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This book provides an overview of the Oracle Communications Billing and Revenue Management Email Manager.

**Audience**

This book is intended for systems integrators, system administrators, database administrators, and other individuals who are responsible for installing and configuring Email Manager for BRM.

**Downloading Oracle Communications Documentation**

Product documentation is located on Oracle Technology Network:

http://docs.oracle.com

Additional Oracle Communications documentation is available from the Oracle software delivery Web site:

https://edelivery.oracle.com

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**Document Revision History**

The following table lists the revision history for this book.

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E16703-01</td>
<td>November 2011</td>
<td>Initial release.</td>
</tr>
<tr>
<td>E16703-02</td>
<td>May 2012</td>
<td>Minor formatting and text changes.</td>
</tr>
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<td>Version</td>
<td>Date</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>E16703-03</td>
<td>August 2013</td>
<td>On HP-UX IA64, BRM 7.5 is certified as of BRM 7.5 Patch Set 5. Documentation added for HP-UX IA64.</td>
</tr>
</tbody>
</table>
This chapter provides an overview of the Oracle Communications Billing and Revenue Management (BRM) Email Manager.

**Note:** Email Manager is an optional component, not part of base BRM.

### About Email Manager

Email Manager integrates BRM with the UNIX sendmail mail transfer agent. Email Manager works in conjunction with sendmail to authenticate users to login into the email service and retrieve email. Email Manager also provides real-time authorization of incoming mail messages to determine whether email can be accepted by a user’s account.

Email Manager runs on UNIX systems only.

**Note:** Email Manager should not be confused with the Email Data Manager (**dm_email**) component of the BRM system. Email Data Manager enables you to automatically send customer notifications and invoices via email.

Email Manager is composed of two daemons:

- **PIN Popper** (the **popper** daemon), which provides real-time authentication.
  
  The **popper** daemon implements the POP3 protocol and supports several email formats including RFC-822, MIME, and SMIME.

- **PIN Mailer** (the **pin_mailer** daemon), which provides real-time authorization.
  
  The **pin_mailer** daemon supports various mail protocols, including ESMTP and SMTP.

You configure email authentication and authorization by editing the related policy source code.

As with other BRM daemons, any number of PIN Popper and PIN Mailer daemons can run on any combination of computers. Each mail daemon requires a Connection Manager (CM), as shown in Figure 1–1.

**Note:** Email Manager doesn’t support mailing to lists or mail forwarding.
Using sendmail with PIN Mailer

To use the PIN Mailer, you must edit the sendmail configuration file to forward mail through PIN Mailer. The sendmail configuration file is usually located in /etc/mail/. See "Configuring the M4 Macro Files in sendmail" for details on setting up this program.

Configuring Email Service for an Account

You configure the following options for an Email service by using Customer Center:

- Which email server to use for an account
- Which path to use for the mailbox that stores a customer’s email
- Maximum mailbox size (in bytes)
- Maximum size for each email message (in bytes)
- Maximum number of email messages

**Note:** Your email service must enforce the configuration settings based on the information it receives in the email API.

Improving Performance by Using CM Proxy

To improve performance, configure PIN Popper and PIN Mailer to connect to a CM Proxy. CM Proxy provides a fast, unauthenticated CM connection allows that access to the database without a login. The CM proxy is approximately 75-80% faster than a regular CM connection.

For more information, see "Using CM Proxy to Allow Unauthenticated Log On" in BRM System Administrator’s Guide.

About the Email API

To authenticate the email login, the PCM_OP_MAIL_LOGIN_VERIFY opcode calls the PCM_OP_ACT_FIND_VERIFY opcode to read the /service/email storable class. To configure and restrict email, the /service/email class has a PIN_FLD_SERVICE_EMAIL substructure with the following fields:

- PIN_FLD_MAIL_SERVER_ID specifies an email server
- PIN_FLD_PATH specifies a path to email files
- PIN_FLD_MAX_MBOX_SIZE sets the maximum mailbox size
- PIN_FLD_MAX_MSG_SIZE sets the maximum message size
- PIN_FLD_MAX_MSG_CNT sets the maximum message number

BRM does not validate the information entered in these fields.
Installing Email Manager

This chapter explains how to install the Oracle Communications Billing and Revenue Management (BRM) Email Manager software.

