



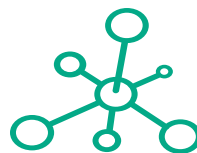
# Project and Portfolio Management Center

Software Version: 9.40

## System Requirements and Compatibility Matrix

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# Chapter 1: Introduction

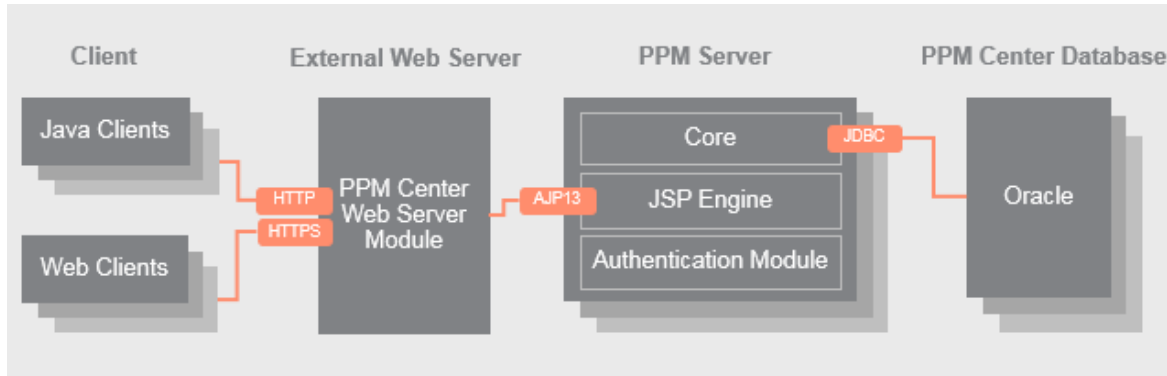
Welcome to Project and Portfolio Management Center (PPM). The goal of this document is to provide you with the details that will allow you to understand the hardware and software options available for your deployment of PPM.

This document provides the details about the environments and products supported by HPE for this version of PPM. Additionally, this guide identifies required third-party software as well as software that can be used to enable optional features, functionality, and topologies.

## An Overview of the PPM Architecture

PPM employs a three-tier, client-server architecture as shown in the following conceptual diagram. Refer to the *Installation and Administration Guide* for details about the available system configuration options.

### PPM architecture



"[Client-Side Products and Environments](#)" on page 9 provides details about the requirements and optional software used in the client tier. These components are identified in the client-side (left) portion of the figure above.

"[Server-Side Products and Environments](#)" on page 13 focuses on the hardware and software requirements for the application and database tiers. The major components of these tiers are identified in the server-side (right) portion of the figure above.

In addition to the application and database tier components, the server-side section also provides details about the optional Web server component.

Although not shown in the previous figure, PPM is able to integrate with most industry standard single sign-on systems such as CA SiteMinder version 6.0.

**Note:** HPE will support single sign-on integration to the extent that the HPE API is used for this purpose. HPE will provide logging information so that customers and third-party vendors can troubleshoot the integration themselves. HPE will not set up the third-party system for debugging purposes. HPE does not commit to changing any HPE-produced code should the integration fail.

"[HPE Migrator and Extension Products and Environments](#)" on page 42 details the third-party software supported for the PPM Extensions and Migrators.

"[Using PPM with HPE Software and Other Software](#)" on page 47 details support requirements for the PPM integration products.

## An Overview of Language Support

The PPM software must be installed (or upgraded) and maintained on servers relying on either an English-language or Japanese-language operating system. Installation of language packs provide the appropriate language content for the principal areas of the PPM user interface and entities. PPM clients should use one of the languages deployed on the PPM instance.

The following language packs are available with the initial release of the product and are included in the installation bundle:

- English (en)
- Russian (ru)
- Portuguese (pt\_BR)
- Spanish (es)
- Chinese (zh\_CN)
- German (de)
- French (fr)
- Korean (ko)
- Turkish (tr)
- Italian (it)
- Japanese (ja)

- Dutch (nl)
- Swedish (sv)
- Arabic (ar)

**Note:** Language codes (abbreviations) may need to be used when generating fiscal periods, translating customized entities, or identifying language-specific paths on the PPM Server. Make sure that you use the language codes shown in parentheses in the previous list and that the specified language is installed on PPM.

**Note:** From version 7.5 to version 9.30, PPM integrations with other HPE Software products or third-party products will not work if language packs are applied.

However, the following integration solutions available since PPM version 9.30 support multiple languages:

- The View Project Quality integration solution
- The integration between PPM and Agile Manager

Even if the integrated product is an English-only instance, PPM can still retrieve data, but displays the data in English.

## Related Information

Selected information from the following documents can assist you with your planning and deployment activities:

- *Installation and Administration Guide*

This guide includes initial product installation procedures as well as configuration, operation, maintenance, migration, and performance information.

In particular, this guide provides an overview of the PPM architecture and optional configurations—this information can help you determine the optimal configuration of your deployment.

- *Solution Integrations Guide*

This document describes how to configure and use integrations of PPM with other HPE products.

- *Release Notes*

These documents provide late-breaking information that may affect your installation and deployment of PPM.

These guides include initial product installation procedures as well as configuration, operation, maintenance, migration, and performance information.

**Note:** Before any installation, read the Release Notes for the version you are installing and or the Release Notes for the patch being applied.



# Chapter 2: Client-Side Products and Environments

The following sections provide information about Web client environment requirements for both the PPM standard interface and the PPM Workbench as well as support for optional, third-party, client-based products.

## Platform and Browser Requirements

**Note:** These are minimum requirements. Additional performance enhancing options, such as additional RAM/memory, may be desired.

Client requirements include the following:

- **Operating system**
  - Microsoft® Windows® 7 Enterprise Edition (both 32- and 64-bit)
  - Microsoft® Windows® 8 Enterprise Edition (both 32- and 64-bit)
  - Microsoft® Windows® 8.1 Enterprise Edition (both 32- and 64-bit)
- **Mobile operating system for PPM Mobility Accelerator**
  - Windows Mobile 6.1
  - Blackberry OS 4.6.0.167
  - Symbian OS 9.3
- **Mobile operating system for PPM Mobile Website Client (PPM Apps)**
  - iOS 7 (on iPhone 5/5S), or iOS 8 (on iPhone 6/6 plus)
  - Android 4.2 (on Samsung Galaxy S4), or Android 4.4 (on Samsung Galaxy S5)
- **Hardware**
  - 1.0 GHz (or faster) processor
  - RAM
  - At least 512 MB

- For PPM Workbench, at least 1 GB
- **Tablet computer**  
The following tablet computer as PPM client:
  - iPad 2 with iOS 5 or later
  - iPad 3 with iOS 5.1 or later
  - iPad 4 with iOS 6 or later
  - HP ElitePad
- **Adobe® Acrobat Reader 5.0 (or later)**
- **Browsers**
  - Microsoft Internet Explorer 11 (standard mode only) on the following PPM client platform:
    - Microsoft® Windows® 7 Enterprise Edition (both 32-bit and 64-bit)
    - Microsoft® Windows® 8 Enterprise Edition (both 32-bit and 64-bit)
    - Microsoft® Windows® 8.1 Enterprise Edition (both 32-bit and 64-bit)
  - Mozilla Firefox 45.x Extended Support Release (ESR)
  - Chrome 47

**Note:**

- For Firefox, PPM certifies ESR versions only. See <https://www.mozilla.org/en-US/firefox/organizations/faq/> for Firefox ESR overview.
- For Google Chrome, PPM 9.40 certifies version 47 only. **However, PPM is committed to investigating the reported issue on non-certified Chrome versions.**

## Multilingual User Interface Support

To support the languages listed in "[An Overview of Language Support](#)" on page 6, clients should be configured with at least one of the languages as that installed on the PPM instance.

For example, if your PPM instance has only the French language pack installed, all clients that access this instance should be configured to use French.

# PPM Workbench Requirements

## Java™ Plug-In Requirements

Access to the PPM Workbench requires an appropriate version of the Oracle Java plug-in installed.

Supported versions include:

- Java 7 Update 51 or later update (32-bit and 64-bit) for all supported browsers
- Java 8 Update 25 or later update (32-bit and 64-bit) for all supported browsers

The Java plug-in is automatically installed the first time a user accesses the PPM Workbench.

## Disk Space Requirements

User machines that access the PPM Workbench require 40 MB of disk space more than is required by the browser. This space is required to store client-side Java files.

# Optional Products

This section lists the optional products that can be used with this version of PPM.

