Policy Management
Release Notes

ORACLE®

Policy Management Release Notes, Release 12.5

E94207-05

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Introduction

These release notes identify the functions and features of Oracle Communications Policy Management which include:

- Feature descriptions
- Supported hardware baseline
- Software and documentation
- Supported upgrade paths
- Compatibility
- Resolved bugs
- Customer-known bugs

Directions for accessing key Oracle sites and services are also identified in the Oracle References and Services.

Release notes are available on Oracle Help Center and are made available for every software release.

Disclaimer

Before installing third-party software on the same server with Oracle products (for example, DSR, PCRF, UDR, PIC, EAGLE and so on), please be aware of the following information:

- Oracle is not responsible for installation, operation, maintenance, etc. of any non-Oracle distributed software with Oracle products (for example, DSR, PCRF, UDR, PIC, EAGLE and so on).
- Additional due diligence including testing is recommended to be performed in the lab before deploying non-Oracle software on production sites to avoid potential issues.
- Oracle is not responsible for validating or integrating non-Oracle software with Oracle products (for example, DSR, PCRF, UDR, PIC, EAGLE and so on). Additionally, persistence of the non-Oracle software over upgrade of the Oracle product may or may not occur, and Oracle does not guarantee the non-Oracle software will persist.
- Oracle Support may require that the customer uninstall the non-Oracle software and reinstall Oracle products (for example, DSR, PCRF, UDR, PIC, EAGLE and so on) to recover the system to address a field issue.

2
Enhancements Descriptions

This release of Oracle Communications Policy Management adds the enhancements described in this chapter.

Policy Control Function (PCF)

The Oracle Communications Policy Management solution is enhanced to add Policy Control Function that extends the functionality of PCRF as part of 5G core network. The Policy Control Function is a functional element for policy control decision and flow based charging control functionalities.

The PCF provides the following functions:

- Policy rules for application and service data flow detection, gating, QoS, and flow based charging to the SMF.

- Access and Mobility Management related policies to the AMF.

For more information, see *Oracle Communications Cloud Native Policy Control Function User's Guide*.

AAC Support-ER 27881912

This enhancement adds support for AAC which includes:

- PCEF routing functionalities

- Querying PCRF address on PCEF

- Rx interface support

- PM interface

- NRM

NFV Support-ER 27737433

This enhancement add support which includes:

- Version specific

- HA/Georedundant configuration

- Cloud-init

- Static IP address

CSG Mobility Event Support - ER 27177007, 27434084

This enhancement adds Closed Subscriber Group (CSG) event support which limits operators capability to provide different charging and policy treatment when users are in CSG or Hybrid cells.

Following Policy Conditions were added for this enhancement:

- Where the select type is contained in Match List(s) select list(s)
- Where the select type is not contained in Match List(s) select list(s)
- Where the CSG ID is available
- Where the CSG ID matches one of specified CSG ID value(s)
- Where the CSG Access Mode is Closed
- Where the UE is member of the CSG

Event Triggers Enhancements-ER27013746

This enhancement adds a mechanism to allow policy action to append event triggers from the executed policy(es).

A new advanced setting, **DIAMETER.ENF.PickUpAllEventTriggers** is introduced which when enabled, MPE picks up all event triggers from multiple executed policies.

By deault, this setting is disabled and MPE picks up event triggers from the last executed policy.

Geo-redundant setup for Gx/Rx-ER 25866138

This enhancement adds Geo-redundant Gx/Rx DRA setup between Policy Management and PGW and PCRF and P-CSCF. Gx/Rx interface uses DRA configured on Policy Management as default route for reaching PGW and PCSCF. If failed, it will retry sending the RAR message to the secondary DRA.

Hotspot Event Trigger Enhancements for ER 27918667

This enhancement adds support to trigger an event when the special data package users use their devices as hotspot to share the Wi-Fi access to others.