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**Note:** Email Manager is an optional feature that requires a separate license.

Before you read this document, you should be familiar with Email Manager. See "About Email Manager".

System Requirements

Email Manager is available for HP-UX IA64, Linux, Solaris, and AIX operating systems. For information on disk space requirements for these operating systems, see "Disk Space Requirements" in *BRM Installation Guide*.

Software Requirements

Before installing Email Manager, you must install:

- Third-Party software, which includes the PERL libraries and JRE required for installing BRM components. See "Installing the Third-Party Software" in *BRM Installation Guide*.
- BRM. See "Putting Together Your BRM System" in *BRM Installation Guide*.

Installation Packages

Email Manager includes the following packages:

- **PINmaila** – the client application
- **PINmaild** – the client application source code
- **PINmailf** – the mail FM shared library

---

**Note:** If you have already installed the product, features that are already installed cannot be reinstalled without uninstalling them first. To reinstall a feature, uninstall it and then install it again.
TO INSTALL EMAIL MANAGER:

1. Download the software to a temporary directory (temp_dir).

   **Important:**
   - If you download to a Windows workstation, use FTP to copy the .bin file to a temporary directory on your UNIX server.
   - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid "Out of Memory" error messages in the log file. For information, see "Increasing Heap Size to Avoid ‘Out of Memory’ Error Messages" in BRM Installation Guide.

2. Go to the directory where you installed the Third-Party package and source the source.me file.

   **Note:** You must source the source.me file to proceed with installation; otherwise, "suitable JVM not found" and other error messages appear.

   Bash shell:
   ```
   source source.me.sh
   ```

   C shell:
   ```
   source source.me.csh
   ```

3. Go to the temp_dir directory and enter this command:

   ```
   7.5.0_EmailMgr_platform_opt.bin
   ```

   where platform is the operating system name.

   **Note:** You can use the -console parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the DISPLAY environment variable before you install the software.

4. Follow the instructions displayed during installation. The default installation directory for Email Manager is opt/portal/7.5.

   **Note:** The installation program does not prompt you for the installation directory if BRM or Email Manager is already installed on the machine and automatically installs the package at the BRM_Home location.

5. Go to the directory where you installed the Email Manager package and source the source.me file:

   Bash shell:
   ```
   source source.me.sh
   ```
Uninstalling Email Manager

C shell:

```
source source.me.csh
```

6. Go to the BRM_Home/setup directory and run the `pin_setup` script.

---

**Note:** The `pin_setup` script starts all required BRM processes.

---

Your Email Manager installation is now complete.

**What’s Next?**

See "Configuring Email Manager and sendmail".

**Uninstalling Email Manager**

To uninstall Email Manager, run the `BRM_Home/uninstaller/EMailMgr/uninstaller.bin`.

This chapter describes how to set up the Oracle Communications Billing and Revenue Management (BRM) Email Manager and sendmail. To set up the Email Manager and sendmail, you might need to configure the following:

- PIN Popper
- PIN Mailer
- sendmail configuration file

For information about editing configuration files, see "Using Configuration Files to Connect and Configure Components" in BRM System Administrator's Guide.

Configuring the PIN Popper

To configure the PIN Popper, you must perform the following tasks:

- Modifying the PIN Popper Configuration File
- Configuring the PIN Popper Startup

**Note:** PIN Popper is based on QPopper (version 2.53) from Qualcomm. Support information for QPopper is located on the QPopper support Web site. Direct all support questions to this site.

Modifying the PIN Popper Configuration File

The default location for the PIN Popper configuration file is `BRM_Home/apps/popper/pin.conf`.

