5-2009

PlaNet-PTN Module: a Single Layer Design Tool for Packet Transport Networks

Miguel Razo, *et al.*

The PlaNet-PTN Module: a Single Layer Design Tool for Packet Transport Networks

Technical Report UTD/EE/1/2009

May 2009

Miguel Razo, Arie Litovsky, Wanjun Huang, Arularasi Sivasankaran,
Limin Tang, Hars Vardhan, Marco Tacca, and Andrea Fumagalli
Open Networking Advanced Research (OpNeAR) Lab
Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas, Richardson, TX, USA
andreaf@utdallas.edu
Paolo Monti
Next Generation Optical Network (NeGONet) Group
School of Information and Communication Technology, ICT-FMI
The Royal Institute of Technology, Kista, Sweden
pmonti@kth.se

Abstract

PlaNet is a multilayer network planning tool developed at the University of Texas at Dallas. This paper illustrates some of the features of *PlaNet-PTN*, one of the modules available in the PlaNet tool. *PlaNet-PTN* can be used to design and plan a single layer packet transport network (PTN). Quality of protection, routing constraints, minimization of the network equipment cost, and user's desired run time of the tool are just some examples of the features available in PlaNet. As shown in the paper, the *PlaNet-PTN* planning module is able to provide, among others, optimization of Label Switched Path (LSP) routes, link capacity placement, node and link equipment configuration.

Keywords: PlaNet, Network Planning Tool, Network Cost Minimization, Packet Transport Network

1. Introduction

Both number of traffic demands — or Label Switched Paths (LSPs) — and number of distinct types of service supported by today's networks are continuously growing. Point to point (P2P) and point to multi-point (P2MP) traffic demands may coexist in the same network. Some LSPs are bidirectional, others are unidirectional. Some require end-to-end path protections, others require link protection (fast reroute). Network standards are also allowing loose definition of routing, for example by requiring that one or more network elements are included in the route of the LSP [8, 10, 14]. Affinities can also be used to match the LSP's required level of service with the performance offered by the available equipment in the network [9].

These requirements, along with thousands of LSPs jointly carried by the same network must be accounted for when planning the network and provisioning the right amount of network resources while containing the overall network equipment cost. Computer aided tools that are required to plan and design networks are therefore becoming increasingly more complex, as new features must be continuously added and integrated with the already existing ones. Such tools must also be able to design multilayer networks, dealing with physical fiber/cable layer, optical/wavelength division multiplexing (WDM) layer, optical transport network (OTN) layer, and packet transport network (PTN) layer, e.g., multiprotocol label traffic engineering (MPLS-TE).

Quite a number of planning tools has been developed commercially. Some tools are designed and maintained by network equipment vendors to support design and marketing

of their products, e.g., [1]. Some others are commercially available to both industry and academia, e.g., OPNET [2], VPI [3], and WANDL [4].

PlaNet is a multilayer network planning tool recently designed, developed and extensively tested by the University of Texas at Dallas. PlaNet is a collection of software modules that can be combined to achieve design and planning of multilayer networks with the total cost of the network component minimized. Layers that can be optimized and designed with the help of PlaNet include: the physical fiber layer, WDM layer [5, 6], OTN layer [7], and the PTN layer [9]. The tool modules can handle the design of metro, as well as core networks.

This paper presents PlaNet-PTN, one of the modules in the PlaNet suite. PlaNet-PTN can be used to optimize the PTN layer in the network. One example of PTN layer is MPLS-TE [9]. Given the input traffic demands, node locations, physical connectivity between nodes, input constraints, and available hardware, PlaNet-PTN can design the network by:

- allocating node hardware, i.e., MPLS-TE chassis (switching fabric or backplane) and MPLS-TE line cards,
- providing a basic configuration for the node hardware,
- associating interfaces with a physical connection between nodes,
- computing routes for LSPs,
- assigning routes to LSPs based on QoS,
- assigning routes to LSPs based on input routing constraints, and
- adding redundancy in the network in order to provide reliability to the LSPs, should they require it.

The objective of the design is to minimize CAPEX, i.e., the cost associated with the provisioning of all the hardware required to build (or update) the network.

PlaNet-PTN attempts to provide a viable solution to the network design problem by including a number of features and a modular software architecture, which easily allows for upgrades and improvements to the current feature set.

2. PlaNet-PTN General Philosophy and Main Modules

This section provides first a high level description of the principles used to design and implement PlaNet-PTN. Then the main modules of the tool are introduced.

Multi-phase Optimization. The user must be able to define a sequence of optimization steps to be applied sequentially to the network under optimization. The result found at the end of each step may be saved (option selected by the user), and used as the input for the next step. For example, the user may decide to optimize P2P traffic alone first. On top of the result found, the user may decide to optimize P2MP traffic without modifying the solution found for the P2P traffic in the earlier step.

Incremental Traffic Demands. The user must be able to define multiple matrices of traffic demands. Each matrix defines a group of traffic demands that are handled as a whole by the tool. It is possible to run PlaNet-PTN using one group at a time, or multiple groups all together. It is possible to run PlaNet-PTN using a sequence of groups, thus studying the evolution of the network over time with incremental traffic demands. Alternatively, the user can, at any time, split a group into multiple groups for differentiated handling of traffic demands. For example, a graphical user interface (GUI) could allow the user to define attributes for an entire group of demands at once, instead of assigning the attributes to each individual LSP.

Objects to Optimize and Their Constraints. For each optimization step, the user must be able to specify what objects (e.g., equipment at a node, routing of LSPs) can be optimized, and what objects are final, i.e., they cannot be changed. Objects include backplanes chosen for a node, line cards chosen for a backplane, and routing for an LSP. For the objects to optimize the user must provide the constraints, e.g., range of possible options. For example, the node size can be 3 backplanes, each backplane can be in the range of (16, 32 etc.) slots, and each slot port can be in the (OC12, OC48) rate range.

Network Descriptor. The user must describe various key aspects of the network under optimization. The topology must be defined (e.g., using a graphical interface), specifying which spans (node pairs) are available, and for each span how many links are possible, and what set of transmission rates are available for that span. For each node, it may be necessary to indicate the product models (backplanes and cards) that are allowed to be used. Cost values must be provided for each network component.

LSP Descriptor. The user can address an individual LSP, or a group of LSPs. For the LSP (individual or in a group), the user must specify whether it is P2P or P2MP, the desired maximum hop count, nominal bandwidth, class type, protection requirement, affinity, etc.

Optimization Algorithm and Parameters. The user must specify the desired run time, or desired goodness of the optimized result.

Optimization Mode. The user must specify if the optimization must start from a network with no existing equipment, or must build upon the previously obtained results (resume of an existing planning session).

Optimizer Output. At the end of an optimization step, the solution is made available to the user for analysis and saved to files. The solution includes the specific description of the node hardware, the paths of the demands, their reserved bandwidth, etc. The values of the objective functions are also made available, and where applicable, they can be shown for individual demands, group of demands, including averages, min/max, variance, distributions, etc. A history or trace of the optimization steps must be saved (as part of the solution) and made available to the user, who may want to be able to repeat the procedure under which a certain result was obtained.

Graphical User Interface. A (graphical) user interface allows the user to interact with the optimizer and specify all of the above functions. The interface allows the user to save optimization configurations, make them the user default configuration, etc. The planning tool provides a default configuration for every parameter, thus making it simple for the inexperienced user to run the optimizer the first time with some meaningful setup.