## Microsoft Project

Project Management supports the following versions of Microsoft Project:

- Microsoft Office Project Standard 2007 SP2 (both 32- and 64-bit)
- Microsoft Office Project Professional 2007 SP2 (both 32- and 64-bit)  
(single-user or connected to Microsoft Office Project Server 2007)
- Microsoft Office Project Standard 2010 (both 32- and 64-bit)
- Microsoft Office Project Professional 2010 (both 32- and 64-bit)  
(single-user or connected to Microsoft Office Project Server 2010)
- Microsoft Office Project Standard 2013 (both 32- and 64-bit)
- Microsoft Office Project Professional 2013 (both 32- and 64-bit)  
(single-user or connected to Microsoft Office Project Server 2013)

For more information about using Microsoft Project with Project Management, see the *Project Management User's Guide*.

### Visual Studio Tools for Office (VSTO)

- VSTO version 3.0 for Microsoft Project 2007

**Note:** For Microsoft Project 2010 and later, VSTO should be bundled automatically with Office installation. Make sure your system administrator did not disable the automatic VSTO installation.

### Microsoft Office Primary Interop Assemblies (PIA) for Microsoft Project

- Version 2007 for Microsoft Project 2007

**Note:** For Microsoft Project 2010 and later, PIA should be bundled automatically with Office installation. Make sure your system administrator did not disable the automatic PIA installation.

### Microsoft Excel

The following versions of Microsoft Excel are supported:

- Microsoft Office Excel 2007 SP1
- Microsoft Office Excel 2010
- Microsoft Office Excel 2013

### Microsoft .NET Framework

- Microsoft .NET Framework version 3.5 or later

### Language Support

The optional products should use the corresponding language of the client (and supported on the PPM instance).

For example, if your PPM instance has the French language pack installed, clients with a French session language should use French for their optional software products.

**Note:** Do not attempt to use PPM with software products that have a mix of languages, such as a PPM instance supporting English, Korean, and French interacting with a German client having an Italian version of Excel software. All the software products used in your PPM client should rely on the same language, and this language must also be supported on the PPM instance.

# Chapter 3: Server-Side Products and Environments

## **HPE PPM Center Software Platform Support**

Support is limited to the software and versions specifically mentioned in this document unless otherwise noted.

## **Third Party Software Platform Support**

Third party platform support information provided in this document does NOT supersede anything provided by the third party vendors. Please make sure that all third party software and platform combinations used in conjunction with PPM Center are supported by the respective vendors, and that the combinations are supported by HPE. HPE is not responsible for any discrepancies involving support platforms for third party products.

The following sections list the requirements for the PPM server-side components. Details specific to each component are documented in their own section. For your convenience the information is further categorized by platform and each section includes additional important information and considerations, if necessary.

## Important Considerations

Carefully consider each of the following during your planning and deployment phases of PPM:

- **Oracle® Support**

- All installed Oracle versions should include the most recent patches and follow the guidelines provided in the latest *Critical Patch Update*. This information is available from <https://metalink.oracle.com>.

Throughout this guide, any Oracle patches or similar updates that are critical for PPM support are noted.

- Standard Edition One, as well as the Standard and Enterprise Editions of the Oracle database versions are supported.
- HPE supports 32-bit and 64-bit Oracle for the versions and operating systems supported by PPM. These are subject to the hardware and operating system requirements established by

Oracle.

- **Operating System Support**

- Support for each operating system version assumes that the appropriate patch or patches have been applied to support the Java JDK installation on that system.
- On x86 platforms, the distinction is made whether HPE supports the 32- or 64-bit version of the operating system (Windows or Linux). On other platforms such as Oracle SPARC, IBM Power4/5, and HPE PA-RISC or Itanium®, HPE does support their respective 64-bit UNIX® operating system.

- **Transparent Technology and Virtualization Support**

In recent years, a number of “transparent” hardware and software technologies and virtualization solutions (such as Citrix, Microsoft Cluster Software, and VMware) have become increasingly prevalent. These solutions operate in the technology layers adjacent to the operating systems or, in some cases, as extensions of the operating systems. Similarly, database solutions offer transparent components as supported elements.

HPE supports Project and Portfolio Management Center running on operating systems and databases on particular platforms as described in the matrix above, not specific hardware and software configurations. HPE will support Project and Portfolio Management Center customers who run HPE software products on supported operating systems and databases, irrespective of whether they are running transparent or virtualization solutions in their environment.

HPE does not support these transparent or virtualization technologies directly. Since the providers of these technologies support a set of certified operating systems and hardware, the customer and the providers of these technologies will be responsible for any interactions or issues that arise at the hardware or operating system layer as a result of their use. HPE will not require customers to re-create and troubleshoot every issue in a non-transparent environment; however, HPE does reserve the right to request that its customers diagnose certain issues in a native certified operating system environment without the transparent technology. HPE will only make this request when there is reason to believe that the environment is a contributing factor to the reported issue.

While Project and Portfolio Management Center is expected to function properly with these transparent technologies in place, there may be performance implications, which can invalidate HPE’s typical sizing and recommendations. Analysis must be performed within the context of the specific application to be hosted in a virtual environment to minimize potential resource overload, which can have significant impact on performance and scalability, particularly under peak load.

- **HPE Integrity Virtual Machine**

- Project and Portfolio Management Center for HP-UX 11i Integrity is binary compatible to run

within an HPE Integrity Virtual Machine (VM).

- **Language Support**

- The language for the operating system used for both the PPM Server and database must be either English or Japanese regardless of the languages deployed on the PPM instance.

**Limitation:** If Japanese is the default language of Java Virtual Machine, the email notification is displayed in Japanese even though the log-in language is English. Therefore, when the PPM instance is on a platform whose operating system language is Japanese, you must explicitly specify English as the default language of Java Virtual Machine.

To do so, change `<PPM_HOME>/bin/kStart.sh` by adding the line: `SERVER_OPTION="$SERVER_OPTION -Duser.language=en -Duser.country=US"` after the following:

```
if [ "$OS_NAME" = "AIX" ]; then
    SERVER_OPTION=""
else
    SERVER_OPTION="-server"
fi
```

- Implementation of the various languages on the PPM instance may require additional configuration and maintenance.
- National language support is available for the Managing Application Change integration software and the Migrators and Extensions on a limited basis—see the appropriate product documentation for details.

# PPM Server Platforms

## Microsoft Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
<p>One of the following:</p> <ul style="list-style-type: none"> <li>• Microsoft Windows Server 2008, SPs 1 through 2, Standard, Enterprise, and Datacenter Edition (64-bit)</li> <li>• Microsoft Windows Server, 2008 R2, Standard and Enterprise Edition (64-bit)</li> <li>• Microsoft Windows Server, 2012 R2, Standard and Enterprise Edition (64-bit)</li> </ul>	<p>All of the following:</p> <ul style="list-style-type: none"> <li>• x86 and compatible chip architectures (1.5 GHz)</li> <li>• 2 GB RAM</li> <li>• 1 GB disk space</li> </ul>	<ul style="list-style-type: none"> <li>• These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>• See "<a href="#">Hardware Sizing Estimates</a>" on page 32 for additional considerations.</li> <li>• Limits on physical memory for 32-bit Windows operating systems depend in part on whether the Physical Address Extension (PAE) is enabled. The PAE allows some 32-bit Windows systems (Windows Server 2008 Datacenter and Windows Server 2008 Enterprise) to use more than 4 GB of physical memory. (To enable PAE, use the /PAE switch in the <code>Boot.ini</code> file.) The total available physical RAM on this system is limited to 4 GB. For detailed information about memory support and memory limitations on Windows operating systems, see Microsoft Support online.</li> </ul>
<p>When installed on an x86 VMware ESXi Server version 5.0 or 5.5 partition, one of the following:</p> <ul style="list-style-type: none"> <li>• All Microsoft operating systems previously identified in this table</li> </ul>	<p>All of the following:</p> <ul style="list-style-type: none"> <li>• x86 and compatible chip architectures (1.5 GHz)</li> <li>• 3 GB RAM</li> <li>• 1 GB disk space for installed files</li> <li>• 400 MB temporary space for installation files</li> </ul>	<ul style="list-style-type: none"> <li>• These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>• Remote Management of ESX is required.</li> <li>• For system sizing impact, contact HPE Software Support (<a href="https://softwaresupport.hpe.com/">https://softwaresupport.hpe.com/</a>).</li> </ul>



