



A Siemens Business

Personal Automated Design System Release Highlights

Software Version PADS VX.2.2

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Introduction

This document provides a high-level summary of the PADS® VX.2.2 release. Refer to the Release Notes on SupportNet 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 the release. Refer to the Release Highlights documents on SupportNet for the most up-to-date release information.

New Features Introduced in PADS VX.2.2

This is primarily a release aimed at adding new functionality and fixing customers logged defects. The following new products, features and enhancements are introduced in the PADS VX.2.2 release.

New Product Options

There were no new product introductions for PADS VX.2.2.

Improvements to Migration

With each release, improvements and enhancements are continually being delivered for both migration within MGC flows and translations from competitive tools. Approximately 25 defects have been addressed for VX.2.2 across the following areas:

- **Migration between MGC flows** – PCB migration from PADS to PADS Professional and Xpedition Enterprise
- **Library Migration** – PADS Designer and PADS Netlist libraries to Central Library
- **Translation from competitive tools** – Improved translation, with particular emphasis on Altium to PADS Layout, PADS Professional and Xpedition Enterprise
- **Project Migration** – Migration of Electrical nets and associated design rules from Netlist to Integrated projects.

PADS AMS

PADS AMS is now included on the media as part of the core PADS install.

Note: If you use Xpedition AMS (formerly known as SystemVision) in the PADS environment, review details in the Xpedition AMS Release Highlights document.

Features and Functionality

Faster simulator startup

In earlier PADS AMS versions, large designs could take several minutes to load into the simulator. In this release, load times for large designs are reduced by as much as 50 -60% over earlier simulator versions.

PSpice Converter updates/improvements

We continue updating and enhancing the PADS AMS PSpice converter. Converter improvements for this release include several changes to handle model syntax that did not convert properly in earlier releases.

Side-by-Side installation/invocation

The PADS environment, and therefore the PADS AMS tool set, now support installing and running multiple versions of the environment without using the Release Switcher program.

Simulation convergence improvements

We continue to research and implement more efficient ways to solve tough simulation problems. This release includes support for adding shunt elements to a simulation (cshunt and gshunt), and better logic for handling divide-by-zero issues.

Faster parts placements from the PADS AMS toolbar

When the PADS Designer Properties pane was open in earlier releases, there was a delay between selecting a part in the PADS AMS toolbar and when the selected symbol could be placed in a design. In this release, the delay is reduced by as much as 90%.

PADS Layout

Electrical Nets

Electrical Nets Actuals in the Layout/Router spreadsheet values are now aligned with Constraint Manager values.

There is a major change in how net/pin-pair length is calculated in PADS VX.2.2. This change is not only for Electrical Nets, but also for Physical (Regular) Nets in both Netlist and Integrated projects.

Electrical Nets usage is not required to see the differences. Changes were implemented in both PADS Layout and Router.

In PADS VX.2.1 and prior releases the net/pin-pair length is equal to the trace length for regular nets and a sum of trace lengths and inner component discrete lengths for electrical nets.

This change applies to tooltips and status bar texts when interactive routing. Reported values include pin package lengths.

The new implementation will always pick half of each component discrete length for each pin connected to the trace and the trace length. Electrical net length calculation also was changed to sum the individual nets/pin-pairs length into electrical net length

This change applies to Report in Router: Reported values include pin package lengths and there is appropriate caption: “Net Length in Mils (Pin package length included)”.

PADS 3D

In this release we have added support for alternative decals in PADS 3D. There are two major changes related to this functionality:

- You can now successfully use different alignment to different decals sharing the same part and 3D model
- You can import different 3D model to a different decals sharing the same part

There were also a number of improvements made in the Update Library / Update Models functionality that supports 3D model mapping reuse.

Flat DXF Export

Completing some enhancements that were started in PADS VX.2.1, a further 5 Customer Service Requests (SR's) have been addressed.

Further details on Customer Service Request addressed on VX.2.2 can be found in the PADS VX.2.2 Release Notes Document located on SupportNet.

Variant Manager

10 Customer SR's have been addressed in many different areas, including BOM output, PartLister, scripting and part properties. Further details can be found in the Release Notes.