Fig. 1 shows the main modules of the PlaNet-PTN tool. They operate according to the following flow.

1. Load input: this module reads all information from input files, e.g., topology description, constraints and traffic demands.
2. Preprocess: this module checks for possible inconsistency in the input files and preprocess the LSP requirements, e.g., routing constraints, protection requirements, etc..
3. Read parameters: this module reads the parameters used by the Optimize module, e.g., running time.
4. Optimize: this module performs the required optimization tasks according to the objective function, e.g., minimize cost, increase equipment utilization, etc..
5. Interconnect Intermission Trunks (IMT): this module optimizes the intermission trunks. IMT allows LSPs to be routed from one backplane to another within the same node.

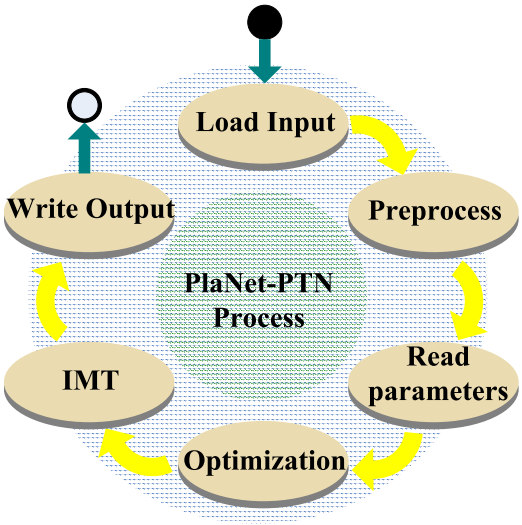


Figure 1

PlaNet-PTN Modules.

6. Write output: this module saves the optimization results into the output files.

3. PlaNet-PTN Feature Set

This section presents a list of features that PlaNet-PTN supports. PlaNet-PTN tool can handle the following:

- traffic types: PlaNet-PTN supports LSPs that can be bidirectional P2P, unidirectional P2P, and unidirectional P2MP,
- Differentiated Services (DiffServ): this model is used for the purposes of bandwidth allocation based on types and priorities of traffics. PlaNet-PTN supports up to eight classes [12],
- bandwidth allocation models: PlaNet-PTN implements the maximum allocation model [13] and russian doll model [11],

- protection types: PlaNet-PTN supports unprotected, 1+1 and 1:1 dedicated path protection, FRR Detour [16] and FRR Bypass[1] [15],
- technology types: the following technologies are supported: gigabit Ethernet (GE) and packet over SONET (PoS),
- affinity values: affinity is a 32 bit parameter, used to define a subset of equipments and spans that a given LSP can use,
- constraints:
  - hardware: this constraint is used to specify which equipments that can be used at each node and on each span,
  - routing: this constraint is used to specify the routing metric (e.g., hops vs. distance), or when a LSP is forced to use a specific primary and/or secondary path (tree), the affinity value, the maximum hop count for a path, possible nodes/spans that need to be included/excluded during route computation, etc.,
  - running time: this parameter defines the time limit (measured in seconds) for the PlaNet-PTN tool to perform the optimization tasks,
- operation mode: four optimization modes are available. One is called *greenfield* and the other three are called *incremental*. In the *greenfield mode*, new LSPs are added to a network with equipment at all. In an incremental mode, new LSPs are added to a network with already existing equipments and/or with some LSPs already routed. In *incremental mode 1*, the following rules apply: while optimizing the routing for the new traffic demands, no new equipment can be added to the network, the existing equipments can not be changed/upgraded, and the routing of the LSPs already present can not be re-optimized. In *incremental mode 2*, the following rules apply: while optimizing the routing for the new traffic demands, new equipment can be added to the network, but the existing equipments can not be changed/upgraded, and the routing of the LSPs already present in the network can not be re-optimized. In *incremental mode 3*, the following rules apply: while optimizing the routing for the new traffic demands, new equipment can be added, and/or existing equipments can be changed/upgraded and the routing of the LSPs already present in the network can be re-optimized.

4. Using PlaNet-PTN

This section gives a brief overview of the capability of the PlaNet-PTN module.

[1] P2MP traffic cannot use FRR detour.

4.1 Graphical User Interface (GUI)

The tool provides a set of default values: input parameters that are required for the tool to work properly, and in case are not provided trough the input files, the tool can still be used. These parameters can also be customized according to user preferences.

Fig. 2 shows a screenshot of GUI tool default values for directory, number of candidate paths, affinity mask, etc.

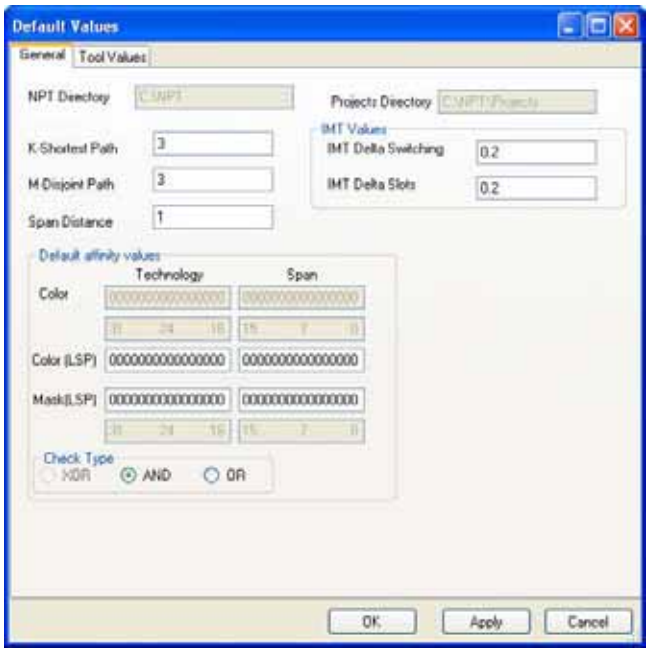


Figure 2

GUI screenshot: tool default values.

Fig. 3 shows a screenshot of GUI tool default values for demand and topology constraints.

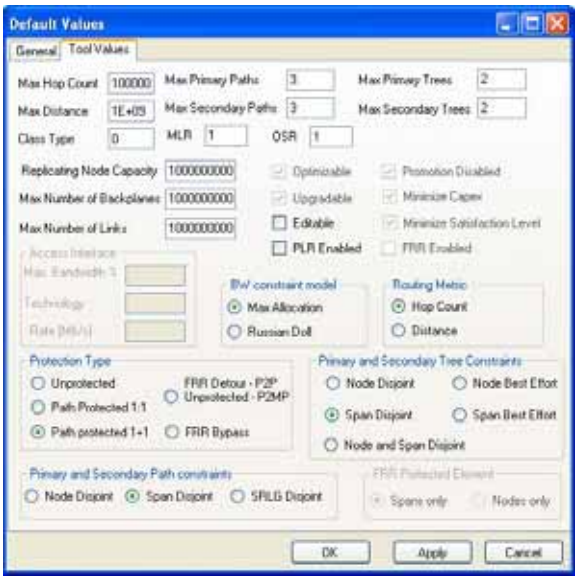


Figure 3

GUI screenshot: default values for constraints.

Figs. 4 shows the node and span properties page. This page can be used to visualize or modify key parameters for individual topology components(i.e. node or spans).

