6 Bill of Materials and Other Reports

After performing network design tasks, SP Guru Transport Planner enables you to view related metrics and design results. Files containing more detailed results can be extracted anytime from SP Guru Transport Planner by selecting **Info > Export to Spreadsheet** or **Info > Export to Web Report**.

The next sections describe how to generate reports.

Procedure 6-1 Generating the Bill-of-Materials File

1 Open the **WDMGuru_Examples** project.

1.1 Select **File > Open...**.

1.2 Select the **WDMGuru_Examples** project, then press **Open**.

➥ The example project, which contains multiple scenarios, is loaded. The Australia scenario appears in the workspace.

2 Switch to the USA scenario

2.1 Select **Scenarios > Switch To Scenario > USA** to open the USA scenario.

3 Groom a SONET traffic matrix.

3.1 Select **Design > Groom DCL to OCH Traffic > Fixed Routes...**

3.2 Select the following options:

- Traffic matrix **STS-1**
- Bit Rate of OCH Traffic Matrix is **OC-48**
- **Hop Count** as routing cost
- Check **Optimize**
- Check **1+1 Protection**
- Leave **Client Protection** and **Node Disjoint** unchecked

➥ The traffic matrix will be groomed with 1+1 protection in the DCL layer.

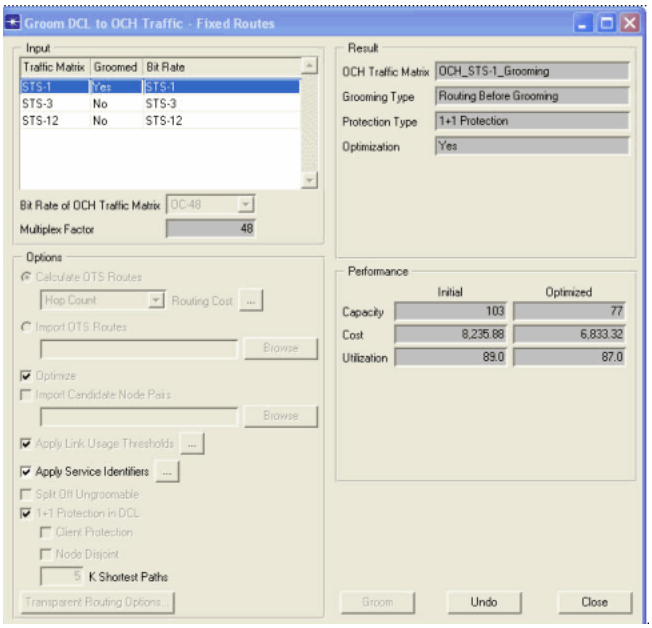
3.3 Press **Groom**.

➥ The **Grooming Optimization Progress** dialog box appears.

This dialog box shows the decrease of the network cost during the optimization steps of the grooming algorithm.

3.4 When the status is **Finished**, close the dialog box.

Due to the grooming action, an OCH traffic matrix (STS_1_Grooming) has been created to create the logical DCL topology. This OCH traffic matrix and the groomed DCL traffic matrix STS-1 are both entirely accommodated in the network.



3.5 Close the **Groom DCL to OCH Traffic - Fixed Routes** dialog box.

4 Generate the bill of materials.

4.1 Select **Info > Export to Web Report > Bill of Materials**.

➥ The web browser is launched and the Bill Of Materials file appears.

5 Browse the **Overview Cost Parameters** section.

- Select **Overview Cost Parameters** at the left side of the report. This section consists of different parts giving an overview of all equipment cost settings for the network.

- The first part is the **Node Fixed Cost** section: it gives an overview of the node types used in the network. Note that for the DXCs and IXCs only a continuous type is shown, because we use the continuous node models for these node types. For OXCs we use the discrete node model: several discrete OXC types are provided. For each type the cost is displayed and for each discrete type the number of available ports is shown.

				Cost	#Ports
DXC	Continuous			10,000.00	-
OXC	Type1			600.00	32
	Type2			1,600.00	64
	Type3			4,000.00	128
	Type4			10,000.00	512
	Type5			40,000.00	1,024
	Type6			100,000.00	4,096
WP-OXC	Type1			1,000.00	160
	Type2			1,600.00	320
	Type3			2,500.00	640
IXC	Continuous			10,000.00	-
OADM	No-WDM	Common		0.00	-
		Band 1	Both	0.00	
			Add Drop	0.00	
			Transit	0.00	
	LH 8-WDM	Common		50.00	
		Band 1	Both	0.00	
			Add Drop	0.00	
			Transit	0.00	
	LH 16-WDM	Common		100.00	
		Band 1	Both	0.00	
			Add Drop	0.00	
			Transit	0.00	
	LH 40-WDM	Common		200.00	
		Band 1	Both	0.00	
			Add Drop	0.00	
			Transit	0.00	
	LH 80-WDM	Common		400.00	
			Both	0.00	

- The next part is the **Node Port Cost** section: this shows the port cost per bit rate. The first table shows the DXC, IXC, and ADM tributary port cost per DCL bit rate. The second table displays the trunk and tributary port, the terminal multiplexer, the short reach transponder and the ADM cost per OCH bit rate.

	STS-1	STS-3	STS-12	STS-48	STS-192
LOP TM	5.00	9.00	16.00	30.00	55.00
SDH TM Trib Port	0.25	0.50	1.25	2.50	5.00
DXC Trib Port	0.50	1.00	2.50	5.00	10.00
IXC Trib Port	0.50	1.00	2.50	5.00	10.00
ADM Trib Port	0.50	1.00	2.50	5.00	10.00

	OC-3	OC-12	OC-48	OC-192	OC-768	OC-1536	OC-3072
OXC Trunk Port	2.50	5.00	10.00	15.00	30.00	45.00	65.00
OXC Trib Port	2.50	5.00	10.00	15.00	30.00	45.00	65.00
WP-OXC Trunk Port	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-OXC Trib Port	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DXC Trunk Port	1.00	2.50	5.00	10.00	20.00	30.00	45.00
IXC Trib Port	1.00	2.50	5.00	10.00	20.00	30.00	45.00
IXC Trunk Port	1.00	2.50	5.00	10.00	20.00	30.00	45.00
SDH TM/Aggr	15.00	25.00	30.00	100.00	300.00	500.00	900.00
SR Transponder	7.00	12.00	15.00	50.00	150.00	250.00	450.00
ADM UPSR	4.00	10.00	25.00	65.00	160.00	400.00	1,000.00
ADM 2F-BLSR	6.00	15.00	40.00	100.00	250.00	650.00	1,500.00
ADM 4F-BLSR	10.00	25.00	65.00	160.00	400.00	1,000.00	2,500.00

- The **Link Fixed Cost** table gives an overview of the generic cost parameters per cable, per fiber and per channel.

