Mentor®
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Personal Automated Design System Release Highlights

Software Version: PADS VX.2.6

September 2019

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Introduction

This document provides a high-level summary of the PADS® VX.2.6 release. Refer to the Release Notes on Support Center for the list of specific known issues and workarounds.

This document includes a summary of the new features in this release. It also includes, if applicable, any authorization code changes required, any major installation changes, and any transitioning issues you should be aware of before installing. Additionally, any last-minute issues found in the final stages of testing are included.

Changes may be added to this document after release. Refer to the Release Highlights document on Support Center for the most up-to-date release information.

Mentor Version Support

Support is provided for a period of two years from the date of the first general customer release (also known as First Customer Ship or FCS). Support for releases older than two years is not available except at the sole discretion of Mentor. For additional information, please visit Mentor Support Center: https://www.mentor.com/support/en/about

New Features Introduced in PADS VX.2.6

This is primarily a release aimed at adding new functionality and fixing customer's logged defects - Service Requests (SRs). The following new products, features, and enhancements are introduced in the PADS VX.2.6 release.

PADS AMS

64-bit Simulator Support

Release VX.2.6 introduces the 64-bit version of PADS AMS, which replaces the 32-bit version of the simulator. The 64-bit simulator is based on our Questa ADMS and Eldo simulators, enables larger design capacity and better simulation performance, and is available in the PADS and PADS Professional flows.

LTspice Symbol Support

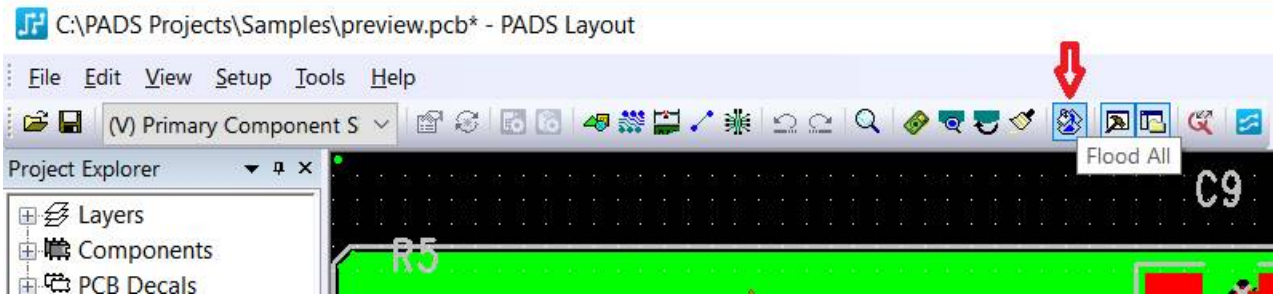
An earlier PADS AMS release introduced Model & Symbol Wizard support for LTspice models. Release VX.2.6 extends this support by generating schematic symbols that look similar to the original LTspice versions.

PADS Layout and Router

UPG flooding in PADS Layout

For flooding, PADS Layout now uses the same engine (UPG) as PADS Router.

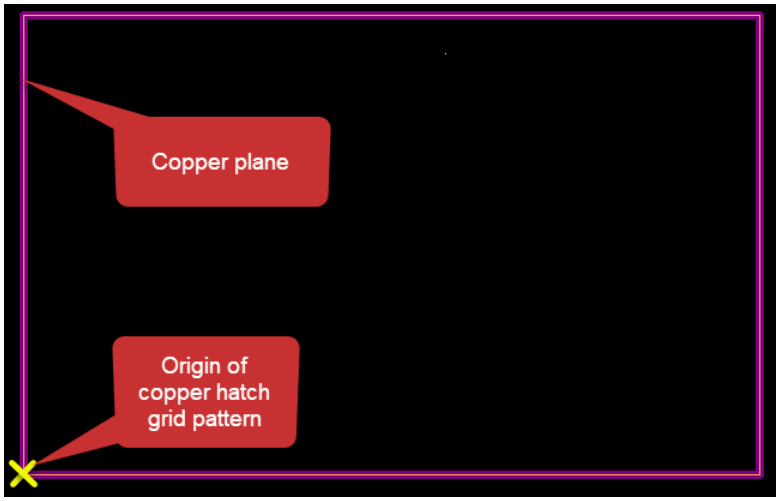
A “Flood All” toolbar button was added (pictured below).



