aPriori

System Requirements

For On-Premise deployments of:

aPriori Professional 2019 R2
aPriori Cost Insight Report 2019 R2
aPriori Cost Insight Admin 2019 R2

Document Information

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The latest version of this document can be found at the aPriori Support HelpCenter (requires registration): https://support.apriori.com/hc

Contents

Product Compatibility

This document covers the requirements of the current releases of aPriori On-Premise software:

- aPriori Professional 2019 R2 -- aPriori's flagship costing solution
- aPriori Cost Insight Report 2019 R2, and Cost Insight Admin 2019 R2, including Scenario Sync, LDAP Sync, and VPE Sync.

Note: For On-Premise installations, these products are distributed and installed under the 2019 R2 Enterprise Platform framework. In this document, "Enterprise Platform" refers to On-Premise installations of Cost Insight Report and/or Cost Insight Admin.

This document covers only the system requirements for On-Premise installations. For system requirements regarding our aPriori Cloud solution and products, please refer to the aPriori Cloud documentation.

aPriori Enterprise Platform 2019 R2 (and later maintenance releases) is compatible with aPriori Professional 2019 R2 (and later maintenance releases). Depending on the Enterprise Platform maintenance release, it may be necessary to upgrade at least one aPriori Professional client to a maintenance release compatible with Enterprise Platform. The On-Premise installation guides alert you to any such requirement. Enterprise Platform 2019 R2 is not compatible with any release prior to aPriori Professional 2019 R2. Likewise, aPriori Professional 2019 R2 and later maintenance releases are compatible only with aPriori Enterprise Platform 2019 R2 (and its later maintenance releases). They are not compatible with any release prior to aPriori Enterprise Platform 2019 R2.

Note: Hot fixes of one product may require a later compatible version of the other.

aPriori Enterprise Platform Modules

The following Enterprise Platform modules are available for On-Premise installations as local web services.

- Cost Insight Report
- Cost Insight Admin: Scenario Export (for Cost Insight Report)
- Cost Insight Admin: System Data Export (for Cost Insight Report)
- Cost Insight Admin: Scenario Synchronization
- Cost Insight Admin: LDAP Synchronization
- Cost Insight Admin: VPE Synchronization

Basic Requirements

In the first table below, the "Required" column shows the minimum requirements for running On-Premise aPriori Professional on a user's workstation or laptop in a test environment, or in a very simple deployment. The "Recommended" column shows the possible requirements for running aPriori Professional in a production environment with large CAD parts, many VPEs, etc. See the *What constitutes a "large" or "complex" environment* section below. If you use Bulk Costing, you should also read *Bulk Costing Considerations* later in this document. More specific information about database and Enterprise Platform requirements are shown in the sections following this one.

RAM vs heap

When evaluating memory requirements for aPriori applications, there are two concepts that need to be considered:

- RAM is the total hardware memory installed in the host computer
- Heap is the portion of that memory that is reserved exclusively for aPriori.

There are different heap size requirements and different procedures for adjusting heap size for:

- aPriori Professional in Creo direct integration mode
- aPriori Professional in standalone mode
- aPriori Professional bulk costing
- Cost Insight Admin and Cost Insight Report

For more information about heap memory requirements and how to adjust heap settings, refer to the tables and footnotes on the following pages, and to Chapter 9, "Adjusting Heap Memory" in the aPriori Professional *System Administration Guide*.

	Required	Recommended
Operating System	**Tested Client Configurations:** Windows 8.1 or 10, 64-bit **Tested Server Configurations:** Microsoft Windows Server 2012 R2, 64-bit[2] Microsoft Windows Server 2016, 64-bit[2]	--
RAM	4 GB	12-32GB depending on details of your installation. See *What constitutes a "large" or "complex" environment* below.
Heap Size	2 GB	4 GB – 8 GB[1]
Disk Space	3 GB	Depends on details of your installation. See *What constitutes a "large" or "complex" environment* below.
Disk drives	HDD (Hard Disk Drive)	SSD (Solid State Drive)
Communication Protocol	TCP/IP	--

1   The heap setting should not exceed 60% of available RAM. For information about adjusting heap settings, see the *aPriori Professional System Administration Guide* or contact aPriori Customer Support.

2   Windows Server tests are performed with Standard Edition, which also validates Datacenter Edition. The following Server Editions are NOT validated: Standard-Core and Nano.

