, 1 = status and errors, 2 = trace, status and
errors).
agent_log_level=2

// Hub message selection information
agent_subscriber_name=smtpapp1
agent_message_selector=recipient_list like '%,smtpapp1,%'
// Only provide values for the next two parameters if you have multiple Adapter
instances for the given application with
the given partition.
//agent_reply_subscriber_name=
//agent_reply_message_selector=

// Set this to false if you want to turn off all tracking of messages (if true,
// messages which have tracking fields set in iStudio will be tracked)

agent_tracking_enabled=true

// Set this to false if you want to turn off all throughput measurements
agent_throughput_measurement_enabled=true
```

```
// By default, adapters use an OAI specific DTD for all messages sent to the Hub
// because other OAI adapters will be picking up the messages from the Hub
// and know how to interpret them. This should be set to true if for every
// message,you would like to use the DTD imported for that message's Common View
// instead of the OAI DTD. This should only be set to true if
// an OAI adapter is *NOT* receiving the messages from the Hub.
agent_use_custom_hub_dtd=false

// Sets the metadata caching algorithm.
// The possible choices are startup (cache everything at startup: this
// may take a while if there is a lot of
// metadata in your Repository), demand (cache metadata as it is used)
// or none (no caching: this will slow down performance.)

agent_metadata_caching=demand

// Sets the DVM table caching algorithm.
// The possible choices are startup (cache everything at startup: this
// may take a while if there is a lot of
// metadata in your Repository), demand (cache metadata as it is used)
// or none (no caching: this will slow down performance.)
agent_dvm_table_caching=demand

// Sets the lookup table caching algorithm.
// The possible choices are startup (cache everything at startup: this
// may take a while if there is a lot of
// metadata in your Repository), demand (cache metadata as it is used)
// or none (no caching: this will slow down performance.)
agent_lookup_table_caching=demand

// If metadata caching, DVM table caching, or lookup table caching are turned on
// (startup or demand) then the Adapter caches metadata or DVM tables
// it retrieves from the Repository in a file cache. When you restart the
// Adapter, it will not have to get that metadata or DVM table
// from the Repository again because it is in the cache files. However, if you
// change some metadata or DVM table using iStudio and you want the Adapter to
// use those changes the next time it is started, you can either delete the
// cache files or set this parameter to true before restarting.
agent_delete_file_cache_at_startup=false

// Max number of application data type information to cache
agent_max_ao_cache_size=200

// Max number of common data type information to cache
agent_max_co_cache_size=100

// Max number of message metadata to cache
agent_max_message_metadata_cache_size=200

// Max number of DVM tables to cache
agent_max_dvm_table_cache_size=200

// Max number of lookup tables to cache
agent_max_lookup_table_cache_size=200

// Internal Agent queue sizes
agent_max_queue_size=1000
agent_Persistence_queue_size=1000
```

```
// Persistence
agent_persistence_cleanup_interval=60000
agent_persistence_retry_interval=60000
```

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