		Cost
Cable Cost	Fixed	0.00
	Length	0.00
	OA Site	0.00
	Regenerator Site	0.00
Fiber Cost	Fixed	0.00
	Length	0.00
Channel Cost	Fixed	0.00
	Length	0.00

- The **Link Fiber Cost** table shows the cost of a WDM terminal multiplexer, an optical amplifier and regenerator (common equipment) per line system type.

LS Type		WDM TM	OA	Regenerator (Com. Eq.)
No-WDM	Common	0.00	75.00	100.00
	Band 1	0.00	0.00	0.00
LH 8-WDM	Common	20.00	75.00	100.00
	Band 1	0.00	0.00	0.00
LH 16-WDM	Common	40.00	75.00	100.00
	Band 1	0.00	0.00	0.00
LH 40-WDM	Common	100.00	75.00	100.00
	Band 1	0.00	0.00	0.00
LH 80-WDM	Common	200.00	75.00	100.00
	Band 1	0.00	0.00	0.00
ULH 40-WDM	Common	100.00	125.00	100.00
	Band 1	0.00	0.00	0.00

- The **Link Channel Cost** table displays the cost of a WDM channel card per line system type and of a regeneration card and a long reach transponder per line system type and per OCH bit rate.

LS Type	WDM Channel Card	Reg Card OC-3	Reg Card OC-12	Reg Card OC-48	Reg Card OC-192	Reg Card OC-768	Reg Card OC-1536	Reg Card OC-3072	LR Transp OC-3	LR Transp OC-12	LR Transp OC-48	LR Transp OC-192	LR Transp OC-768	LR Transp OC-1536	LR Transp OC-3072	LR Prot Transp OC-3	LR Prot Transp OC-12	LR Prot Transp OC-48	LR Prot Transp OC-192	LR Prot Transp OC-768
No-WDM	0.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	15.00	25.00	30.00	100.00	300.00	500.00	900.00	22.50	37.50	45.00	150.00	450.00
LH 8-WDM	0.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	15.00	25.00	30.00	100.00	300.00	500.00	900.00	22.50	37.50	45.00	150.00	450.00
LH 16-WDM	0.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	15.00	25.00	30.00	100.00	300.00	500.00	900.00	22.50	37.50	45.00	150.00	450.00
LH 40-WDM	0.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	15.00	25.00	30.00	100.00	300.00	500.00	900.00	22.50	37.50	45.00	150.00	450.00
LH 80-WDM	0.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	15.00	25.00	30.00	100.00	300.00	500.00	900.00	22.50	37.50	45.00	150.00	450.00
ULH 40-WDM	0.00	60.00	100.00	120.00	400.00	1,200.00	2,000.00	3,600.00	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00	45.00	75.00	90.00	300.00	900.00

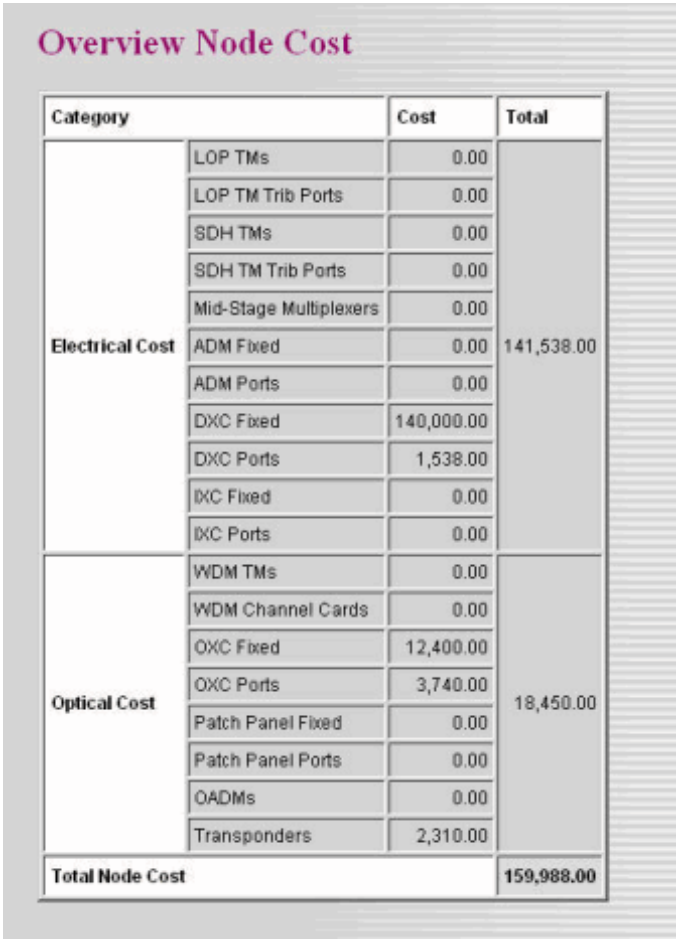
- The **Link SDH Equipment Cost** table shows the cost of an SDH regenerator and SDH amplifier per OCH bit rate.

	OC-3	OC-12	OC-48	OC-192	OC-768	OC-1536	OC-3072
SDH Regenerator	30.00	50.00	60.00	200.00	600.00	1,000.00	1,800.00
SDH Amplifier	75.00	75.00	75.00	75.00	75.00	75.00	75.00

6 Browse through **Overview Node Cost** section.

6.1 Select **Overview Node Cost**.

This table gives an overview of the cost of the node equipment installed in the network. In this example there are DXCs and OXCs installed in the network. Also (short-reach) transponders have been installed in the nodes. In the next sections, more details are given about the installed node equipment.