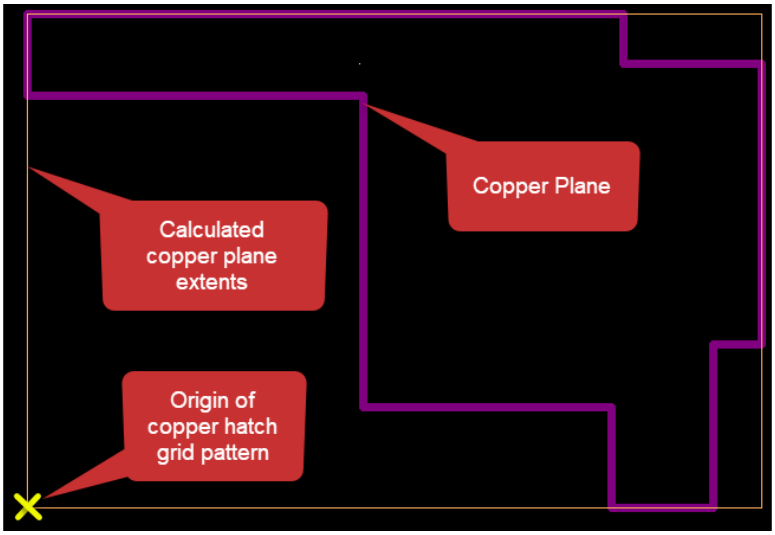
Flood All: Floods copper planes on all layers, including documentation layers.

Fixed Origin for Copper Hatch Grid

The origin of the copper plane hatch grid is now the lower left corner for rectangular shapes or calculated for irregular flooded shapes.



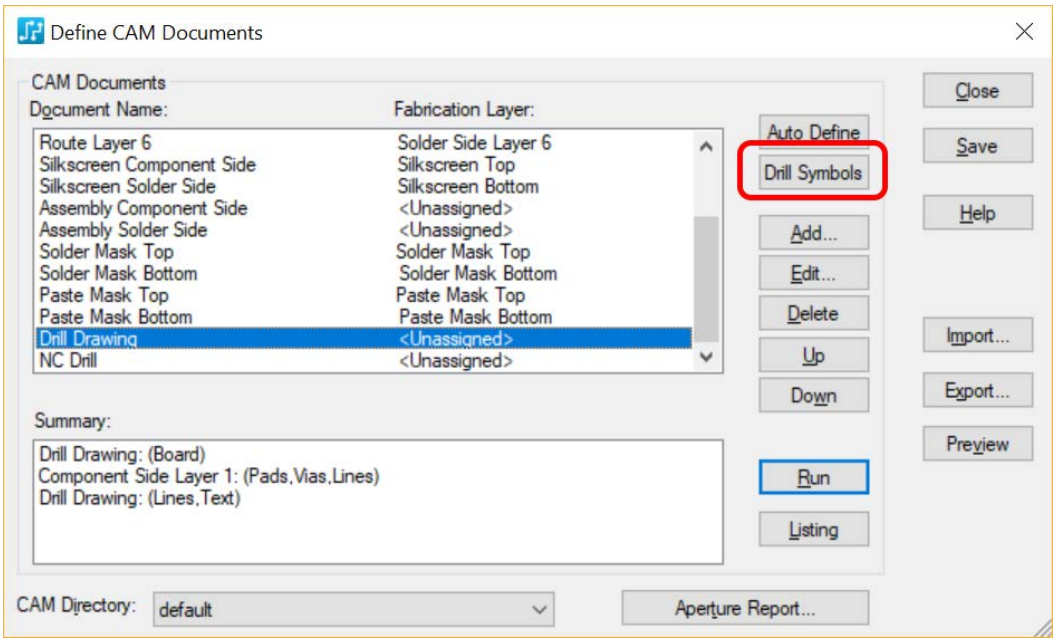
The origin of the hatch grid pattern is defined by an imaginary box surrounding the extents of the copper plane shape. The extents box is reduced by ½ the line width of the copper plane shape and the hatch grid origin is placed in the lower left corner of the extents box. For a simple rectangular copper plane shape the hatch grid origin will be in the lower left corner of the shape. For more complex shapes, the lower left corner of the extents may be a point outside of the copper plane shape. This is not the origin of the copper plane shape, only the origin of the hatch pattern for the copper plane.



