

Enterprise Infrastructure Planning Tool User Guide

Basic walkthrough and definition of terms

Version 1.11

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Revision History

Version 1.0	Initial Release
Version 1.01	Added explanation of Configuration Search, Web saving nuances, deploying modular/shared infrastructure nodes, multi-solution explanation, minor text fixes
Version 1.02	Added “What’s New” section to act as pseudo release notes. Will drive more regular refresh of manual. Added explanation of new PCIe Airflow Adviser.
Version 1.03	Small commodity content update. Primarily a bug fix release. See What’s New.
Version 1.04	Added PowerEdge Launch 2 products (R540/R440, T640/T440, FC/M640). Added feature to suppress erroneous error messages. Various commodity additions to existing products. Updated fan estimation calibration for 900 and 700 series rack products.
Version 1.05	Added Third Party PCIe Card support on 14G 900-400 R-series products. Added SC products (SC3020, SC3000, SC320, SC300). Adding PCIe Airflow Adviser support for R540 and R440. Workload choice information added to printed output. Clones in printed output consolidated to a single line. Power updated for NDC and Mezzanine cards in FC/M640. Modified PSU Adviser for R440 to allow configurations that are fault tolerant. Various commodity updates and defect fixes.
Version 1.06	Updated definition for sound power
Version 1.07	New User Interface and new functionality
Version 1.08	Max Potential Power added as Workload
Version 1.09	Import DSC Solution XML into EIPT
Version 1.10	Support for Storage Products from Power Calculator

Purpose

The goal of this user guide is to walk through many common user workflows to emphasize newly added features and efficiency improvements. In addition, we will seek to define terms used in the interface and output of EIPT for clarity.

What's New

1. Ability to import Solution XML file from DSC (Dell Solutions Configurator)
2. Power Calculator Integration:
 - a. Power Calculator is a similar tool to EIPT supporting legacy EMC Storage products. As part of this integration, all the actively selling EMC Storage products are supported in EIPT.
3. Greenhouse Gas emissions report

Familiarizing yourself with the Interface

Canvas Interface

A new feature of EIPT is the configuration canvas. You can now drag elements into and around this space to lay out groups of hardware. A single left click on an element will highlight it and context sensitive metric information will be displayed in the metrics pane. Items can be grabbed and dragged between areas of the canvas. When dragging, a grid will appear to help guide where the product can be dropped. Dropping on other products is not allowed. There is a keep out area around the rack where new products cannot be dropped.

The new layout will allow you a bigger canvas. Product catalog can be minimized to achieve even more bigger Canvas.

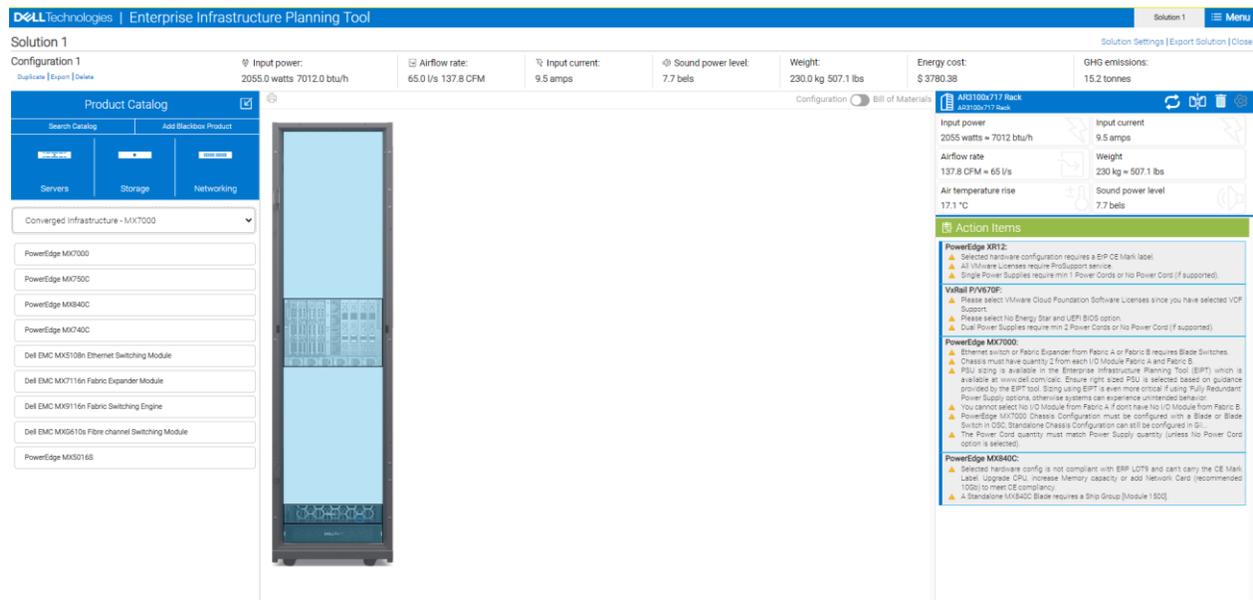


Figure 1: Bigger Workload Canvas

When an item is active, it will have a red border:



If you make a mistake or decide you want to remove a rack, product, etc., simply click it and press the Delete key on the keyboard. A prompt will display in case you press Delete by mistake. Note that any items nested in the container (ex: nodes in a chassis) will also be deleted.



Modes

Configuration Mode

This is the main mode where you will spend most of your time. It is selected by default. This mode controls the central pane and allows you to drag and drop products in the canvas.

If you are in in Bill of Materials Mode, to get to the Canvas switch to “Configuration” from the Mode, by simply clicking on it.



Bill of Materials Mode

This is an alternative mode which may be helpful to review the options chosen at a glance. Power and metrics are itemized in a similar fashion to how they will display in outputs.

If you are in Standard Mode, to get to the Bill of Materials switch to “Bill of Materials” from the Mode, by simply clicking on it.