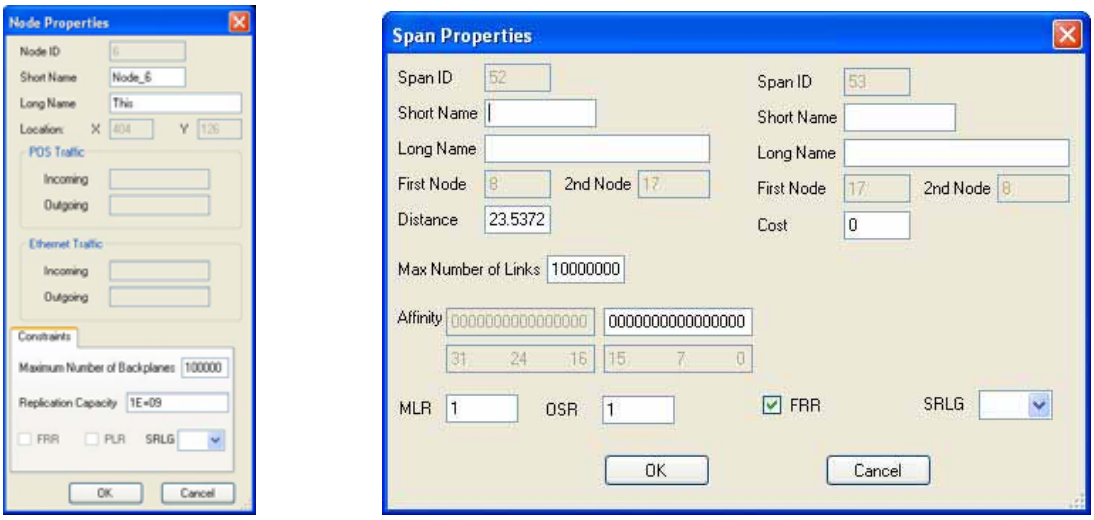
Fig. 5 shows a screenshot of GUI with an example of input topology. Since the screenshot refers to a greenfield design, the topology shows only the node location and the possible physical interconnection between node pairs, i.e., the spans, while it does not show any equipment or LSP.

Fig. 6 shows a screenshot of the LSP property page within the GUI. Although the input files are text based and an experienced user could input all the requirements from the input files directly, the GUI can read and edit those files for a more intuitive user experience. As

the screenshot reveals, a large number of parameters (some of them described in Section 3.) can be set for each individual LSP.

Fig. 7 shows a screenshot of GUI with an example of output topology, after one optimization run. This screenshot reveals more information when compared to the one in Fig. 5, e.g., each link is color coded in order to visually identify the percent load on each link. The thresholds for the different colors can be changed on the fly from the GUI to investigate what are the critical load levels in the network. Information on a per-class base is also available upon selection.

Fig. 8 shows the form used to select LSP(s) and later visualize their routing. Different sorting method are available. The *Select LSP* part is letting the user select the LSP(s) to be



(a) (b)

Figure 4

GUI screenshot: node and span properties.

visualized according the LSP class and traffic type (P2P or P2MP or ALL). After sorting, one or more LSP can be selected to have their routing displayed, as shown in Fig. 9. The *Select Node or Backplane* part is letting the user decide among the LSP(s) traversing a node or a backplane pair. The *Select Span Interface* part is used to select which LSP(s), among the ones originating at, or traversing a given interfaces, should be displayed. The *Select Node Backplane* part is letting the user decide among the LSP(s) originating at, or traversing a given node or backplane.

Fig. 9 shows an example of how the GUI can be used to visualize the routing of one (or more) LSP(s). In this particular screenshot one LSP is protected by FRR detour. For each protected facility, e.g., link, the dark line indicates the FRR tunnel.

Fig. 10 shows a P2MP LSP 1+1 link disjoint protected. Source node is 48, and destinations are nodes 9,15,39,43,51 and 53. The dark line indicates the working tree.

Fig. 11 shows the IMT Ring: backplanes used in a node and the list of cards used in a backplane.

4.2 Tool Run Time vs. Optimization Level

The tool was tested under different scenarios. Fig. 12 refers to a topology with 76 nodes, 400 spans and a demand matrix of 600 unprotected P2P LSPs. It can be noticed that with increasing running times, the tool returns lower network costs. Fig. 13 shows results obtained using the same network as Fig. 12, but this time with a demand matrix of 600 P2P LSPs, 20% with FRR Detour protection and 80% unprotected. The plot reveals a consistent behavior, i.e., longer run times yield lower cost network solutions. Fig. 14 shows how

the tool scales with respect to the topology and demand matrix size, the heterogeneity of the traffic and the number of routing constraints. The total network cost is plotted as a function of the tool running time for a topology with 200 nodes, 1000 spans and a demand matrix of 12000 LSPs: 6000 P2MP and 6000 P2P, using in both cases (P2P and P2MP) 1+1 and 1:1 dedicated path protection.

5. Summary

This paper describes the features available in PlaNet-PTN, one of the modules available in the PlaNet tool. The module may be used to design a single layer packet transport network, either starting from a clean slate (no existing equipment in the field), or adding equipment incrementally to an already existing network. The main objective of the PlaNet-PTN module is to minimize the cost of the equipment that is required in the network to support a given set of traffic demands, while taking into account a number of factors: (a) a realistic set of traffic demand types, including P2P and P2MP traffic, directional and bidirectional flows, end-to-end path protection and fast reroute link protection, multiple classes of priority, (b) the network equipment type, capacity, and cost, which the network designer provides as part of the tool input, (c) a number of routing constraints, e.g., requesting the include or exclude of multiple network elements along the route of special traffic demands, affinity between traffic demands and equipments, disjoint (in terms of link, node, and SRLG) routing for diversity purpose, (d) a pragmatic approach to designing network, whereby the network designer may wish to trade the optimization run time of the module for the optimality level of the solution returned by the module.

The PlaNet tool was designed, developed and extensively tested by a team that includes both graduate and undergraduate students at the University of Texas at Dallas. At current time, the tool consists of about 170,000 lines of C++ code, which can be compiled on both Windows and Linux operating system. The challenge of designing, implementing, and integrating all the features available in the PlaNet tool offered this team of students a unique opportunity to experience and understand the R&D type of environment, where loose specifications are given at the beginning of the project and must be turned into concrete requirements that can be met in the limited time frame given for development.

Acknowledgments

The authors would like to acknowledge the help received from Poornima Hanumara in testing many of the PlaNet-PTN features.

References

[1] "Motorola Network Planning Tools," information available at http://www.motorola.com/Business/US-EN/Business+Product+and+Services/Wireless+Broadband+Networks/Point-to-Point+Bridges/Network+Planning+Tools.

[2] "OPNET," information available at http://www.opnet.com.

[3] "VPI systems," information available at http://www.vpisystems.com.

[4] "WANDL," information available at http://www.wandl.com.

[5] *ITU-T G.805 - Generic Functional Architecture of Transport Networks*, Tech. Rep., International Telecommunications Union, March 2000.

[6] *ITU-T G.872 - Architecture of Optical Transport Networks*, Tech. Rep., International Telecommunications Union, November 2001.

[7] *ITU-T G.709 - Interfaces for the Optical Transport Network*, Tech. Rep., International Telecommunications Union, March 2003.

[8] D. Awduche, L. Berger, D. Gan, V. S. T. Li, and G. Swallow, "RFC 3209 - RSVP-TE: Extensions to RSVP for LSP Tunnels," December 2001.

[9] D. Awduche, J. Malcolm, J. Agogbua, M. O'Dell, and J. McManus, "RFC 2702 - Requirements for Traffic Engineering Over MPLS," September 1999.

