Reports

WAE Design lets you generate reports that compare IP/MPLS topology and configuration information, demand routings, LSP routings, or traffic between two plan files. You can use these reports to:

- Plan for upgrades—Compare plan files before and after topology and configuration changes are made to a current network. For example, you could compare the original plan file to a proposed new plan in which circuits or nodes are added or upgraded.

- Mitigate congestion—Compare plans before and after making configuration changes to mitigate congestion due to a failure or planned maintenance, such as metric changes or LSP additions and reroutings.

- Validate simulations—Compare the simulated traffic under failure in one plan to the measured traffic after a failure has occurred in another plan to validate the accuracy of the simulation.

- Audit plans—Review any changes between two plan files.

- Identify demand and LSP reroutes—Compare plans to determine which demands or LSPs experienced routing changes, for example as the result of an interface metric change or capacity upgrades.

Upon comparing plan files, a report of the results opens automatically. You can access this report later by choosing **Window > Reports**.

For More Information...	See...
Reports on LSP path routes	MPLS Simulation
Reports on L1 circuit routes	Layer 1 Simulation
Reports on demand groupings and demand grouping costs	Traffic Forecasting Cost Modeling
Reports on infrastructure costs	Cost Modeling

This section contains the following topics:

Plan Comparison Reports

Comparison reports let you compare objects between two plan files to determine:

- Which objects are present in one plan, but not in the other.

- Which objects are present in both plans and which, if any, have different properties.

You can run four types of plan comparison reports:

- IP/MPLS topology and configuration—Objects describing the topology (such as nodes, circuits, and interfaces), configured objects (such as LSPs and LSP paths), and related properties (such as IGP metrics and capacity).

- Demand routings—Demand paths and the properties that indicate routing changes, such as Path Length and Max Latency. For a complete list of compared properties, see Table 1: Plans Comparison Report: IP/MPLS Topology and Configuration , on page 3.

- LSP routings—Properties of LSPs that indicate routing changes, such as TE Path Metric and Active Path Sim. For a complete list of compared properties, see Table 2: Plans Comparison Report: Demand Routings , on page 6.

- Complete plan comparison—All tables in the table schema are compared, except for internal simulation caching tables. For a complete list of these tables, refer to the $CARIDEN_HOME/docs/table_schema file.

Report Columns

Each WAE Design table has key columns that uniquely identify objects. For example, the key columns in the Interfaces table are the Node and Interface columns, which represent the name of the node containing the interface and the name of the interface itself. In a Plan Comparison report, an object in one plan is identified with an object in another plan only if the key columns of the two objects match. That is, key columns determine if an object is present in both plans or in only one of the plans.

The Plan Comparison report displays three other types of columns. Table 1: Plans Comparison Report: IP/MPLS Topology and Configuration , on page 3, Table 2: Plans Comparison Report: Demand Routings , on page 6, and Table 3: Plans Comparison Report: LSP Routings , on page 7 list the properties reported upon and their associated column type.

- Information only (Info)—There are no comparisons made. Information is reported for the plan file from which you are running the report (Plan 1).

- Differences (Diff)—Specific properties are compared for each object that has matching key columns across the two plan files. Objects are then identified as belonging in either Plan 1 only (file from which you are running the report), in Plan 2 only (plan file to which you are comparing), or in both Plan 1 and Plan 2. If the object exists in both plan files, but has different properties, a Diff column shows T (true) if there are any differences or F (false) if there are none.

  Differences are based on the current state of the open plan files. For example, if a circuit has failed, the demand routings change to route around the failure.

- Summary Differences (Summ Diff)—These are not columns within WAE Design tables. They are T/F (true or false) values, depending on some differences in the table objects that are not represented in the table columns. For example, if a common LSP path is configured differently between plans, this difference is represented in a summary difference column in the LSP section. If demand routings differ, this is represented in a summary difference column in the Demands section.

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Note   For easy reference, the following tables list columns in the order of type first: Key, Info, Diff, and Summ Diff. Properties within each column type are alphabetical.

Table 1: Plans Comparison Report: IP/MPLS Topology and Configuration

Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
Interfaces	Name	Key	
	Node	Key	
	Remote Node	Info	
	Affinities	Diff	
	Area	Diff	
	Capacity	Diff	
	Circuit	Diff	
	Description	Diff	
	FRR Protect	Diff	
	IGP Metric	Diff	
	IP Address	Diff	

Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
	PC Min BW	Diff	
	PC Min Links	Diff	
	Resv BW	Diff	
	TE Metric	Diff	
Circuits	InterfaceA	Key	
	InterfaceB	Key	
	NodeA	Key	
	NodeB	Key	
	Name	Info	
	Active	Diff	
	Capacity	Diff	
	Delay	Diff	
Nodes	Name	Key	
	Active	Diff	
	AS	Diff	
	BGP ID	Diff	
	ECMP Max	Diff	
	IP Address	Diff	
	IP Manage	Diff	
	Model	Diff	
	OS	Diff	
	Vendor	Diff	
LSPs	Node	Key	
	Source	Key	
	Active	Diff	
	Destination	Diff	
	Exclude	Diff	
	FRR Link Protect	Diff	

Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
	Hold Pri	Diff	
	Hop Limit	Diff	
	Include	Diff	
	Include Any	Diff	
	Load Share	Diff	
	Metric	Diff	
	Metric Type	Diff	
	Setup BW	Diff	
	Setup Pri	Diff	
	Unresolved Destination	Diff	
	LSPs Path Diff	Summ Diff	T (true) if there are any differences in the LSP Paths table for this LSP. If two LSPs have differences in their named path hops or LSP paths, these differences are propagated to this column.
LSP Paths	Node	Key	
	Path Option	Key	
	Source	Key	
	Exclude	Diff	
	Hold Pri	Diff	
	Hop Limit	Diff	
	Include	Diff	
	Include Any	Diff	
	Path Name	Diff	
	Setup BW	Diff	
	Setup Pri	Diff	
	Standby	Diff	
	Named Path Diff	Summ Diff	T (true) if there are any differences in the Named Paths table for this LSP path.
Named Paths	Active	Key	

Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
	Name	Key	
	Source	Key	
	Named Path Hops Diff	Summ Diff	T (true) if there are any differences in the Named Path Hops table for this named LSP path.
Named Path Hops	Name	Key	
	Source	Key	
	Step	Key	
	Interface	Diff	
	IP Address	Diff	
	Node	Diff	
	Type	Diff	
	Unresolved Hop	Diff	

Table 2: Plans Comparison Report: Demand Routings

Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
Demands	Destination	Key	
	Name	Key	
	Service Class	Key	
	Source	Key	
	Destination Site	Info	
	Source Site	Info	
	Active	Diff	
	ECMP Min %	Diff	
	Max Latency	Diff	
	Path Metric	Diff	
	Path Diff	Summ Diff	T (true) if there are any differences in routing of the demand.

Table 3: Plans Comparison Report: LSP Routings

| Compared Table	Compared Columns	Comparison Column Type	Summary Difference Description
LSPs	Name	Key	
	Source	Key	
	Active Path Sim	Diff	
	Destination	Diff	
	Routed	Diff	
	Shortest TE Path	Diff	
	TE Path Metric	Diff	
	Actual Path Diff	Summ Diff	T (true) if there are any differences in routing of the actual LSP path.
	Simulated Path Diff	Summ Diff	T (true) if there are any differences in routing of the LSP.

Report Sections

The Summary section shows the number of objects in each plan file, the number of objects in both plan files, and the number of objects with property differences (Figure 1: Example Plan Comparison Report Summary, on page 8).

Example: Nodes A, B, and C are in Plan 1, and B, C, and D are in Plan 2. Nodes B and C have matching key columns. The B nodes have identical properties, but the C nodes have different IP addresses. Therefore, in the Summary section, the In Both Plans column shows 2, and the Different Properties column shows 1.

An individual section is generated for each object that appears in only one plan file and if there are differences between the properties, a section is generated showing these differences. Thus, there is the potential of generating one to three sections per compared table: one for objects appearing only in Plan 1, one for objects appearing only in Plan 2, and one listing objects existing in both plan files, along with their differences noted with a T (true) or F (false).

Figure 1: Example Plan Comparison Report Summary
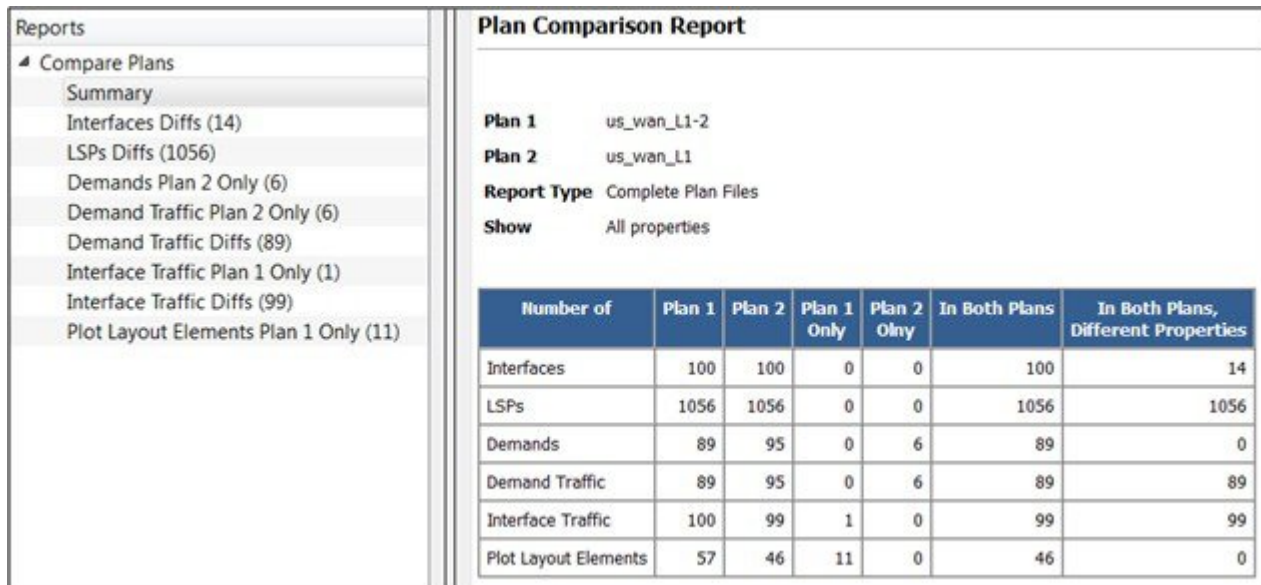
Other than Summary, the report sections and columns (properties) that appear depend on the options selected when generating the report.