AR3100x717 Rack	AR3100x717 Rack	Ghost Rack
Input power		396 watts, 1351.2 btu/h
Max potential power		698 watts
Input current		1.8 amps
Airflow rate		32.1 CFM, 15.1 l/s
Weight		36.3 kg, 80 lbs
Air temperature rise		22.2 °C
Sound power level		5.3 bels

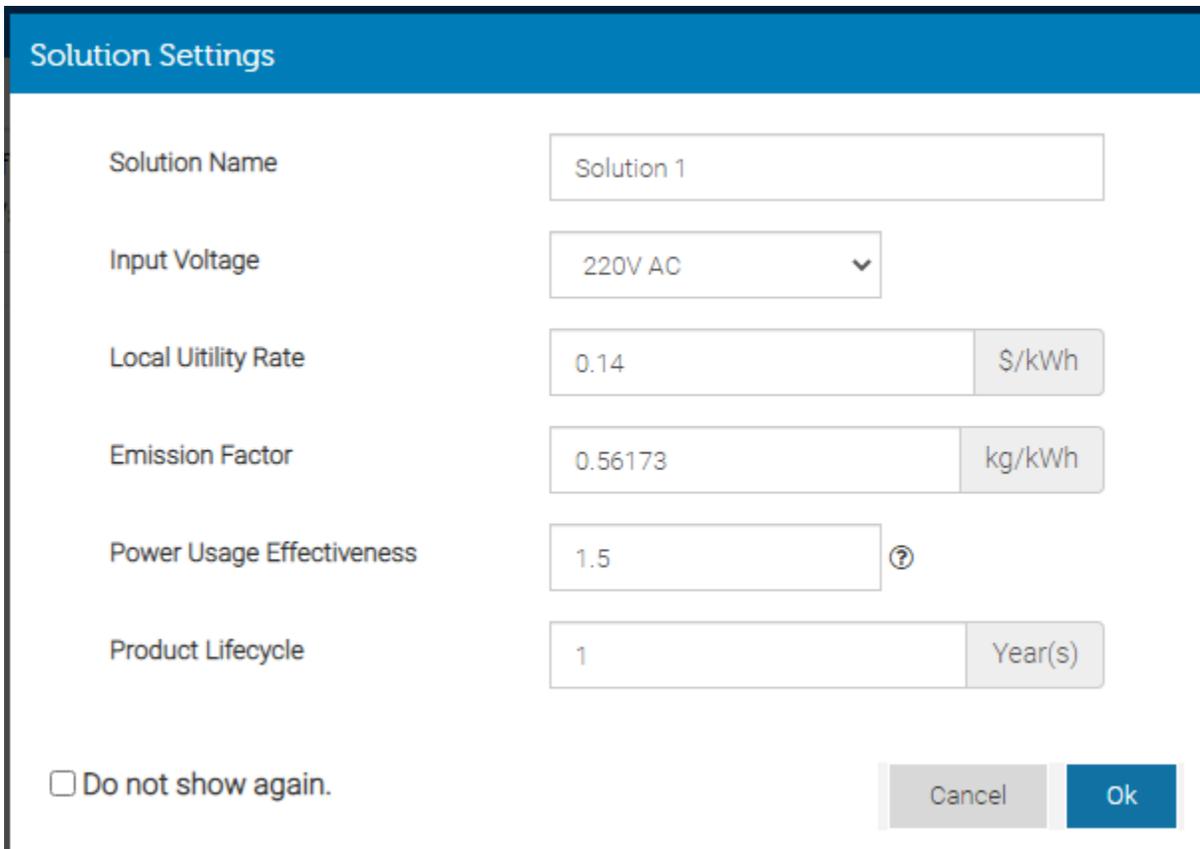
PowerEdge R7525	PowerEdge R7525
Input Power	396 watts, 1351.2 btu/h
Max Potential Power	698 watts, 2381.7 btu/h
Power Supply Capacity	1400 watts, 4777 btu/h
Input Current	1.8 amps
Airflow	32.1 CFM, 15.1 l/s

Organization

The tool offers several options to help organize your information and differentiate between different locations, customers, categories, or other organizational units.

Solution Settings – When you launch EIPT or try to create a new solution, you will be asked to choose the Solution settings. You must Set the Solution Name, Voltage, Local Utility Rate, Emission Factor, Power Usage Effectiveness and Product Lifecycle that applies to the entire solution.

Note: Solution Settings can be changed, on clicking **Solution Settings** in Solution bar.



The screenshot shows a dialog box titled "Solution Settings" with a blue header. It contains several input fields and buttons:

- Solution Name:** A text input field containing "Solution 1".
- Input Voltage:** A dropdown menu showing "220V AC" with a downward arrow.
- Local Utility Rate:** A text input field containing "0.14" and a unit selector button labeled "\$/kWh".
- Emission Factor:** A text input field containing "0.56173" and a unit selector button labeled "kg/kWh".
- Power Usage Effectiveness:** A text input field containing "1.5" and a help icon (question mark in a circle).
- Product Lifecycle:** A text input field containing "1" and a unit selector button labeled "Year(s)".

At the bottom left, there is a checkbox labeled "Do not show again." At the bottom right, there are two buttons: "Cancel" (grey) and "Ok" (blue).

Solution Tier– You can have multiple active solutions (up to 5 solutions) at one time in the interface. We imagine a solution would represent something large like a physical datacenter or a whole offering to a customer.



Configuration Tier – Each **Solution** can have multiple configurations (up to 10 Configurations) within it. A configuration is one comprehensive collection of hardware to be estimated. Typically, a configuration

will have a Rack and Product level estimation summary. If server or storage enclosures are included, it will have Rack, Chassis and Product level estimation summaries.

Configuration 1 <small>Duplicate Export Delete</small>	Input power: 2774.9 watts 9468.4 btu/h	Airflow rate: 48.0 l/s 101.7 CFM	Input current: 12.7 amps	Sound power level: 7.8 bels	Weight: 285.9 kg 630.3 lbs	Energy cost: \$ 5104.71	GHG emissions: 20.5 tonnes
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Rack Tier – Each **Configuration** can have one or several racks within it. At present the rack is a standard 42U height based off a purchasable rack, but actual hardware as found in sales catalogs is not available. Appropriate metrics will be summarized at the rack level at the upper right of the interface.

AR3100x717 Rack <small>AR3100x717 Rack</small>					
Input power 2774.9 watts ≈ 9468.4 btu/h	Input current 12.7 amps				
Airflow rate 101.7 CFM ≈ 48 l/s	Weight 285.9 kg ≈ 630.3 lbs				
Air temperature rise 21.3 °C	Sound power level 7.8 bels				

Chassis Tier – Some products such as Shared Infrastructure converged solutions are comprised of a **Chassis** and associated blades, sleds, or nodes. Appropriate metrics for **Chassis** is summarized in the context sensitive metrics pane when a chassis is selected.

PowerEdge MX7000 <small>PowerEdge MX7000</small>				
Input Power 266 watts ≈ 907.6 btu/h	Power Supply Capacity 9000 watts ≈ 30709.3 btu/h			
Input Current 1.2 amps	Weight 181.4 kg ≈ 399.9 lbs			

Product Tier – The most granular area of the organizational hierarchy is **Product**. Here you will find information specific just to your individual rack server, storage controller, network switch, etc.