Overview Node Cost

Category		Cost	Total
Electrical Cost	LOP TMs	0.00	141,538.00
	LOP TM Trib Ports	0.00	
	SDH TMs	0.00	
	SDH TM Trib Ports	0.00	
	Mid-Stage Multiplexers	0.00	
	ADM Fixed	0.00	
	ADM Ports	0.00	
	DXC Fixed	140,000.00	
	DXC Ports	1,538.00	
	IXC Fixed	0.00	
	IXC Ports	0.00	
Optical Cost	WDM TMs	0.00	18,450.00
	WDM Channel Cards	0.00	
	OXC Fixed	12,400.00	
	OXC Ports	3,740.00	
	Patch Panel Fixed	0.00	
	Patch Panel Ports	0.00	
	OADMs	0.00	
	Transponders	2,310.00	
Total Node Cost			159,988.00

6.2 Select **DXC**.

This table gives an overview of the used tributary ports (per DCL bit rate) and the used trunk ports (per OCH bit rate) on the DXCs in the network. Next, the installed DXC type is shown. Because we have chosen the continuous DXC model in this example, all installed DXCs are of the Continuous type. To conclude the table, the total cost per DXC is calculated.

DXC

Overview DXC Ports

Name	Trib STS-1	#Trib Ports	Trunk OC-48	#Trunk Ports	Total Ports	Type	Cost
ATLANTA	104	104	21	21	125	Continuous	10,157.00
BOSTON	117	117	8	8	125	Continuous	10,098.50
CHICAGO	119	119	14	14	133	Continuous	10,129.50
DALLAS	121	121	17	17	138	Continuous	10,145.50
DETROIT	99	99	10	10	109	Continuous	10,099.50
HOUSTON	104	104	12	12	116	Continuous	10,112.00
LAS_VEGAS	107	107	20	20	127	Continuous	10,153.50
LOS_ANGELES	121	121	8	8	129	Continuous	10,100.50
MIAMI	118	118	6	6	124	Continuous	10,089.00
NEW_YORK	90	90	4	4	94	Continuous	10,065.00
SAN_DIEGO	84	84	6	6	90	Continuous	10,072.00
SAN_FRAN	109	109	8	8	117	Continuous	10,094.50
SEATTLE	114	114	7	7	121	Continuous	10,092.00
WASHINGTON	129	129	13	13	142	Continuous	10,129.50
Total	1,536	1,536	154	154	1,690	-	141,538.00

6.3 Select **OXC**.

This table gives an overview of the used tributary ports and the used trunk ports (both per OCH bit rate) on the OXCs in the network. Next, the installed discrete OXC type is shown. In some nodes Type1 is installed, while in other nodes it is needed to install a bigger type—Type2. To conclude this table, the cost per OXC is calculated.

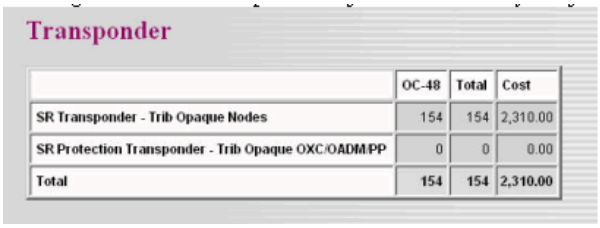
OXC

Overview OXC Ports

Name	Trib OC-48	#Trib Ports	Trunk OC-48	#Trunk Ports	#Trunk Ports For Transit	Total Ports	Type	Cost
ATLANTA	21	21	23	23	2	44	OXC Type2	2,040.00
BOSTON	8	8	10	10	2	18	OXC Type1	780.00
CHICAGO	14	14	24	24	10	38	OXC Type2	1,980.00
DALLAS	17	17	29	29	12	46	OXC Type2	2,060.00
DETROIT	10	10	18	18	8	28	OXC Type1	880.00
HOUSTON	12	12	18	18	6	30	OXC Type1	900.00
LAS_VEGAS	20	20	24	24	4	44	OXC Type2	2,040.00
LOS_ANGELES	8	8	8	8	0	16	OXC Type1	760.00
MIAMI	6	6	6	6	0	12	OXC Type1	720.00
NEW_YORK	4	4	10	10	6	14	OXC Type1	740.00
SAN_DIEGO	6	6	12	12	6	18	OXC Type1	780.00
SAN_FRAN	8	8	8	8	0	16	OXC Type1	760.00
SEATTLE	7	7	13	13	6	20	OXC Type1	800.00
WASHINGTON	13	13	17	17	4	30	OXC Type1	900.00
Total	154	154	220	220	66	374	-	16,140.00

6.4 Select **Transponder**.

This table gives an overview of the installed transponders in the nodes (per OCH bit rate) and their cost. Because the OCH layer mode is opaque in this example, only short-reach transponders are installed in the nodes (long-reach transponders are installed on the links at the WDM terminal multiplexers).



Transponder

	OC-48	Total	Cost
SR Transponder - Trib Opaque Nodes	154	154	2,310.00
SR Protection Transponder - Trib Opaque OXC/OADM/PP	0	0	0.00
Total	**154**	**154**	**2,310.00**

Note—If there are additional types of nodes in the network (such as ADMs, IXCs, and OADMs), similar tables appear in the Bill-of-Materials for these types of nodes.

7 Browse through the **Overview Link Cost** section.

7.1 Select **Overview Link Cost**.

This table gives an overview of the cost of the link equipment installed in the network per level: cable, fiber, channel and SDH equipment. In the next sections, the installed link equipment is described more in detail.