CAM Improvements

30+ Customer SR's have been addressed.

A new CAM integrity test has been introduced – it is not part of the regular integrity test in Layout, but it is executed separately when you open CAM Documents dialog and/or when you click OK on any dialog inside that.

Several issues related to incorrect Gerber files being produced when the G36/G37 D-Code option is enabled have been addressed, including customer reported crashes. PADS Layout now utilizes the newer plane generation engine (introduced with the VX.2 release to improve the overall quality of generated plane/copper data) to fix these errors.

Ease of Use Improvements

60+ Customer SR's have been addressed in many different areas, including the following:

- Via Stitch not working for a copper shape that is over another copper shape on a different layer
- Tilt wheel on mouse no longer works for horizontal panning within PADS
- Overlapping outlines on different layers cause lines and pads to disappear during a move
- GUI Defect, Project Explorer, select any item notice the color is light grey. Repeat within Logic and Router it's Dark Blue.
- PADS Layout can be opened from `\SDD_HOME\Programs` without warning that it should be opened from `\SDD_HOME\common\win32\bin` instead
- BGA won't fan out correctly
- Quick Measure, Modeless command q, dimension text becomes grainy or out of focus over certain colors

PADS Library Tools

A new command, “Library Services” has been added to the PADS Library Tools.

Library Services, depending where it launched from, schematic or layout, allows you to manipulate (copy or move, Import/Export, depending upon object type) one or more data objects to/from another integrated flow Central Library or data file in a single transaction.

Library Services does not function in a PADS netlist project flow.

You can move parts and associated objects:

- From a PADS integrated flow central library file to another PADS integrated flow central library file
- Between partitions in a PADS integrated flow central library file
- From a PADS part type library file (.px) to a central library file
- To and from PADS part type library files (.px)

PADS Layout and Router IDEAS

The following IDEAS have been addressed:

- D9340 - Remove need to add space between "Z commands" in Router
- D11033 - Please add an 'Enable Color by Net' checkbox

PADS Logic

Ease of Use Improvements

- Sheet dropdown list moves to opposite screen on a dual monitor system whenever the Layer Name is longer than 16 characters.
- When displaying PADS Logic on second monitor the drop down menu for Sheets displays on the other monitor.

PADS (DX) Designer

There are several ease of use improvements and new functionality for the VX.2.2 release.

New Display Control (IDEA 15413)

A new Display Control provides additional settings for schematic view and printing including the following advanced capabilities:

- Favourites
- Hide Unused items
- Search
- Schemes
- Operates on Schematic Navigator

Property Mapping Dialog

Significant improvements have been made to both Usability and functionality.

- Improvements to user interaction
 - Override vales
 - Delete values
 - Keep (multiple) items
- Defaults to “Library only”
 - As if placed from Databook
- Schematic wins
 - Use to replace like with like and keep schematic overrides
- Library wins
 - Use to replace different components but keep some schematic overrides

Search command

Instantiation of components has been added to the “Search” command.

- From Libraries Tab
 - Drag and Drop
 - Place with Slot

Verify Components

Verify components in the design for correct properties.

- Same functionality as Databook Live/Hierarchical Verification

IDEAS

The following IDEAS have been addressed:

- D3579 - Allow Variant Manager to substitute different Symbols
- D13991 - Add “Disconnect” option when RMB click on a Symbol
- D3989 - Slot command in Properties pane
- D6644 – Delete Borders, insert Borders, change Borders across whole design

HyperLynx SI/PI/Thermal

HyperLynx v9.4.2 adds some important new functionality and fixes defects. The sections below provide details of some major new capabilities.

Some of the HyperLynx updates/enhancements are listed below.

New, Modernized BoardSim Viewer

HyperLynx 9.4.2 adds a new, modernized board viewer to BoardSim, for increased ease-of-use and performance — overall, the most-significant upgrade to BoardSim’s viewing capability ever.

The biggest enhancement in the new viewer is layer transparency, which allows seeing through metal areas to the layers below. In BoardSim’s older viewer, “solid” metal was displayed as opaque; seeing beneath metal required toggling layer visibility on and off. In the new viewer, metal areas are solidly colored but “transparent”; you can see both a given area *and* through it to metal on layers below. This makes it easier to efficiently visualize and understand complex

aspects of a PCB's layout, for example, the details of a power-distribution network, exactly how decoupling capacitors and IC power pins are mounted, etc.

