

PADS Release Highlights

Software Version: PADS VX.2.7
March 2020

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Introduction

This document provides a high-level summary of the PADS® VX.2.7 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.2.7

This is primarily a release aimed at adding new functionality and fixing customers' logged defects - Service Requests (SRs). The following new products, features, and enhancements are introduced in the PADS VX.2.7 release.

PADS AMS

64-bit Simulator Enhancements

Release VX.2.6 introduced the 64-bit version of PADS AMS, which replaced the 32-bit version of the simulator. Release VX.2.7 is phase two of the simulator update and includes improved simulation convergence, larger design capacity, and upgraded performance; multi-core simulation support and improved license management for multi-run analyses; Fast Fourier Transform (FFT) analysis support.

PADS AMS is available in PADS Standard Plus.

Schematic Editing, Mapping, and Netlist Updates

Prior to VX.2.7 editing symbol properties and SimDB mapping worked primarily at the block level. With VX.2.7, SimDB mapping and the Edit Model Properties dialog now work with instance level properties, and when instance level properties are present on a symbol, the netlister uses them to create the simulation netlist.

Performance Improvements

Designs using VHDL-AMS models now netlist faster, and regularly used tool dialogs take less time to start. The design auto-load is now optional, eliminating the time needed to load the last design.

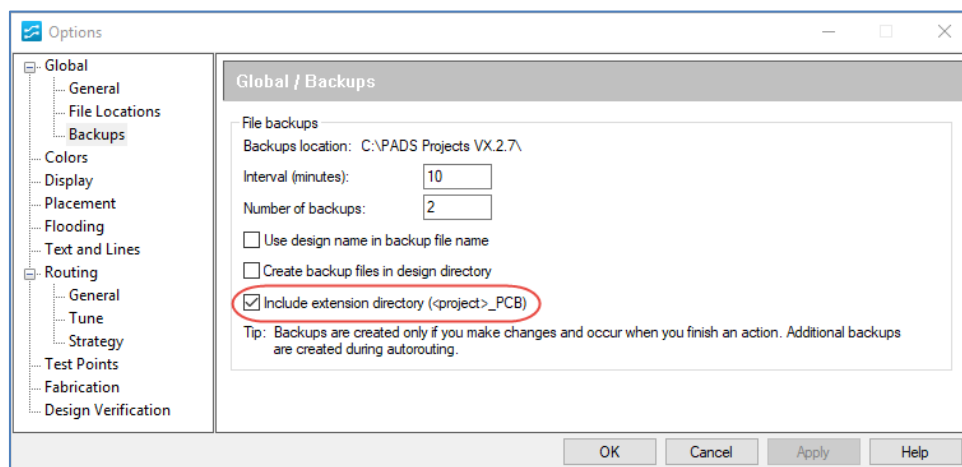
Smaller Install Size

To help preserve valuable disk space, we removed duplicate source code files and the 32-bit Java Runtime Environment to reduce the size of the simulator installation.

PADS Layout and Router

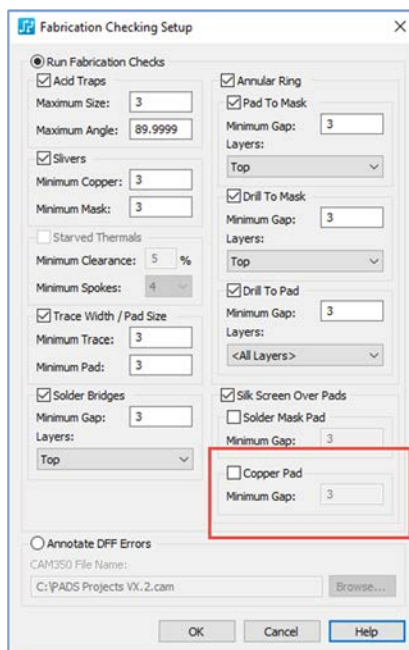
PADS Router: Backup Enhancement to Allow for the Exclusion of 3D Content

Additional option was implemented to allow excluding the extension directory (<project>_PCB) from the backup. By default, this option will be checked to be in alignment with previous releases. This directory contains data for: 3D & MCAD Collaborator.