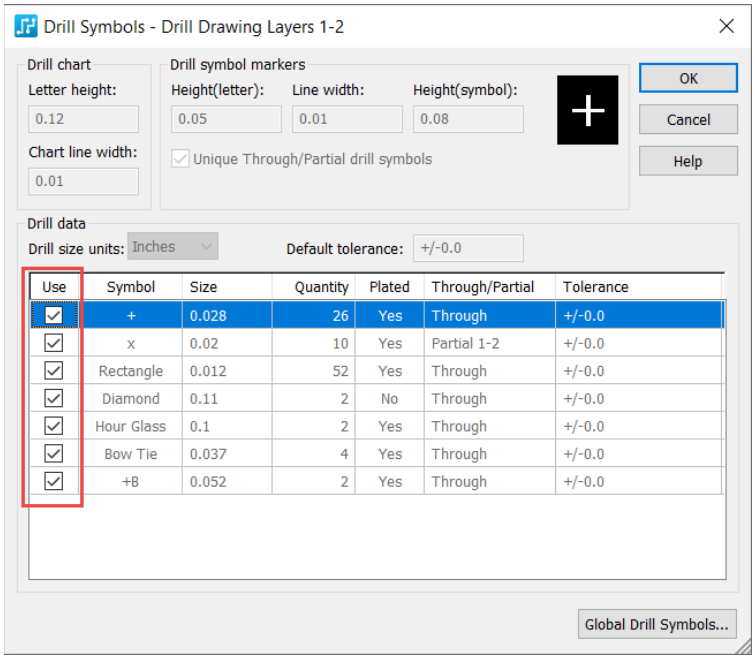
CAM enhancements

Now you can define drill drawing characteristics and drill symbols globally, and then define which drill symbols to display in each drill drawing you save to your CAM document list - perfect for separate partial-via drill drawings.

Global Drill Symbols settings are accessible here:

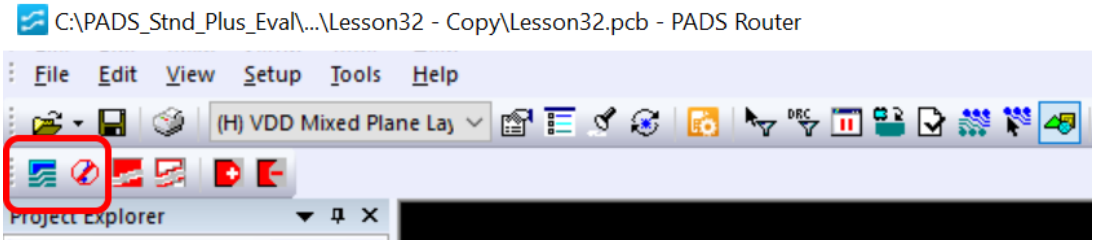


Local drill symbols are accessible in the standard location (Drill Drawing document options) and you can specify which symbols to export in that particular document:



Drafting Operation in PADS Router

Support for the creation and modification of Copper and Keepout objects directly in PADS Router.