Internal Tool for Data Collection and Troubleshooting-ER 20319995

This enhancement adds a third party server, rpm to be installed on CMP products to capture the diameter flow for debugging issues. There is an option to specify the MPEs and MRAs of which the rpm will capture the data. The Policy Management tool framework deploy agents to the specified MPEs and MRAs that initiates tcpdump to capture all the diameter messages, and the tool framework takes back all the PCAP packets, merge the contents. You can specify the users by IMSI, E.164 or Session Id.

3GPP Multiple PRA Handling Support-ER 27433979

This enhancement adds support for Presence Reporting Area (PRA) both single PRA (CNO-ULI) and Multiple PRA (Multi-PRA).

This allows Operator to write policies to subscribe or unsubscribe to the PRA event trigger value anytime during the life time of the IP-CAN session.

This enhancement adds a new policy condition and a new policy action.

- Policy Condition:
  - Where the UE is inside/outside/inactive subscribed PRA area for any one of specified PRA area(s)
  - Where the subscribed PRA area matches one of specified PRA area(s)
- Policy Action:
  - enable/disable PRA Subscription
  - install PRA change for PRA area(s)
  - remove PRA change for PRA area(s)
  - unsubscribe PRA change

LTE 5G Internetworking Call Flow Enhancement-ER 27433899

The enhancement adds support bandwidth values higher than 2^32-1 (4.294.967.295) bps for 5G NR. 3GPP defined a feature, Extended bandwidth support for EPC supporting Dual Connectivity. This includes changes on Gx, and Rx.

This enhancement adds a new policy condition and a new policy action

- Policy Condition:
  - where the QoS parameters in the flow are equal to specified value
- Policy Action:
  - overwrite Conditional Policy Information with Execution-Time to time and parameters

Policy Table Multiple-Row Match-ER 23214881

This enhancement allows using a single Policy to allow matching multiple rows in a Policy Table and take the action associated with each row. This reduces the number of required policies and/or reduces the number of rows required in the Policy Table.

New Monitoring Events Support-ER 27881912

This enhancement adds event monitoring configuration support and reporting of following types:

- Change of IMSI-IMEI (SV) association
- Roaming Status

Network Services Header Support - ER 27176622

An enterprise ID has been included by the Policy Management towards the PGW for any new enterprise value-added services based on subscriber profile information. PGW utilizes the Enterprise ID for the metadata insertion.

OCPM shall support insertion of Enterprise-Service-Path-ID based on subscriber profile in case of PDP session creation, update or subscriber profile modification (UDR notification).

PLMN_CHANGE Event Trigger Support for Rx-ER 26557079

The enhancement adds PLMN Change notification towards an Application Function (AF). This intends to provide PLMN (MCC and MNC) information as part of Rx interface based AAA and RAR messages and allows AF to be aware of PLMN changes.

If AF subscribes to the notifications of PLMN ID change, Policy Management provides the PLMN identifier to AF when receiving a change of PLMN from PCEF. In this case Policy Management sends a Diameter RAR command to the AF which includes the Specific-Action AVP set to PLMN_CHANGE and the 3GPP-SGSN-MCC-MNC AVP for the PLMN, where the UE is located.

During the Rx session establishment or modification, the Policy Management respond the AA-Answer message including the PLMN identifier within 3GPP-SGSN-MCC-MNC AVP, if the Policy Management has previously requested to be updated with this information in the PCEF.

S8HR Support-ER 26641840

This enhancement adds S8 HR (S8 Home Routing).

S8HR architecture allows roaming of IMS services which uses *well known* IMS APN whereby the PGW, PCRF and P-CSCF are located in the HPLMN also when the UE is roaming in a VPLMN.

This adds flexibility for operators planning to support S8 based Home Routing feature for IMS use cases. This support helps adds necessary Oracle Communications Policy Management compliances with the latest Rx interface (29.214) specification

3GPP Enhancements - ER 27175916

Following 3GPP Standards-driven enhancements were made in this release:

- **Detection and handling of overlapping Request:**
  When PCEF sends the CC-Request to the which includes the origination time stamp (Origination-Time-Stamp AVP) received from the originating entity colliding with an existing IP-CAN session context, for the same UE (the same Subscription-Id AVP and the same APN but from a different PCEF (different Origin-Host AVP)), the Policy Management accepts the new CC-Request only if it contains a more

recent Origination-Time-Stamp than the origination timestamp stored for the existing IP-CAN session.