What constitutes a "large" or "complex" environment

The disk and memory requirements for your installation varies with factors such as the size and complexity of the CAD parts you work with, and the number of VPEs you use. Here are some guidelines to help you estimate your local requirements. If you use Bulk Costing, you should also read *Bulk Costing Considerations* below.

Factor	Description	Recommendation
"Large" CAD parts	file size >= 10 MB	Solid State Drive (SSD) [1] RAM: 12 - 32 GB aPriori heap size = 8GB[2]
"Large" or "complex" assembly and/or roll up	Has up to 5000 components	Solid State Drive (SSD) [1] RAM: 12 - 32 GB aPriori heap size = 8GB[2]
"Many" VPEs	Greater than about 30 VPEs	Solid State Drive (SSD) [1]

[1]   SSDs provide significantly improved I/O performance when costing components and when reading/writing VPEs.

[2]   The heap setting should not exceed 60% of available RAM. For information about adjusting aPriori Professional heap settings, see the *aPriori Professional System Administration Guide* or contact aPriori Customer Support.

aPriori Professional Database Server Requirements

	Required	Recommended
Operating System[1]	Oracle®: Any server-class OS Supported by the database vendor. Microsoft SQL Server®: Any server-class OS Supported by the database vendor. MySQL™: Server-class Windows® or Linux®[3] See "*Software Requirements*" below for supported Oracle and MySQL versions.	
RAM[2]	2 GB	4 GB
Disk Space[2]	See **Recommended** column ==>	20 GB for up to 50 users 30 GB for 50 to 100 users 40 GB for 100 users or greater
Communication Protocol	TCP/IP	

1   aPriori is tested against databases on Windows Server 2012 R2 x64 and 2016 x64, and ships with MySQL 5.7. Server-class OS is **required** for production environments, and any environment where production-like performance is needed (for example, performance/load testing environments, which should mimic production environments as much as is practicable). Server-class OS is recommended but not required for small deployments and other environments such as development, training, and demo systems.

Windows Server tests are performed with Standard Edition, which also validates Datacenter Edition. The following Server Editions are NOT validated: Standard-Core and Nano.

2   Required RAM and disk space are dependent on the number of users and overall usage.

3   When using MySQL on Linux, the MySQL installation must be case insensitive.

Enterprise Platform Database Server Requirements

The following table shows the requirements for an On-Premise Enterprise Platform installation running Cost Insight Report. Enterprise Platform installations that are not running Cost Insight Report (for example, running only Cost Insight Admin sync) have less stringent requirements. See the section following the table for details.

	Required	Recommended
Operating System [1]	Oracle®: Any server-class OS supported by the database vendor. Microsoft SQL Server®: Any server-class OS supported by the database vendor. MySQL: Server-class Windows® or Linux®[3] See "*Software Requirements*" below for supported Oracle, MySQL, and SQL Server versions. Note that a Cost Insight installation can include remote databases. You can have multiple database installations (for the operational and reporting databases, for example), and they do not need to be on a single machine. **However, all servers must be on the same LAN.**	
RAM	6 GB	8 - 16 GB
Disk Space[4]	For demo installations: 5 GB For production installations, realistic numbers depend on the number of users, number and size of export sets[2], and how long you expect to retain data. See **Recommended** column for conservative estimates that should be more than adequate for most installations. ==>	20 GB for up to 50 users 40 GB for 50 to 100 users 80 GB for 100 to 200 users

1   Enterprise Platform is tested against databases on Windows Server 2012 R2 x64 and 2016 x64. For demos and evaluations, it can run on Windows 8.1, and 10. Server-class OS is **required** for **production** environments, and any environment where production-like performance is needed (for example, performance/load testing environments, which should mimic production environments as much as is practicable). Server-class OS is recommended but not required for small deployments and other environments such as development, training, and demo systems.

   Windows Server tests are performed with Standard Edition, which also validates Datacenter Edition. The following Server Editions are NOT validated: Standard-Core and Nano.

2   Number of scenarios, processes, operations, frequency of exports, etc.

3   When using MySQL on Linux, the MySQL installation must be case insensitive.

4   When the database is serving multiple applications, use the higher RAM and Disk Space recommendations. Note that disk recommendations include only aPriori usage, and do not take into account any DBA overhead or external factors such as back-up files.

Note: Each of the following Enterprise Platform components require a separate schema (or database, depending on the terminology for your DBMS), in addition to the aPriori "operational" database:

- JasperServer ("jasperserver")
- Cost Insight Report ("reporting")
- Quartz scheduler ("quartz", shared by multiple components)
- Cost Insight Admin: Scenario and/or VPE Synchronization ("sync", shared)
- Cost Insight Admin: LDAP Synchronization ("ldap_sync")

See the *Enterprise Platform Installation Guide* for more information.