PowerEdge R750 <small>PowerEdge R750</small>				
Input Power 597 watts ≈ 2037 btu/h	Workload Transactional 100%			
Power Supply Capacity 1400 watts ≈ 4777 btu/h	Input Current 2.7 amps			
Airflow 46.4 CFM ≈ 21.9 l/s	Sound Power 6.9 bels			
Weight 35.3 kg ≈ 77.8 lbs	Air Temperature Rise 23.2 °C ≈ 41.8 °F			

Metrics

Metrics are now represented in four tiers.

Special Note: If your configuration includes multiple metric tiers where a metric is not supported at all tiers, please be aware that your configuration level summary will not represent all hardware for that tier. For example, if you have 10 R730s which support Airflow Rate, with 4 FX2 chassis which **DO NOT** support Airflow Rate, the Configuration level summary will only include the R730 information and will be incomplete. Additional margin will need to be added to account for the disparity.

Configuration – This represents a summary of all hardware on the active canvas. It will usually include one or more racks. Metrics include:

- Input power
- Airflow rate
- Input current
- Sound Power level
- Weight
- Energy cost
- GHG emissions

⚡ Input power: 2207.0 watts 7530.6 btu/h	📦 Airflow rate: 61.9 l/s 131.1 CFM	⚡ Input current: 10.2 amps	🔊 Sound power level: 0.0 bels	⚖ Weight: 41.5 kg 91.5 lbs	💰 Energy cost: \$ 4060.00	🌱 GHG emissions: 16.3 tonnes
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Rack – This represents a summary of all hardware within one rack on the canvas. It will usually include several **Chassis** or **Products** but may include only one for a simple **Configuration**. Metrics include:

- Input power
- Input Current
- Airflow rate
- Sound power level
- Weight
- Air temperature rise

Chassis – This represents a summary of all hardware in a server or storage enclosure. Metrics include:

- Input power
- Input Current
- Power Supply Capacity
- Weight

Product – Metrics include (This offering varies from product to product):

- Input power
- Input VA
- Input Current
- Airflow
- Weight
- Ambient temperature
- Power Supply capacity
- Peak Inrush Current
- Sound power
- Sound pressure
- Chassis Size
- Air temperature rise

PSU Adviser

Under the **Power Supply** heading of supported products, you will find a **Guide** button for the EIPT PSU adviser. We recommend you use this pop out modal to determine what PSU options best fit your needs.

PSU Option ▲	Power Supply Capacity ▲	Estimated Input Power At Workload (W) ▲	Estimated Cost At Workload (USD) ▲
<input type="radio"/> Single, Hot-Plug, Power Supply 800W Non Redundant (1+0), A	800	432 W	\$ 529.8
<input type="radio"/> Single, Hot-Plug, Power Supply 800W Non Redundant(1+0), L	800	432 W	\$ 529.8
<input type="radio"/> Dual, Hot-Plug, Power Supply 800W Redundant (1+1), A	800	432 W	\$ 529.8
<input checked="" type="radio"/> Dual, Hot-Plug, Power Supply 800W Redundant (1+1), L, Mixed Mode	800	432 W	\$ 529.8

**Selecting a PSU capacity less than recommended may experience graceful performance degradation depending on environment and workload for non-redundant PSU configurations or after redundancy loss for redundant PSU configurations.

Estimated Input Power At Workload is representative of the estimated power consumption (in Watts) of the system under the user configurable Workload condition and parameters selected on the system

Cancel

Options that are grey are determined by budgeting logic be insufficient to fit your configuration. For monolithic products such as Racks and Towers we highlight the recommend power supply in green. This recommendation indicates that it is the lowest capacity redundant PSU that fits the chosen hardware selections.

In the PSU Adviser window, we offer an explanation of the metrics shown and applicable use of the information. For screenshot purposes you may hide or expand the text portion of the window by clicking on the arrow.

Special Note: The R440 platform has specialized sizing logic implemented. It maintains the portfolio stance that we would only recommend a redundant power supply policy. The deviation is that logic has been restructured to allow the user to choose options with varying levels of redundancy. Conditionally, choices which previously would have been grey or not allowed are now white and allowed if they meet the standard of Fault Tolerant Redundancy. For a definition please consult the R440 Owner’s Manual. As a high-level summary, these choices are still redundant and will keep the system up and running even in a PSU fault, but now may result in performance degradation when a supply is lost.

Previously we would have blocked any PSU option which could result in performance degradation when a supply is lost. We modified the logic to allow customers better information to optimize cost versus only optimizing PSU redundancy.

Power Supply Guide

PSU Option ▲	Power Supply Capacity ▲	Estimated Input Power At Workload (W) ▲	Estimated Cost At Workload (\$USD) ▲
<input type="radio"/> Single, Hot-Plug, Power Supply 800W Non Redundant (1+0), A	800	432 W	\$ 529.8
<input type="radio"/> Single, Hot-Plug, Power Supply 800W Non Redundant(1+0), L	800	432 W	\$ 529.8
<input type="radio"/> Dual, Hot-Plug, Power Supply 800W Redundant (1+1), A	800	432 W	\$ 529.8
<input type="radio"/> Dual, Hot-Plug, Power Supply 800W Redundant (1+1), L, Mixed Mode	800	432 W	\$ 529.8

**Selecting a PSU capacity less than recommended may experience graceful performance degradation depending on environment and workload for non-redundant PSU configurations or after redundancy loss for redundant PSU configurations.

Estimated Input Power At Workload is representative of the estimated power consumption (in Watts) of the system under the user configurable Workload condition and parameters selected on the system

[Cancel](#)

PCIe Airflow Adviser

Under the **Chassis** heading of supported products you will find a **Guide** button for the EIPT PCIe Airflow Adviser. This feature is only currently supported on 14G rack products. This adviser provides estimates for the maximum PCIe airflow delivered to each PCIe slot. The estimates are provided in terms of Linear Feet per Minute or LFM. LFM is a measure of the approach/inlet velocity of air to the PCIe slot and is the most commonly used metric to define PCIe card cooling requirements.

PowerEdge servers will typically operate at a lower LFM than the maximum value. Cards provided by Dell will be optimally configured for their airflow needs. For 3rd party cards a proprietary algorithm is used to estimate the cooling requirement for that card. For best results it is recommended to consult the 3rd party card's specification and enter the card cooling requirement into the iDRAC's PCIe Airflow Configuration. This will automatically ensure the 3rd party card's cooling requirements are met or exceeded. This may also reduce excessive fan speeds associated with the 3rd party estimated response.