If the Policy Management detects that the Origination-Time-Stamp included in the new CC-Request is older than the origination timestamp stored for the existing IP-CAN session, then may reject the new CC-Request by modifying setting.

- **Handling of timed out request at the originating entity:**
  When PCEF sends the CC-Request which includes the origination time stamp and the Maximum Wait Time received from the originating entity (Origination-Time-Stamp AVP and the Maximun-Wait-Time AVP), the Policy Management verifies if that the request has not already timed out at the originating node and may reject the CC-Request that has timed out by modifying the setting.

Support for External ID on Gx/Sh for MSISDN less Devices-ER 27434131

This enhancement adds an External ID as Subscription ID to support MSISDN less devices. These devices will have IMSI and their RAT-TYPE may be either E-UTRAN/EUTRAN-NB-IoT. These devices will have IMSI.

Sy support for OCS Initiated Termination - ER 27176660

This enhancement adds the Sy capability to terminate the session in the following scenarios:

- User is removed from the OCS system
- User migrated from one OCS system to another OCS system

3
Software and Documentation

Oracle Communications Policy Management software is available for download on the Oracle software delivery website. Documentation is delivered electronically on Oracle Help Center. Both the software and the documentation are listed in this section.

Software

All components are available for download from the software delivery website (http://www.oracle.com/us/support/software/premier/my-oracle-support-068523.html).

> **Note:**
>
> These files are available in one or more of the following formats:
> - *.iso: for bare metal deployments
> - *.ova: for VMware and OVM/OVS deployments
> - *.qcow2: for KVM/Openstack deployments

Software

- Oracle Communications Policy Management Configuration Management Platform 12.5.0.0.0_63.1.0
- Oracle Communications Policy Management Multimedia Policy Engine 12.5.0.0.0_63.1.0
- Oracle Communications Policy Management Policy Front End 12.5.0.0.0_63.1.0
- Oracle Communications Policy Management Mediation Server 12.5.0.0.0_63.1.0
- Oracle Communications Tekelec Virtual Operating Environment (TVOE) 3.5.0.0.0_86.46.0
- Oracle Communications Tekelec Platform Distribution (TPD) 7.5.0.0.0-88.45.0
- Oracle Communications Tekelec Platform Management and Configuration (PM&C) 6.5.0.0.0-65.11.0

This list is accurate at the time of release, but is subject to change. View the Oracle Software Delivery Cloud site for the latest information.

Documentation

All documents available for download from Oracle Help Center (http://docs.oracle.com/en/industries/communications).

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> **✎ Note:**
>
> This list is accurate at the time of release but is subject to change. See Oracle Help Center for all available documents.

- Platform Configuration User's Guide

- Configuration Management Platform Wireless User's Guide

- Policy Wizard Reference

- SNMP User's Guide

- OSSI XML Interface Definitions Reference

- Policy Front End User's Guide

- Mediation Server User's Guide

- Troubleshooting Reference

- Analytics Data Stream Reference

- Policy Variables Reference

- Network Impact Report

- Virtual Network Function Overview and Direction

- Cloud Installation Guide

- Software Installation Guide

- 12.2.x/12.3.x to 12.4 Upgrade Procedures

- Disaster Recovery Guide

- Concepts for Wireless Networks

- Licensing Information User Manual

4

Supported Hardware Baseline

The hardware identified in Supported Hardware Baseline comprises the hardware and server versions that have been verified with this release.

Supported Hardware Baseline

Table 4-1   Supported Hardware Baseline

Hardware	Description
HP Gen 8/8+	Rackmount and C-Class servers configured as defined in the configuration workbook.
HP Gen 9	Rackmount and C-Class servers configured as defined in the configuration workbook.
X5-2 servers	Rackmount and C-Class servers configured as defined in the configuration workbook.
X5-2 NETRA servers	Rackmount and C-Class servers configured as defined in the configuration workbook.