Sync Database Server Requirements

If you run Cost Insight Admin:Scenario Synchronization and/or VPE Synchronization on a database that supports Cost Insight Report (see above), the Cost Insight reporting database configuration typically far exceeds the synchronization requirements.

If you plan to run Scenario Synchronization and/or VPE Synchronization alone and do not intend to run Cost Insight Report, your database requirements are much more conservative. Use the "Required" column above, with the following changes: For Scenario Synchronization, the initial disk space needed to handle the realm requirements (the area where scenarios are dumped, analyzed, and then synced with their databases) for the first synchronization is equal to the size of the operational database. However, the disk space required for subsequent synchronization operations is much less: typically, less than 5 GB per site. For VPE Synchronization (which does not make use of realms), the requirements are even less -- typically less than 1 GB per site.

Other Enterprise Platform Requirements

Web Server Requirements

	Required	Recommended
Operating System	Windows[1]	
Processor	Two CPUs or equivalent	Four to eight CPUs or equivalent
RAM	12 GB	16 - 32 GB[2]
Heap	4 GB	6 GB[3]
Disk Space	20 GB	20 - 40 GB

[1]   Cost Insight Report and Cost Insight Admin are tested on Windows Server 2012 R2 x64 and 2016 x64. For demos and evaluations, Cost Insight Admin and Cost Insight Report can run on Windows 8.1 and 10.

[2]   The RAM requirements vary depending on the number and size of aServer instances in use. For more information about aServers, see *Enterprise Platform Installation Guide*.

[3]   The heap requirements for aServers vary if you use CI Report and CI Admin to export more than about 75,000 scenarios from the operational database, depending on the number and size of aServer instances in use. See "Heap size and large scenario counts" in the *Cost Insight Admin User Guide* for more details.

Windows Powershell Requirements

Some aPriori procedures require the use of Microsoft Windows PowerShell scripts. As of the current release, aPriori tests with this version:

Windows PowerShell 4.0.

Software Requirements

To install and run On-Premise aPriori Professional or Cost Insight Admin/Report, the following software components must be installed.

	Server	Client
Database (for aPriori) **Note:** As a MySQL reseller, aPriori can license and provide MySQL Server and Tools. aPriori cannot provide Oracle or SQL Server database software.	MySQL Server Community or Commercial Edition 5.6 through 5.6.34[5], or 5.7.x **Or** Oracle Standard Edition 11g or 12c relational databases[3] **Or** SQL Server 2014, 2016, or 2017 Standard Edition	–
Database (for aPriori Enterprise Platform) **Note:** To run reports against the operational database, all Enterprise Platform databases must be the same vendor type and must match the vendor type of the aPriori operational database that they interact with. For example, if your operational database is MySQL, your Cost Insight Report reporting database must also be MySQL.	MySQL Server Community or Commercial Edition 5.6 through 5.6.34[5], or 5.7.x **Or** Oracle Standard Edition 11g or 12c relational databases[3] **Or** SQL Server 2014, 2016, or 2017 Standard Edition	–
Microsoft Visual C++ 2010, 2012, 2013 Runtimes (for aPriori)[2]	–	Included as part of the aPriori installation.
Dassault Systèmes® VC10 and VC11 Prerequisites (for aPriori)[2]	–	Included as part of the aPriori installation. Not required when running aPriori as a Pro/ENGINEER® Toolkit application
Apache Tomcat Web Server (for aPriori Enterprise Platform)	Apache Tomcat/8.5.30 Included as part of aPriori Enterprise Platform installation	–
Jaspersoft (for Cost Insight)	Cost Insight Report 2018 R3 JasperReports Server V7.2 Included as part of Cost Insight installation	Jasper Studio Included as part of Cost Insight distribution, for optional local installation
Java Virtual Machine [As of 2019 R1, aPriori products are bundled with OpenJDK 8. Customer configuration is no longer needed.]	OpenJDK 8	–
aPriori (for aPriori Enterprise Platform)	See Product Compatibility above.	–
Browsers (for Cost Insight and Sync modules)	–	Microsoft Internet Explorer 11 or later[1] Mozilla Firefox Extended Support Release (ESR) v52 or later[4] Google Chrome V66 or later

1. The MSIE setting "Display intranet sites in Compatibility View" in "Compatibility View settings" MUST be disabled. Windows 10 Edge browsers are not supported.