[10] L. Berger, "RFC 3473 - Generalized Multi-Protocol Label Switching (GMPLS) Signaling Resource ReserVation Protocol-Traffic Engineering (RSVP-TE) Extensions," January 2003.

[11] F. L. Faucher, "RFC 4127 - Russian Dolls Bandwidth Constraints Model for Diffserv-Aware MPLS Traffic Engineering," June 2005.

[12] F. L. Faucher and W. Lai, "RFC 3564 - Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering," July 2003.

[13] F. L. Faucher and W. Lai, "RFC 4125 - Maximum Allocation Bandwidth Constraints Model for Diffservaware MPLS Traffic Engineering," June 2005.

[14] C. Lee, A. Farrel, and S. D. Cnodder, "RFC 4874 - Exclude Routes - Extension to Resource ReserVation Protocol-Traffic Engineering (RSVP-TE)," April 2007.

[15] E. Mannie and D. Papadimitriou, "RFC 4427 - Recovery (Protection and Restoration) Terminology for Generalized Multi-Protocol Label Switching (GMPLS)," March 2006.

[16] P. Pan, G. Swallow, and A. Atlas, "RFC 4090 - Fast Reroute Extensions to RSVP-TE for LSP Tunnels," May 2005.

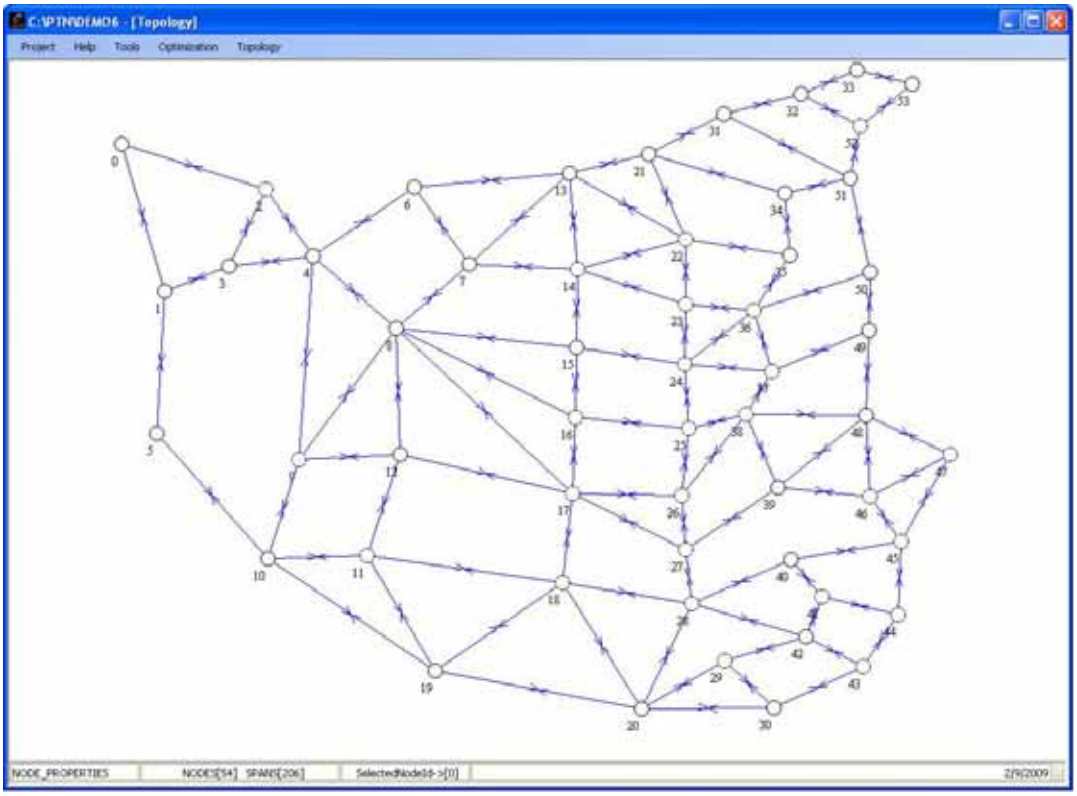


Figure 5

GUI screenshot: one example of input topology.

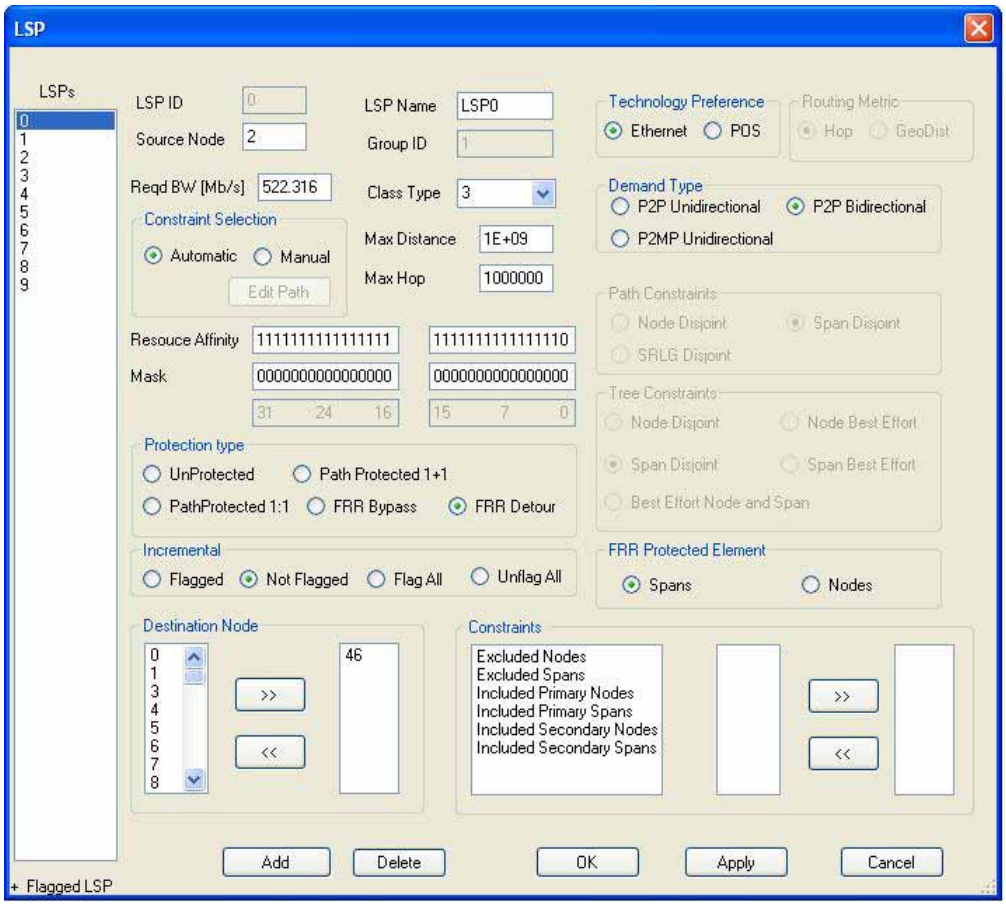


Figure 6

GUI screenshot: page used to review or modify LSP properties.