Operating System	Requirements	Additional Information
<b>JDK Software</b>		
All Microsoft operating systems previously identified in this table, except as described in the row below	The following: <ul style="list-style-type: none"> <li>• Java SE Development Kit (JDK) 7u45 (1.7.0 Update 45) or later update (available from Oracle)</li> <li>• Java SE Development Kit (JDK) 8u25 (1.8.0 Update 25) or later update (available from Oracle)</li> <li>• Azul Zulu (a certified build of OpenJDK 8)</li> </ul>	HPE recommends the following for JDK 8: <ul style="list-style-type: none"> <li>• Use 64-bit JVM</li> </ul> If you use JDK 8 for PPM Server platforms, the server configuration parameter <code>SERVER_MAX_PERM_SIZE</code> stops working, and perm size would be included in heap size which is controlled by the parameter <code>SERVER_MAX_HEAP_SIZE</code> . <ul style="list-style-type: none"> <li>• Update the RSA keys size to be greater than 1024 bits if you use X.509 certificates with RSA keys.</li> </ul>
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• Microsoft Windows Services for UNIX versions 3.0 and 3.5</li> <li>• Microsoft Telnet Services</li> </ul>	
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• Internet Protocol version 4 (IPv4) (default)</li> <li>• Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the <code>ENABLE_IPV6</code> parameter to the <code>server.conf</code> file and set it to <code>true</code> . For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
For: <ul style="list-style-type: none"> <li>• All previously identified Microsoft Windows Server 2008-based versions</li> </ul>	One of the following: <ul style="list-style-type: none"> <li>• OpenSSH (included in Cygwin)               <ul style="list-style-type: none"> <li>◦ Version 4.5p1</li> <li>◦ Version 4.6p1</li> <li>◦ Version 4.7p1</li> <li>◦ Version 4.9p1</li> <li>◦ Version 5.x</li> <li>◦ Version 6.9</li> </ul> </li> <li>• VanDyke (VShell Server)               <ul style="list-style-type: none"> <li>◦ Version 2.6</li> <li>◦ Version 3.0</li> <li>◦ Version 3.5</li> <li>◦ Version 3.6.2</li> </ul> </li> </ul>	
For:	One of the following:	

Operating System	Requirements	Additional Information
<ul style="list-style-type: none"> <li>All previously identified Microsoft Windows Server 2012-based versions</li> </ul>	<ul style="list-style-type: none"> <li>OpenSSH (included in Cygwin)               <ul style="list-style-type: none"> <li>Version 4.5p1</li> <li>Version 4.6p1</li> <li>Version 4.7p1</li> <li>Version 4.9p1</li> <li>Version 5.x</li> <li>Version 6.9</li> </ul> </li> <li>VanDyke (VShell Server)               <ul style="list-style-type: none"> <li>Version 2.6</li> <li>Version 3.0</li> <li>Version 3.5</li> <li>Version 3.6.2</li> </ul> </li> </ul>	
<b>Terminal Emulation Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>"Dumb" mode</li> <li>VT100 mode</li> <li>VT220 mode</li> </ul>	
<b>Other Software</b>		
All Microsoft operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>SQL*Net</li> <li>SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see the <i>Installation and Administration Guide</i> or the <i>Upgrade Guide</i>.</li> </ul>
All Microsoft operating systems previously identified in this table	(Optional) The following: <ul style="list-style-type: none"> <li>Email application configuration</li> </ul>	<ul style="list-style-type: none"> <li>If you are planning to use notifications, an email application is needed. See <a href="#">"Email Server Requirements" on page 32</a> for details.</li> </ul>
All Microsoft operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>Bourne shell</li> </ul>	<ul style="list-style-type: none"> <li>This software is included in the Cygwin utilities.</li> <li>The Bourne shell (bash) must be available on both the source and destination servers.</li> </ul>

## Oracle Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
One of the following: <ul style="list-style-type: none"> <li>Oracle Solaris 10, Updates 1 through 11 (Sparc)</li> <li>Oracle Solaris 11, Updates 1 and 2 (Sparc)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>UltraSPARC III (1050 MHz)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul> The following packages (or later versions) are required for Oracle database 11g R2 for Oracle Solaris 10: <ul style="list-style-type: none"> <li>SUNWarc</li> <li>SUNWbtool</li> <li>SUNWhea</li> <li>SUNWlibC</li> <li>SUNWlibm</li> <li>SUNWlibms</li> <li>SUNWspot</li> <li>SUNWtoo</li> <li>SUNWi1of</li> <li>SUNWi1cs (ISO8859-1)</li> <li>SUNWi15cs (ISO8859-15)</li> <li>SUNWxfnt</li> <li>SUNWcsl</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See <a href="#">"Hardware Sizing Estimates" on page 32</a> for additional considerations.</li> </ul>
One of the following: <ul style="list-style-type: none"> <li>Oracle Enterprise Linux (OEL) 5 (RHEL Clone)</li> <li>Oracle Enterprise Linux (OEL) 6 (RHEL Clone)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>x86, x86_64</li> <li>1 GB RAM (minimum)</li> </ul>	These are minimum requirements—faster processors and additional memory and storage are acceptable.
<b>JDK Software</b>		
All Oracle Solaris operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>Java SE Development Kit (JDK) 7u45 (1.7.0 Update 45) or later update (available from Oracle)</li> <li>Java SE Development Kit (JDK) 8u25 (1.8.0 Update 25) (available from Oracle)</li> </ul>	HPE recommends the following for JDK 8: <ul style="list-style-type: none"> <li>Use 64-bit JVM</li> </ul> If you use JDK 8 for PPM Server platforms, the server configuration parameter <code>SERVER_MAX_PERM_SIZE</code> stops working, and perm size would be included in heap size which is controlled by the parameter <code>SERVER_MAX_HEAP_SIZE</code> .

Operating System	Requirements	Additional Information
All Oracle Linux operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• Java SE Development Kit (JDK) 7u45 (1.7.0 Update 45) or later update (available from Oracle)</li> <li>• Java SE Development Kit (JDK) 8u25 (1.8.0 Update 25) or later update (available from Oracle)</li> <li>• OpenJDK 8 built into Linux distributions</li> </ul>	<ul style="list-style-type: none"> <li>• Update the RSA keys size to be greater than 1024 bits if you use X.509 certificates with RSA keys.</li> </ul>
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• Internet Protocol version 4 (IPv4) (default)</li> <li>• Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the ENABLE_IPV6 parameter to the server.conf file and set it to true. For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
For: <ul style="list-style-type: none"> <li>• All previously identified Oracle Solaris 10-based versions</li> <li>• Oracle Solaris 11</li> </ul>	One of the following: <ul style="list-style-type: none"> <li>• SSH-2.0_Sun_SSH_1.1</li> <li>• OpenSSH version 4.6p1</li> <li>• OpenSSH version 4.7p1</li> <li>• OpenSSH version 4.9p1</li> <li>• OpenSSH version 5.9</li> <li>• OpenSSH version 6.9</li> <li>• Reflection for Secure IT for Unix v7.1</li> </ul>	
<b>Terminal Emulation Software</b>		
All Oracle operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• "Dumb" mode</li> <li>• VT100 mode</li> <li>• VT220 mode</li> </ul>	
<b>Other Software</b>		
All Oracle operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• SQL*Net</li> <li>• SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>• The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>• SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>• Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see</li> </ul>

Operating System	Requirements	Additional Information
		<p>the <i>Installation and Administration Guide</i> or the <i>Upgrade Guide</i>.</p>
<p>All Oracle operating systems previously identified in this table</p>	<p>(Optional) The following:</p> <ul style="list-style-type: none"> <li>• Email application configuration</li> </ul>	<p>If you are planning to use notifications, an email application is needed. See "<a href="#">Email Server Requirements</a>" on page 32 for details.</p>
<p>All Oracle operating systems previously identified in this table</p>	<p>The following:</p> <ul style="list-style-type: none"> <li>• Bourne shell</li> </ul>	<p>The Bourne shell is available by default on most UNIX systems. However, in some environments, it might be not configured or enabled. Check with your UNIX system administrator to make sure that the Bourne shell is available and configured on your system.</p>