Overview Link Cost

Category		Quantity	Cost	Total
Cable Cost	Fixed	23	0.00	0.00
	Length	22,233.22	0.00	
	Regenerator Sites	24	0.00	
	OA Sites	185	0.00	
Fiber Cost	Fixed	23	0.00	25,675.00
	Length	22,233.22	0.00	
	WDM TMs	94	9,400.00	
	OAs	185	13,875.00	
	Regenerators (Com. Eq.)	24	2,400.00	
Channel Cost	Fixed	110	0.00	14,040.00
	Length	111,553.34	0.00	
	WDM Channel Cards	220	0.00	
	Regeneration Cards	124	7,440.00	
	Long Reach Transponders	220	6,600.00	
SDH Equipment Cost	SDH Regenerators	0	0.00	0.00
	SDH Amplifiers	0	0.00	
Total Link Cost				**39,715.00**

7.2 Select **WDM Terminal Equipment**.

This table displays the number of equipped fibers and the number of WDM terminal multiplexers per line system type and per link. Next, it shows the available and used channels, the installed channel cards and the (long reach) transponders on each link. To conclude the table, the cost of all this equipment is calculated.

WDM Terminal Equipment

Name	Fiber LH 40-WDM	#Fiber Pairs	#Regen Stations	WDM Term LH 40-WDM	#WDM Term	#Bidir Channels Available	#Bidir Channels Used	#Bidir Channel Cards	#LR Transp	Cards LH 40-WDM	LR Transp LH 40-WDM OC-48	Cost
ATLANTA <-> MIAMI (1)	1	1	1	4	4	40	3	6	6	6	6	580.00
ATLANTA <-> WASHINGTON (1)	1	1	1	4	4	40	7	14	14	14	14	820.00
CHICAGO <-> ATLANTA (1)	1	1	1	4	4	40	3	6	6	6	6	580.00
CHICAGO <-> DETROIT (1)	1	1	0	2	2	40	8	16	16	16	16	880.00
DALLAS <-> ATLANTA (1)	1	1	1	4	4	40	6	12	12	12	12	760.00
DALLAS <-> CHICAGO (1)	1	1	2	6	6	40	8	16	16	16	16	1,060.00
DALLAS <-> HOUSTON (1)	1	1	0	2	2	40	6	12	12	12	12	580.00
DETROIT <-> BOSTON (1)	1	1	1	4	4	40	5	10	10	10	10	700.00
DETROIT <-> WASHINGTON (1)	1	1	1	4	4	40	5	10	10	10	10	700.00
HOUSTON <-> ATLANTA (1)	1	1	1	4	4	40	4	8	8	8	8	640.00
HOUSTON <-> MIAMI (1)	1	1	2	6	6	40	3	6	6	6	6	760.00
HOUSTON <-> SAN_DIEGO (1)	1	1	3	8	8	40	5	10	10	10	10	1,100.00
LAS_VEGAS <-> DALLAS (1)	1	1	2	6	6	40	9	18	18	18	18	1,140.00
LOS_ANGELES <-> LAS_VEGAS (1)	1	1	0	2	2	40	3	6	6	6	6	360.00
LOS_ANGELES <-> SAN_DIEGO (1)	1	1	0	2	2	40	3	6	6	6	6	360.00
LOS_ANGELES <-> SAN_FRAN (1)	1	1	0	2	2	40	2	4	4	4	4	320.00
NEW_YORK <-> BOSTON (1)	1	1	0	2	2	40	5	10	10	10	10	500.00
SAN_DIEGO <-> LAS_VEGAS (1)	1	1	0	2	2	40	4	8	8	8	8	440.00
SAN_FRAN <-> LAS_VEGAS (1)	1	1	1	4	4	40	3	6	6	6	6	580.00
SEATTLE <-> CHICAGO (1)	1	1	4	10	10	40	5	10	10	10	10	1,300.00
SEATTLE <-> LAS_VEGAS (1)	1	1	2	6	6	40	5	10	10	10	10	800.00
SEATTLE <-> SAN_FRAN (1)	1	1	1	4	4	40	3	6	6	6	6	580.00
WASHINGTON <-> NEW_YORK (1)	1	1	0	2	2	40	5	10	10	10	10	500.00
Total	23	23	24	94	94	920	110	220	220	220	220	16,000.00

7.3 Select **In-line Regeneration/Amplification**.

This table shows the regeneration and optical amplification equipment installed on the links. The cost for this equipment is calculated per link.