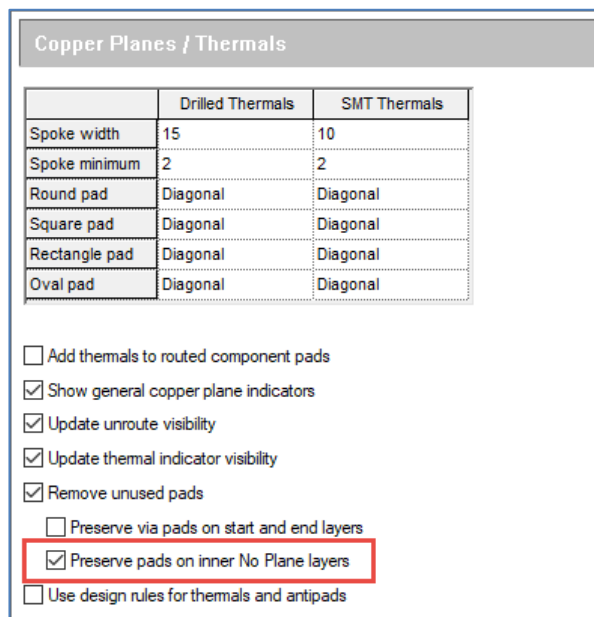
New Fabrication Check

You can now check for silk screen over copper pads in the Verify Design Fabrication check.



Preserve Unused Pads on No Plane Layers

With a new check box in the Thermal options, component pins and vias retain their pads on layers defined as "No Plane" in Setup > Layer Definition even though there is no connection to a copper plane on that layer or no trace is attached to the pin/via on that layer.



PADS (DX) Designer

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

DRC Checks to Use Schematic Level Pin Type

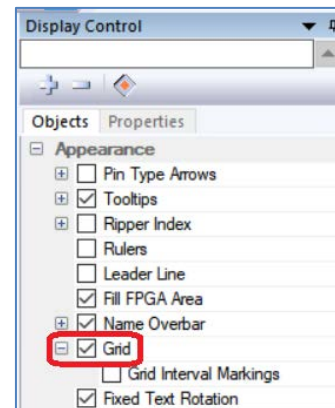
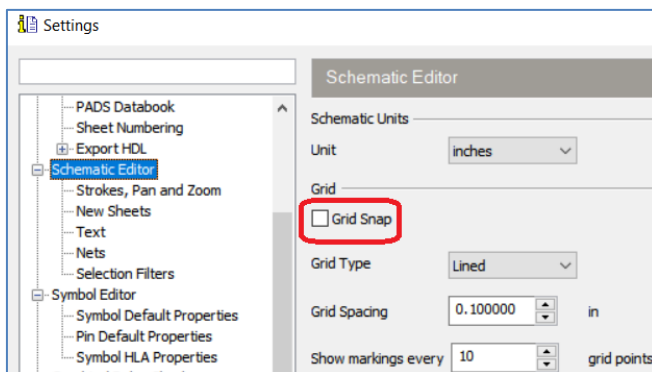
DRC will check the pin type from symbol, block, and instance level. The priority will be as follows: Instance, Block, Symbol. Designer supports pin type override via back annotation. This was based on a highly ranked Mentor Idea (<https://communities.mentor.com/ideas/13586>).

Separate Grid Display and Grid Snap

Instead of one Grid Display button in VX.2.7 there are two separate Grid Display and Grid Snap buttons.

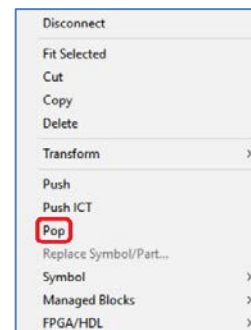


This enables independent control of grid display and grid snap. This was based on a highly ranked Mentor Idea (<https://communities.mentor.com/ideas/8732>).



