

SystemArchitect Implement power cabling

Issue	February 12, 2009
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Introduction

In the System Architect it is possible to implement fully automatic power cabling for one or more racks. However, in the event of several racks, they are viewed sequentially one after the other. There is no rack-overlapping power cabling. The basic idea in power cabling via the Assistant is based on the fact that the user defines in advance the attributes for his cabling requirements, which are then taken into account in subsequent automatic power cabling. All the required socket strips and UPSs are automatically added by the Assistant. If these components are found in a rack before starting the Assistant, an attempt is made to use these components when cabling as preferred. Whatever, the same regulations are observed during the Power Assistant as used in the function 'Check'. In addition, manual component selection and cabling is possible at any time, which is also verified via "Check".

Recommended procedure for creating a configuration with power cabling

- 1) 3 different parameters are set in the menu 'Options - Settings - Power parameters' which are automatically inherited for each new configuration and its components. These parameters are based mostly on regional requirements which are specified through the country and the environment with a 'standard customer' and are usually only set once when installing the System Architect. A subsequent change to the setting is possible at any time.
 - a) **Supply voltage** - depends on the country to which the configuration is delivered. The set value is saved to the SAR file and can be modified as required (menu 'File - Properties')
 - b) **Number of phases** - usually defined by the country to which the configuration is delivered. Can also be customer-specific. A change in the value has a direct influence on the offer "House connections" (next parameter). The number of different phases available is selected.
 - c) **House connection connectors** - usually defined by the country to which the configuration is delivered. Can also be customer-specific. The active checkboxes are used (tick) to define which types of connectors are permitted with the connection cables of the socket strips and UPSs. This should avoid components being selected which cannot even be connected to the customer mains due to plug incompatibility. The lower the number of permitted types of connector, the greater the probability that the Power Assistant cannot find a solution (cabling) as there is no appropriate connection option!

The value set in the option "Number of phases" and "House connection connectors" is inherited on each rack that is added to the configuration. It can be changed at any time in order to ensure customer-specific deviations from the 'Standard'.

- 2) Create the configuration based on the customer's requirements without any cabling
- 3) Implement the data cabling (Fibre Channel, SCSI, SAS)
- 4) Only for existing racks: add the required components for the KVM cabling (rack console, KVM switches) and start the Console Assistant for each rack

- 5) Only for existing racks: set the attributes for power cabling:
- a) Each rack module / user (server, storage system, console, switch...) can be set individually whether it is to be connected on a **phase-redundant** basis. This is done by clicking on the context menu function 'Phase Redundant/DPF'. This connects the connection cables of the power supply units for this user to socket strips / UPSs, which in turn are connected to different phases.
The activation of this function requires the existence of redundant power supply units. A test before starting the Assistant reports a faulty status and interrupts the Assistant process.
If the context menu function is grey, it cannot be selected. This could be for two reasons:
 - The user cannot accept any redundant power supply units
 - The number of phases is set at '1' (see 1-b)
 - b) Each rack module / user (server, storage system, console, switch...) can be set individually whether it is to be connected on a **UPS-secured** basis. This is done by clicking on the context menu function 'UPS Settings'. The following dialog is used to set three parameters:
 - 'Activate UPS backup' means that this user must be connected to a UPS.
 - An additional specification with activated UPS backup controls whether, with simultaneously activated phase redundancy, all the power supply units are to be connected to UPSs (requires at least 2 UPSs), or whether the redundant power supply units are to be connected to a socket strip (cheaper).
Here there is no evaluation whether or not the phase redundancy is activated (5-a). If it is deactivated, all the existing power supply units are by all means connected to a UPS - irrespective of the selection of this parameter.
If the input field is grey, either the function "UPS backup" is not selected or it is a user that cannot accept any redundant power supply units.
 - A backup time specified by the customer (time required for a controlled server shutdown) can be entered in the field 'Required backup time'. A change at this point controls the UPS product selection. If the initial value '00:00' remains unchanged, a UPS is used which corresponds to the power consumption: a statement about the backup time that is to be determined can be read in the properties dialog of the user. If this is too low, the backup time must be entered as a specification.
 - c) Phase redundancy and UPS backup can also be set centrally on the rack (with the same functions). This means that all users that are in the rack at this moment can take on this setting - irrespective of the individual values previously set on the user. All new users added to the rack take on these values, too.
An individual change on the user is possible at any time.
 - d) If at least one user is to be UPS secured, the UPS type to be used must be set on the rack. This is also done in the menu "UPS Settings" - by selecting 'UPS preference'. All other selections in this dialog have already been described under 5-c
 - e) Irrespective of phase redundancy and UPS backup, the **house connection parameters** should be checked in the menu on the rack with the same name. They were transferred from the values set in Options (see 1-b and 1-c)
 - f) When all the settings have been made, the Power Assistant must be started. This occurs in the menu 'Assistant', in the context menu of the rack or via the symbol in the symbol bar. Two different types of generation are offered:
 - Complete generation means that any existing power connections are disconnected and complete new cabling takes place.
 - Incremental generation means that only all the open power connections are cabled while the existing ones remain unchanged.

As stated earlier, missing socket strips and UPSs are automatically added while existing components are used if they correspond to the internal regulations und set parameters.
As the end of a generation run a clear status message is issued, which contains any errors and warnings that have occurred and a list of all the added components.
The power cabling is ended and no errors or warnings should occur during the subsequent test.
 - g) A change in parameters (irrespective of which one) after power cabling has taken place means that the configuration is subsequently no longer **consistent** (parameters no longer match the cabling).
In this case, run a new generation and then delete the unused socket strips and UPS as required. These are listed when testing.