Table 3–1 displays the PIN Popper entries:

<table>
<thead>
<tr>
<th>Entry</th>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>domain</td>
<td>Optional</td>
<td>The default mail domain for this system. By default, the BRM system stores email logins as <code>user@domain</code>. Some popper clients only pass in the <code>user</code> part of an email name. For most cases, this entry adds a default domain that the popper appends to the user name.</td>
</tr>
<tr>
<td>mailuser</td>
<td>Required</td>
<td>The UNIX login name used by the PIN Popper. The default is <code>pin</code>. This entry is stored in the system password file.</td>
</tr>
<tr>
<td>maildir</td>
<td>Required</td>
<td>The directory where users' mail files are stored.</td>
</tr>
</tbody>
</table>
Table 3–1  (Cont.) PIN Popper Entries

<table>
<thead>
<tr>
<th>Entry</th>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>workdir</td>
<td>Optional</td>
<td>The directory where temporary mail files are stored. The default is maildir.</td>
</tr>
</tbody>
</table>

Configuring the PIN Popper Startup

The PIN Popper program should be run as one of the standard Internet services which are controlled by inetd server process on your BRM server. See the inetd(1M) manual page in your UNIX system documentation for details.

1. To start the popper daemon on your system, add the following line to your /etc/inetd.conf file:

   ```
   pop3 stream tcp nowait root BRM_Home/bin/popper
   ```

2. Verify that the /etc/services file on your system has a `pop3` entry.

   This entry assigns a port on your system (port 110 is standard) to the popper service.

3. If your services file doesn’t contain a `pop3` entry, add the following line to the file:

   ```
   pop3 110/tcp
   ```

4. To force inetd to reread the configuration file, send a SIGHUP signal to the inetd process.

   ```
   kill -hup <inetd processID>
   ```

   All connections to port 110 of your system cause inetd to spawn a popper process to handle each connection.

Verifying Your PIN Popper Setup

When setup is complete, inetd starts the PIN Popper automatically each time a connection is made to the `pop3` port on your system.
To verify that the PIN Popper has started, use `telnet` to connect to the `pop3` port on your system and verify that the popper responds. The following line indicates a successful connection:

```
telnet <host> 110 +OK QUALCOMM Pop server derived from UCB (version 2.1.4-R3)...starting
```

## Configuring the M4 Macro Files in sendmail

The directory structure that `sendmail` uses for example configuration code are designed to use a post-V7 version M4 macro processor.

Table 3–2 shows the files and subdirectories under the configuration directory of the `sendmail` configuration file.

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>README</td>
<td>Configuration instruction file.</td>
</tr>
<tr>
<td>m4</td>
<td>General support routines that are not normally changed.</td>
</tr>
<tr>
<td>cf</td>
<td>Configuration files. The files have .mc suffixes, and must be run through M4 macro processor. The resulting files each have a .cf suffix.</td>
</tr>
<tr>
<td>ostype</td>
<td>Definitions describing a particular operating system type. These files should always be referenced using the OSTYPE macro in the .mc file.</td>
</tr>
<tr>
<td>domain</td>
<td>Definitions describing a particular domain, referenced using the DOMAIN macro in the .mc file. These definitions are site dependent (see Table 3–4).</td>
</tr>
<tr>
<td>mailer</td>
<td>Descriptions of mailers. These descriptions are referenced using the MAILER macro in the .mc file (see Table 3–5).</td>
</tr>
<tr>
<td>sh</td>
<td>Shell files used when building the .cf file from the .mc file in the cf subdirectory.</td>
</tr>
<tr>
<td>feature</td>
<td>These files hold special orthogonal features. They should be referenced using the FEATURE macro.</td>
</tr>
<tr>
<td>hack</td>
<td>Local hacks. These can be referenced using the HACK macro.</td>
</tr>
<tr>
<td>siteconfig</td>
<td>Site configuration information, such as tables of locally connected UUCP sites.</td>
</tr>
</tbody>
</table>

## Installing M4 Macro Files

You can enforce that your site-specific customizations to `sendmail` always use M4 files. If you’ve always used M4 files or you are configuring the `sendmail` configuration file for the first time, do the following:

1. Copy your M4 files to the appropriate cf subdirectories in the `sendmail` build directory hierarchy.

2. Run the M4 macro processor in the cf subdirectory as described in the README file.

   A new.cf file is created.

