# What's New

**11.0.0.0**

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# What's New in PTC Mathcad Prime 11.0.0.0

This document describes the enhancements implemented in this release, categorized by the functional area:

- Application enhancements
  - Manual calculation mode
  - Custom unit system
  - Result threshold formatting (Exponential, complex, zero)
  - Binary, octal and hexadecimal support (Calculation and results formatting)
  - Region borders
  - Python for advanced controls
- Engine enhancements
  - New *decomp* keyword
  - Solve block improvements (Scaling of object functions and constraints, expanded CTOL)
  - Plot processing improvements
  - Symbolic calculation improvements (keyword *simplify*, calculus operators)
- Usability enhancements
  - Simplified insert image
  - Converting password-protected areas
  - New **vec()** and **IsRange** functions
  - Radio button selection by default
  - Slider Invert and Slider min/max properties

- Page number format

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# Application Enhancements

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# Manual Calculation Mode

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Calculations ▸ Controls**

### Description

In the manual calculation mode in PTC Mathcad Prime 11.0.0.0, you can decide when to calculate the worksheet. After you switch from automatic to manual calculation mode, you can update regions, change values, add content, and then decide when to include those changes in a calculation.

In manual calculation mode there are two ways to update the worksheet to accommodate changes made since the last time calculation occurred – by selecting **Calculate Worksheet**, which will update the entire worksheet, or by selecting the new **Calculate Now** option, which only updates relevant regions with out-of-date results up to the page currently being viewed.

# Custom Unit System

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Math ▸ Units**

### Description

PTC Mathcad Prime automatically provides results in units determined by the unit system you chose for the worksheet. The new custom unit system functionality introduced in PTC Mathcad Prime 11.0.0.0 enables you to create a unit system containing units of your choice.

From the **Units** menu, you can select the **Custom** unit system, base it on an existing built-in unit system, and then add or modify the base and derived units that are used and displayed when the worksheet is calculated.

# Result Threshold Formatting (Exponential, Complex, and Zero)

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Math Formatting ▸ Results**

### Description

Set the exponential, complex, and zero thresholds of your results.

PTC Mathcad Prime 11.0.0.0 adds three new threshold values for result formatting:

- Complex threshold — Controls how much larger the real or imaginary part of a number must be before the display of the smaller part is suppressed.
- Zero threshold — Controls how close a result must be to zero before it is displayed as zero.
- Exponential — Controls whether the number is displayed in exponential notation.

# Binary, Octal, and Hexadecimal Calculations and Result Formatting

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Calculations** ▸ **Worksheet Settings** ▸ **Calculation Options** and **Math Formatting** ▸ **Results**

## Description

Calculate equations and format results in binary, octal or hexadecimal format.

In PTC Mathcad Prime 11.0.0.0, when the new **Bin/Oct/Hex Mode** is selected from the **Calculation Options menu**, entering the letters *b*, *o*, or *h* after a number identifies that number to the calculation engine as binary, octal, or hexadecimal, respectively. In this mode, binary, octal, and hexadecimal calculations can be performed directly within the worksheet.

To support this calculation mode, in PTC Mathcad Prime 11.0.0.0 select a new **Radix** control in the math formatting results menu that enables you to select the default format for displaying results: decimal, binary, octal, or hexadecimal.

# Region Border

PTC Mathcad Prime 11.0.0.0

User Interface Location: Click **Document** ▸ **Region Formatting**

## Description

In PTC Mathcad Prime 11.0.0.0, you can turn region borders on or off, and display them when they are not active or selected. You can chose to display the region border either individually or for a selected group. This applies to all regions that do not have borders displayed by default when inserted into a worksheet, including math, text, and plots.

With the region or regions selected, either use the right mouse button menu item **Show border** or go to the **Document** tab and use the **Show Border** button in the **Region Formatting** section. You can turn borders off using the same controls.

# Python for Advanced Controls

PTC Mathcad Prime 11.0.0.0

User Interface Location: Advanced Control **Edit** dialog box, in the **Script Editor** tab.

## Description

Script advanced controls using Python.

In addition to the existing VBScript and JScript languages, PTC Mathcad Prime 11.0.0.0 provides the ability to create advanced controls using the Python scripting language. If you have the required version of Python installed on your system, it will be automatically registered for use in PTC Mathcad Prime 11.0.0.0. Once registered, Python will be listed as a scripting language available for selection in the advanced control **Edit** dialog box.

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# Engine Enhancements

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# New decomp symbolic keyword

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Math ▸ Operators and Symbols ▸ Symbolics**

### Description

Use the new *decomp* symbolic keyword to decompose large symbolic result expressions. *decomp* replaces repeating parts and numeric coefficients with placeholder identifiers in the result, making it easier to analyze the general format of the result and use it later in the worksheet. Several new modifiers have been added to better control the use of the keyword.

# Solve Block Improvements

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Math ▸ Regions ▸ Solve Block**

### Description

Solve blocks have been improved by providing better support for scaling objective functions and constraints, and by expanding the role of the worksheet CTOL setting during a solve block calculation.

# Plot Processing Improvements

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Plots**

### Description

2D plot processing is improved, leading to faster display times of many XY and polar plots.

# Symbolic Calculation Improvements

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Math ▸ Operators and Symbols**

### Description

Improved performance for symbolic calculations, including:

- The keyword *simplify*
- Calculus operators

# New vec and IsRange Functions

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Functions**

## Description

Two new functions are added to PTC Mathcad Prime 11.0.0.0:

- **vec()** — Creates a simple vector from either start, step and stop values, or by converting an existing range variable to a vector.
- **IsRange()** — Determines whether an expression is the range data type.

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# Usability Enhancements

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# Simplified Insert Image

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Document ▸ Regions ▸ Image**

### Description

In PTC Mathcad Prime 11.0.0.0, the insert image workflow has been simplified by removing the need for an image region. When choosing to insert an image at a location in the worksheet, the image file browser is immediately opened.

# Convert Password-Protected Areas

PTC Mathcad Prime 11.0.0.0

User Interface Location: N/A

### Description

The PTC Mathcad Prime 11.0.0.0 legacy worksheet converter will now convert password protected areas from legacy Mathcad worksheets to areas protected with the same passwords in PTC Mathcad Prime 11.0.0.0 worksheets.

# Radio Button Selected by Default

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Input/Output ▸ Controls ▸ Advanced ▸ Radio Button**

### Description

To avoid ambiguity, when inserting a new radio button advanced control in PTC Mathcad Prime 11.0.0.0, a radio button is preselected.

# Slider Invert and Slider min/max Properties

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Input/Output ▸ Controls ▸ Advanced ▸ Slider**

### Description

To provide more options for the slider advanced control type, in PTC Mathcad Prime 11.0.0.0 the slider minimum and maximum points can be inverted. Additionally, you can choose to display the minimum and maximum points on the slider.

# Page Number Format

PTC Mathcad Prime 11.0.0.0

User Interface Location: **Document ▸ Headers and Footers ▸ Page number**

## Description

New page format options can be added to the header and footer in PTC Mathcad Prime 11.0.0.0. The new formats indicate both the page number and the number of pages, but because they do not contain text, they can be used in all languages.