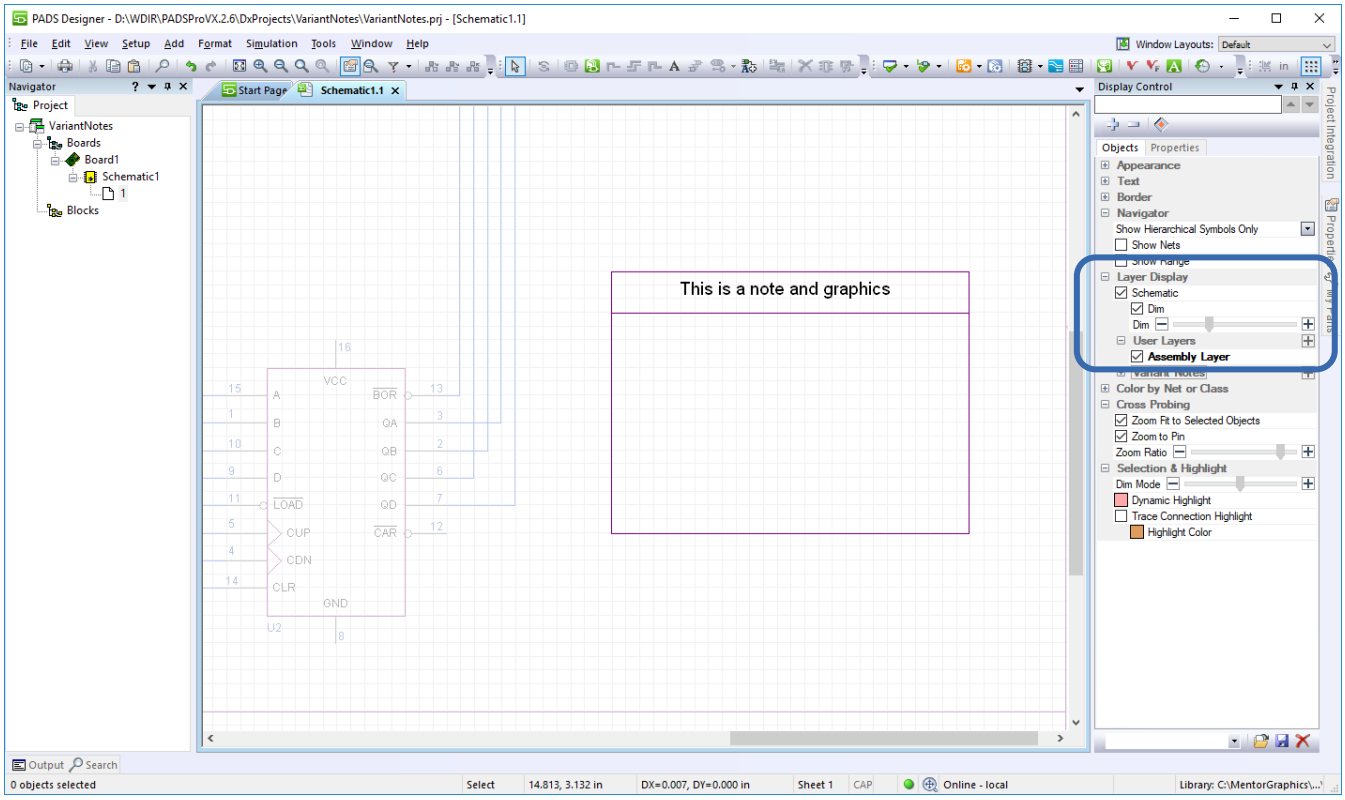


PADS (DX) Designer

Below is a list of ease-of-use improvements and new functionality.