3. Save a copy of your `sendmail` configuration file as a backup file. Copy the new.cf file as your `sendmail` configuration file.

If you have `sendmail` installed and site-specific changes have been made directly to the `sendmail` configuration file, you have two options:
Configuring the M4 Macro Files in sendmail

- Edit the `sendmail` configuration file. To edit the `sendmail` configuration file, see "Using the PIN Mailer with sendmail".
- Run M4 by using the following instructions.

To run M4:
1. Make a copy of the `cf` subdirectory tree at the same location as the `cf` directory, for example, `mycf`.
2. Remove all files from the `cf`, `domain`, `feature`, `hack`, `mailer`, `ostype`, and `siteconfig` subdirectories in `mycf` that are not referenced by your M4 files.
3. Copy your M4 files into the appropriate subdirectories in `mycf`.
4. Run the M4 macro processor in the `cf` subdirectory.
   If the M4 processor can’t find a file it needs, it reports an error. Copy the required file from the `/cf` directory. Once all files are available, M4 creates a new `cf` file.
5. Save a copy of your `sendmail` configuration file as a backup file. Copy the specific segments from the generated `.cf` file into your customized `sendmail` configuration file.

Testing sendmail

First, test the operation of `sendmail` without Email Manager. If there are no problems during the test, proceed to test the integration of Email Manager with `sendmail`.

Configuration Instructions and Example Files

The `README` file shipped with the `sendmail` source files includes instructions for configuring the M4 macro files.

The Email Manager includes three example configuration files located in the `BRM_Home/apps/pinapps/examples/m4` directory:
- `cf/portal-example.m4`
- `mailer/portal-example.m4`
- `domain/portal-example.m4`

<table>
<thead>
<tr>
<th>Table 3–3 cf/portal-example.mc</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERSIONID(`@(#)portal-example.mc 1.0 (Portal Software, Inc.) 06/08/1999')</td>
<td>Signature written to the <code>sendmail</code> configuration file.</td>
</tr>
<tr>
<td>OSTYPE(solaris2)dnl</td>
<td>Referring to <code>../ostype/solaris2.m4</code>. Change to match your implementation.</td>
</tr>
<tr>
<td>DOMAIN(portal-example)dnl</td>
<td>Referring to <code>../domain/portal-example.m4</code>. Change to match your implementation.</td>
</tr>
<tr>
<td>MAILER(portal-example)dnl</td>
<td>Referring to <code>../mailer/portal-example.m4</code>. Change to match your implementation.</td>
</tr>
</tbody>
</table>

Note: These files can’t be used without modification.

Table 3–3 describes the `cf/portal-example.mc` file.
Configuring the PIN Mailer

For PIN Mailer configuration, you’ll have to find and edit a configuration file.

**Table 3–4** describes the `mailer/portal-example.m4` file.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERSIONID(`@(#)portal-example.m4 1.0 (Portal Software, Inc.) 06/08/1999')</td>
<td>Signature written to the <code>sendmail</code> configuration file.</td>
</tr>
<tr>
<td>ifdef(<code>PIN_MAILER_PATH' , </code>define(<code>PIN_MAILER_PATH', </code>BRM_Home/bin/pin_mailer') )</td>
<td>Set the value from the environment. If no value is found, set the value to the default location of the <code>pin_mailer</code> executable.</td>
</tr>
<tr>
<td>ifdef(<code>PIN_MAILER_FLAGS','</code>define(<code>PIN_MAILER_FLAGS', </code>DEFblS') ) ifdef(<code>PIN_MAILER_ARGS', </code>define(<code>PIN_MAILER_ARGS', </code>pin_mailer $u') )</td>
<td>If these values aren't set in the environment, set them to reasonable values. See &quot;Configuring the PIN Mailer&quot; for details.</td>
</tr>
<tr>
<td>define(<code>_LOCAL_','ifdef(</code>confLOCAL_MAILER', `pinmail'))</td>
<td>Defines the mailer.</td>
</tr>
<tr>
<td>define(<code>confFORWARD_PATH', </code>$z/.forward.$w:$z/.forward')dnl define(<code>confCW_FILE', </code>o /etc/sendmail.cw')dnl define(<code>confDONT_INIT_GROUPS', </code>True)dnl FEATURE(redirect)dnl FEATURE(use_cw_file)dnl FEATURE(stickyhost)dnl</td>
<td>Set up Pin Mail as the local mailer using the values of these variables.</td>
</tr>
</tbody>
</table>