2. Provided by aPriori and can be installed directly from the aPriori installer executable. Not required by Cost Insight.

3. aPriori certifies against Oracle Standard Edition. Since this includes a subset of Oracle Professional Edition functionality, aPriori expects Professional Edition to also work.

4. For more information about Firefox ESR, see http://www.mozilla.org/en-US/firefox/organizations/faq/

5. Ensure that inno_db_buffer_pool_size is set to at least "1G". Versions higher than 5.6.19 require that inno_db_log_file_size be set to at least six times the value of max_allowed_packet. See the aPriori *Installation Guide* for more information.

Bulk Costing Considerations

To get the best performance out of your Bulk Costing jobs, ensure that your system is configured to reflect the following.

Bulk Costing Child Clients vs. CPU Cores

Before increasing the number of Bulk Costing child clients, you need to increase the number of CPU cores:

```
(Number of Bulk Costing child clients) = (Number of CPU Cores)
```

Costing is a single threaded process, so increasing the number of child clients without increasing the number of CPU Cores does NOT improve Bulk Costing performance.

Setting Heap Size for Bulk Costing

The default heap size for aPriori Bulk Costing can be set in two files:

- By setting `launcher.max.memory` in `<pistol>\exit\analysis-purchasing-module\plugin.properties`. The default is 2048m.

- For running the Bulk Loader from the command line, you can also set MAX_HEAP_SIZE in `<ap_install>\bin\bulkLoad.cmd`. By default, this setting is commented out, so unless you uncomment and edit this line, command line Bulk Costing jobs use the value set in `plugin.properties`.

Very complex parts can require 8GB (see *What constitutes a "large" or "complex" environment* above). If you need to set your child clients to this high of a value, you must ensure that you have enough RAM on the computer. If you have moderately complex parts, you can try setting the heap size to 4GB.

You can also try other settings between these values. For example, if you are going to generate Spreadsheet Reports and use Bulk Costing for greater than 1000 parts, you might try setting the main client heap size to 6GB. Note that these are rough estimates to start with, and you may need to tweak these values to find the best performance for your situation.

Database location

aPriori recommends that you keep your database on a separate machine within your LAN. Since the Bulk Costing process occupies most of the CPU processing on the machine performing the Bulk Costing, it is preferable to put this on another machine.

Calculating total RAM requirements

To evaluate the impact of the above considerations, use the following formula to calculate the total RAM needed for your configuration:

```
Total RAM => (Tc * Hc) + Hm + Md + Mos
```

where:

- Tc = Total Number of Child Clients = Total Number of CPU Cores
- Hc = Heap Size setting for individual Bulk Costing Clients

- ▪ Hm = Heap Size setting for the main client
- ▪ Md = Memory required for the database (2GB, if database is on the same machine)
- ▪ Mos = Memory required for OS and other processing (2GB)

If you find that your requirements far exceed the existing RAM of the computer, make adjustments where possible. For example:

- ▪ reduce number of client processes
- ▪ reduce heap size
- ▪ add more RAM.

Note: If the database resides on another machine, you can eliminate `Md`.

Supported aPriori Client Deployments

The On-Premise aPriori Professional client runs directly on the client hardware and must be installed on a local drive. Some configuration on the local machine is necessary.

Network Requirements between the aPriori client and server

aPriori tests network latency as Round Trip Time (RTT) with the **ping** command between the aPriori client and the aPriori Professional database server.

	Required	Recommended
Latency (round trip)*	240 ms	150 ms
Bandwidth*	200 kb/s	1500 kb/s

* Latency generally has a greater impact on performance than bandwidth. The impact of high latency is increased when costing large assemblies.

Note: When latency is greater than 240 ms, aPriori recommends a deployment with local databases for groups of users, with aPriori Scenario Sync to share data between the databases. This deployment approach allows a global user population to have a consistent and shared view of component costs.   For latency between 150 ms and 240 ms, aPriori recommends a multi-database deployment if remote users are frequently accessing aPriori and costing assemblies.

Licensing

On-Premise aPriori Professional users and licenses are configured using the aPriori System Administrator tool. Licensing is based on named users. The aPriori user store and authentication are managed as part of the aPriori system.

On-Premise Cost Insight Report installations that include Jaspersoft components have users and licenses that are configured using JasperServer. aPriori provides a Jaspersoft production license as described in the On-Premise *Enterprise Installation Guide*.