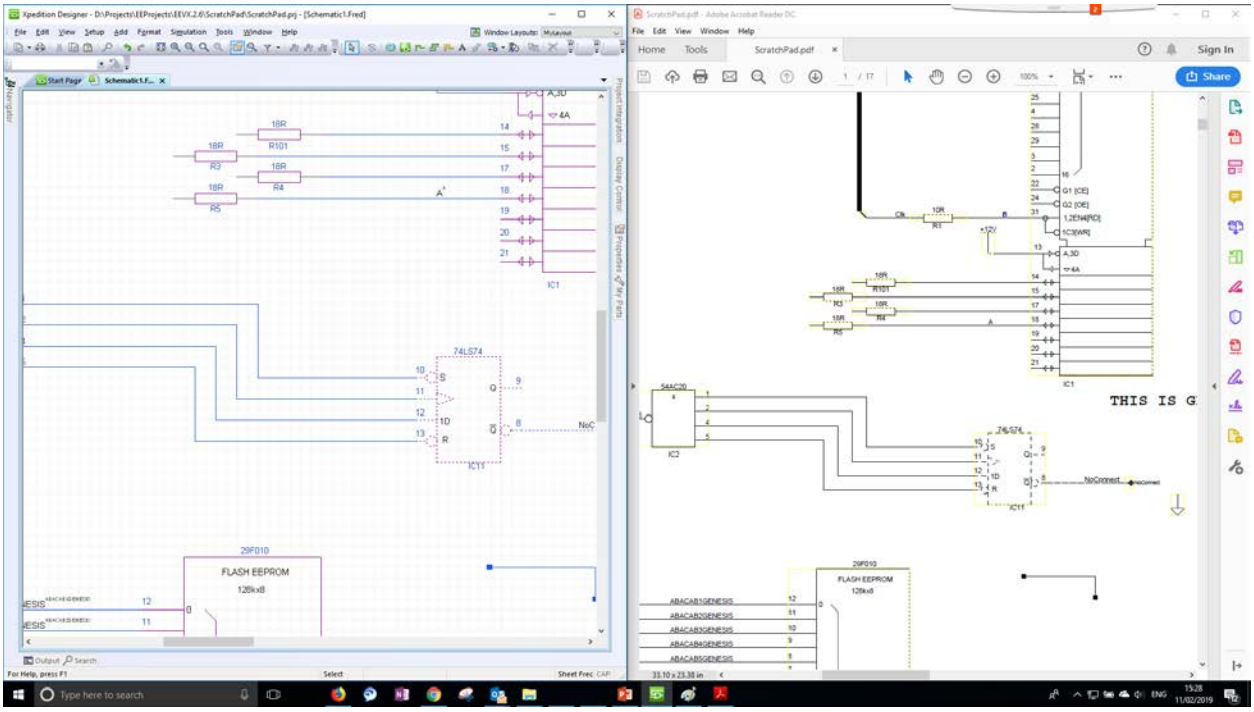
User Layers

- Added support for user defined layers in Designer for documentation, specifically: graphics, text, annotate symbols only. This was based on highly ranked Mentor Idea (https://communities.mentor.com/ideas/15041).
- Switch on and off.
- Dim Schematic.
- Support printed outputs: Print/PDF/CCE.



Documentation Enhancements

- Support for line styles in PDF and CCE export.



Note - Viewing PDF files within a web browser causes some links not to function.

HyperLynx® DRC

HyperLynx DRC adds some important new functionality and defect fixes. The sections below provide details on some of the new capabilities.

Productivity

- **Auto Save and Auto Restart** – Projects are automatically saved at specified periods while rules are running. If a session is unexpectedly exited, the project can be automatically resumed to continue running the rules.

New Rules

- **Five new MIPI C-phy rules**
- **Two new SI rules**
  - Diff Pair Inner Spacing rule
  - Safety 3D Clearance

HyperLynx® SI/PI/Thermal (Optional Licensed Features)

The following HyperLynx SI/PI/Thermal changes described below are only available in optional licensed HyperLynx products, these HyperLynx changes are not available in PADS Standard and PADS Standard Plus products.

This release contains significant improvements in SERDES analysis as well as power-aware SI analysis (mixed SI/PI analysis). Some incremental improvements have also been made to make it easier to work with S-parameters, which are becoming much more common in these types of analysis.