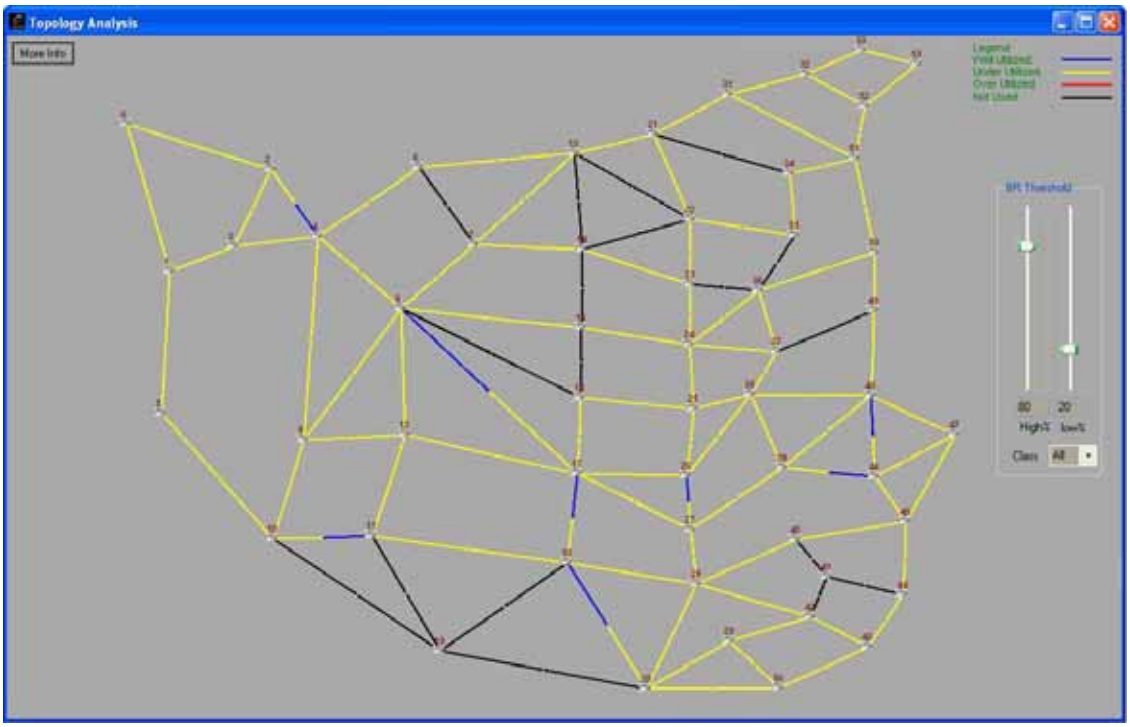


Figure 7

GUI screenshot: page used to display the topology information and span load using color codes according to user selected threshold.

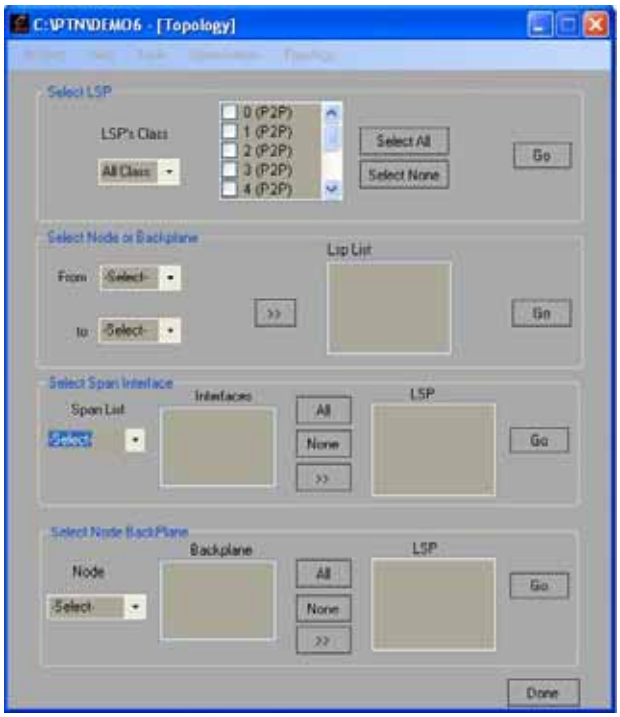


Figure 8

GUI screenshot: page used to select the LSP(s) whose routing should be visualized.

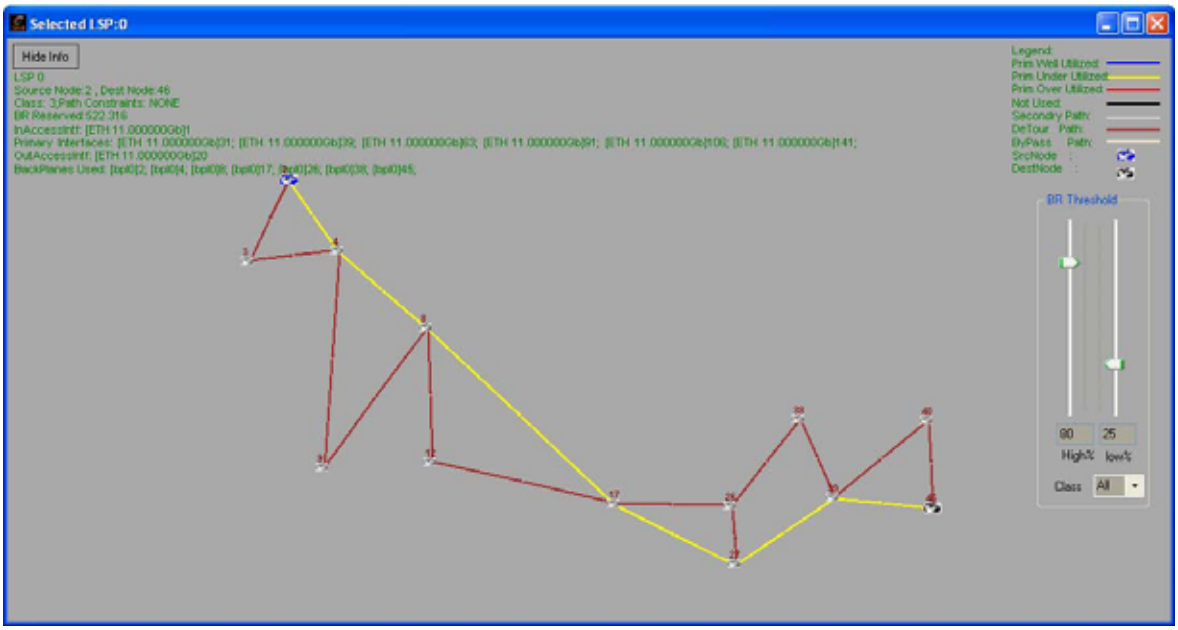


Figure 9

GUI screenshot: page used to display P2P LSP routing after optimization. Working and protection (FRR Detour) paths are visualized.

