



## Changeover

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WAE Design enables you to model the topology, routings, and utilizations of a currently operational network. It also allows exploration of modifications to that network. For example, interface metrics can be modified or explicit LSP routings changed to obtain a new routing configuration.

The Changeover tool provides a step-by-step sequence of routing configuration changes to move a network safely from an initial configuration to a pre-specified final configuration. WAE Design selects the order of these changes so that there is as little as possible congestion in the network during intermediate configurations, and so that this congestion lasts for as few intermediate steps as possible.

Only certain configuration changes are allowed between the initial and final plan.

- Changes to interface metrics
- Changes to LSP configurations
- Changes of circuits and node from the active to the inactive state, and vice-versa

An individual step in the changeover sequence consists of one of the following.

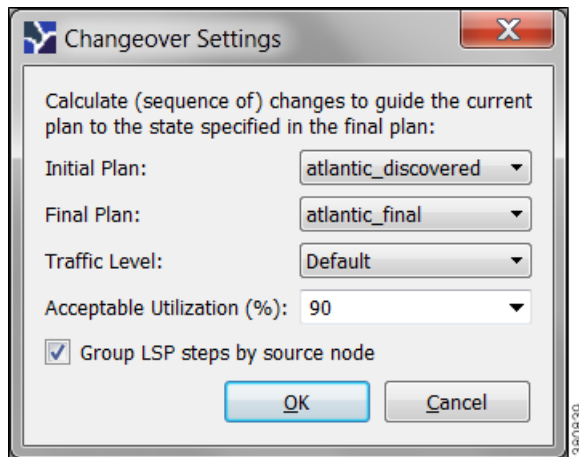
- A single metric change on a specific interface
- LSP configuration changes on all LSPs sourced from a specific node
- The activation or inactivation of a specific circuit or node

## Changeover Options

To run Changeover, both the initial and final network plans should be open in WAE Design, and the desired plan should be selected to view.

Select the Tools->Changeover to open a dialog box with the following options.

- Initial Plan—Name of the initial plan, selected from open plan files.



- Final Plan—Name of the final plan, selected from open plan files.
- Traffic Level—Changeover monitors maximum interface utilization levels for all steps in the sequence. The utilizations are calculated using this traffic level.
- Acceptable Utilization—The percentage of maximum acceptable utilization of any interface at any step during the changeover sequence. Changeover attempts to keep utilizations below this level, although it is not always possible. Often the utilization spikes upward during the last few steps of the sequence, if, for example, new ECMP paths must be put in place. WAE Design attempts to keep the number of high-utilization steps to a minimum.
- Select whether to group the LSP steps by source node.

## Report

Changeover creates a Changeover report in the Reports window, containing Summary, Steps, and Utilization sections.

- To access this information later, select the Window->Reports menu.
- To export the steps taken to change over to a new plan file, right-click Steps in the Reports window, and select Export Tables.
- To export the utilization values to a table, right-click Utilizations in the Reports window, and select Export Tables.

## Summary

The Summary section contains a list of the options used to run Changeover. It also contains a summary of the differences between the initial and final plans, the number of steps taken, and the number of steps resulting in intermediate configurations with utilizations in excess of the acceptable utilization.

## Steps

The Steps section contains the following columns, some of which might need to show since they are hidden.

- Step—Steps of the Changeover sequence.
- Action—Action taken at the step.
  - MetricChange—An interface metric is changed.
  - CapacityChange—An interface capacity is changed.
  - TunnelsFromRouter—LSPs from a specified router are to be reconfigured.
  - ActivateNode—A node (router) is activated.
  - DeactivateNode—A node (router) is de-activated.
  - ActivateInterface—An interface is activated.
  - DeactivateInterface—An interface is de-activated.
- Node
  - If Action is MetricChange, the node containing the interface of the metric to change.
  - If TunnelsFromRouter, the node at which the LSPs are to be reconfigured.
  - If ActivateNode or DeactivateNode, the relevant node.
  - If ActivateInterface or DeactivateInterface, the node containing the relevant interface.
- RemoteNode—If Action is MetricChange, the remote node containing the interface of the metric to change.
- Circuit—If Action is MetricChange, the circuit for the metric change.
- Interface
  - If Action is MetricChange, the interface name.
  - If TunnelsFromRouter, ActivateNode, or DeactivateNode, this is na (not applicable).
  - If ActivateInterface or DeactivateInterface, the relevant interface name.
- MaxUtil—The maximum interface utilization at this step.
- UtilLocation—The interface on which the maximum utilization occurs.
- ChangeTo—If Action is MetricChange, the original metric. Otherwise, this is set to “na.”
- ChangeFrom—If Action is MetricChange, the metric to be configured at this step. Otherwise, this is set to “na.”

## Utilizations

The Utilizations section contains all utilizations for all interfaces in the network, for each step in the Changeover sequence.