SERDES

- **Support for "outside aggressors" in the SERDES Wizard** – The SERDES Wizard has been enhanced to allow for inclusion of aggressors outside the primary bus being simulated. While this is not full support for "alien crosstalk", it does allow for differential signals that are of similar frequency and voltage to be included in the analysis if desired.

- **Customizable COM/JCOM/USB/PCIE Analysis** – the special analysis modules inside the SERDES Wizard, such as COM, now have user-accessible parameters that can be modified to allow for customized versions of the analysis.

- **Gap Closing with older Wizards** – The SERDES Wizard has been enhanced with all of the capabilities from the older FastEye and IBIS-AMI Wizards so that customers can transition to the new Wizard and take advantage of its expanded breadth of capabilities.

S-parameters

- **Automatic net connectivity through headers** – In previous releases, all analysis types in HyperLynx extracting S-parameter information were enhanced to include detailed header information such as net names and net connectivity. In VX.2.6, that information is automatically used to create "electrical nets" through the S-parameter, which is crucial for any analysis type that uses net names for analysis.

- **Automatic insertion loss port selection** – One of the most common parameters of interest in an S-parameter file is the insertion loss. The Touchstone Viewer will now automatically display the insertion loss parameters based on the connectivity strength in the S-parameter.

Power-Aware SI Analysis

- **PDN and Channel Extraction Wizard** – Extracting models for power-aware SI analysis has been made significantly easier in VX.2.6 with this new Wizard, which allows for extraction of PDN, single-ended via(s), and/or signal channel models to be used in the analysis.

- **IBIS Wrapper Enhancements** – The IBIS Wrapper utility has been enhanced to allow for tying package model reference nodes to the same pin in the model, as well as explicit connection of analog ground to a pin in the model.

PI Analysis

- **PI Wizard Results Generation** – All PI Wizards now work consistently with other Wizards in HyperLynx by generating results in a time-stamped folder in the project directory (or otherwise-specified results directory).

Scripting

- **Python Editor/Debugger** – Native Python script editor and debugger has been added.

Licensing

The PADS VX.2.6 release utilizes the Mentor Standard Licensing software version 2019_1. The latest version of licensing software is always available on Account Center:

https://account.mentor.com/licenses/download

This version of PADS requires a PCLS FlexNet license server running at version v11.16.0.0 or higher. If you use floating licenses and your license server is not at least a FlexNet v11.16.0.0, you will need to update the license server.

Authorization Codes

To use PADS VX.2.6, a minimum license version (Exact Access Date) of 2019.08 (August 2019) is required. The EAD reflects the support contract expiration year and month.

There were some changes to authorization codes in the PADS VX.2.6 release for the following PADS products:

- PADS Standard Plus Suite 3D Ap SW, PN: 265888 – it now includes PADS AMS, please request new license before installing.

HyperLynx Analog (PN 225414) is retired (no longer available). Transition part number for this product is PN 267958.

You may download your existing authorization codes from Account Center:

https://account.mentor.com/licenses

For additional information on licensing, refer to the *Licensing Mentor Graphics Software* manual, or *Getting Started with Licensing* on Account Center:

https://account.mentor.com/licenses/guide

Support Information

If you have questions about this software release, please log in to Support Center. You may search thousands of technical solutions, view documentation, or open a Service Request online at:

https://support.mentor.com/

If your site is under current support and you do not have a Support Center login, you may easily register for Support Center by filling out the short form at:

https://support.mentor.com/en/register

Supported Platforms

Overall Notes

- Specified patches below are minimum levels. Later versions of the patches are valid, supported configurations.
- Except as noted, all products are supported on all platforms.
- Processor and Memory requirements vary based on the mix of applications being used, the design complexity, and infrastructure requirements. Individual needs may vary from those published below.