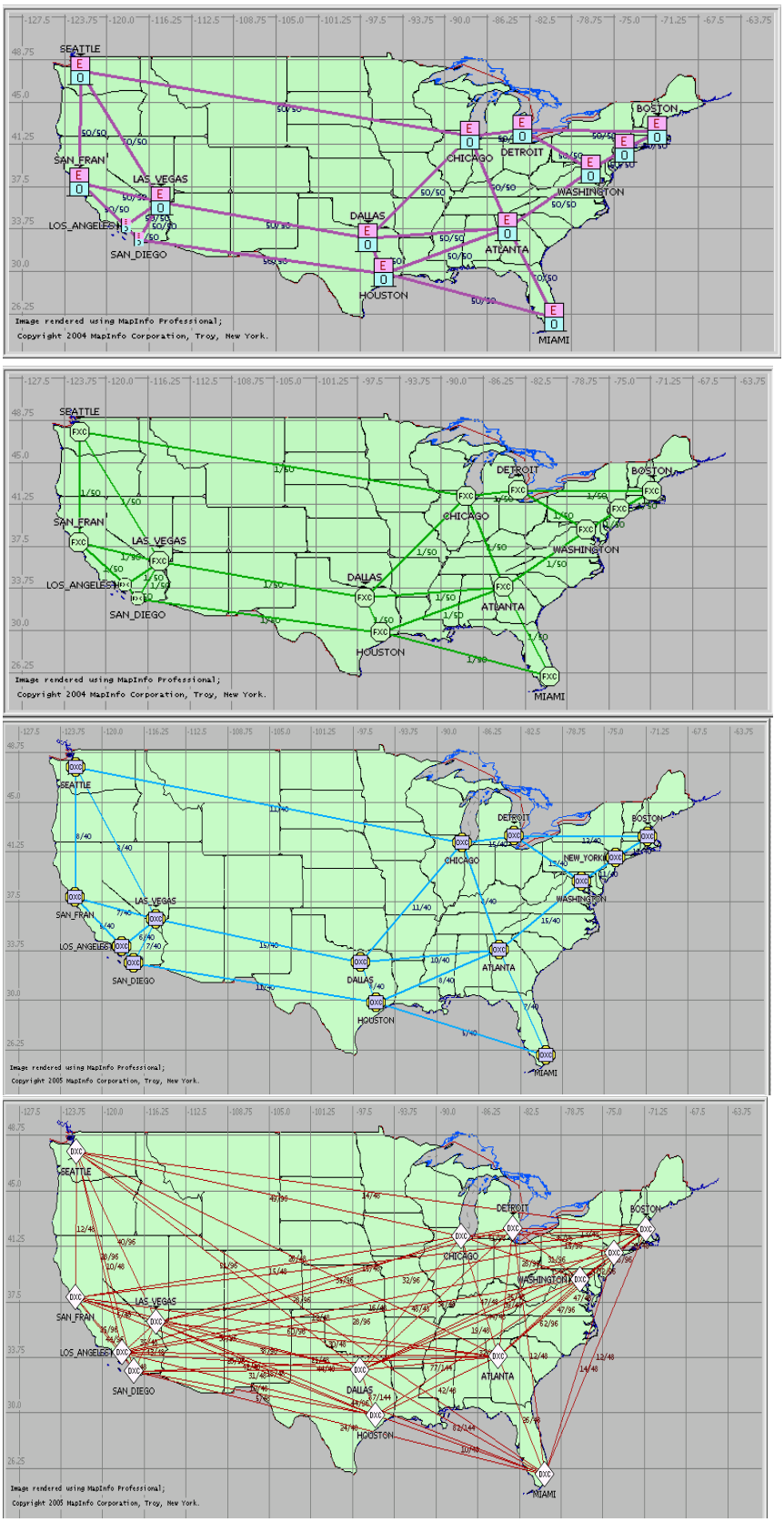
In-line Regeneration/Amplification

Name	Fiber LH 40-WDM	#Fiber Pairs	#Regen Stations	#OA Stations	Regen Com. Eq. LH 40-WDM	#Regen Com. Eq.	OA LH 40-WDM	#Bidir OAs	#Bidir Channels Used	#Bidir Regen Cards	Regen Cards LH 40-WDM OC-48	Cost
ATLANTA <-> MIAMI (1)	1	1	1	8	1	1	8	8	3	3	3	880.00
ATLANTA <-> WASHINGTON (1)	1	1	1	7	1	1	7	7	7	7	7	1,045.00
CHICAGO <-> ATLANTA (1)	1	1	1	8	1	1	8	8	3	3	3	880.00
CHICAGO <-> DETROIT (1)	1	1	0	3	0	0	3	3	0	0	0	225.00
DALLAS <-> ATLANTA (1)	1	1	1	10	1	1	10	10	6	6	6	1,210.00
DALLAS <-> CHICAGO (1)	1	1	2	10	2	2	10	10	8	16	16	1,910.00
DALLAS <-> HOUSTON (1)	1	1	0	3	0	0	3	3	6	0	0	225.00
DETROIT <-> BOSTON (1)	1	1	1	8	1	1	8	8	5	5	5	1,030.00
DETROIT <-> WASHINGTON (1)	1	1	1	5	1	1	5	5	5	5	5	775.00
HOUSTON <-> ATLANTA (1)	1	1	1	10	1	1	10	10	4	4	4	1,030.00
HOUSTON <-> MIAMI (1)	1	1	2	13	2	2	13	13	3	8	8	1,535.00
HOUSTON <-> SAN_DIEGO (1)	1	1	3	17	3	3	17	17	5	15	15	2,475.00
LAS_VEGAS <-> DALLAS (1)	1	1	2	15	2	2	15	15	9	18	18	2,405.00
LOS_ANGELES <-> LAS_VEGAS (1)	1	1	0	3	0	0	3	3	3	0	0	225.00
LOS_ANGELES <-> SAN_DIEGO (1)	1	1	0	1	0	0	1	1	3	0	0	75.00
LOS_ANGELES <-> SAN_FRAN (1)	1	1	0	5	0	0	5	5	2	0	0	375.00
NEW_YORK <-> BOSTON (1)	1	1	0	3	0	0	3	3	5	0	0	225.00
SAN_DIEGO <-> LAS_VEGAS (1)	1	1	0	4	0	0	4	4	4	0	0	300.00
SAN_FRAN <-> LAS_VEGAS (1)	1	1	1	5	1	1	5	5	3	3	3	655.00
SEATTLE <-> CHICAGO (1)	1	1	4	23	4	4	23	23	5	20	20	3,325.00
SEATTLE <-> LAS_VEGAS (1)	1	1	2	12	2	2	12	12	5	10	10	1,700.00
SEATTLE <-> SAN_FRAN (1)	1	1	1	9	1	1	9	9	3	3	3	955.00
WASHINGTON <-> NEW_YORK (1)	1	1	0	3	0	0	3	3	5	0	0	225.00
Total	23	23	24	185	24	24	185	185	110	124	124	23,715.00

8 Browse the **Topology** section.

This section shows the OTS (Optical Transport Section) Layer, the OMS (Optical Multiplex Section) Layer, the OCH (Optical Channel) Layer, and the DCL (Digital Client) Layer. See Figure 6-1 on page TrPT-6-10.

Figure 6-1 Layers Shown in the Topology Section



9 Close the **Bill of Materials** report.

End of Procedure 6-1

Without closing the project or scenario, perform the following procedure.

Procedure 6-2 Generating the Connection Resources Details File

1 Select **Info > Export to Web Report > Connection Resources Details > By Resource Index**.

➥ The web browser is launched and the **Connection Resources Details** report appears.

2 Browse through the DCL traffic section.

- This section gives the connection details of each of the (partly) accommodated traffic matrices in the DCL layer. In this example, only the traffic matrix STS-1 is routed in the DCL layer.
- Select **STS-1**. This section gives the details of each connection of the traffic matrix STS-1.