## HP Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
One of the following: <ul style="list-style-type: none"> <li>HP-UX 11i v2 (B.11.23) (IA64) (64-bit)</li> <li>HP-UX 11i v3 (B.11.31) (IA64) (64-bit)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>Itanium 2 (1.4 GHz)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See <a href="#">"Hardware Sizing Estimates" on page 32</a> for additional considerations.</li> <li>When performing upgrade, make sure that there is at least 2GB free disk space for the root directory. Otherwise you may receive a message similar to the following: "WARNING: / partition has insufficient space to install the items selected."</li> </ul>
When using the Integrity VM, one of the following: <ul style="list-style-type: none"> <li>HP-UX 11i v2 (B.11.23) (IA64) (64-bit)</li> <li>HP-UX 11i v3 (B.11.31) (IA64) (64-bit)</li> </ul>		
<b>JDK Software</b>		
All HP operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>HP-UX 11i Java Development Kit (JDK) for the Java 2 Platform Standard Edition 7 (Java SE 7) version 7.0.01 (7.0 Update 1) or later (available from HP)</li> <li>HP-UX 11i Java Development Kit (JDK) for the Java 2 Platform Standard Edition 8 (Java SE 8) or later (available from HP)</li> </ul>	
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>Internet Protocol version 4 (IPv4) (default)</li> <li>Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the ENABLE_IPV6 parameter to the server.conf file and set it to true. For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
All HP operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>OpenSSH version 4.2p1</li> <li>OpenSSH version 4.3p2</li> </ul>	

Operating System	Requirements	Additional Information
	<ul style="list-style-type: none"> <li>• OpenSSH version 4.4p1</li> <li>• OpenSSH version 4.7p1</li> <li>• OpenSSH version 4.9p1</li> <li>• OpenSSH version 5.9</li> <li>• OpenSSH version 6.9</li> <li>• Reflection for Secure IT for Unix v7.1</li> </ul>	
<b>Terminal Emulation Software</b>		
All HP operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• "Dumb" mode</li> <li>• VT100 mode</li> <li>• VT220 mode</li> </ul>	
<b>Other Software</b>		
All HP operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• SQL*Net</li> <li>• SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>• The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>• SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>• Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see the Installation and Administration Guide or the <i>Upgrade Guide</i>.</li> </ul>
All HP operating systems previously identified in this table	(Optional) The following: <ul style="list-style-type: none"> <li>• Email application configuration</li> </ul>	If you are planning to use notifications, an email application is needed. See <a href="#">"Email Server Requirements"</a> on page 32 for details.
All HP operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• Bourne shell</li> </ul>	The Bourne shell is available by default on most UNIX systems. However, in some environments, it might be not configured or enabled. Check with your UNIX system administrator to make sure that the Bourne shell is available and configured on your system.

## IBM Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
<p>The following:</p> <ul style="list-style-type: none"> <li>IBM AIX version 6.1</li> </ul>	<p>All of the following:</p> <ul style="list-style-type: none"> <li>POWER4™ / POWER5™ / POWER7® (both 32- and 64-bit)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul> <p>The following operating system filesets are required for AIX 6.1:</p> <ul style="list-style-type: none"> <li>bos.adt.base</li> <li>bos.adt.lib</li> <li>bos.adt.libm</li> <li>bos.perf.libperfstat 6.1.2.1 or later</li> <li>bos.perf.perfstat</li> <li>bos.perf.proctools</li> <li>xlC.aix61.rte.10.1.0.0 or later</li> <li>xlC.rte.10.1.0.0 or later</li> <li>gpfs.base 3.2.1.8 or later</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See <a href="#">"Hardware Sizing Estimates" on page 32</a> for additional considerations.</li> </ul>
<p>The following:</p> <ul style="list-style-type: none"> <li>IBM AIX version 7.1</li> </ul>	<p>All of the following:</p> <ul style="list-style-type: none"> <li>POWER4™ / PPC970 / POWER5™ / POWER6® / POWER7® (both 32- and 64-bit)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul> <p>The following operating system filesets are required for AIX 7.1:</p> <ul style="list-style-type: none"> <li>bos.adt.base</li> <li>bos.adt.lib</li> <li>bos.adt.libm</li> <li>bos.perf.libperfstat</li> <li>bos.perf.perfstat</li> <li>bos.perf.proctools</li> <li>xlC.aix61.rte.10.1.0.0 or later</li> <li>xlC.rte.10.1.0.0 or later</li> <li>gpfs.base 3.3.0.11 or later</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See <a href="#">"Hardware Sizing Estimates" on page 32</a> for additional considerations.</li> </ul>



Operating System	Requirements	Additional Information
<b>JDK Software</b>		
All IBM operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• Java SE Version 7.0 Service Refresh 2 or later SR ( 32-bit and 64-bit) (available from IBM) (Recommended: 7.0 Service Refresh 7 Fix Pack 1)</li> </ul>	
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• Internet Protocol version 4 (IPv4) (default)</li> <li>• Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the ENABLE_IPV6 parameter to the server.conf file and set it to true. For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
For: <ul style="list-style-type: none"> <li>• IBM AIX version 6.1</li> <li>• IBM AIX version 7.1</li> </ul>	One of the following: <ul style="list-style-type: none"> <li>• OpenSSH version 4.1p1</li> <li>• OpenSSH version 4.3p2</li> <li>• OpenSSH version 4.4p1</li> <li>• OpenSSH version 4.5p1</li> <li>• OpenSSH version 4.6p1</li> <li>• OpenSSH version 4.7p1</li> <li>• OpenSSH version 4.9p1</li> <li>• OpenSSH version 5.9</li> <li>• OpenSSH version 6.9</li> <li>• Reflection for Secure IT for Unix v7.1</li> </ul>	
<b>Terminal Emulation Software</b>		
All IBM operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• "Dumb" mode</li> <li>• VT100 mode</li> <li>• VT220 mode</li> </ul>	
<b>Other Software</b>		
All IBM operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>• SQL*Net</li> <li>• SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>• The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>• SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>• Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see the</li> </ul>

Operating System	Requirements	Additional Information
		<i>Installation and Administration Guide</i> or the <i>Upgrade Guide</i> .
All IBM operating systems previously identified in this table	(Optional) The following: <ul style="list-style-type: none"> <li>• Email application configuration</li> </ul>	If you are planning to use notifications, an email application is needed. See <a href="#">"Email Server Requirements" on page 32</a> for details.
All IBM operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>• Bourne shell</li> </ul>	The Bourne shell is available by default on most UNIX systems. However, in some environments, it might be not configured or enabled. Check with your UNIX system administrator to make sure that the Bourne shell is available and configured on your system.

## Red Hat Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
One of the following: <ul style="list-style-type: none"> <li>Red Hat Enterprise Linux Advanced Platform 5.x (both 32- and 64-bit)</li> <li>Red Hat Enterprise Linux 6.x (both 32- and 64-bit)</li> <li>Red Hat Enterprise Linux 7 (both 32- and 64-bit)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>x86 and compatible chip architectures (1.5 GHz)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See "<a href="#">Hardware Sizing Estimates</a>" on <a href="#">page 32</a> for additional considerations.</li> </ul>
When installed on an x86 VMware ESXi Server version 5.0 or 5.5 partition, one of the following: <ul style="list-style-type: none"> <li>Red Hat Enterprise Linux Advanced Platform 5.0 (both 32- and 64-bit)</li> <li>Red Hat Enterprise Linux 6 (both 32- and 64-bit)</li> <li>Red Hat Enterprise Linux 7 (both 32- and 64-bit)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>x86 and compatible chip architectures (1.5 GHz)</li> <li>3 GB RAM</li> <li>1 GB disk space for installed files</li> <li>400 MB temporary space for installation files</li> <li>300 MB on root partition (for installation only)</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>Remote Management of ESX is required.</li> <li>For system sizing impact, contact HPE Software Support (<a href="https://softwaresupport.hpe.com/">https://softwaresupport.hpe.com/</a>)</li> </ul>
The following on HPE Cloud Services environment: <ul style="list-style-type: none"> <li>CentOS 6 Server (64-bit)</li> </ul>		<b>Note:</b> This is the only operating system PPM is certified for when running a PPM server in the HPE Cloud Services environment.
<b>JDK Software</b>		
All Red Hat operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>Java SE Development Kit (JDK) 7u45 (1.7.0 Update 45) or later update (available from Oracle)</li> <li>Java SE Development Kit (JDK) 8u25 (1.8.0 Update 25)</li> </ul>	HPE recommends the following for JDK 8: <ul style="list-style-type: none"> <li>Use 64-bit JVM</li> </ul> If you use JDK 8 for PPM Server platforms, the server configuration parameter <code>SERVER_MAX_PERM_SIZE</code>