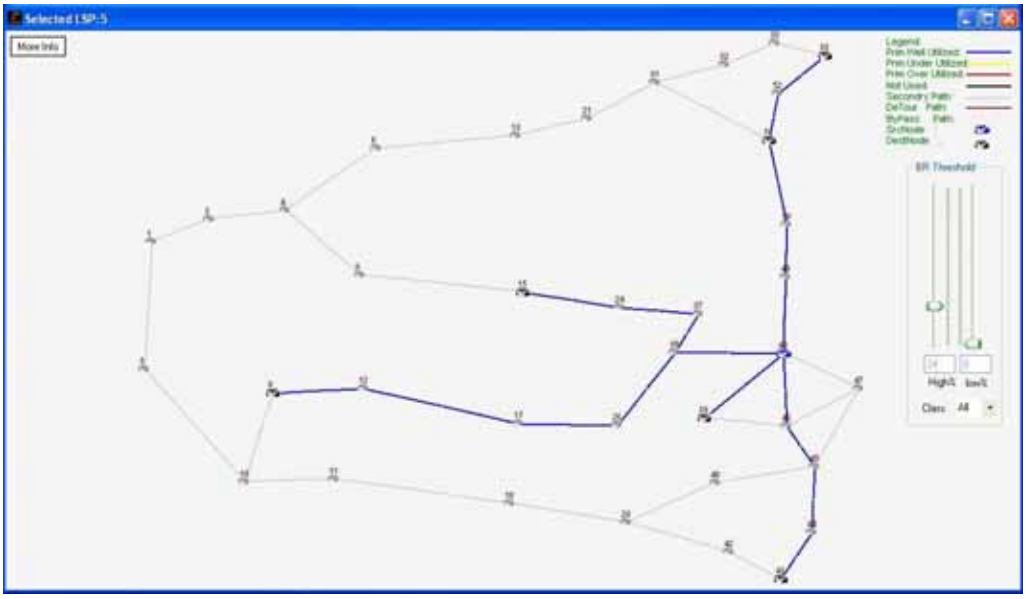


Figure 10

GUI screenshot: page used to display P2MP LSP routing after optimization. Working and protection (1+1 link disjoint) paths are visualized.

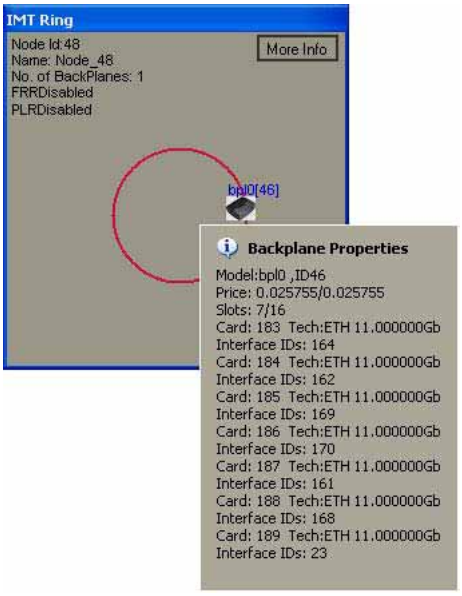


Figure 11

GUI screenshot: IMT ring.

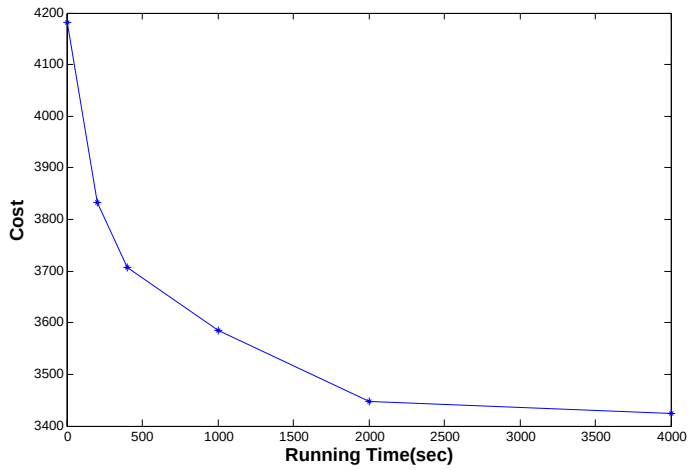


Figure 12

Total network cost as a function of the tool running time. Topology with 76 nodes, 400 spans. Demand matrix with 600 unprotected P2P LSPs.

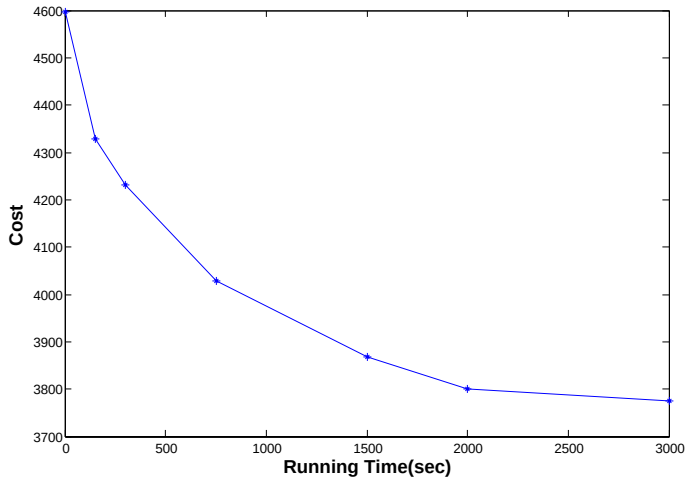


Figure 13

Total network cost as a function of the tool running time. Topology with 76 nodes, 400 spans. Demand matrix 600 P2P LSPs: 20% protected (FRR Detour), 80% unprotected.

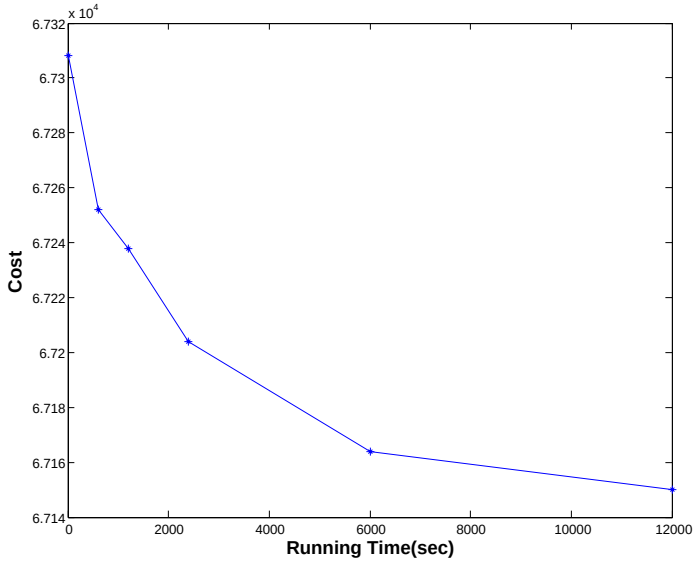


Figure 14

Total network cost as a function of the tool running time. Topology with 200 nodes, 1000 spans. Demand matrix 1200 LSPs: 6000 P2MP and 6000 P2P with 1+1 and 1:1 dedicated path protection.