**Table 3–5** describes the `domain/portal-example.m4` file.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERSIONID(`@(#)portal-example.mc 1.0 (Portal Software, Inc.) 06/08/1999')</td>
<td>Signature written to the <code>sendmail</code> configuration file.</td>
</tr>
<tr>
<td>define(<code>confFORWARD_PATH', </code>$z/.forward.$w:$z/.forward')dnl define(<code>confCW_FILE', </code>o /etc/sendmail.cw')dnl define(<code>confDONT_INIT_GROUPS', </code>True)dnl FEATURE(redirect)dnl FEATURE(use_cw_file)dnl FEATURE(stickyhost)dnl</td>
<td>Redefine M4 variables for use in your feature files.</td>
</tr>
</tbody>
</table>

Refer to your M4 feature files located in ".feature."
Using the PIN Mailer with sendmail

You must edit the sendmail configuration file on your system (typically /etc/mail/sendmail.cf) by doing the following:

Note: Before editing the sendmail configuration file, read "Configuring the M4 Macro Files in sendmail".

- Add a mailer definition line to the Mailer Definitions section of your sendmail configuration file. For example:

  Mpinmail, P=BRM_Home/bin/pin_mailer,F=DEFb1S,A=BRM_Home/bin/pin_mailer $u
  Mpinmail, P=BRM_Home/bin/pin_mailer, F=DEFb1SA/|, S=10/30, R=20/40, A=BRM_Home/bin/pin_mailer $u

- Add a line to define the behavior for parsing an email address before sending it to the PIN Mailer. For example:

  R$*<@>$* $#pinmail $: $1<@>$2

Note: There is a tab between R$*<@>$* and $#pinmail.

Table 3–6 describes the flags in the mailer definition line (F=DEFb1S):

<table>
<thead>
<tr>
<th>Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>PIN Mailer requires a Date: header (usually not required).</td>
</tr>
<tr>
<td>E</td>
<td>Change the extra From to &gt;From.</td>
</tr>
<tr>
<td>F</td>
<td>PIN Mailer requires a From: header.</td>
</tr>
<tr>
<td>b</td>
<td>Add a blank line at the end of a message if needed.</td>
</tr>
<tr>
<td>l</td>
<td>PIN Mailer is local.</td>
</tr>
<tr>
<td>S</td>
<td>Do not reset userid.</td>
</tr>
</tbody>
</table>

This replaces any other mail delivery agent entries, and requires that all addresses are converted to user@domain format before being sent to the mail delivery agent. sendmail then forks a pin_mailer each time a sendmail connection is made and mail to user@domain is processed.

For information on starting and stopping BRM daemons, see "Starting and Stopping the BRM System" in BRM System Administrator’s Guide.

PIN Mailer Configuration File

The default location for the PIN Mailer configuration file is BRM_Home/apps/pin_mailer/pin.conf.