Operating System	Requirements	Additional Information
	or later update (available from Oracle) <ul style="list-style-type: none"> <li>OpenJDK 8 built into Linux distributions</li> </ul>	stops working, and perm size would be included in heap size which is controlled by the parameter <code>SERVER_MAX_HEAP_SIZE</code> . <ul style="list-style-type: none"> <li>Update the RSA keys size to be greater than 1024 bits if you use X.509 certificates with RSA keys.</li> </ul>
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>Internet Protocol version 4 (IPv4) (default)</li> <li>Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the <code>ENABLE_IPV6</code> parameter to the <code>server.conf</code> file and set it to <code>true</code> . For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
All Red Hat operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>OpenSSH version 4.3p2 (included with the product bundle from Red Hat, Inc.)</li> <li>OpenSSH version 4.4p1</li> <li>OpenSSH version 4.5p1</li> <li>OpenSSH version 4.6p1</li> <li>OpenSSH version 4.7p1</li> <li>OpenSSH version 4.9p1</li> <li>OpenSSH version 5.9</li> <li>OpenSSH version 6.9</li> <li>Reflection for Secure IT for Unix v7.1</li> </ul>	
<b>Terminal Emulation Software</b>		
All Red Hat operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>"Dumb" mode</li> <li>VT100 mode</li> <li>VT220 mode</li> </ul>	
<b>Other Software</b>		
All Red Hat operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>SQL*Net</li> <li>SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see the <i>Installation and Administration Guide</i> or the <i>Upgrade Guide</i>.</li> </ul>
All Red Hat operating	(Optional) The following:	If you are planning to use notifications,

Operating System	Requirements	Additional Information
systems previously identified in this table	<ul style="list-style-type: none"><li data-bbox="570 281 786 338">• Email application configuration</li></ul>	an email application is needed. See <a href="#">"Email Server Requirements" on page 32</a> for details.
All Red Hat operating systems previously identified in this table	The following: <ul style="list-style-type: none"><li data-bbox="570 436 737 464">• Bourne shell</li></ul>	The Bourne shell is available by default on most UNIX systems. However, in some environments, it might be not configured or enabled. Check with your UNIX system administrator to make sure that the Bourne shell is available and configured on your system.

## SUSE Platforms

Operating System	Requirements	Additional Information
<b>Platform</b>		
One of the following: <ul style="list-style-type: none"> <li>SUSE Linux Enterprise Server 10 (both 32- and 64-bit)</li> <li>SUSE Linux Enterprise Server 11 (both 32- and 64-bit)</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>x86 and compatible chip architectures (1.5 GHz)</li> <li>2 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>See "<a href="#">Hardware Sizing Estimates</a>" on <a href="#">page 32</a> for additional considerations.</li> </ul>
When installed on an x86 VMware ESXi Server version 5.0 or 5.5 partition, one of the following: <ul style="list-style-type: none"> <li>All SUSE Linux operating systems previously identified in this table</li> </ul>	All of the following: <ul style="list-style-type: none"> <li>x86 and compatible chip architectures (1.5 GHz)</li> <li>3 GB RAM</li> <li>1 GB disk space</li> <li>400 MB temp space</li> <li>300 MB on root partition (for installation only)</li> </ul>	<ul style="list-style-type: none"> <li>These are minimum requirements—faster processors and additional memory and storage are acceptable.</li> <li>Remote Management of ESX is required.</li> <li>For system sizing impact, contact HPE Software Support (<a href="https://softwaresupport.hpe.com/">https://softwaresupport.hpe.com/</a>)</li> </ul>
<b>JDK Software</b>		
All SUSE Linux operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>Java SE Development Kit (JDK) 7u45 (1.7.0 Update 45) or later update (available from Oracle)</li> <li>Java SE Development Kit (JDK) 8u25 (1.8.0 Update 25) or later update (available from Oracle)</li> <li>OpenJDK 8 built into Linux distributions</li> </ul>	HPE recommends the following for JDK 8: <ul style="list-style-type: none"> <li>Use 64-bit JVM</li> </ul> <p>If you use JDK 8 for PPM Server platforms, the server configuration parameter <code>SERVER_MAX_PERM_SIZE</code> stops working, and perm size would be included in heap size which is controlled by the parameter <code>SERVER_MAX_HEAP_SIZE</code>.</p> <ul style="list-style-type: none"> <li>Update the RSA keys size to be greater than 1024 bits if you use X.509 certificates with RSA keys.</li> </ul>
<b>Communications Software</b>		
All Microsoft operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>Internet Protocol version 4 (IPv4) (default)</li> <li>Internet Protocol version 6 (IPv6)</li> </ul>	To enable support for IPv6, add the <code>ENABLE_IPV6</code> parameter to the <code>server.conf</code> file and set it to <code>true</code> . For more information, see the <i>Installation and Administration Guide</i> .
<b>Secure Communications Software</b>		
For:	One of the following:	

Operating System	Requirements	Additional Information
<ul style="list-style-type: none"> <li>SUSE Linux Enterprise Server 10 (both 32- and 64-bit)</li> <li>SUSE Linux Enterprise Server 11 (both 32- and 64-bit)</li> </ul>	<ul style="list-style-type: none"> <li>OpenSSH version 4.1p1 (SUSE Linux Enterprise Server 10 only)</li> <li>OpenSSH version 4.3p1</li> <li>OpenSSH version 4.3p2</li> <li>OpenSSH version 4.4p1</li> <li>OpenSSH version 4.5p1</li> <li>OpenSSH version 4.6p1</li> <li>OpenSSH version 4.7p1</li> <li>OpenSSH version 4.9p1</li> <li>OpenSSH version 5.9</li> <li>OpenSSH version 6.9</li> <li>Reflection for Secure IT for Unix v7.1</li> </ul>	
<b>Terminal Emulation Software</b>		
All SUSE Linux operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>"Dumb" mode</li> <li>VT100 mode</li> <li>VT220 mode</li> </ul>	
<b>Other Software</b>		
All SUSE Linux operating systems previously identified in this table	One of the following: <ul style="list-style-type: none"> <li>SQL*Net</li> <li>SQL*Plus</li> </ul>	<ul style="list-style-type: none"> <li>The Oracle client version should correspond to the version of the database used with the PPM instance.</li> <li>SQL*Net must be configured to recognize the connection string of the Oracle database that contains the PPM database schema.</li> <li>Oracle Java virtual machine (OracleJVM) must be enabled for PPM. For more information, see the <i>Installation and Administration Guide</i> or the <i>Upgrade Guide</i>.</li> </ul>
All SUSE Linux operating systems previously identified in this table	(Optional) The following: <ul style="list-style-type: none"> <li>Email application configuration</li> </ul>	If you are planning to use notifications, an email application is needed. See <a href="#">"Email Server Requirements" on the next page</a> for details.
All SUSE Linux operating systems previously identified in this table	The following: <ul style="list-style-type: none"> <li>Bourne shell</li> </ul>	The Bourne shell is available by default on most UNIX systems. However, in some environments, it might be not configured or enabled. Check with your UNIX system administrator to make sure that the Bourne shell is available and configured on your system.

## Hardware Sizing Estimates

The hardware specifications provided in this guide are the minimum requirements for a valid PPM production installation. The requirements as they apply to each installation will vary based on the number of users, volume of activity, and type of activity. HPE will conduct hardware assessments for customers at appropriate stages of the implementation. Contact HPE Software Support (<https://softwaresupport.hpe.com/>) for a detailed assessment.

## Email Server Requirements

An email server is required if you are planning to use notifications. PPM can send email notifications to identify pending actions or to notify users of status changes for various packages, requests, and tasks.

PPM can integrate with any SMTP-compliant mail server, including Microsoft Exchange, UNIX sendmail, and others. For example, the following Microsoft Exchange Server versions are supported:

- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010

To work with these third-party products, the PPM Server needs the IP address of the email server and the logon name of one or more valid users on the email server, which the PPM Server uses as "from" addresses for its notifications.

For information about configuring the email server, see the *Installation and Administration Guide*.

## PPM Database Requirements

The following Oracle database versions are supported on all PPM Server platforms:

- Oracle 11.2.0.2, Standard and Enterprise Edition (RAC and Non-RAC)
- Oracle 11.2.0.3, Standard and Enterprise Edition (RAC and Non-RAC)
- Oracle 11.2.0.4, Standard and Enterprise Edition (RAC and Non-RAC)
- Oracle 12.1.0.1, Standard and Enterprise Edition (RAC and Non-RAC)
- Oracle 12.1.0.2, Standard and Enterprise Edition (RAC and Non-RAC)



**Note:** For the production environment only, PPM Center 9.40 can run on Oracle 12c with Container Database (CDB) or Pluggable Database (PDB) enabled.