Appendix
Benchmarking Results

I. Green Field Design

A. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-1. The traffic scenario is the following:

```
-) Topology: 76 nodes, 200 spans.
-) Traffic A:
   *) 600 LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
-) Run the tool under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
*) seed 11, 22, 33, 44 and 55
```

B. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-2. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic B:
   *) 600 LSPs: 80% use 1+1, the remaining is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

C. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-3. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic C:
   *) 600 LSPs: 50% use 1+1, the remaining is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
```

```
      T_final=T_initial/1e3
```

D. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-4. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic D:
   *) 2400 LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

E. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-5. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic E:
   *) 2400 LSPs: 80% use 1+1, the remaining is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

F. P2P 1+1 Protection Node disjoint

Benchmarking results are reported in Table A-6. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic F:
   *) 2400 LSPs: 50% use 1+1, the remaining is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

G. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-7 and A-8 . The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:
   *) 600 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

H. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-9 and A-10 . The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic B:
   *) 600 LSPs: 80% use FRR bypass, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

I. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-11 and A-12. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic C:
   *) 600 LSPs: 50% use FRR bypass, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

J. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-13 and A-14. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic D:
   *) 2400 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

K. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-15 and A-16. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic E:
   *) 2400 LSPs: 80% use FRR bypass, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

L. P2P FRR Bypass Protection

Benchmarking results are reported in Table A-17 and A-18. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic F:
   *) 2400 LSPs: 50% use FRR bypass, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

M. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-19 and A-20. The traffic scenario is the following:

```
-) Topology: 76 nodes, 200 spans

-) Traffic G:
   *) 3500 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 35 minutes T_initial=1e-3 T_final=1e-6
   *) running time 35 minutes T_initial=1e-4 T_final=1e-7
   *) running time 35 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

N. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-21 and A-22. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic H:
   *) 3500 LSPs: 80% use FRR bypass, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 35 minutes T_initial=1e-3 T_final=1e-6
   *) running time 35 minutes T_initial=1e-4 T_final=1e-7
   *) running time 35 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

O. P2P FRR Bypass Protection

Benchmarking results are reported in Tables A-23 and A-24. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic I:
   *) 3500 LSPs: 50% use FRR bypass, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% use constraint

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 35 minutes T_initial=1e-3 T_final=1e-6
   *) running time 35 minutes T_initial=1e-4 T_final=1e-7
   *) running time 35 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

P. P2MP no Protection

Benchmarking results are reported in Tables A-25, A-26, and A-27. The traffic scenarios are the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:
   *) 600 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:
   *) 2400 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 20 minutes T_initial=1e-3 T_final=1e-6
   *) running time 20 minutes T_initial=1e-4 T_final=1e-7
   *) running time 20 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:
   *) 3500 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: no constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 35 minutes T_initial=1e-3 T_final=1e-6
   *) running time 35 minutes T_initial=1e-4 T_final=1e-7
   *) running time 35 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

Q. P2MP no Protection 10% Constraints

Benchmarking results are reported in Tables A-28, A-29 and A-30 . The traffic scenarios are the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:
   *) 600 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: 10% constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

```
-) Traffic B:
   *) 2400 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: 10% constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 20 minutes T_initial=1e-3 T_final=1e-6
   *) running time 20 minutes T_initial=1e-4 T_final=1e-7
   *) running time 20 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:
   *) 3500 LSPs: 20% use FRR bypass, the remaining 80% is unprotected
      +) subcase 1A: 10% constraints

-) Run the tool using various seeds under these conditions:
   *) number of k-shortest paths: 3, 5 10
   *) running time 35 minutes T_initial=1e-3 T_final=1e-6
   *) running time 35 minutes T_initial=1e-4 T_final=1e-7
   *) running time 35 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

R. P2MP 1+1 Protection Node Disjoint

Benchmarking results are reported in Tables A-31 to A-39. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:

   *) 600 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

-) Traffic C:

   *) 600 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic D:

   *) 2400 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic E:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic F:

   *) 2400 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

```
-) Traffic G:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic H:

   *) 3500 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic I:

   *) 3500 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

S. P2MP 1+1 Protection Best Effort Node Disjoint

Benchmarking results are reported in Tables A-40 to A-48. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:

   *) 600 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint
```

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:

   *) 600 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic D:

   *) 2400 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic E:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic F:

   *) 2400 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic G:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic H:

   *) 3500 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic I:

   *) 3500 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

```
-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

T. P2MP 1+1 Protection Link Disjoint

Benchmarking results are reported in Tables A-49 to A-57. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:

   *) 600 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:

   *) 600 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic D:
```

```
   *) 2400 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic E:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic F:

   *) 2400 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic G:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic H:
```

```
   *) 3500 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic I:

   *) 3500 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

U. P2MP 1+1 Protection Best Effort Link Disjoint

Benchmarking results are reported in Tables A-58 to A-66. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:

   *) 600 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
```

```
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:

   *) 600 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic D:

   *) 2400 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic E:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic F:

   *) 2400 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
```

```
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic G:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic H:

   *) 3500 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic I:

   *) 3500 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

V. P2MP 1+1 protection Best Effort Link/Node Disjoint

Benchmarking results are reported in Tables A-67 to A-75. The traffic scenario is the following:

```
-) Topology: 76 nodes (2 connected)

-) Traffic A:

   *) 600 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
```

      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic B:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic C:

   *) 600 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic D:

   *) 2400 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic E:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected

      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic F:

   *) 2400 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic G:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic H:

   *) 3500 P2MP LSPs: 20% use 1+1, the remaining 80% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Traffic I:

   *) 3500 P2MP LSPs: 50% use 1+1, the remaining 50% is unprotected

```
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *) running time 10 minutes T_initial=1e-3 T_final=1e-6
   *) running time 10 minutes T_initial=1e-4 T_final=1e-7
   *) running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3
```

II. Incremental Design

A. P2MP 1+1 Protection Node Disjoint

Benchmarking results are reported in Tables A-76, A-77 and A-78. The solution obtained for traffic scenario in Sec. I-R, traffic A, index 1 (subcase 1A) is used as the initial solution for the incremental design. The traffic scenario is the following:

```
-) Traffic A:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic B:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic C:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
```

```
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)
```

B. P2MP 1+1 Protection Best Effort Node Disjoint

Benchmarking results are reported in Tables A-79, A-80 and A-81. The solution obtained for traffic scenario in Sec. I-S, traffic A, subcase 1A, first entry, is used as the initial solution for the incremental design. The traffic scenario is the following:

```
-) Traffic A:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic B:

   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic C:

   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
```

```
      +) subcase 1A: no constraints
      +) subcase 1B: 10% of the LSPs have a randomly generated constraint
      +) subcase 1C: 30% of the LSPs have a randomly generated constraint
      +) subcase 1D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)
```

C. P2MP 1+1 Protection Link Disjoint

Benchmarking results are reported in Tables A-82, A-83 and A-84. The solution obtained for traffic scenario in Sec. I-T, traffic A, subcase 1A, first entry, is used as the initial solution for the incremental design. The traffic scenario is the following:

```
-) Traffic A:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic B:
   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic C:
   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
```

```
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
       T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)
```

D. P2MP 1+1 Protection Best Effort Link Disjoint

Benchmarking results are reported in Tables A-85, A-86 and A-87. The solution obtained for traffic scenario in Sec. I-U, traffic A, subcase 1A, first entry, is used as the initial solution for the incremental design. The traffic scenario is the following:

```
-) Traffic A:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
       T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic B:
   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
       T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic C:
   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint
```

```
-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)
```

E. P2MP 1+1 Protection Best Effort Link/Node Disjoint

Benchmarking results are reported in Tables A-88, A-89 and A-90. The solution obtained for traffic scenario in Sec. I-V, traffic A, subcase 1A, first entry, is used as the initial solution for the incremental design. The traffic scenario is the following:

```
-) Traffic A:

   *) 600 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic B:
   *) 2400 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
      T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)

-) Traffic C:
   *) 3500 P2MP LSPs: 80% use 1+1, the remaining 20% is unprotected
      +) subcase 2A: no constraints
      +) subcase 2B: 10% of the LSPs have a randomly generated constraint
      +) subcase 2C: 30% of the LSPs have a randomly generated constraint
      +) subcase 2D: 70% of the LSPs have a randomly generated constraint

-) Run the tool using various seeds under these conditions:
```

```
   *)  running time 10 minutes T_initial=Cost_of_initial_solution/1e7
       T_final=T_initial/1e3

-) Run the tool using
   *) incremental design 3.1
   *) incremental design 3.2
   *) incremental design 3.3 (20% of the equipment can be upgraded)
```