Supported CAD Application Formats

aPriori provides the capability to cost parts and assemblies from several CAD formats. Customers across a broad range of industries can use aPriori Professional regardless of their CAD or PLM systems.

aPriori certifies the applications and versions in the table[1, 2].

CAD Vendor	Application & Version	Optional MCAD Integration
PTC[3]	Creo™ Elements/Parametric 1.0, 2.0, 3.0, 4.0, 5.0, 6.0	Creo™ Elements/Parametric 1.0, 2.0, 3.0, 4.0, 5.0[3], 6.0
Dassault Systèmes	CATIA V5 ® 6R2016 (R26), V5-6R2017 (R27), V5-6R2018 (R28), V5 – 6R2019 (R29)	CATIA V5 ® V5-6R2016 (R26), V5-6R2017 (R27), V5-6R2018 (R28), V5 – 6R2019 (R29)
Dassault Systèmes	SolidWorks ® 2016, 2017, 2018, 2019	SolidWorks ® 2016, 2017, 2018, 2019
Siemens PLM	NX™ 1 to 8.5, 9, 10, 11, 12, 1847-1867	NX™ [4]: 10, 11, 12, 1847-1867
Siemens PLM	SolidEdge® V20, ST, ST2, ST3, ST4, ST5, ST6, ST7, ST8, ST9, ST10	
Autodesk	Autodesk® Inventor® 2016, 2017, 2018, 2019	
File Exchange Formats	JT 8.5, 9.0 - 9.5, 10[5] STEP AP203, AP214, AP242 Parasolid 10.0 - 29.0 ACIS R19-R27	
Additional CAD Format and Version support is planned for future releases. Please contact aPriori directly for more information.		

[1]   aPriori can also read CAD files saved in older versions of these CAD applications but does not regularly test older versions. aPriori reserves the right to not address issues which are apparent only in older unsupported CAD versions.

[2]   aPriori also can be used in environments where the MCAD application is integrated with a PLM system. aPriori currently does not integrate directly with PLM systems.

[3]   Creo Elements/Direct Modelling is not currently supported.

[4]   Requires an aPriori Professional Services Engagement to implement. Service delivery requires customers have one NX Open C++ Author License; Microsoft Visual Studio Professional 2008, 2010 or 2012; and a Windows 7 machine with admin privileges.

[5]   aPriori supports costing only JT files using the newer XT-BREP boundary representation, not the older JT-BREP.

Licensing Note: The capability to open different format CAD files is sold and licensed as separate options. Please contact aPriori if you are interested in this capability.

Graphics Drivers

aPriori uses a third-party component from Tech Soft 3D called HOOPS for displaying graphics. aPriori can be configured to use OpenGL or OpenGL2. As of 2019 R2, DirectX 11 is the default Graphics Driver for aPriori.

A list of tested drivers is posted here: http://developer.techsoft3d.com/hoops/hoops-visualize/graphics-cards/

IMPORTANT: aPriori recommends upgrading to the latest graphics drivers when installing or upgrading aPriori products.

Localization and Translation

The UI (labels and error messages) for aPriori Professional is available in the following languages in addition to English:

- German
- French
- Chinese
- Japanese

A sub-set of the aPriori Professional user documentation is available as PDFs and on-line help in the following languages in addition to English:

- German

Translations are typically available at each Service Pack release. For example, the 2018 R3 UI and documentation are available in German as of the 2018 R3 SP1 release.

Note: New functionality, messages, and/or documentation introduced in the Service Pack may or may not make it into the translation. If not, they will be included in the next scheduled localization.

Other products and other languages may be added in the future. If you have a pressing need for additional language support, please contact aPriori.

Excel Support for Spreadsheet Reports

The aPriori Spreadsheet Report feature has been tested against Microsoft Excel 2010. In general, template-based reports work properly when the OS running the report supports the same version of Excel on which the spreadsheet report template is based. For example, if you build a spreadsheet report and create a template for it with Excel 2010, then you should use Excel 2010 to view it. Problems may occur when the two versions are mismatched. You should not use Excel 2007, for instance, to open a template created on Excel 2010.

Limitations

- The MCAD integration with PTC products may not work if there are other Java based toolkit applications also running.

- aPriori does not work on computers which have Comodo Time Machine® installed.

- Cost Insight supports single aPriori deployments. If you have multiple deployments (for example, representing different manufacturing sites, business units, etc.), use a separate Cost Insight instance for each deployment.

aPriori

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