Sample PIN Mailer pin.conf File

  # @(#)pin_conf 6 Sun Sep 12 21:07:55 1999 # Sample pin.conf file for PIN's Mailer (Version 7.5)
  # (see pin_conf() manpage for format discussion)
  - napcm_ptrip<hostname>11960
  - userid0.0.0.1 /service/pcm_client 1
- nap login_type 1# type 1 is with password
- nap login_name <name>.<db_no> # e.g.: loginname.0.0.1
- nap login_pw <password>
- pin_mail domain <mail_domain_name>
- pin_mail mailuser pin
- pin_mail maildir /var/mail
- pin_mail workdir BRM_Home/apps/pin_mailer
- pin_mail logfile /var/portal/7.5/pin_mailer/pin_mailer.pinlog
- pin_mail loglevel 2

Common Connection Entries

Table 3–7 describes the common connection entries used in the \textit{pin.conf} file. For more information, see "Using Configuration Files to Connect and Configure Components" in \textit{BRM System Administrator’s Guide}.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm_ptr</td>
<td>Required</td>
<td>Pointer to the CM/CMMP</td>
</tr>
<tr>
<td>userid</td>
<td>Required</td>
<td>Database number</td>
</tr>
<tr>
<td>login_type</td>
<td>Required</td>
<td>Login type, with or without a password</td>
</tr>
<tr>
<td>login_name</td>
<td>Required</td>
<td>Login name</td>
</tr>
<tr>
<td>login_pw</td>
<td>Required</td>
<td>Login password</td>
</tr>
</tbody>
</table>

Table 3–8 describes the PIN Mailer entries used in the \textit{pin.conf} file.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mailuser</td>
<td>Required</td>
<td>The UNIX login name used by the PIN Mailer. The default is pin. This entry is stored in the \textit{system password file}.</td>
</tr>
<tr>
<td>maildir</td>
<td>Required</td>
<td>The directory where users’ mail files are stored.</td>
</tr>
<tr>
<td>workdir</td>
<td>Optional</td>
<td>The working directory for the mail system, that is, the PIN Mailer portion of the mail system.</td>
</tr>
<tr>
<td>logfile</td>
<td>Required</td>
<td>The full path name for the \textit{logfile}. The default is \texttt{/var/portal/7.5/pin_mailer/pin_mailer.pinlog}.</td>
</tr>
<tr>
<td>loglevel</td>
<td>Optional</td>
<td>The error reporting level. The default value logs all errors regardless of type.</td>
</tr>
</tbody>
</table>

Starting PIN Mailer

When configuration is complete, PIN Mailer is started automatically as needed by your system’s \texttt{sendmail} daemon.

Customizing Email Manager

The Email Manager opcodes perform two functions:

- To authorize logins, Email Manager uses the \texttt{PCM_OP_MAIL_LOGIN_VERIFY} opcode. See "Customizing Email Login Authorization".

- To authorize mail delivery, Email Manager uses the \texttt{PCM_OP_MAIL_DELIVER_VERIFY} opcode. See "Customizing Email Delivery Authorization".
Customizing Email Login Authorization

To authorize logins, Email Manager uses the PCM_OP_MAIL_LOGIN_VERIFY opcode. This opcode calls the PCM_OP_ACT_FIND_VERIFY opcode, and specifies that the authorization request is for an email service login.

The PCM_OP_ACT_FIND_VERIFY opcode calls the PCM_OP_ACT_POL_SPEC_VERIFY opcode, which authorizes the login. You can use the PCM_OP_ACT_POL_SPEC_VERIFY opcode to customize how the login is authorized.

By default, the authentication checks the following:

- Login name.
- Password.
- Credit balance is equal to or greater than 0.

Customizing Email Delivery Authorization

To authorize email delivery, Email Manager uses the PCM_OP_MAIL_DELIV_VERIFY opcode. This opcode calls the PCM_OP_ACT_FIND_VERIFY opcode, and specifies that the authorization request is for an email delivery.

The PCM_OP_ACT_FIND_VERIFY opcode calls the PCM_OP_ACT_POL_SPEC_VERIFY opcode, which authorizes the mail delivery. You can use the PCM_OP_ACT_POL_SPEC_VERIFY opcode to customize how the mail delivery is authorized.

By default, the authentication checks if the email service is active.