LFM estimates are also provided within iDRAC. These estimates may change as new hardware is added. For example, adding more hard drives may reduce the airflow to the PCIe slots and will be automatically represented in this adviser and iDRAC.

Reporting of the maximum slot LFM may also allow for optimal card slot arrangement. Cards that require higher levels of cooling may be placed in the highest LFM slots to minimize the fan speeds required to cool them. This can result in lower fan power consumption, airflow consumption and acoustics.

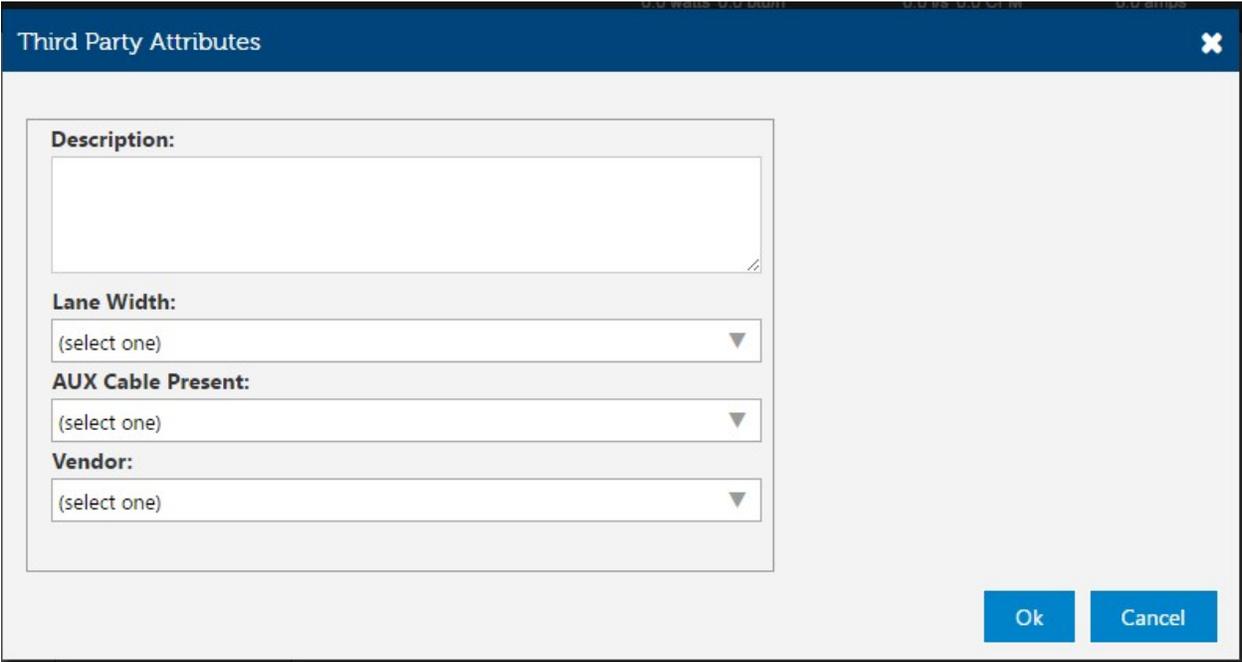
Third Party PCIe Card Support

Under any PCIe heading on R series 940 to 440 products we have added a series of “third party” options. This will allow users to model their system with cards not directly supported or not offered through Dell EMC factories. The intent is to offer information about the default power and cooling behaviors when cards are added to assist with sizing. The feature is modeling only and does not imply any form of new support by Dell EMC.

When a card is added we assess the default power and cooling behaviors based on the selections made. This will influence Input Power, Input Current, Maximum Potential Power, PSU Sizing, Airflow, Sound Power, and Air Temperature Rise. It will not impact Weight, or PCIe Airflow Adviser output.

Note that Airflow, Sound Power, and Air Temperature Rise are system level metrics. It is possible the card(s) added will be sufficiently cooled by the existing system response of other Dell EMC supported commodities also installed. In such a case these metrics may not change and that is expected.

When a third-party card is added please answer all questions in the Pencil icon  that appears.



Third Party Attributes

Description:

Lane Width:
(select one)

AUX Cable Present:
(select one)

Vendor:
(select one)

Ok Cancel

This information will be used to correctly size the power and cooling impact of the adding the card. It will also be useful to identifying the card in your printed output for future reference.

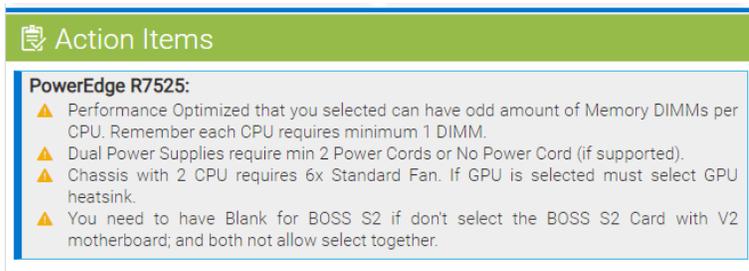
Action Pane

In the bottom right of the interface is the **Action Pane**. This is the location to review to confirm that the configuration is valid, and all hardware and sales rules have been followed. Note that while due care is applied to restrict invalid combinations, but it is assumed users have a working understanding of the physical and technical limitations of these products. Sales tools and/or Dell.com will be the ultimate authority on valid combination of hardware if there is any delta between EIPT and those resources.

If you have applied a customized name to your product you will see it reflected in this window. To further assist with identifying what product is generating the error messages, you can click on the message and the product will be selected in the canvas.

If you have an error and you are unable to clear it. Consult the FAQ at the end of this user guide for additional information and steps.