3 Check the routes of a DCL connection.

- Check the working path of the connection **Atlanta <-> Boston**. This connection consists of four STS-1 units. The working path starts in the DXC and the OXC at Atlanta. Next, it is routed along the link from Atlanta to Washington using the first wavelength on the first fiber on the link. In Washington it is routed to New York along the first wavelength on the first fiber. In New York it is again switched at the optical level. Next, it uses the first wavelength on the first fiber on the link between New York and Boston. In Boston it is dropped in the OXC and the DXC. Note that the connection is not switched at the electrical level between its end nodes. This means that the DCL path of the connection is a one-hop route, while the OCH path of the connection is a three-hop route. The connection uses the first to the fourth timeslot on the (logical) DCL link between Atlanta and Boston.

Node	Type	Switching Layer	Timeslot	Wavelength	Fiber
ATLANTA	DXC+OXC	DCL	1	6	1
WASHINGTON	OXC	OCH		4	1
NEW_YORK	OXC	OCH		4	1
BOSTON	OXC+DXC	DCL			

- Check the protecting path of the connection **Atlanta <-> Boston**. The protecting path starts in the DXC and the OXC at Atlanta. Next, it is routed along the link from Atlanta using the first wavelength on the first fiber on the link. In Chicago the connection is dropped on the OXC and switched at the DCL layer (using the DXC). From Chicago it is routed to Detroit along the first wavelength on the first fiber. In Detroit, the connection is switched at the DCL layer (using the DXC). On the logical DCL link between Atlanta and Chicago the connection uses the first to the fourth timeslot. Also, on the logical link between Chicago and Detroit those timeslots are used. Next, the connection is dropped on the OXC in Detroit and routed along the first wavelength on the first fiber on the link between Detroit and

Boston. In Boston it is dropped in the OXC and the DXC. Between Detroit and Boston the connection uses the first to the fourth timeslot on the (logical) DCL link. Note that the DCL protecting path is a three-hop path at the DCL layer because it is switched at the digital level in the intermediate nodes Chicago and Detroit. The protecting path of the connection at the OCH layer is also a three-hop route. This can be checked with the node browser (as shown in step 4).

Node	Type	Switching Layer	Timeslot	Wavelength	Fiber
ATLANTA	DXC+OXC	DCL	1	1	1
CHICAGO	OXC+DXC+OXC	DCL	1	1	1
DETROIT	OXC+DXC+OXC	DCL	1	1	1
BOSTON	OXC+DXC	DCL			

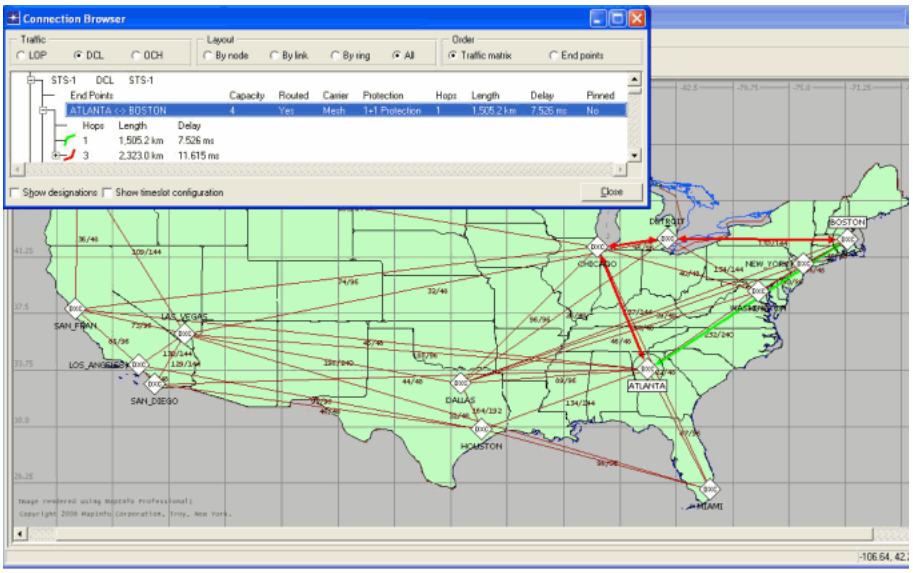
Close the **Connection Resource Details** report.

4 Check the routes of a DCL connection using the connection browser.

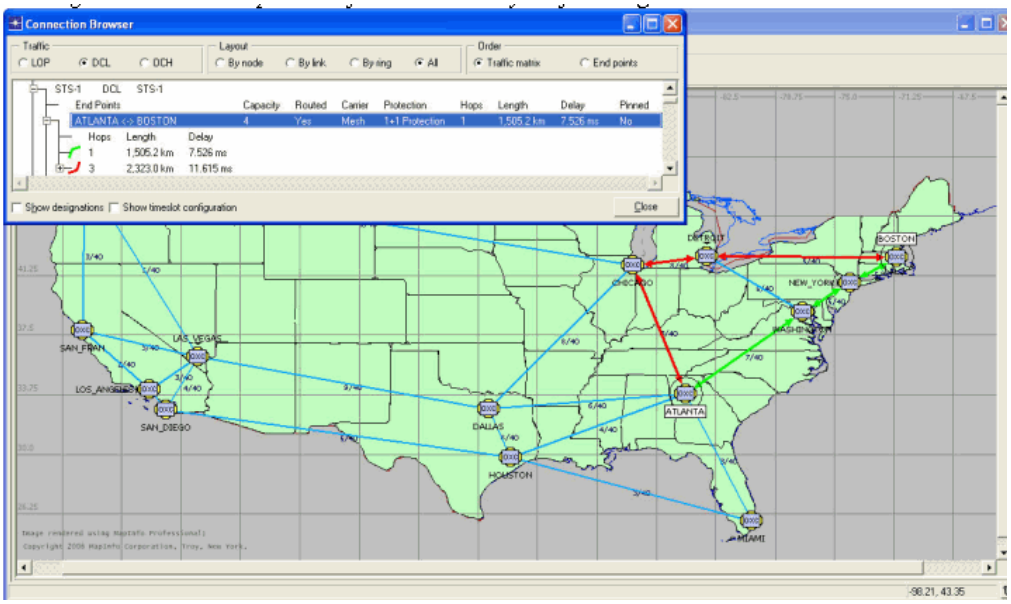
4.1 Select **Network > Connection Browser**.