How you control the board viewer has also improved in version 9.4.2: two panes pop into view if touched at the right edge of the screen (one for layer-specific settings and the other for global options), providing quick access and maximizing screen space.

Finally, BoardSim's new viewer offers higher performance than the older one, noticeable especially with large boards: faster panning, zooming, etc. This is made possible through the use of accelerated OpenGL-based graphics.

BoardSim still offers the option (available on the Welcome screen) of using the previous viewer: on an older machine running a 32-bit operating system or with an out-of-date OpenGL driver, the "classic" viewer may be needed. But for most users, the new viewer offers significant benefits and improvements.

NAND-Flash Support in the DDRx Wizard

In HyperLynx v9.4.2, the DDRx Wizard adds support for simulation of two important and widely used NAND-Flash standards, NV-DDR3 and NV-DDR2. This brings to designers of these increasingly popular memory technologies the same powerful, comprehensive, batch-mode analysis HyperLynx has long offered for DDR protocols: complete simulation of entire interfaces, encompassing all aspects of required timing and signal-integrity validation. Close adherence to the requirements of the relevant standards makes the new NAND-Flash capability truly sign-off-level.

Enhancements to Integration of LineSim to Full-Wave Solver

In HyperLynx v9.4.2, for "3D vias" in a LineSim schematic that are marked for solving with the HyperLynx Full-Wave Solver, additional geometry and materials data can be specified, including:

- Via backdrilling
- Removal of non-functional pads
- Via metal material (changeable per via)
- Trace-to-plane separation of feeding traces (per via)
- Support for multi-board / multiple-stackup designs ("local" stackup used for each via)

This additional information allows taking the fullest advantage of the full-wave solver's ability to discern differences in electrical behavior resulting from even "subtle" variations in geometric details.

Improved, HTML-Based Results Reports

In recent releases, HyperLynx has significantly improved its simulation-results reporting, adding HTML-based reports with a rich set of features: numerical values that one-click link to annotated waveforms; “dynamic” plots that allow zooming, panning, and curve highlighting; and so forth.

In version 9.4.2, further reporting enhancements have been made. For example, a new HTML report has been added for decoupling analysis; it shows the end-result Z-parameter curves and records the detailed settings used to produce the analysis.

Existing reports have also been augmented and improved. For example, the already-extensive HTML report produced for DDRx batch analyses now adds:

- Tooltips with helpful comments about violations and failures
- Improved setup- and hold-time highlighting in linked waveforms
- Various enhancements to reporting for DDR4, DDR3, LPDDR4, and LPDDR3 interfaces
- Other improvements based on user suggestions / feedback

HyperLynx DRC 6.5 - Summary

The HyperLynx DRC v6.5 release focuses on improved integration between HyperLynx DRC and PADS VX.2.2. HyperLynx DRC v6.5 offers users a number of defect fixes and improvements.

Usability Improvements

- Cross Probing between HyperLynx DRC and PADS is supported.
- Multiple Violation View: By selecting multiple violations in the build-in spreadsheet, all the violations generated by OOTB rules are displayed in the board viewer.

Out of the Box Rules Additions

HyperLynx DRC v6.5 Developer now has 40 rules including 16 new rules. HyperLynx DRC v6.5 Standard has 8 new rules. The new rules in both Standard and Developer offer checks that are commonly used for DDR verification such as topology and skew/delay checks. Developer offers additional differential pair verification rules such as symmetry check. Power Integrity rules are also added. Developer has additional 4 rules to check both decoupling capacitor and layer transition via holes counts. The table below shows the new rules now available in HyperLynx DRC v6.5.