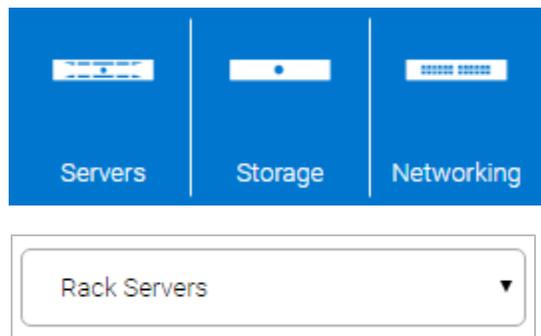
Same Action pane will appear in the Configure server Popup, but it only shows the warnings for Selected products. Check [Figure 2: Configure Product Pop-Up](#)



Estimation Workflow

Browse Products

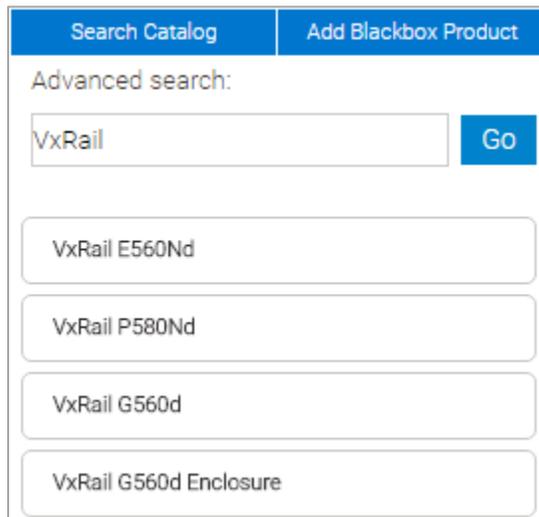
The first option available for you to find a product is to simply browse for it. You must first select the icon for the major business unit you wish to browse (Servers, Storage, Networking). Next you will have a dropdown dynamic to the business unit selection which offers subcategories of interest.



Select your subcategory then browse to your product. A single click on the product will pop out an identification pane with a picture of the product. If you click the “Add Product”, the product will be added to a new rack in the canvas. If instead you wish to decide where it is placed, simply click and drag to your desired location. Note: Modular/Shared infrastructure products are dragged and dropped on top of the picture of the chassis in the interface. If you drop in empty space a chassis will be created automatically.

Search Catalog

For more advanced users who are familiar with the products by name, it allows to search directly. Click the “Search Catalog” button in the upper left pane. Enter all or a portion of the product name and click “Go”. The search will return all products that are a close match. You may select them in the same manner as with browsing the catalog.



Search Catalog	Add Blackbox Product
Advanced search:	
<input type="text" value="VxRail"/>	<input type="button" value="Go"/>
VxRail E560Nd	
VxRail P580Nd	
VxRail G560d	
VxRail G560d Enclosure	

Configuring Products

Before you begin configuring products, it is recommended you review Solution level settings and lock in your choices.

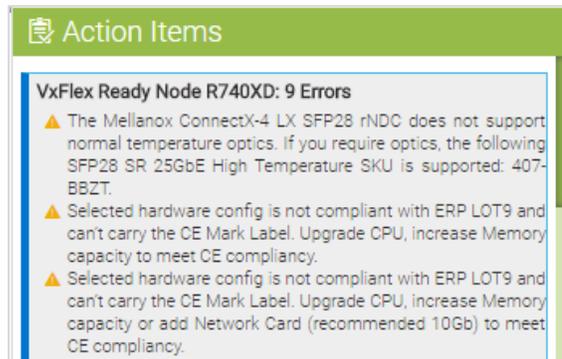
To configure a product (ex: chassis, storage appliance), first click the product. A red border will highlight the chosen product and controls specific to that product will appear in the right panes.



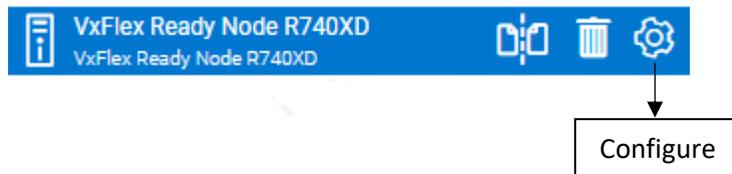
The first option to configure is product name. This is optional, but customers often indicate it is very helpful to recall the purpose or category of the product as it will be used in the installation. The product branding is maintained so recognition of the hardware persists even if a name is chosen.



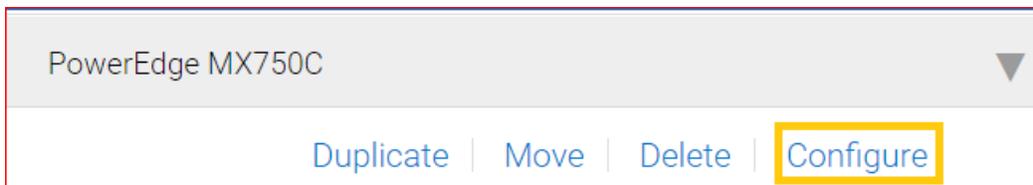
Something to note is that the name you choose will translate to the Action Pane so you can quickly identify which products have errors. It will also translate to printed material outputs.



The next step is to Configure the Product, you can Click on the Icon at right most corner.



To access configuration information for Modular/Shared Infrastructure nodes, you must click the dropdown arrow followed by "Configure", below Power Configuration on EIPT Dashboard



To configure all the commodities and settings of the system hardware, click on the Configure Button, a pop-up (i.e. Configure Server Panel) will be opened. However, at times validation messages will trigger (see the Action Item panel) indicating your configuration is invalid as configured. This may require accessing modules which do not impact power.

The Configure Server panel (CS Panel)

The CS panel, have:

- Module Selection Panel
- Workload Selection Panel (**New Addition: MPP Benchmark**)
- Action Item Panel