- If you select to show only properties with differences, only those columns with differences in properties appear in the report. If only one value is different, all objects are listed (not just the one with the different property).

- If you select to show all properties compared, all compared properties appear in the report whether there are differences between the two plan files or not.

Creating Plan File Comparison Reports

Step 1	Open the two plan files you want to compare.
Step 2	In either of these two plan files, choose **Tools > Reports > Compare Plans**.
Step 3	Choose the plan file to which you are comparing the open plan.
Step 4	Choose the type of comparisons you want to generate:

- IP/MPLS topology and configuration

- Demand routings

- LSP routings

- Complete plan files

Step 5	Choose whether to show only properties with differences or whether to show all properties compared.
Step 6	Click **OK**.

Traffic Comparison Reports

Traffic Comparison reports compare traffic values within a single plan or between two plan files. You can compare traffic on one object at a time (nodes, interfaces, circuits, demands, LSPs, multicast flows, and flows). Each object has a different set of comparisons from which to choose. For example, interface traffic and capacity can be compared, and LSP traffic and setup bandwidth can be compared. Another example would be to compare the simulated interface traffic in a plan file before a failure to the measured interface traffic of a plan file in which a failure occurred. Such a comparison lets you determine which interfaces show the greatest differences.

For each plan file compared, the current traffic level and either the selected service class or queue are used. They can be different in each plan.

The Summary section shows a high-level summary of what is being compared. Additionally, a section of the difference on the selected object and traffic columns is generated and named accordingly.

Plan 1	us_wan
Plan 2	us_wan_L1
Compare	Interfaces

	Plan 1	**Plan 2**
Traffic Type	TraffSim	TraffSim
Traffic Level	Default	Default
QoS	Undifferentiated	Undifferentiated
Total Traffic	108830 Mbps	58286 Mbps

Plan 1 has 50544.1 Mbps more traffic in total than Plan 2

Creating Traffic Comparison Reports

Step 1 If comparing traffic from the open plan file to another, open the other plan file.
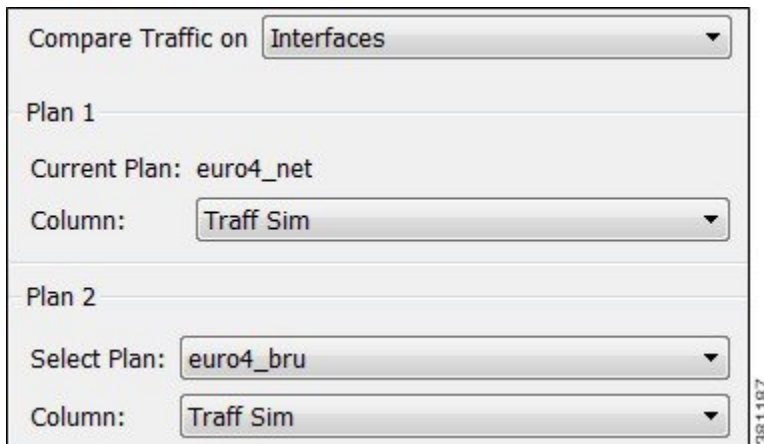
Step 2	In each plan file, choose the travel levels and choose either the service class or queue traffic to compare.
Step 3	Choose **Tools > Reports > Compare Traffic**. This plan file is identified as Plan 1 in the Compare Traffic dialog box that opens.
Step 4	Choose the object type on which to compare traffic (interfaces, circuits, nodes, and so on).
Step 5	Choose the traffic column in the current plan that you want to compare (Plan 1).
Step 6	The default Plan 2 is the current plan file. To change this, choose a different plan file for Plan 2.
Step 7	Choose the traffic column being compared for Plan 2.
Step 8	Click **OK**.

Viewing or Exporting Reports

Upon generating a report, it opens automatically. From there you can select the various sections of the report from the left navigation pane.

To view a report after having closed it, choose **Window > Reports**. All reports generated on that plan file appear and are selectable from one report window.

If you want to save these reports for later use, you must save the plan file. However, running the report again overwrites the report. To preserve the information, you can export the data by report section. Right-click any of the sections in the left navigation pane and choose **Export Tables**.