The firmware components are software that is installed on the hardware. These components are listed in the Firmware Release Notice:http://docs.oracle.com/cd/E57832_01/index.htm.

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Firmware Components

The firmware components are software that is installed on the hardware. These components are listed in the Firmware Release Notice:http://docs.oracle.com/cd/E57832_01/index.htm.

Firmware Component List

The firmware documents are available from Oracle Help Center (OHC): http://docs.oracle.com/cd/E57832_01/index.htm.

Table 5-1 shows the firmware components used in this release.

Table 5-1   Supported Firmware Components

Hardware	Release	Description
HP Firmware FUP	2.2.11 (minimum)*	FC
Oracle X5-2 Firmware	3.1.5 (minimum)	FC

FC
Fully Compatible

PC
Partially Compatible (Compatible but not fully functional [feature dependent])

NC
Not Compatible

N/A
Not Applicable

> ✏ **Note:**
>
> There are no general restrictions on the use of newer firmware. Oracle provides guidance in the HP Solutions Firmware Upgrade Pack Release Notes on the maximum firmware version for a component. Only when there is a known compatibility issue with a newer firmware version is a maximum version specified. Oracle recommends that the latest firmware release always be used unless there is a known compatibility issue.

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Compatibility and Software Upgrade Paths

This chapter provides a Policy Management compatibility matrix and a table of upgrade paths.

UDR and Policy Management Compatibility Matrix

The firmware documents are available from Oracle Help Center: http:// docs.oracle.com/cd/ E57832_01/index.htm.

UDR and Policy Management Compatibility Matrix lists which releases of Policy Management are compatible with each release of UDR.

Table 6-1   UDR and Policy Management Compatibility Matrix

UDR Software Release	Compatible Policy Management Software Releases
9.1	9.1, 10.5
9.3	9.1, 10.5, 11.5, 12.1, 12.2
10.0	10.5, 11.5, 12.1
10.2	11.5, 12.1 , 12.2
12.1	11.5, 12.1*, 12.2 , 12.3, 12.4, 12.5
12.2	12.1, 12.2, 12.3, 12.4, 12.5
12.4	12.1, 12.2, 12.3, 12.4 , 12.5

* If you decide to use the UDR enterprise pools feature in UDR release 12.2, then Policy Management release 12.2 is required. A special upgrade sequence order is required:

1. Upgrade to Policy Management 12.2.

2. Upgrade to UDR 12.2.

3. Upgrade to Policy Management 12.2.2.

After this is complete, the UDR enterprise pools feature can be enabled.

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Supported Upgrade Paths

This release has been tested for upgrades from specific prior releases; this chapter contains the exact paths for upgrade for both wireless mode. Verify that your current installed release is listed on a valid upgrade paths.

Supported Upgrade Paths

This release has been tested for upgrades from specific prior releases. This chapter contains the exact paths for upgrade. Verify that your current installed release is listed on a valid upgrade path. The possible upgrade paths to Policy Management 12.5 are listed in Table 7-1.

Table 7-1   Upgrade Paths

From	To	Mechanism
12.2.x	12.5	ISO upgrade
12.3.x	12.5	ISO upgrade
12.4.x	12.5	ISO upgrade

> ✎ **Note:**
>
> • 12.2.x, 12.3.x, and 12.4.x to 12.5.x upgrade is available only for Wireless mode.

8
Resolved and Known Bugs

This chapter lists the resolved and known bugs for this release of Oracle Communications Policy Management.

These bug lists are distributed to customers with a new software release at the time of general availability (GA) and are updated for each maintenance release.

Severity Definitions

The resolved and known bug tables in this document refer to bug severity levels listed in this section. Definitions of these levels can be found in the publication *TL 9000 Quality Management System Measurement Handbook*.

> **✎ Note:**
>
> A problem report is a report from a customer or on behalf of the customer concerning a product or process defect requesting an investigation of the issue and a resolution to remove the cause. The report may be issued via any medium. Problem reports are systemic deficiencies with hardware, software, documentation, delivery, billing, invoicing, servicing, or any other process involved with the acquisition, operation, or performance of a product. An incident reported simply to request help to bring back the service or functionality to normal without the intent to investigate and provide a resolution to the cause of the incident is not a problem report.