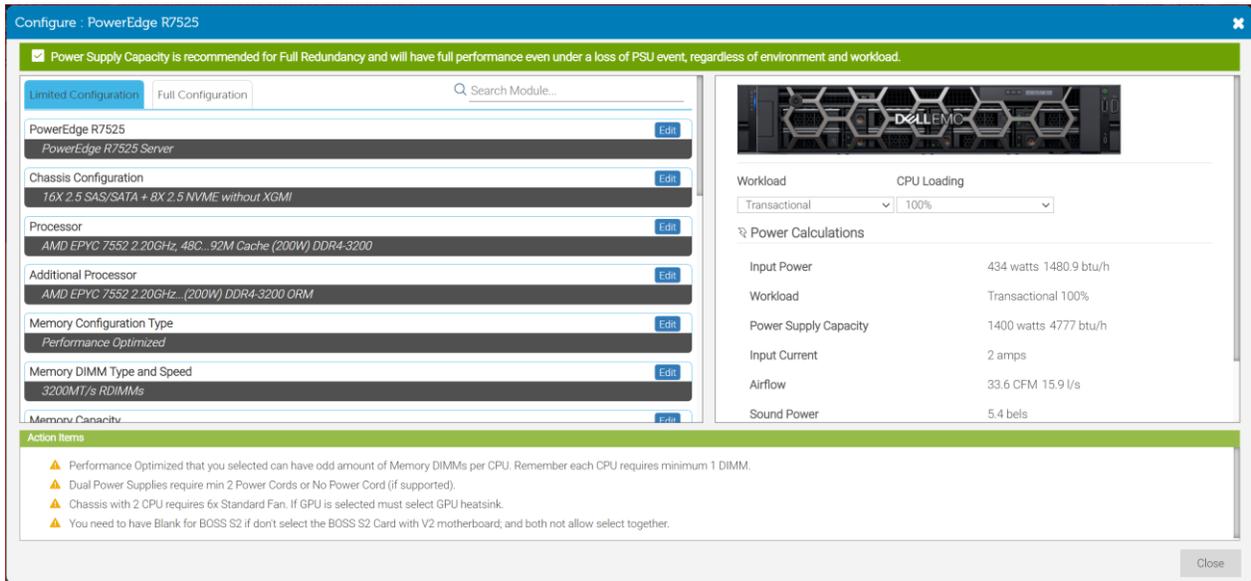
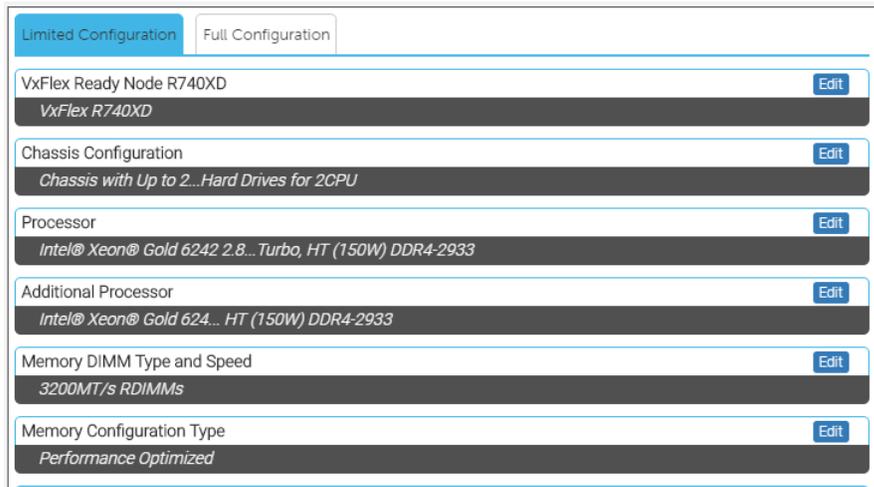


Figure 2: Configure Product Pop-Up

1) Module Selection Panel

This panel let you choose the desired configuration as well as it will show you the selected module items.



Module Selection panel has 2 tabs:

a) Limited Configuration

- a. For a pure estimation focus we recommend you use the “**Limited Configuration**” toggle to address only those modules which will influence your power/thermal estimation.

b) Full Configuration

- a. To get full access to all modules, click on **Full Configuration**.

How to Choose an item(s) in a Module:

- ❖ Click on **Edit** button on the desired module.
- ❖ A dropdown will be opened. If it's a **single selection item**, as soon as you select the Item, it will be saved, but if it's a **multiple selection item**, you need to choose the Item, add the quantity required, and click on **Done** Button. Then after the settings will be saved.

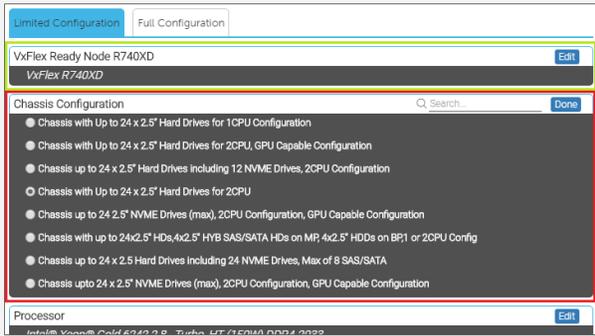


Figure 3: Single Selection Items

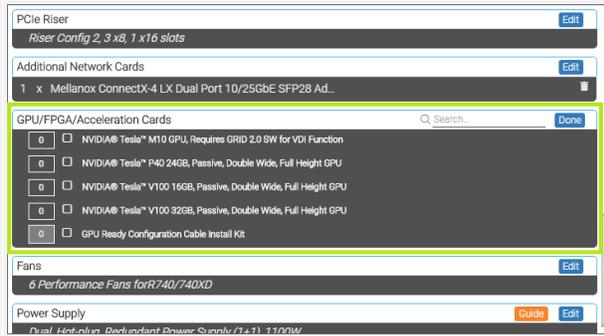
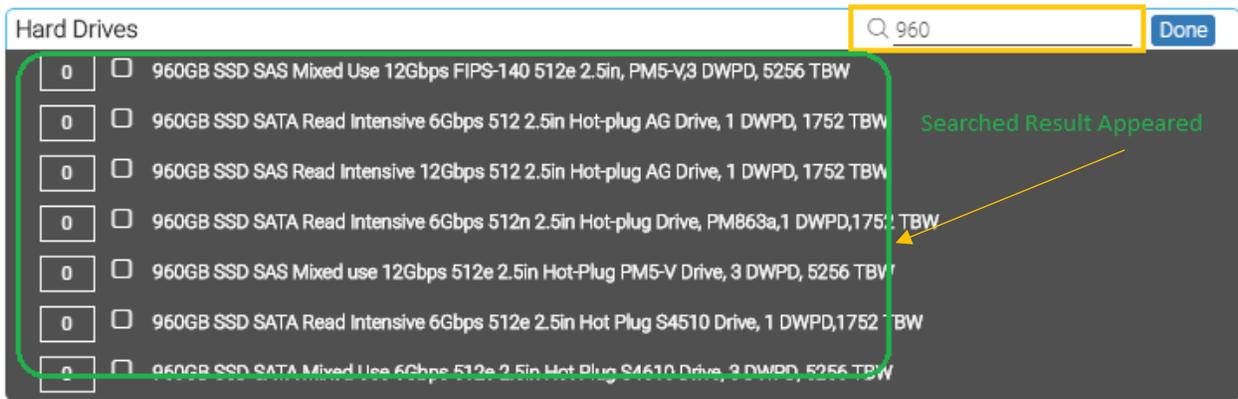


Figure 4: Multiple Selection Items

Search Modules:

This feature allows you to search directly for a product inside the module. Anything in the text string of the option should be a valid search term. EX (not actual quotes) “E5-2690”, “400GB”, “QP”.



2) Workload Selection Panel

This panel shows selected server image, workload settings and power calculation info of selected product



Workload: Transactional | CPU Loading: 100%

Power Calculations

Input Power	434 watts 1480.9 btu/h
Workload	Transactional 100%
Power Supply Capacity	1400 watts 4777 btu/h
Input Current	2 amps
Airflow	33.6 CFM 15.9 l/s
Sound Power	5.4 bels
Weight	36.3 kg 80 lbs
Air Temperature Rise	23.3 °C 41.9 °F

Choose your workload and where applicable subsystem loading.