4.2 Select **DCL** (Traffic), **All** (Layout) and **Traffic Matrix** (Order).

4.3 Expand the traffic matrix STS-1 (using the **+** icon) and then expand the connection **ATLANTA <-> BOSTON**. The working and protecting path of the connection in the DCL layer are shown on the workspace. As mentioned in step 3, the working path is a one-hop path at the DCL layer and the protecting path is a three-hop (through Chicago and Detroit) path.



4.4 Press the **OCH** button on the Project Editor toolbar. The paths of the DCL connection are now shown in the OCH layer. Note that both the working path (through Washington and New York) and the protecting path (through Chicago and Detroit) are three-hop paths in the OCH layer.



4.5 Close the connection browser.

End of Procedure 6-2

Without closing the project or scenario, do the following procedure.

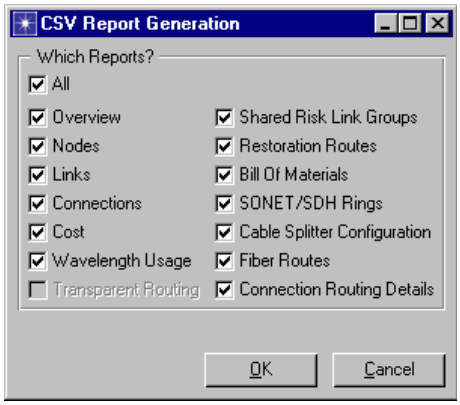
Procedure 6-3 Generating Spreadsheet Reports

1 Select **Info > Export to Spreadsheet…**

➥ The **CSV Report Generation** dialog box appears.

This dialog box lets you select the reports to generate. The .csv files are written to the following directory:
op_reports\<*protect_name*>\<*scenario_name*>\SP Guru Transport Planner Reports\Spreadsheets\<*date*>_<*time*>.

2 Select **All**, then press **OK** to generate the reports.



3 Browse the directory for the .csv files, then open them to view the reports, as follows.

- The **overview.csv** file gives an overview of the traffic matrices in the network. In case traffic matrices are accommodated in the network with shared path protection or with restoration, the restoration capacity per link is listed.

Name	WDMGuru_Examples-USA									
Date	Fri Nov 10 16:24:48 2006									
Mode	Opaque									
Overview Traffic Matrices - OCHLayer										
Name	Bit Rate	Native	Patch Pan	Client Prot	Protection	Routed Ca	Requested	%Routed	Hops Worl	Hops Protecting
OC-48	OC-48	No	No	No	No Protect	0	154	0	0	0
OC-192	OC-192	No	No	No	No Protect	0	94	0	0	0
OCH_STS	OC-48	No	No	No	No Protect	77	77	100	110	0
Overview Traffic Matrices - DCLayer										
Name	Bit Rate	Client Prot	Protection	Routed Ca	Requested	%Routed	Hops Worl	Hops Protecting		
STS-1	STS-1	No	1+1 Protec	768	768	100	1433	1797		
STS-3	STS-3	No	No Protect	0	360	0	0	0		
STS-12	STS-12	No	No Protect	0	80	0	0	0		
Overview Traffic Matrices - LOPLayer										
Name	Bit Rate	Client Prot	Protection	Routed Ca	Requested	%Routed	Hops Worl	Hops Protecting		
Overview Shared Protection / Restoration Capacity										

- The **nodes.csv** file gives an overview of the traffic in each node in the network, both at the OCH and DCL layer.

- The **connections.csv** file shows details about each connection accommodated in the OCH, DCL, and LOP layer.

Connections OCH Layer										
From	To	Traffic Mat	Designatio	Bit Rate	Capacity	Length	Delay	From	To	Carrier
ATLANTA	BOSTON	OCH_STS-1_Groomir		OC-48	1	1505.19	7.52597	ATLANTA	BOSTON	Mesh
ATLANTA	CHICAGO	OCH_STS-1_Groomir		OC-48	1	947.605	4.73803	ATLANTA	CHICAGO	Mesh
ATLANTA	DALLAS	OCH_STS-1_Groomir		OC-48	2	1159.54	5.7977	ATLANTA	DALLAS	Mesh
ATLANTA	DALLAS	OCH_STS-1_Groomir		OC-48	1	1496.57	7.48285	ATLANTA	DALLAS	Mesh
ATLANTA	DETROIT	OCH_STS-1_Groomir		OC-48	1	1519.07	7.59536	ATLANTA	DETROIT	Mesh
ATLANTA	HOUSTON	OCH_STS-1_Groomir		OC-48	1	1132.12	5.66062	ATLANTA	HOUSTON	Mesh
ATLANTA	LAS_VEG	OCH_STS-1_Groomir		OC-48	1	2880.4	14.402	ATLANTA	LAS_VEG	Mesh
ATLANTA	LOS_ANG	OCH_STS-1_Groomir		OC-48	1	3398.89	16.9944	ATLANTA	LOS_ANG	Mesh
ATLANTA	MIAMI	OCH_STS-1_Groomir		OC-48	1	974.683	4.87341	ATLANTA	MIAMI	Mesh
ATLANTA	NEW_YOF	OCH_STS-1_Groomir		OC-48	1	2625.17	13.1259	ATLANTA	NEW_YOF	Mesh
ATLANTA	NEW_YOF	OCH_STS-1_Groomir		OC-48	1	1202.97	6.01486	ATLANTA	NEW_YOF	Mesh

- The **links.csv** file displays details of all links in each layer (OTS, OMS, DCL, and LOP) of the network.

