LSP Setup Bandwidth Optimization

As a network operator, you may need to periodically update LSPs as traffic changes in your network. You might have some fixed rules with respect to what the maximum setup bandwidth should be for LSPs. Restrictions on the setup bandwidth per LSP affect the number of LSPs in the network. As the setup bandwidth increases, the number of LSPs that you have to manage in your network is reduced. However, the risk that certain LSPs cannot be routed also increases. As the setup bandwidth decreases, more alternative paths can be found allowing for better load balancing. This holds true both in the fail-free and under failures cases.

To address these LSP setup bandwidth requirements, WAE Design includes an LSP Setup BW Optimization tool that enables you to create or remove LSPs based on constraints on the setup bandwidth.

Procedure Overview

The LSP Setup BW Optimization tool enables you to add or remove LSPs based on set bandwidth requirements that you specify. You can select the LSPs that you want the optimizer to consider. The optimizer then separates these LSPs into different groups. The optimizer defines an LSP group based on the fact that the LSPs within the group share common source and destination nodes. You can also specify additional custom groupings to get a finer granularity on the setup bandwidth.

The optimizer enables you to create LSPs by specifying:

- The number of LSPs to create for each LSP group.
- The maximum Setup BW per LSP. In this case, the minimum number of LSPs is created for each group in order to meet this requirement.

Additionally, the optimizer enables you to remove LSPs by specifying:

- The number of LSPs to remove for each group
- The minimum Setup BW per LSP. In this case, the minimum number of LSPs is removed from each group in order to meet this requirement.

You can then perform different operations on each group to test different design scenarios.

Note The sum of the Setup BW of the LSPs per group is not modified by adding or removing LSPs. The Setup BW is evenly redistributed among the LSPs within each LSP group.

Step 1 Navigate to Tools > LSP Setup BW Optimization.

Step 2   In the LSPs field, select the LSPs you want the optimizer to consider. The default is to operate on All LSPs. If you want to consider just certain LSPs, then indicate those LSPs that you want the optimizer to operate on by selecting a subset of the LSPs or using tags to specify certain LSPs.

Step 3   Select the manner in which LSPs are separated into LSP groups. The options are:

- Source/Destination Nodes—LSPs with common source and destination nodes belong in the same group.

- Source/Destination Nodes and existing SetupBWOpt::Group Entries—LSPs with common source and destination nodes and common SetupBWOpt::Group entries belong in the same group. This can be a useful option when you want to group LSPs based on different service classes.

Step 4   For each LSP Group, provide your setup bandwidth requirements. The options are:

- Create x number of LSPs. Enter a positive integer in this field. This tells the optimizer to create a certain number of LSPs per group, for example, 1.

- Create the minimum number of LSPs so that Setup BW <= x Mbps. This option enables you to specify the minimum number of LSPs to meet your setup bandwidth rule in Mbps, for example, the bandwidth rule could be 10000 Mbps.

- Remove x number of LSPs. Enter a positive integer in this field. This tells the optimizer to remove a certain number of LSPs per group, for example, 1.

- Remove the minimum number of LSPs so that Setup BW <= x Mbps. This option enables you to specify the removal of the minimum number of LSPs to meet your setup bandwidth rule in Mbps, for example,10000 Mbps.

Step 5   Optional) Override the defaults for how LSPs are tagged (SetupBWOpt) or for how new optimized plan files are saved (LSP_Add_Remove_3-SetupBWopt).

Step 6   Click OK.

Reports

The reports window provides both a summary report and an LSP groups table report.

Summary Report

After running the LSP setup bandwidth optimization, the optimizer creates a summary report identifying the following:

- the total number of LSPs you selected
- the total number of LSP groups identified
- the total number of LSPs created
- the total number of LSPs removed

LSP Groups Report

You can get additional details on how the optimizer operated on LSPs, by clicking on the LSP Groups report option. The key metrics include:

- Group: the name of the LSP Group as specified by SetupBWOpt::Group. If this group is not specified, then the Group column appears empty.

- LSP Source: the source node of the LSP group.

- LSP Destination: the destination node of the LSP group.

- Total Setup BW: the sum of the setup bandwidth values of the LSPs within the LSP Group.

- LSP Number Before: the number of LSPs within the LSP Group before running the optimization.

- LSP Number After: the number of LSPs within the LSP group after the optimization.

- LSP Setup BW Before: the average setup bandwidth within the LSP Group before the optimization.

- LSP Setup BW After: the setup bandwidth within the LSP Group after the optimization.

Related Topics

- SR-TE Optimization

- LSP Disjoint Path Optimization

- LSP Loadshare Optimization

- Capacity Planning Optimization

- Plan Objects (for creating tags)

Related Topics