Workload: Transactional | CPU Loading: 100%

Workload dropdown menu options:

- Transactional
- Idle
- Computational
- Memory Intensive
- Max Potential Power

Max Potential Power is the new benchmark added in the Workload.

When user will select the **Max Potential Power**, the Input power will show the max potential power. if option **Fan at full speed** is selected, it means the server is drawing MPP with fan at full speed.

Workload: Max Potential Power

Fans at Full Speed

Workload: Max Potential Power

Fans at Full Speed

PSU Error

If the selected Power Supply capacity is less than the system's average or normal operating power, an error message will be displayed to either upgrade the PSU or downgrade CPU, Memory or Hard drives etc.

● Your current hardware configuration exceeds this Power Supply Capacity. Please either upgrade the power supply unit or downgrade the CPU, memory, or PCIe card(s).

If the selected PSU capacity is less than the required capacity to deliver the system's peak performance, a warning message will be shown. If you choose to keep this PSU:

1. System will continue to operate normally till the redundancy is lost for redundant PSU configurations
2. System will be throttled based on the environment and workload for non-redundant configurations

▲ Power Supply Capacity is less than recommended. May drive system throttling depending on environment and workload for non-redundant PSU configurations or after redundancy loss for redundant PSU configurations.

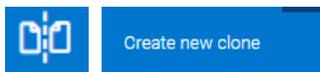
Multiplying configured content

By this point you have invested time in configuring your product to your liking. There are a variety of efficiency tools to leverage this effort if you need to make copies or permutations.

Clones

EIPT has the ability to make identical **Product, Chassis, or Rack** clones. When a group of items is identified as a clone group, all configuration elements of hardware and options will be inherited between all items in the group. For example, if the processor in a server clone changes, the processor will change for all other linked clones. The only configuration element that isn't linked is Name, so that you can identify meaningful names without being constrained to keep them all identical.

To create a clone group, click on an item in the canvas and click the "Clone" icon and choose "Create new clone". You will be limited to the number of clones that fit in the existing rack. If you need more, you can then clone the racks themselves.



At a later time, if you decide you need to separate one of several items from a clone group, you are free to do so. Simply select the item, click the Clone icon, and choose "Unlink selected clone". This can be very useful if you want to branch variations from a common product archetype.

Take note that for Modular/Shared Infrastructure nodes you must first click "Configure". At this point, the pane which was supporting the chassis will change to the selected node product. From this point you can make these nodes clones or unlink them using the same "Clone" icon.

Note: Now the Racks and Chassis will not be cloned but can be Duplicated.

Duplicates

Specific to Modular/Shared Infrastructure Nodes and Storage nodes we have provided the ability to Duplicate. This is a static one-time copy of an existing node. You are free to Duplicate up to the available node capacity in your chosen chassis. After a Duplicate action is complete, any changes to nodes **WILL NOT** be linked in any way.

Now, the Rack(s) and Chassis can be duplicated **NOT** cloned.



Output

When you have reached a point where you have finished configuring the solution and wish to collect your output you have a few options.

Currently you have the ability to Export to PDF or XLS formats. To export all the data of all configurations in your **Solution**, choose “Export All” from the active Solution bar. To export only the active **Configuration**, choose “Export” from the active Configuration bar. Finally, to store a copy of the rack canvas you have created, choose “Print” from the Configuration bar.

Note that the Web UI version of the tool only offers XLS format at this time. MS Excel has readily available plugins to convert to PDF.

Save/Load

You may **save** your **solution in JSON format** at any time by clicking “**Download Solution**” on the Solution bar. The first time this will create a prompt asking you to provide a file name in the JSON format to be stored on your local system. Afterwards, you will continue to save to this file. If you wish to choose a new name or location, choose “Save Solution As” from the file menu.

NOTE: The “Save Solution As” option is available only in MSI in File menu.

To load a saved JSON solution, simply click “Load Solution Icon” near the Solution tab.



Fig 1: Download Solution

Import Solution XML from DSC

Solution import capability from **DSC** (Dell Solutions Configurator) to EIPT saves lot of time for the Dell Sales organization and improves their efficiency.

You can create a solution in DSC and export it to a .zip file after saving it. Unzip the file and extract the Solution XML file. Now you can import the .xml file into EIPT.

Import Solution button available in the EIPT Menu located in the top right corner.

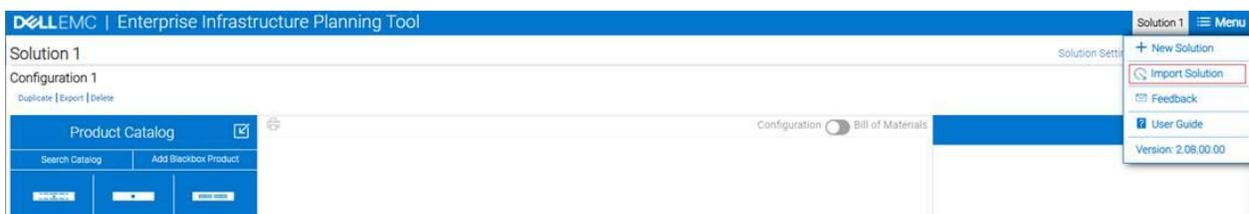


Fig 2: Load Solution

Offline Caching

For the offline version of the tool, your unsaved progress is cached locally on your system in the directory specified below. Note that a new folder will be created when you upgrade to a new version and the prior folders will no longer be used. With that in mind, please save any changes before upgrading. In the event your system restarts, or you close the program and forget to save, you will restart where you left off based on a cached copy of your solution.

C:\Users\user_name\AppData\Local\Dell\Enterprise Infrastructure Planning Tool

Where “username” is your system login username. A folder will be created with the name of the release (ex: 1.06.000) with “Cache” and “Data” information stored within.

Take note you may need to clear out this cached data in some recovery scenarios. Doing so will destroy unsaved changes to your active solutions. We recommend you save products you will be using for a long time via the Save prompt.

Web Caching

Web caching is currently disabled.

Upgrading

New versions of the tool will be posted on the landing page [HERE](#). **Please save any active solutions before upgrading. Any unsaved changes will be lost.**

NOTE: To experience best results with EIPT Web, we recommend using, **Chrome, Safari, Edge, Firefox** browsers.

FAQ

Q: I added up all the items in my configuration and the numbers do not tie out. Why?