- Critical: Conditions that severely affect the primary functionality of the product and, because of the business impact to the customer, requires non-stop immediate corrective action, regardless of time of day or day of the week as viewed by a customer on discussion with the organization such as the following:

  1. Product inoperability (total or partial outage)

  2. A reduction in the traffic/data handling capability, such that expected loads cannot be handled

  3. Any loss of emergency capability (for example, emergency 911 calls)

  4. Safety hazard or risk of security breach

- Major: Product is usable, but a condition exists that seriously degrades the product operation, maintenance, or administration, etc., and requires attention during pre-defined standard hours to resolve the situation. The urgency is less than in critical situations because of a lesser immediate or impending effect on product performance, customers, and the customer's operation and revenue such as the following:

  1. Reduction in the product's capacity (but still able to handle the expected load)

  2. Any loss of administrative or maintenance visibility of the product and/or diagnostic capability

3. Repeated degradation of an essential component or function

4. Degradation of the product's ability to provide any required notification of malfunction

- Minor: Other problems of a lesser severity than Critical or Major such as conditions that have little or no impairment on the function of the system.

- Minor: No Loss of Service. Oracle severity is outside what is defined by TL 9000.

The numbered severity levels in the tables below correspond to these definitions:

- 1 - Critical

- 2 - Major

- 3 - Minor

- 4 - Minor: No Loss of Service.
  Oracle severity is outside what is defined by TL 9000.

Customer-Known Bugs

GUID-C3824C9B-09AC-4A63-92BB-A8362393F9E7#GUID-C3824C9B-09AC-4A63-92BB-A8362393F9E7/V6726573 lists known bugs in this release:

> **Note:**
>
> Customer-Known bugs are sorted in ascending order by severity and then by bug number.

Table 8-1 Oracle Communications Policy Management 12.5.0 Customer-Known Bugs

Sev	Bug Number	Title	Impact Statement	Work Around
3	28852757	Detection and handing late arriving request and MPE prcess wrong one more RAR is send to pcef	It is a boundary case to handle with when: 1. DIAMETER.SessionUniquenessControl set to true (default is false, VzW requires this feature and may already set to true). If a duplicated CCR-I arrives, and second one with recent timestamp, PCRF sends two RAR to release first session In above boundary case, PCRF will send two RAR to release first session.	Set DIAMETER.SessionUniquenessControl to False, or avoid duplicate CCR-I.

Table 8-1   (Cont.) Oracle Communications Policy Management 12.5.0 Customer-Known Bugs

Sev	Bug Number	Title	Impact Statement	Work Around
3	2886535 9	The Variables expression in policy should support colon	• **Functional impact:** The default value of policy variable is not supported. The default value in policy variable using colon will cause exception, *{name[:default-value]}* • **Performance impact:** If more than four policy variables are deployed in policy, it could cause load shedding on G9 when runs on 50%TPS.	1. Remove the policy variable default values. 2. Use less policy variables.
3	2860078 8	HP G9 MPE entered busy status at 80% TPS	On HP G9, MPE enters busy status upon 12.5K TPS where the expected 100% TPS is 15K. At that time CPU usage is 27% and Memory is 21%. The performance drop is caused by Linux kernel fix for spectre/meltdown remediation, included in TPD build 88.47.0.	The workaround is to switch back to kernel 2.6.32.696 which comes from TPD 7.5 ISO 7.5.0.0.0-88.46.0 and it does not include fix of spectre/meltdown. Both sysbench test and PCRF test has verified PCRF can achieve performance goal with that kernel. Command line: rpm -ivh kernel-2.6.32-696.16.1.el6prerel7.5.0.0.0_88.45.0.x86_64.rpm --force
3	2841062 3	Report GC full while run low profile performance test	The issue occurs when KPI dashboard is opened during performance test on low VM profile. This is a known issue and no code change can fix this. The VM profile should be increased in future release.	Don't use low VM profile for CMP, or don't keep KPI dashboard open during performance testing
3	2885833 2	MPE receives CCA-U 3002 from MRA 3 seconds later after CCR-U	PCEF sends multiple retried CCR-U to Policy Management since CCA-U with 3002 is received and the new authorized information cannot be sent to PCEF when 3002 is sent in CCA-U which may affect the call.	The root cause is the multiple PRA list is null if no multiple PRA values are stored when de-serializing from Comcol DB. The workaround is to configure DIAMETER.PRA.PRASupportedAccesses as THREEGPP_EPS,NON_THREEGPP_EPS