**Note:** There is a known issue in the Oracle 12 side. To address this issue, you should permanently alter the session parameter "optimizer\_adaptive\_features".

- To do so:
  - a. Log on to PPM Center database schema as PPM\_SCHEMA.
  - b. Run the commands as follows:

```
create trigger PPM_LOGON_ORACLE_18311854
after logon on <PPM_SCHEMA_NAME>.schema
begin
execute immediate 'alter session set "optimizer_adaptive_features" =
false';
end;
```

**Note:** Because Oracle Enterprise DB Server is not supported on VMware, PPM does not work with Oracle Enterprise DB Server on VMware.

For sizing information for database-based DMS solutions, see "[Database Sizing](#)" on page 37.

For details about server requirements, see Oracle documentation specific to your operating system in the Oracle Database Documentation Library ([http://www.oracle.com/pls/db112/portal.portal\\_db?selected=11&frame=](http://www.oracle.com/pls/db112/portal.portal_db?selected=11&frame=)).

For information on periodic database maintenance tasks, see the Oracle Database Administrator's Guide.

## Database Character Sets

The table below lists the database character sets supported for English-language deployments of this version of PPM.

Code	Description
US7ASCII	ASCII 7-bit U.S. America
WE8ISO8859P1	ISO 8859-1 Western Europe
WE8ISO8859P9	ISO 8859-9
WE8ISO8859P15	ISO 8859-15

Code	Description
WE8MSWIN1252	Microsoft Windows code page 1252 8-bit Western Europe <b>Note:</b> Supported for legacy reasons. Do not use for new PPM Center installations.
UTF8	Unicode 3.0 UTF-8
AL32UTF8	Unicode 3.0 UTF-8 <b>Note:</b> For new PPM installations, make sure you ALWAYS use AL32UTF8.

You should also specify:

- AL32UTF8 for NLS\_CHARACTERSET
- AL16UTF16 for NLS\_NCHAR\_CHARACTERSET

**Note:** HPE Software strongly recommends the use of AL32UTF8 for new installations.

## Single Sign-On and Authentication

The following Single Sign-On (SSO) and authentication software products are supported for this version of PPM:

- NTLM version 2 (Microsoft Windows operating systems only)
- Any LDAP v3.0-compliant Server
  - LDAP + SSL
  - LDAP (special mode)
- SiteMinder 6.x
- SiteMinder 12

## External Web Servers

PPM comes with an internal Web server to handle HTTP requirements in many implementations.

External Web servers are required in the following situations:

- PPM is deployed as a cluster configuration and you do not want to use a hardware load balancer to distribute the load.
- HTTPS is required to access PPM.
- PPM Server is running on a UNIX platform and the HTTP port number must be lower than 1024.
- Integration with a single sign-on system that utilizes the PPM Web Server Module (such as CA SiteMinder) is desired.

An external Web server does not have to be installed on the same machine as the PPM Server. The optional Web servers supported by HPE are listed in the table below

For information about configuring an external Web server (as well as setting up a cluster environment), see the *Installation and Administration Guide*.

### Web Server support

Operating System	Requirements
<b>Microsoft Platforms</b>	
For: <ul style="list-style-type: none"><li>• Microsoft Windows Server 2008, SPs 1 through 2 (both 32- and 64-bit)</li></ul>	The following: <ul style="list-style-type: none"><li>• Microsoft IIS 7.0 (32-bit only)</li></ul>
For: <ul style="list-style-type: none"><li>• Microsoft Windows Server 2008, SPs 1 through 2 (64-bit only)</li></ul>	The following: <ul style="list-style-type: none"><li>• Apache HTTP 2.2 (32-bit only)</li></ul>
For: <ul style="list-style-type: none"><li>• Microsoft Windows Server 2008 R2 (64-bit)</li></ul>	The following: <ul style="list-style-type: none"><li>• Microsoft IIS 7.5 (64-bit only)</li></ul>
For: <ul style="list-style-type: none"><li>• Microsoft Windows Server 2012 R2 (64-bit)</li></ul>	The following: <ul style="list-style-type: none"><li>• Microsoft IIS 8.5 (64-bit only)</li><li>• Apache HTTP 2.4 (both 32- and 64-bit)</li></ul>
<b>Oracle Platforms</b>	
For: <ul style="list-style-type: none"><li>• Oracle Solaris (SPARC-32)</li></ul>	One of the following: <ul style="list-style-type: none"><li>• Sun Java System Web Server 6.1 (GA and Updates 1 through 9) (32-bit only)</li></ul>

**Web Server support, continued**

Operating System	Requirements
	<ul style="list-style-type: none"> <li>• Sun Java System Web Server 7.0 (GA and Updates 1 through 2) (32-bit only)</li> </ul>
For: <ul style="list-style-type: none"> <li>• Oracle Solaris 10, Updates 1 through 8 (PA-RISC/Itanium)</li> <li>• Oracle Solaris 11</li> </ul>	One of the following: <ul style="list-style-type: none"> <li>• Sun Java System Web Server 6.1 (GA and Updates 1 through 9) (64-bit only)</li> <li>• Sun Java System Web Server 7.0 (GA and Updates 1 through 2) (64-bit only)</li> </ul>
<b>HP Platforms</b>	
For: <ul style="list-style-type: none"> <li>• HP-UX 11i v2</li> <li>• HP-UX 11i v3</li> </ul>	The following: <ul style="list-style-type: none"> <li>• Apache HTTP Server 2.2 (32-bit only on 64-bit HP-UX)</li> </ul>
<b>IBM Platforms</b>	
For: <ul style="list-style-type: none"> <li>• IBM AIX version 6.1</li> <li>• IBM AIX version 7.0</li> </ul>	The following: <ul style="list-style-type: none"> <li>• IBM HTTP Server (IHS) version 6.1.0 (32-bit only) (available from IBM)</li> <li>• IBM HTTP Server 7.0 (both 32-bit and 64-bit) (available from IBM)</li> </ul>
<b>Red Hat Platforms</b>	
For: <ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux Advanced Platform 5.0, Updates 1 through 6 (both 32- and 64-bit)</li> </ul>	The following: <ul style="list-style-type: none"> <li>• Apache HTTP Server 2.2 (both 32- and 64-bit)</li> <li>• Apache HTTP Server 2.4 (both 32- and 64-bit)</li> </ul>
<b>SUSE Platforms</b>	
For: <ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server 10, SPs 1 through 3 (both 32- and 64-bit)</li> <li>• SUSE Linux Enterprise Server 11 (both 32- and 64-bit)</li> </ul>	The following: <ul style="list-style-type: none"> <li>• Apache HTTP Server 2.2 (both 32- and 64-bit)</li> <li>• Apache HTTP Server 2.4 (both 32- and 64-bit)</li> </ul>

## Document Management System Solutions

The HPE document management system (DMS) is remodelled to fully leverage your current Oracle databases—either a PPM Center-dedicated database or an external database on your network.

**Note:** Even though any Oracle version supporting Oracle TEXT indexes should work as an external DMS database, HPE only certified the solution with the same Oracle versions as are currently supported by PPM Center.

For detailed system requirements and supportability matrices for the database-based DMS solutions (PPM Center Database DMS or PPM Center External Database DMS), see ["PPM Server Platforms" on page 16](#) and ["PPM Database Requirements" on page 32](#).

## Database Sizing

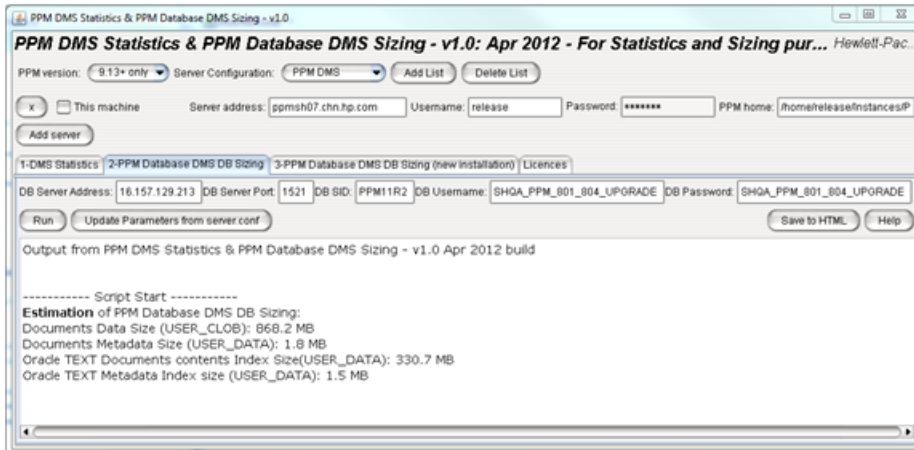
The only sizing impact of using PPM Database DMS or PPM External Database DMS is in your Database Server, as everything happens in the database.