A: There are a few key reasons for this:

- **Chassis** fan power is calculated dynamically based on size and type of node. An empty **Chassis** consumes very little fan power and we do not calculate fan for empty chassis as they are not a valid use case. When the first node is added fan, power is calculated and added to the chassis metric. When the second node is added, a comparison is done to see if the fan power is higher than the estimate of the first and if so, the estimate is increased. And so on...
- Node are displayed in DC Power. They do not have a power supply directly attached so you are seeing a break in the calculation to give a general impression of the impact of adding or modifying hardware installed. When converting to AC power at the **Chassis level** the tool will add anywhere from 4% to 12% of additional power to account for the efficiency loss converting AC power DC power in system.

- Given that the user cannot directly access the fan power information or the estimate power supply efficiency, it will not be possible to add up each item to match up to the total AC Input.

Q: There are errors in the Action Pane that I cannot resolve.

A: As a first step, please swap to Full Configuration and confirm the needed choices are not available in that view. If that does not resolve the issue, consider the following known issue:

- Validation of **Chassis** node quantity is currently defective. We are working to correct this. You may get Action Pane messages in the chassis that indicate you have not met a minimum node count or that a node (like a FN IOA switch) must be added. You may get Action Pane messages in the node indicating it needs options set to accommodate stand-alone distribution. If you have the proper node count, **these can be ignored**.

Q: Can I export this content into Online Solution Configurator?

A: Currently Not. We are working with the OSC team to develop a method for importation in the future. Please request this feature through your management chain.

Q: Can I export from Online Solution Configurator and import into EIPT?

A: Not at this time, but the feature is scoped and in progress.

Definition of terms

Input Power – This is an average runtime AC power value for a given workload. A notable exception if modular/shared infrastructure nodes. These are average runtime but displayed in DC power as this is a break in calculation to show the node information. Summary input AC in these cases is shown at the **Chassis** level. Note this includes all power conversion efficiencies, including power supply and voltage regulators. It also includes fan power of the products and/or components included.

Maximum Potential Power – This is representative of the maximum power seen at the circuit breaker. The time domain is around one second and therefore of interest in breaker sizing. If this value is higher than acceptable, you can use power capping features to cap the node or in the case of modular/shared infrastructure solutions you can also cap the chassis. Take note this is not a runtime load and we do not expect most customer workloads to approach this value for appreciable time. For runtime guidance consult **Input Power**.

Input Current – This is simply the **Input Power** divided by the chosen AC voltage.

Sound power level – An engineering estimate of the average A-weighted sound power level (LwA), measured in bels, of a system operating at predicted system fan speeds. Fan speed predictions are influenced by the configuration and workload conditions in the configuration bar.

Airflow Rate – This is the cubic airflow rate per meter (CFM) for the volume of air traveling from the inlet through the chassis. This metric is influenced by user selected configurable workload conditions and parameters selected in the Solution bar. This metric is primarily supported only on monolithic rack

and tower systems. In most cases there are too many combinations of hardware in modular/shared infrastructure products to make an accurate prediction of airflow.

Weight – This is the combined weight of the solution. Note that in many cases we do not itemize weight. For example, we do not itemize hard drive weight in most racks, and we do not itemize sled weight in chassis. Instead, we take the worst case at launch of the product. This information is therefore for ballpark guidance and actual weight may be higher or lower.

Air temperature rise – This is a metric of the amount the inlet air temperature rises as it travels over the heated components in the chassis and exist the exhaust. Take note that it is not a metric specifically of the exhaust temperature and that the Celsius to Fahrenheit conversion for such a temperature delta is different ($9/5 * \text{Temp in Celsius}$) than for absolute temperature ($9/5 * \text{Temp in Celsius} + 32$)

Local Utility Rate: The Local Utility rate is the energy cost per kWh. The \$0.14 per kW/hr is the default rate and responsibility of the user to manually set the correct utility rate for the datacenter location.

Emission Factor: Emission Factor is the estimated amount of greenhouse gas emissions (CO₂-eq or carbon dioxide equivalent) discharged into the atmosphere when generating a unit of energy by a specific energy source. Emission Factor is highly dependent upon the energy source type and location. There are regional and state-level authorities that are responsible for publishing emission conversion factors pertaining to various types of energy sources. We recommend you consult them for receiving factors applicable for your data center location and energy source types being consumed. Allowed values are between 0 and 1. Default value is 0.3712 (country level factor in 2022 as per U.S. Environmental Protection Agency). The user may also change the emission factors if they should choose to do so.

Power Usage Effectiveness (PUE): The PUE is the ratio of the total facility power divided by the IT equipment power and the DCiE (Data Center infrastructure Efficiency) is the reciprocal of PUE. The Total Facility Power is the power measured at the utility meter dedicated solely to the datacenter. The IT Equipment power is the equipment used to manage, process, store, or route data within the data center. The PUE value determines how energy efficient the data centers are. Below table captures the values of PUE and the corresponding levels of effectiveness. The PUE value is set to 2 as a default value for each country in the tool. This value corresponds to “Average” on the “Level of Efficiency”. The user can change the PUE value in the Site Manager of the site being configured if they know the particular configuration site PUE value, for accuracy purposes.

PUE	DCiE	Level of Efficiency
3.0	33%	Very Inefficient
2.5	40%	Inefficient
2.0	50%	Average (default)
1.5	67%	Efficient
1.2	83%	Very Efficient

Energy Cost: Energy Cost or Total Cost of Ownership (TCO) is based on the Local utility rate paid per kilowatt hour (kWh). The Energy Cost reported provides a comprehensive estimation of the device energy consumption and associated energy consumption by facility in the data center over a period of the selected Product Lifecycle.

GHG Emissions: Greenhouse Gas Emissions (CO₂ - Carbon Dioxide equivalent) is related to the use phase of the product over a period of the selected Product Lifecycle. Emissions from manufacturing, transportation, and end-of-life are excluded.

Amp – Also known as Ampere. A unit of electrical current which is a measure of the amount of electric charge passing a point in an electric circuit per unit time with 6.241×10^{18} electrons, or one coulomb per second constituting one ampere.

kWh – Kilowatt hour, a unit of energy equal to 1000 watt-hours or 3.6 Mega-joules.

btu/h – British Thermal Unit/hour, unit of energy equal to about 1055 joules.

CFM – Cubic Feet per Minute, unit of airflow

bels – A unit of sound power measurement equal to 10 decibels.

db (Decibels) – A unit of sound pressure. Ratio of a physical quantity relative to a specified or implied reference level.

Feedback

For feedback or questions not found in this guide, please submit a request to [EIPT Business Partners@dell.com](mailto:EIPT_BusinessPartners@dell.com).

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