Processor Note for Intel/AMD Processors

All Windows OS variants run on Intel or AMD x86 or x64 processors. In the past, the processor GHz speed determined the performance, but recent changes in the internal architecture of both Intel and AMD processors have made these comparisons difficult. Therefore, the following recommendations are being made for **all** Windows systems:

- Supported processors and systems are those manufactured since 2008 which conform to the subsequent requirements.
- Intel Celeron processors are not recommended.
- Minimum requirement is a dual-core (or dual processor) system. A quad core is recommended for improved overall system performance. A hyper-threaded processor should be considered a single processor, not a dual processor.
- For best results, maximize processor speed and L1/L2/L3 processor cache memory.
- Typically, cost is the best indicator of performance, and extra investment in processor capability returns better system performance.

Microsoft Windows 7

Microsoft Windows 7 (64 bit version, SP1 or greater), Professional Edition, Ultimate Edition, and Enterprise Edition are supported. While there is no known issue with running Microsoft Windows 7 Starter Edition and Microsoft Windows 7 Home Premium Edition, the product has not been tested with these editions, and therefore is not supported.

Kernel Configuration: N/A

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8GB recommended

Swap Space: 2x the amount of RAM

Microsoft Windows 8.1

Microsoft Windows 8.1 (64 bit version), Enterprise Edition and Pro Edition are supported. While there is no known issue with running Microsoft Windows 8.1 Basic Edition, the product has not been tested with this edition, and therefore is not supported.

Kernel Configuration: N/A

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8GB recommended

Swap Space: 2x the amount of RAM

Windows Server 2012 R2

The following configurations are only supported for the sharing of libraries. All other PADS VX.2.6 products are not supported on any Windows Server platforms:

Microsoft Windows Server 2012 R2 with all current updates via Windows Update.

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8 GB recommended (per simultaneously logged in user)

Swap Space: 2X the amount of RAM

Microsoft Windows 10

Microsoft Windows 10 (64 bit version), Enterprise Edition and Pro Edition are supported.

While there is no known issue with running Microsoft Windows 10.0 Home Edition or Educational Edition, the product has not been tested with these editions, and therefore is not supported.

Kernel Configuration: N/A

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8GB recommended

Swap Space: 2x the amount of RAM

Windows Server 2016

The following configurations are only supported for the sharing of libraries. All other PADS VX.2.6 products are not supported on any Windows Server platforms:

Microsoft Windows Server 2016 with all current updates via Windows Update.

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8 GB recommended (per simultaneously logged in user)

Swap Space: 2X the amount of RAM

Windows Server 2019

The following configurations are only supported for the sharing of libraries. All other PADS VX.2.6 products are not supported on any Windows Server platforms:

Microsoft Windows Server 2019 with all current updates via Windows Update.

Processor: Dual-core Intel or AMD processor minimum. See Processor Note for Intel/AMD Processors above.

Memory: 8 GB or more recommended (per simultaneously logged in user)

Swap Space: 2X the amount of RAM

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Java Support in Mentor EBS Products

Introduction

Many Mentor Electronic Board Systems (EBS) products are based on Oracle's Java SE Runtime Environment (JRE), and the EBS product installs include a JRE within the product bundle that is loaded onto a system as part of the installation process. In the past, the JRE has been freely distributable. However, Oracle has recently changed its licensing terms for the JRE environment, leading to concerns about how this impacts Mentor EBS products.

This document provides background information on the change in licensing terms, a description of how Mentor will adapt to these new terms, and a timeline for those actions, as well as directly addressing some concerns already expressed by some of our customers. We encourage you to read this document carefully and to request any necessary clarification from your Global Support Services contact or your account team.

Background

Oracle has provided Java free of charge for General Purpose Computing use since Oracle acquired Sun Microsystems in 2010. However, in July 2018 Oracle announced new licensing terms for versions of Java delivered after January 2019. These terms require users of these newest versions of the JRE to purchase a Java SE Subscription. The details of the legal changes can be found here: https://www.oracle.com/technetwork/java/javase/javaclientroadmapupdate2018mar-4414431.pdf.

These changes will require some changes in our plans for delivering EBS products going forward. Notably, while Oracle delivers a commercial version of Java that requires a subscription, they also provide the OpenJDK version of Java, which continues to be free and available for general use, but which has a lower level of support, including ongoing bug fixes and security updates.