## Database Disk Space

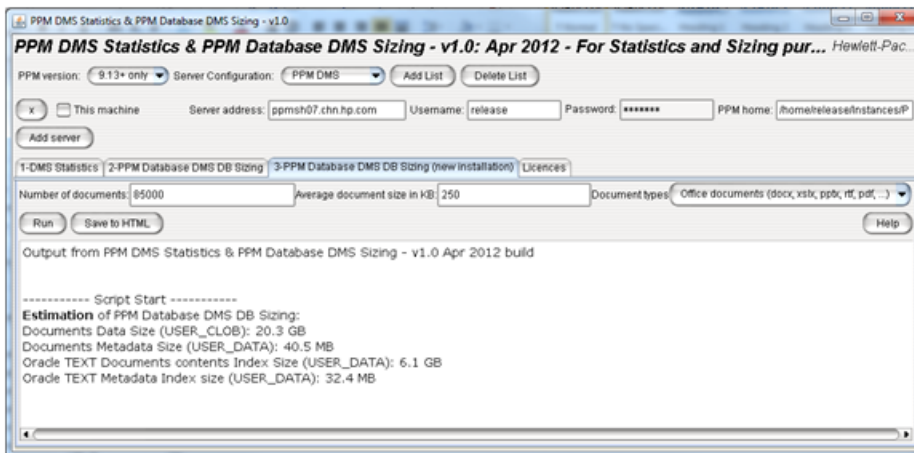
The database disk space consumed by PPM Database DMS or PPM External Database DMS can be split into three different parts:

- Space taken up by Document contents (about equal to total documents size)
- Space taken up by Documents metadata (proportional to number of documents and propensity of PPM users to input lengthy documents descriptions, key words, and version comments).
- Space taken up by TEXT Indexes
  - Index on document contents, proportional to total size and types of documents (index on pure text file such as a logs file might take more space than the file itself, while index on a picture file, even very large, does not take any space as no text content can be extracted from the picture).
  - Index on text metadata, proportional to the size of metadata (as all indexed metadata is text and can be indexed).

The PPM DMS Statistics & PPM Database DMS Sizing tool available from HPE Support automatically estimates the extra disk space needed in database to migrate an existing PPM Server environment to either of the database-based DMS solution. The tool computes estimates based on quantity of documents, total size of documents, and types of documents. All this information are retrieved from the KNTA\_DOCUMENTS table of PPM database.



The tool can also provide estimates for new PPM installations, based on user's input on planned usage of documents in PPM (estimated total number and size of documents, text concentration of stored documents).



## Customer Case

Here is an example of Database Space consumption from an existing PPM customer who used a Documentum-based DMS solution previously. "[Customer documents statistics](#)" below lists customer documents statistics, and "[Customer Case: Document repartition by type](#)" on the next page lists detailed document repartition information.

### Customer documents statistics

Item	Statistics
Total number of documents	128,853
Average number of versions per document	1.003
Maximum number of versions for a document	8

**Customer documents statistics, continued**

Item	Statistics
Total number of documents versions	129,221
Cumulated size of all documents versions (estimated)	32,056 MB
Document repartition by type	See the table below

**Customer Case: Document repartition by type**

Document Type	Text Content	Files Count	Cumulated total size (MB)
RTF	Medium	2,175	10,513
MSG	Medium	49,088	6,507
DOC	Medium	21,767	4,684
TXT	High	14,365	3,367
XLS	Medium	5,457	1,500
PDF	Medium	8,634	1,399
ZIP	Unknown	864	797
XLSX	Medium	1,248	650
DOCX	Medium	2,604	649
BMP	None	302	386
none	Unknown	1,922	342
HTM	High	16,783	319
TIF	None	667	242
REP	Unknown	22	141
EXE	None	21	76
DOT	Medium	126	57
JPG	None	349	54
MDB	Medium	2	48
SQL	High	782	27
PPT	Medium	13	21
Other	Unknown	2,030	278

Text-only documents contain high level text contents, Microsoft Office documents contain medium level text contents, and images as well as binary documents contain practically no text content. This is reflected in the document contents index size.

Text Index creation time: ~ 6 hours (on a 2-instance RAC server with 4 x Dual Core CPU Intel(R) Xeon (R) E5540 @ 2.53GHz per instance).

Disk space consumed by PPM Database DMS:

Item	Disk Space Consumed (MB)
Documents binary contents (BLOB Columns)	32,041
DMS Tables without BLOB columns (not including KNTA_DOCUMENTS):	30
Total Metadata Indexes	21.7
Document Contents Indexes	6,011

As you can see, the size of document contents index (~6 GB) accounts for almost 20 percent of the documents contents size (~32 GB). This is a relatively ratio, which can be explained by the large amount of office documents in the customer's attachments.

It might be possible that the index size is larger than the document contents if all the attachments are pure text files (such as .txt, .sql, and .log files).

**Caution:** The BLOB columns containing the documents are appearing slightly smaller than the estimated total size of documents (15 MB smaller). The reason is that the total size of the documents is an estimation, computed using "Versions count \* file size of latest version" for each document. It appears that the earlier versions of documents are smaller in size in average, resulting in the observed discrepancy.

## Database Server CPU

If you have no plan to enable full-text search (or more precisely, if you do not need to create TEXT indexes), there is virtually no impact on database CPU, as reading and writing documents contents to database are mainly I/O intensive operations.

If you do create TEXT indexes, but schedule them to be updated only out of peak hours, there should be no need to consider an upgrade of DB Server CPU based on standard PPM sizings.



However, if you are using frequent index updates, or use SYNC (ON COMMIT) indexes for real time indexing, a CPU upgrade of your DB Server might be necessary, especially if your PPM users tend to store a large amount of text intensive files in PPM (more than 1 GB of new documents per week, with peak document activity concentrated on a few hours in the week).

# Chapter 4: HPE Migrator and Extension Products and Environments

The system requirements provided in the following sections are in addition to the requirements for this version of PPM.

These supplemental products are available in English language only.

## Migrators

### Application Requirements

Various versions of PPM support particular combinations of Object Migrator, GL Migrator, and the following Oracle E-Business Suite Releases:

- 11i (11.5.7 through 11.5.10.2 (CU2))
- Release 12 (12.0.0 through 12.1.3)

**Note:** Oracle no longer supports Oracle E-Business Suite Release 11 or Releases 11.5.1 through 11.5.6 (which are early releases of 11i), so HPE no longer supports use of PPM Extensions, GL Migrator, or Object Migrator with those releases.

Each unshaded cell in "[Migrators](#)" above lists the versions of PPM that support the combination of Oracle E-Business Suite release (in a table row) and a migrator (in a table column). Combinations that are *not* supported on any version of PPM are shown in the lightly shaded table cells.