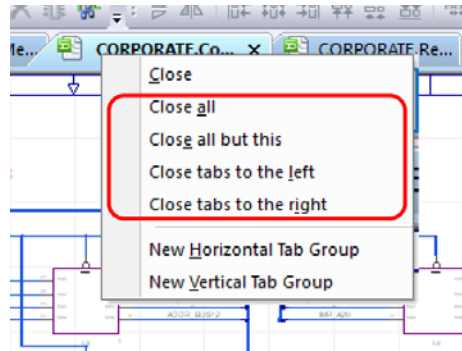
Pop Command Added to the RMB Menu

The Pop command was added to the RMB popup menu. This was based on a highly ranked Mentor Idea (<https://communities.mentor.com/ideas/19358>).



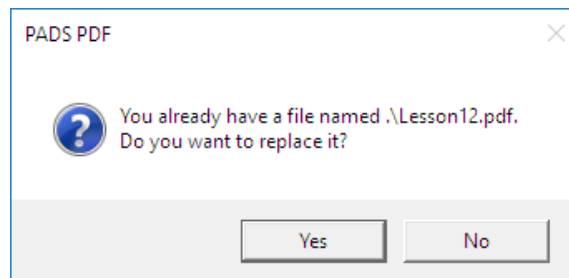
Enhanced Tab Management

The following commands were added to behave similar to web browsers: Close all, Close all but this, Close tabs to the left, and Close tabs to the right. This was based on a highly ranked Mentor Idea (<https://communities.mentor.com/ideas/16609>).



Warn When Overwriting PDF File

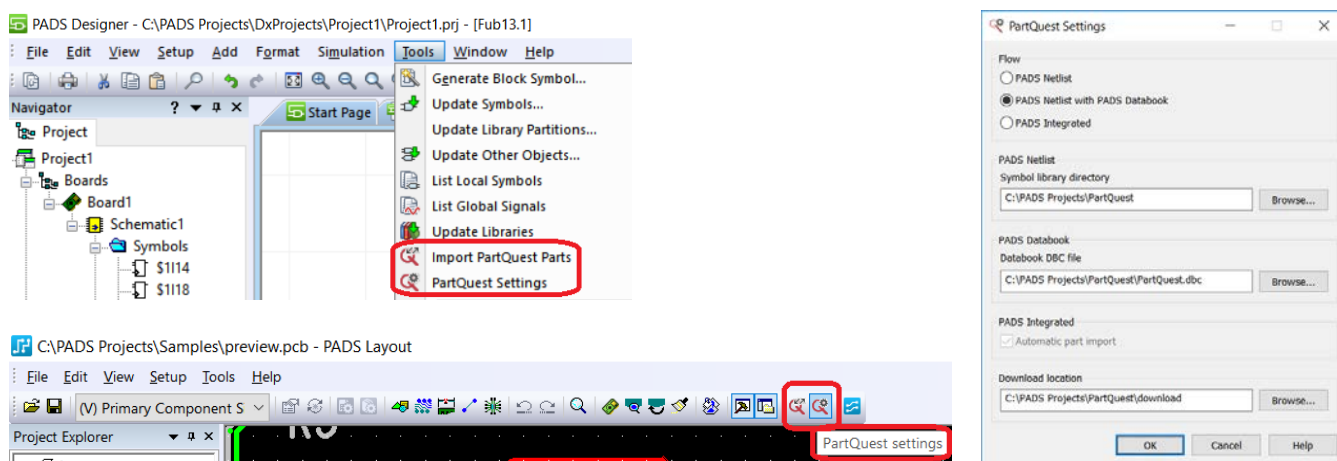
An overwrite warning was added when generating PDF files. This was based on a highly ranked Mentor Idea (<https://communities.mentor.com/ideas/10654>).