OTS Links							
From	To	Length Uni	Regen. Sta	OA Station	Total Fiber	User Specified Cost	
ATLANTA	MIAMI	974.683	1	8	50	0	
ATLANTA	WASHING	876.903	1	7	50	0	
CHICAGO	ATLANTA	947.605	1	8	50	0	
CHICAGO	DETROIT	390.885	0	3	50	0	
DALLAS	ATLANTA	1159.54	1	10	50	0	
DALLAS	CHICAGO	1284.89	2	10	50	0	
DALLAS	HOUSTON	364.447	0	3	50	0	
DETROIT	BOSTON	984.463	1	8	50	0	
DETROIT	WASHING	642.169	1	5	50	0	
HOUSTON	ATLANTA	1132.12	1	10	50	0	
HOUSTON	MIAMI	1557.97	2	13	50	0	
HOUSTON	SAN_DIEG	2092.79	3	17	50	0	
LAS_VEG	DALLAS	1720.86	2	15	50	0	
LOS_ANG	LAS_VEG	363.262	0	3	50	0	
LOS_ANG	SAN_DIEG	173.976	0	1	50	0	
LOS_ANG	SAN_FRA	562.726	0	5	50	0	
NEW_YOF	BOSTON	302.222	0	3	50	0	
SAN_DIEG	LAS_VEG	415.665	0	4	50	0	
SAN_FRA	LAS_VEG	672.222	1	5	50	0	
SEATTLE	CHICAGO	2784.92	4	23	50	0	
SEATTLE	LAS_VEG	1409.86	2	12	50	0	
SEATTLE	SAN_FRA	1092.96	1	9	50	0	
WASHING	NEW_YOF	326.07	0	3	50	0	

- The **cost.csv** file gives an overview of the cost of the link and node equipment installed in the network.

Network Cost	199703		
Link Cost	39715		
Link Cost (%)	0.19887		
Node Cost	159988		
Node Cost (%)	0.80113		
Link Cost	Cost	Number	Total
Cable Fixed	0	23	0
Cable Length	0	22233.2	0
Cable OA/Reg	0	209	0
Cable Total			0
Fiber Fixed	0	23	0
Fiber Length	0	22233.2	0
Fiber WDM TMs LH 40-WDM Common	100	94	9400
Fiber WDM TMs LH 40-WDM Band 1	0	94	0
Fiber OAs LH 40-WDM Common	75	185	13875
Fiber OAs LH 40-WDM Band 1	0	185	0
Fiber Regenerator Common Equipment LH 40-WDM Common	100	24	2400
Fiber Regenerator Common Equipment LH 40-WDM Band 1	0	24	0
Fiber Total			25675
Channel Fixed	0	110	0
Channel Length	0	111553	0
WDM Channel Cards LH 40-WDM	0	220	0
Channel Reg Cards LH 40-WDM OC-48	60	124	7440
Long Reach Transp LH 40-WDM OC-48	30	220	6600
Channel Total			14040
SDH Regen Common Equipment		0	0
SDH Link Eq. Total			0
Total			39715
LOP TM Cost	Cost	Number	Total Cost
LOP TM Fixed Total		0	0
LOP TM Trib Ports Total		0	0
Total			0
Continuous DXC Cost	Cost	Number	Total
DXC Fixed Total	10000	14	140000
DXC Trib Ports STS-1	0.5	1536	768
DXC Trunk Ports OC-48	5	154	770
DXC Ports Total		1690	1538
Total			141538
Discrete OXC Cost	Cost	Number	Total
Type1	600	10	6000
Type2	1600	4	6400
OXC Fixed Total		14	12400

- The **wavelength_usage.csv** file gives an overview of the wavelength usage (network wide and per OCH link).

Wavelength Usage - Network Wide			
Wavelength	Used Capacity	Equipped Capacity	
1	23	23	
2	23	23	
3	22	23	
4	15	23	
5	13	23	
6	6	23	
7	4	23	
8	3	23	
9	1	23	
10	0	23	
11	0	23	
12	0	23	
13	0	23	
14	0	23	
15	0	23	
16	0	23	
17	0	23	
18	0	23	
19	0	23	
20	0	23	
21	0	23	
22	0	23	
23	0	23	
24	0	23	
25	0	23	
26	0	23	
27	0	23	
28	0	23	
29	0	23	
30	0	23	

- The **transparent_routing.csv** file lists detailed information specific for transparent networks. This file can only be generated while in transparent OCH layer mode.

- The **srlg.csv file** lists which resources are sharing common infrastructure in the lower layers, thus having a shared risk of failing together.
- The **restoration.csv** file lists for every link failure the affected capacity and the restoration routes for those connections that can be restored.
- The **bom.csv** file contains the same information as the bill-of-materials in .html format (see above).
- The **rings.csv** file provides an overview of all rings present at the DCL layer.
- The **cable_splitters.csv** file lists the configuration of each cable splitter in the network.
- The **fiber_routes.csv** file lists the active fiber routes in the network.
- The **connection_routing_details.csv** file displays details about the connections accommodated in the OCH layer or the DCL layer.

Note—In this example, not all reports will contain information.

ID	Designation	Type	Capacity	Native	Dynamics	Map	Route
OCH Connections							
ATLANTA=WASHINGTON#0_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <3(1)> [OXC_WASHINGTON]
ATLANTA=WASHINGTON#1_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <2(1)> [@OXC_CHICAGO@] <9(1)> [@
WASHINGTON=NEW_YORK#0_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_WASHINGTON] <3(1)> [OXC_NEW_YORK]
WASHINGTON=NEW_YORK#1_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_WASHINGTON] <8(1)> [@OXC_DETROIT@] <7(1)
NEW_YORK=BOSTON_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_NEW_YORK] <3(1)> [OXC_BOSTON]
ATLANTA=CHICAGO_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <3(1)> [OXC_CHICAGO]
CHICAGO=DETROIT#0_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_CHICAGO] <1(1)> [OXC_DETROIT]
CHICAGO=DETROIT#1_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_CHICAGO] <5(1)> [@OXC_ATLANTA@] <2(1)> [C
DETROIT=BOSTON_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_DETROIT] <1(1)> [OXC_BOSTON]
ATLANTA=DALLAS#0_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <1(1)> [OXC_DALLAS]
ATLANTA=DALLAS#1_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <3(1)> [OXC_DALLAS]
ATLANTA=DALLAS#2_OCH_STS-1_Grooming		OCH:OC-48	1	1	2		[OXC_ATLANTA] <3(1)> [@OXC_HOUSTON@] <6(1)> [(

4 Close the project.

4.1 Select **File > Close**.

4.2 Select **Don't Save** in the **Close Confirm** dialog box.

End of Procedure 6-3