Signal Integrity Rules

Topology (T-folk)	Standard/Developer
Topology (Fly-by)	Standard/Developer
Topology (Star)	Standard/Developer
Delay Length Matching	Standard/Developer
Relative Delay Length Matching	Standard/Developer
Via to Via Isolation	Developer
Acute Angle	Developer
Differential Pair Symmetry	Developer
Differential Pair Spacing	Developer
Differential Pair Pad Parasitic Capacitance	Developer
Differential Pair Phase Matching	Standard/Developer

Power Integrity Rules

Decoupling Capacitor Order	Standard/Developer
Decoupling Capacitor Overage	Developer
Decoupling Capacitor via Locations	Developer
PDN via Count	Developer

EMI Rules

Return Loop	Standard/Developer
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AOM Enhancements

- Added new engine
- Connectivity Graph

A connectivity graph represents a net's connectivity in a graph form, where vertex of the graph represent pads, traces or area fills, and edges represent physical connections between them.

Licensing

The PADS VX.2.2 release utilizes the Mentor Standard Licensing Server MGLS v2016_2. The latest version of MGLS is always available from SupportNet by searching for the product "System Administration" under the Product Finder. This version of PADS requires a PCLS FlexNet license server running at version v11.13.1 or higher. If you use floating licenses and your license server is not at least a FlexNet v11.13.1, you will need to update the license server.

Related TechNote:

[Why upgrade to FlexNet v11.13.1.2/v11.13.1.4? Download the latest licensing software.](#)

Authorization Codes

To use PADS VX.2.2, you must be on support contracts for these products as of May 2017. For more information about "Exact Access" authorization code formats, see the explanation on SupportNet at:

http://supportnet.mentor.com/about/other-info/exact_access.cfm

You may download your site's existing authorization codes from SupportNet at:

<http://supportnet.mentor.com/myaccount/index.cfm?fa=user.licenses>

There were some minor changes to authorization codes in the PADS VX.2.2 release for the following two PADS products.

- PADS AMS Design Suite Ap SW, PN: 268118
- PADS DS Suite Ap SW, PN: 242951

You may request your existing authorization codes by opening a non-technical Service Request on SupportNet:

<http://supportnet.mentor.com/>

For additional licensing information, refer to the *Licensing Mentor Graphics Software* manual.

Ordering Licenses

To order licenses, contact your local Mentor Graphics sales office. They can provide you with information on the number of node-locked and floating licenses your company purchased and any current license sever configurations you may have. You must provide them with:

- Any new license server configuration
- The host ID numbers of client and license server workstations for node-locked licenses
- The host ID number of the license server workstation for all floating licenses

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Note: The Customer Support web site requires a login and password. To register and obtain a password, go to <http://supportnet.mentor.com/user/register.cfm>. If you have difficulties, email csd_registration@mentor.com.

If you are registered, but have forgotten your password, go to

http://supportnet.mentor.com/user/forgot_password.cfm

Support Information

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

<http://supportnet.mentor.com/>

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

<http://supportnet.mentor.com/user/register.cfm>

All customer support contact information can be found on our web site at:

<http://supportnet.mentor.com/contacts/supportcenters/>

Platform Support Changes

No platforms changes for PADS VX.2.2.

However, the PADS VX.2.2 flow release will be the last release that supports Library Support on the Windows Server 2008 R2 platform.

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.

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- 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 (32 and 64 bit versions), 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

Windows Server 2008 R2

The following configurations are only supported for the sharing of libraries. All other PADS VX.2.2 products are not supported on any Windows Server platforms.

Microsoft Windows Server 2008 R2, Standard Edition with all current updates via Windows Update, both 32-bit and 64-bit versions.

Processor: Dual-core Intel or AMD processor minimum. See [Processor Note for Intel/AMD Processors](#) above.

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

Swap Space: 2X the amount of RAM

Microsoft Windows 8.1

Microsoft Windows 8.1 (32 and 64 bit versions), 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 & 2012 R2

The following configurations are only supported for the sharing of libraries. All other PADS VX.2.2 products are not supported on any Windows Server platforms:

Microsoft Windows Server 2012 with all current updates via Windows Update and 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 (32 and 64 bit versions), 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.

Warning: The new Microsoft Edge Browser delivered with Windows 10 is not supported with PADS VX.2.2.

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.2.2 products are not supported on any Windows Server platforms:

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

Warning: The new Microsoft Edge Browser delivered with Windows 10 is not supported with PADS VX.2.2.

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