PartQuest

Partquest.com Download Process Simplified

Designer and Layout now support a universal EDX file from partquest.com. There is no need for an extra install of integration utilities or to set the “flow” at partquest.com. The appropriate part data is extracted to respective library locations according to your flow choice in a new PartQuest Settings dialog utilized by both Designer and Layout.



Batch Import of PartQuest Parts in Designer

Designer now supports bulk import of multiple parts downloaded from PartQuest (and packed into one EDX file) with or without Databook.

HyperLynx® DRC

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

Allegro Integration Enhancements

The following information can now be imported from Allegro on new HL DRC projects only:

- .xnet name
- .diff pair name
- Constraint class
- Back drill info

-
- Stack up material properties
 - Wire bonds
 - Rigid-flex multi zone

Scripting Environment Improvements

- Embedded debugger is now available on Linux
- New scripting engine for better performance, removed limitations on JavaScript, and added Python support.

New Rules

- Diff pair via check
- PDN overlap check
- PDN width and resistance check

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

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.

PI Analysis

Support for VRM sense lines has been added to DC Drop analysis. This allows users to specify a pin designated as the VRM sense line pin, which acts as a reference point for boosting the voltage from the VRM to compensate for losses found at the sense line location.

SERDES

- Automatic 3D area creation has been enhanced to support creation of re-usable coupled 3D areas to accurately and efficiently capture 3D crosstalk between nets. A coupling threshold has been added to the automatic 3D area creation parameters to capture via-to-via, pin-to-pin, and/or trace-to-trace coupling within a 3D area, in a way that allows that larger coupled 3D area to be reusable for each net included. In previous versions,

overlapping 3D areas needed to be enabled/disabled depending on the simulation performed. The new 3D areas eliminate that need, making the process much more automated.

- The via modeling GUI has been enhanced to allow for separate padstacks on each leg of a differential pair, as well as include the orientation angle of a differential via pair.
- Differential pairs can now be created from nets that do not share a reference designator, which allows for easier analysis of SERDES test boards with individual SMA connections.

S-parameters

A number of performance enhancements have been made to simulation of S-parameters in the time domain. This is especially useful for power-aware SI analysis.

Licensing

The PADS VX.2.7 release utilizes the Mentor Standard Licensing software version 2019_3. The latest version of licensing software is always available on Account Center:

<https://account.sw.siemens.com/licenses/download>

This version of PADS requires a PCLS FlexNet license server running at version v11.16.4.0 or higher. If you use floating licenses and your license server is not at least at FlexNet v11.16.4.0, you will need to update the license server.

Authorization Codes

To use PADS VX.2.7, a minimum license version (Exact Access Date) of 2020.02 (February 2020) is required. The EAD reflects the support contract expiration year and month.

There are no other changes to authorization codes for this release. You may download your existing authorization codes from Account Center:

<https://account.sw.siemens.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.sw.siemens.com/licenses/guide>

The availability of the DxLibrary Studio product (PN 227522) will conclude with the VX.2.7 release. This functionality has been replaced by the PADS Library Tools core technology available with the PADS product.

Global Customer Support and Success

A support contract with Mentor, a Siemens Business, is a valuable investment in your organization's success. With a support contract, you have 24/7 access to the comprehensive and personalized Support Center portal.

Support Center features an extensive knowledge base to quickly troubleshoot issues by product and version. You can also download the latest releases, access the most up-to-date documentation, and submit a support case through a streamlined process.

<https://support.sw.siemens.com/>

If your site is under a current support contract, but you do not have a Support Center login, register here:

<https://support.sw.siemens.com/register>

Platform Support Changes

PADS products are no longer supported on the following Windows Operating Systems, beginning with the release of PADS VX.2.7:

- Windows 7 and Windows 8.1
- Windows Server 2012 R2

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.

File Storage

You can install the libraries and share them for group use across a local area network (LAN). We do not recommend use of shared libraries across a wide area network (WAN) due to issues with latency. Storage of any files on Network Appliance Servers (NAS) are not supported with PADS.

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.2.7 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.2.7 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

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.