Oracle E-Business Suite Release	Kintana Object* Migrator Version 5.1	Mercury Object Migrator Version 6.0	HPE Object Migrator Version 7.5	HPE Object Migrator 12.2	Mercury GL Migrator Version 6.0	HPE GL Migrator Version 9.12
11.5.7 Application Object Library: FND.E Applications DBA: AD.F Common Modules: AK.D Financials Suite: Family Pack A	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	8.0x, 9.1x, 9.2x, 9.3x, 9.40

Oracle E-Business Suite Release	Kintana Object* Migrator Version 5.1	Mercury Object Migrator Version 6.0	HPE Object Migrator Version 7.5	HPE Object Migrator 12.2	Mercury GL Migrator Version 6.0	HPE GL Migrator Version 9.12
11.5.8 Application Object Library: FND.F Applications DBA: AD.G Common Modules: AK.E Financials Suite: Family Pack C	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	8.0x, 9.1x, 9.2x, 9.3x, 9.40
11.5.9 <sup>a</sup> Application Object Library: FND.G Applications DBA: AD.H Common Modules: AK.F Financials Suite: Family Pack D	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	8.0x, 9.1x, 9.2x, 9.3x, 9.40
11.5.10 with FND.H Mini Pack <sup>b, c</sup> Application Object Library: FND.H Applications DBA: AD.I Common Modules: AK.G Financials Suite: Family Pack F		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	8.0x, 9.1x, 9.2x, 9.3x, 9.40
11.5.10.2 (CU2) <sup>c, d</sup> Application Object Library: FND.H Applications DBA: AD.I.6 Common Modules: AK.G Financials Suite: Family Pack F		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40	8.0x, 9.1x, 9.2x, 9.3x, 9.40
12.0.0 through 12.1.3 <sup>e</sup> Applications Technology: R12.ATG_PF.A through R12.ATG_PF.B.DELTA.3 Applications DBA: R12.AD.A through R12.AD.B.DELTA.3			7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40			8.0x <sup>f</sup> , 9.1x <sup>f</sup> , 9.2x, 9.3x, 9.40 <b>Important:</b> See footnote f.
12.2.3 or later				7.5, 8.0x, 9.1x, 9.2x, 9.3x, 9.40		

a. 11.5.8 with the FND.G Mini Pack is functionally equivalent to 11.5.9.

b. 11.5.8-11.5.9 with the FND.H Mini Pack is functionally equivalent to 11.5.10 (for Object Migrator).  
11.5.8-11.5.9 with the Financials Family Pack F is functionally equivalent to 11.5.10 (for GL Migrator).

c. Support for the Oracle Applications E-Business Suite version 11.5.10 with the 10G database version requires installation of patch 154770. See the Object Migrator Version 6.0 Database version 10G Compatibility Patch (#154770) readme for details.

d. See the Object Migrator Oracle Apps Version 11.5.10.2 Compatibility Patch (#174141) readme for details.

e. HPE Object Migrator version 7.5 requires patch PPMC\_00090 in order to work with Oracle E-Business Suite Release 12.1.2 or later.

f. Using PPM version 8.0x with Oracle Release 12.1.3 (or later) and GL Migrator version 9.12 requires patch PPMC\_00097 for Deployment Management Extension for Oracle E-Business Suite version 8.00.  
Using PPM version 9.1x with Oracle Release 12.1.3 (or later) and GL Migrator version 9.12 requires patch PPMC\_00098 for Deployment Management Extension for Oracle E-Business Suite version 9.10.

## File and Table Space Requirements

The following table lists the file and table space requirements for Object Migrator. The table space sizings may vary widely depending on your database version, configuration, and the number of entities you have under version control.

### HPE Object Migrator file and table space requirements

Item	Required Space	Recommended Space
Install bundle	30 MB (temporary)	35 MB (temporary)
Install scripts	5 MB	
Programs (.rdf files)	1.5 MB per program 30 MB total	
Interface tables	30 MB	60 MB
Indexes on interface tables	20 MB	30 MB
Archive tables and indexes	30 MB See <a href="#">"Archive Tables" below</a> .	60 MB

## Archive Tables

When saving an object to the object archive, Object Migrator takes the entire definition of the entity and stores it in special archive tables. The growth of these archive tables directly corresponds to the number of objects and the number of versions put into these tables. For some objects, complexity and size may also be a factor.

If you plan to periodically store versions of entire groups of objects rather than only objects that change, then more table space will be required than the recommended 30 MB. HPE recommends starting with a 30 MB allocation and then adding table space as needed.

# Deployment Management Extension for Oracle E-Business Suite

This version of PPM used with Deployment Management Extension for Oracle E-Business Suite supports the following Oracle E-Business Suite releases:

- 11.5.7
  - Application Object Library: FND.E
  - Applications DBA: AD.F
  - Common Modules: AK.D
  - Financials Suite: Family Pack A
- 11.5.8
  - Application Object Library: FND.F
  - Applications DBA: AD.G
  - Common Modules: AK.E
  - Financials Suite: Family Pack C
- 11.5.9
  - Application Object Library: FND.G
  - Applications DBA: AD.H
  - Common Modules: AK.F
  - Financials Suite: Family Pack D
- 11.5.10
  - Application Object Library: FND.H
  - Applications DBA: AD.I
  - Common Modules: AK.G
  - Financials Suite: Family Pack F
- 11.5.10.2 (CU2)
  - Application Object Library: FND.H
  - Applications DBA: AD.I.6
  - Common Modules: AK.G
  - Financials Suite: Family Pack F
- Release 12.0.0–12.1.3
  - Applications Technology:  
R12.ATG\_PF.A through R12.ATG\_PF.B.DELTA.3

- Applications DBA: R12.A through R12.AD.B.DELTA.3

**Note:**

- 11.5.8 with the FND.G Mini Pack is functionally equivalent to 11.5.9.
- 11.5.8-11.5.9 with the FND.H Mini Pack is functionally equivalent to 11.5.10 (for Object Migrator).
- 11.5.8-11.5.9 with the Financial Family Pack is functionally equivalent to 11.5.10 (for GL Migrator).

## Deployment Management Extension for Oracle Technology

This version of PPM used with Deployment Management Extension for Oracle Technology supports:

- Versions of Oracle tools that support Oracle database 9i, 10g, 11, or 12
- Oracle Developer 2000, Developer 6i, or Developer 10g

# Chapter 5: Using PPM with HPE Software and Other Software

PPM supports integration with the following HPE products and versions:

**Table 5-1. PPM Center integration solutions compatibility matrix (PPM Center as leading center)**

Integration Solution	Integrates with	Supported Version
Application Lifecycle Management Change Request to RFC (PPM Center - SM)	HPE Service Manager	Service Manager: <ul style="list-style-type: none"> <li>• 7.10, 7.11</li> <li>• 9.20, 9.21</li> <li>• 9.30, 9.31, 9.32, 9.33, 9.34, 9.35, 9.40, 9.41</li> </ul> <p><b>Note:</b> For this integration, HPE supports integrating one PPM instance with multiple Service Manager instances at the same version.</p>
Create RFC from work plan (PPM Center - SM)	HPE Service Manager	Service Manager: <ul style="list-style-type: none"> <li>• 7.10, 7.11</li> <li>• 9.20, 9.21</li> <li>• 9.30, 9.31, 9.32, 9.33, 9.34, 9.35, 9.40, 9.41</li> </ul>
Request to Requirement / Defect (PPM Center - QC/ALM)	HPE Quality Center / HPE Application Lifecycle Management	HPE Quality Center: <ul style="list-style-type: none"> <li>• 10.00 <sup>a</sup></li> </ul> HPE Application Lifecycle Management: <ul style="list-style-type: none"> <li>• 11.00, 11.20, 11.50, 11.52, 12.00, 12.20, 12.50, 12.53</li> </ul>
View Project Quality (PPM Center - ALM)	HPE Application Lifecycle Management	HPE Application Lifecycle Management: <ul style="list-style-type: none"> <li>• 11.00, 11.20, 11.50, 11.52, 12.00, 12.20, 12.50, 12.53</li> </ul>
Agile Integration Solution (PPM Center - HPE Agile Manager)	HPE Agile Manager	HPE Agile Manager: <ul style="list-style-type: none"> <li>• 1.x</li> <li>• 2.0</li> <li>• 2.10</li> <li>• 2.20</li> <li>• 2.50</li> </ul>

**Table 5-1. PPM Center integration solutions compatibility matrix (PPM Center as leading center), continued**

Integration Solution	Integrates with	Supported Version
Select CI (PPM Center - UCMDB)	Universal CMDB	Universal CMDB: <ul style="list-style-type: none"> <li>• 8.00~8.07</li> <li>• 9.00~9.05</li> <li>• 10.xx</li> </ul>
Retrieve Service List (PPM Center - UCMDB)	Universal CMDB	Universal CMDB: <ul style="list-style-type: none"> <li>• 8.00~8.07</li> <li>• 9.00~9.05</li> <li>• 10.xx</li> </ul>
<p>a. PPM-Quality Center Integration Tool version 1.7.&lt;xxx&gt; is required to integrate PPM with Quality Center version 10.00. This tool is not used to integrate PPM with HPE ALM version 11.00 or later. The integration tool is provided with PPM software. The computer on which the integration tool runs must support Microsoft .NET Framework version 3.5 Service Pack 1.</p>		

For detailed information about the integration solutions with PPM as the leading product, see the *Solution Integrations Guide*.



# Send documentation feedback

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

**Feedback on System Requirements and Compatibility Matrix (Project and Portfolio Management Center 9.40)**

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to your `_IE_team_PDL@hpe.com`.

We appreciate your feedback!