Resolved Bug Listing

Table 8-2 lists bugs that are resolved in the following builds:

> **Note:**
>
> These files are available in one or more of the following formats:
>
> - *.iso: for bare metal deployments
> - *.ova: for VMware and OVM/OVS deployments
> - *.qcow2: for KVM/Openstack deployments

Table 8-2   Oracle Communications Policy Management Release 12.5.0 Resolved Bugs

Severity	Bug Number	SR Number	Title
3	27534774	3-16835184441	User Object getting updated incorrectly after 4241 SLA error second time
3	27687660	3-169884194613 -17875351581	SANE login failed: Cannot decode the Artifact
3	28222579	3-17662151791	Notification Enable Changed to Disabled when making change to Policy Server opt
3	28244509	3-17765406371	Server disk failure should result in switch over
1	28305973	3-178446347113 -17852982073	PUA "Out of sync errors"" once completed a software upgrade to 12.4 on MPEs
2	28324347	3-17861681911	MPE restarts every 30 minutes while performance testing
2	28377785	3-17925384721	PNA resulting to 5012,details=Diameter: Error processing message PNR
3	28381681	3-17925789111	SMPP Connections increased after 12.4 upgrade
2	28440461	3-17993827691	Issue with GateSet IPv6 classifier
3	28536827	3-18060082171	Multi-key feature no STR being triggered towards OCS
3	28557301	3-18188358171	CMP also sending SMPP bind request
3	28776349	3-18471711921	MRA routing BOTH RAR to GWY (One RAR should go to DPI)

9

Oracle References and Services

This chapter describes how to obtain help, where to find related documentation, and provides other general information.

My Oracle Support

My Oracle Support (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support can assist you with My Oracle Support registration.

Call the Customer Access Support main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. When calling, make the selections in the sequence shown below on the Support telephone menu:

- For Technical issues such as creating a new Service Request (SR), select **1**.

- For Non-technical issues such as registration or assistance with My Oracle Support, select **2**.

- For Hardware, Networking and Solaris Operating System Support, select **3**.

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability

- Significant reduction in system capacity or traffic handling capability

- Loss of the system's ability to perform automatic system reconfiguration

- Inability to restart a processor or the system

- Corruption of system databases that requires service affecting corrective actions

- Loss of access for maintenance or recovery operations

- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Customer Training

Oracle University offers training for service providers and enterprises. Visit our web site to view, and register for, Oracle Communications training:

http://education.oracle.com/communication

To obtain contact phone numbers for countries or regions, visit the Oracle University Education web site:

www.oracle.com/education/contacts

Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center site, http://docs.oracle.com/. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the Oracle Help Center site at http://docs.oracle.com/.
2. Click `Industries`.
3. Under the Oracle Communications subheading, click the `Oracle Communications documentation` link.

   The Communications Documentation page opens. Policy Management is listed in the Network Session Delivery and Control Infrastructure section.
4. Click **Policy Management** and then the release number.

   A list of the documentation set for the release displays.
5. To download a document, click ⬇ (download icon) and then click **PDF**.

Locate Product Release Software on the Oracle Software Delivery Cloud Site

Oracle Communications software is available for electronic download at the Oracle Software Delivery Cloud site, https://edelivery.oracle.com. Only authorized customers with a valid password may download software from the site.

For directions on downloading the software and other information about using this site, click **FAQ** in the top right corner.