Note also that the changed licensing terms do not affect versions of Java released before January 2019.

Our Philosophy / Plan

In order to simplify the configuration of our Java-based products, Mentor EBS has always delivered a version of the JRE embedded within our product bundle. This version of the JRE has the following attributes:

- It has been extensively qualified to be compatible with our delivered products
- It is delivered within our product installation tree, not in the location that standard Java downloads use
- It is intentionally isolated such that it is only used by our products. While a knowledgeable user can explicitly access the JRE within our product install tree for other purposes, the default is that this JRE will not impact other non-Mentor Java-based software.

- It has been vetted for vulnerabilities. While no significant piece of software can be assumed to be free of vulnerabilities, we deliver a version that we judge to be acceptably secure for the purposes of running our products.
- Because of where it is delivered into our product install tree, the JRE is not generally subject to standard update processes that are used by most IT organizations that are used to keep their system-level JREs up to date. Further, updating our delivered version of Java to a newer version is not guaranteed to result in a functional Mentor product. Updating any content of our install tree using non Mentor-provided content is highly discouraged and not supported.

Our plan going forward is as follows:

- We will continue to provide a version of the JRE embedded in our product install and qualified to run our products.
- We will provide a version that is free of licensing restrictions that would affect our customers. Our expectation is to continue to provide a free version of Java with our products. There is no need for our customers to purchase a Java JRE subscription in order to run EBS products.
- We will migrate to later versions of Java as part of our ongoing development and enhancement of our products. A tentative timeline is provided in the next section of this document.
- We expect the next update of our delivered version of Java will be to use the OpenJDK that is current at the time of that product release.
- We will continue to monitor the published JREs for vulnerabilities and provide updates to address any vulnerabilities that could impact our products.
- As we move forward with Java updates, we will explore the possibility of qualifying other variants of the JRE for use with our products, including Oracle's Subscription-based version. Note that we will not distribute versions of a JRE for which we do not have distribution rights. In this case, we would provide documentation to our customers that would allow them to replace our embedded JRE with a qualified JRE that they have separately acquired. The timing of this addition to our testing processes is not being committed at this time.

Timeline

We are currently delivering the Java 8 update 162 JRE as part of our current VX.2.5 and planned VX.2.6 products. This version of Java (or a minor update to it) will continue to be our embedded version for the foreseeable future.

Because our product suite is comprised of many software products and 3rd party components with many interdependencies, updating a JRE is a non-trivial process. Therefore, our move to the OpenJDK version of Java is currently projected to occur in our product releases planned for late 2020. It is possible, but not committed, that at that time we will also support the replacement of our delivered JRE with a separately acquired JRE, typically expected to be the Oracle Subscription model, and typically required by the customer's corporate IT policy.

In the meantime, we are confident that the freely available and redistributable version of Java 8 will serve the needs of our customers and provide a stable and secure environment within which our products can operate.

Java Web Start

There is one exception to the use of our embedded JRE for Mentor EBS products. The EDM Library product provides delivery of the EDM Library Cockpit to a client system via Java Web Start technology. This technology allows an end user to use a browser to access a link on our EDM Server that points to a product bundle that is subsequently downloaded to and installed on the client system. This functionality requires a version of Java to be installed as the default JRE on the client system separate from our install, such that it can manage the Java Web Start process and download.

Java Web Start technology is being discontinued by Oracle in version 11 or higher of their JRE. Therefore, if the customer's IT organization standardizes on version 11 or higher of either the OpenJDK or OracleJDK for their system-level Java, the automatic download of the EDM Library Cockpit will not function. The end user will be required to have an earlier version of the JRE as their default system version of Java, or will have to explicitly install the EDM Library Cockpit via a direct product install bundle along with all other desired products in that bundle. We will discontinue use of the Java Web Start technology in future versions of our product, replacing it with functionality developed by Mentor. The completion of this work will be announced at a future date.