TABLE A-1
76 NODES NETWORK, P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC A

K	Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
3	0.001	0.000001	11	4150.8539	3471.6626	3471.6626	602.0040	679.1913	16.3627
3	0.001	0.000001	22	4150.8539	3467.6626	3467.6626	599.6290	683.1913	16.4591
3	0.001	0.000001	33	4150.8539	3469.5435	3469.5435	600.4570	681.3104	16.4137
3	0.001	0.000001	44	4150.8539	3441.7818	3441.7818	599.6750	709.0722	17.0826
3	0.001	0.000001	55	4150.8539	3483.6626	3483.6626	600.3470	667.1913	16.0736
3	0.0001	0.0000001	11	4150.8539	3513.6626	3513.6626	600.4720	637.1913	15.3508
3	0.0001	0.0000001	22	4150.8539	3497.6626	3497.6626	599.9160	653.1913	15.7363
3	0.0001	0.0000001	33	4150.8539	3493.7818	3493.7818	599.4770	657.0722	15.8298
3	0.0001	0.0000001	44	4150.8539	3461.6626	3461.6626	600.0390	689.1913	16.6036
3	0.0001	0.0000001	55	4150.8539	3493.9009	3493.9009	600.3350	656.9530	15.8269
3	0.000415085	4.15085E-07	11	4150.8539	3513.6626	3513.6626	600.1800	637.1913	15.3508
3	0.000415085	4.15085E-07	22	4150.8539	3485.5435	3485.5435	599.8240	665.3104	16.0283
3	0.000415085	4.15085E-07	33	4150.8539	3441.5435	3441.5435	600.2140	709.3104	17.0883
3	0.000415085	4.15085E-07	44	4150.8539	3453.6626	3453.6626	599.8070	697.1913	16.7963
3	0.000415085	4.15085E-07	55	4150.8539	3501.6626	3501.6626	599.6400	649.1913	15.6399
5	0.001	0.000001	11	4198.8539	3453.6626	3453.6626	600.6400	745.1913	17.7475
5	0.001	0.000001	22	4198.8539	3505.6626	3505.6626	600.1090	693.1913	16.5091
5	0.001	0.000001	33	4198.8539	3459.6626	3459.6626	599.4060	739.1913	17.6046
5	0.001	0.000001	44	4198.8539	3425.5435	3425.5435	600.4530	773.3104	18.4172
5	0.001	0.000001	55	4198.8539	3529.6626	3529.6626	599.4840	669.1913	15.9375
5	0.0001	0.0000001	11	4198.8539	3477.6626	3477.6626	600.1410	721.1913	17.1759
5	0.0001	0.0000001	22	4198.8539	3519.7818	3519.7818	599.9370	679.0722	16.1728
5	0.0001	0.0000001	33	4198.8539	3433.6626	3433.6626	599.7500	765.1913	18.2238
5	0.0001	0.0000001	44	4198.8539	3469.9009	3469.9009	599.7500	728.9530	17.3608
5	0.0001	0.0000001	55	4198.8539	3451.7818	3451.7818	600.3120	747.0722	17.7923
5	0.000419885	4.19895E-07	11	4198.8539	3477.6626	3477.6626	600.0180	721.1913	17.1759
5	0.000419885	4.19895E-07	22	4198.8539	3519.7818	3519.7818	599.7470	679.0722	16.1728
5	0.000419885	4.19895E-07	33	4198.8539	3433.6636	3433.6636	600.0000	765.1903	18.2238
5	0.000419885	4.19895E-07	44	4198.8539	3469.9009	3469.9009	599.9990	728.9530	17.3608
5	0.000419885	4.19895E-07	55	4198.8539	3518.0200	3518.0200	599.7340	680.8339	16.2148
10	0.001	0.000001	11	4158.8539	3489.9009	3489.9009	600.2490	668.9530	16.0850
10	0.001	0.000001	22	4158.8539	3545.9009	3545.9009	600.4370	612.9530	14.7385
10	0.001	0.000001	33	4158.8539	3463.6626	3463.6626	599.6240	695.1913	16.7159
10	0.001	0.000001	44	4158.8539	3553.6626	3553.6626	600.0150	605.1913	14.5519
10	0.001	0.000001	55	4158.8539	3531.6626	3531.6626	599.5620	627.1913	15.0809
10	0.0001	0.0000001	11	4158.8539	3479.7818	3479.7818	600.2970	679.0722	16.3283
10	0.0001	0.0000001	22	4158.8539	3515.7818	3515.7818	600.2340	643.0722	15.4627
10	0.0001	0.0000001	33	4158.8539	3463.6626	3463.6626	599.9830	695.1913	16.7159
10	0.0001	0.0000001	44	4158.8539	3511.7818	3511.7818	600.2810	647.0722	15.5589
10	0.0001	0.0000001	55	4158.8539	3517.7818	3517.7818	599.8590	641.0722	15.4146
10	0.000415885	4.15885E-07	11	4158.8539	3479.7818	3479.7818	600.3750	679.0722	16.3283
10	0.000415885	4.15885E-07	22	4158.8539	3493.5435	3493.5435	600.7340	665.3104	15.9974
10	0.000415885	4.15885E-07	33	4158.8539	3463.6626	3463.6626	599.6870	695.1913	16.7159
10	0.000415885	4.15885E-07	44	4158.8539	3517.7818	3517.7818	600.2970	641.0722	15.4146
10	0.000415885	4.15885E-07	55	4158.8539	3517.7818	3517.7818	599.4680	641.0722	15.4146

TABLE A-2
P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC B

K	Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
3	0.001	0.000001	11	4150.8539	3469.6626	3469.6626	600.1460	681.1913	16.4109
3	0.001	0.000001	22	4150.8539	3463.6626	3463.6626	600.1180	687.1913	16.5554
3	0.001	0.000001	33	4150.8539	3461.5435	3461.5435	599.4880	689.3104	16.6065
3	0.001	0.000001	44	4150.8539	3441.7818	3441.7818	600.4680	709.0722	17.0826
3	0.001	0.000001	55	4150.8539	3483.6626	3483.6626	600.4530	667.1913	16.0736
3	0.0001	0.0000001	11	4150.8539	3513.6626	3513.6626	599.6560	637.1913	15.3508
3	0.0001	0.0000001	22	4150.8539	3497.6626	3497.6626	600.4210	653.1913	15.7363
3	0.0001	0.0000001	33	4150.8539	3493.7818	3493.7818	599.5150	657.0722	15.8298
3	0.0001	0.0000001	44	4150.8539	3453.6626	3453.6626	599.5770	697.1913	16.7963
3	0.0001	0.0000001	55	4150.8539	3493.9009	3493.9009	600.3280	656.9530	15.8269
3	0.000415085	4.15085E-07	11	4150.8539	3513.6626	3513.6626	599.9210	637.1913	15.3508
3	0.000415085	4.15085E-07	22	4150.8539	3485.5435	3485.5435	600.1870	665.3104	16.0283
3	0.000415085	4.15085E-07	33	4150.8539	3441.5435	3441.5435	600.5460	709.3104	17.0883
3	0.000415085	4.15085E-07	44	4150.8539	3452.6626	3452.6626	600.0350	698.1913	16.8204
3	0.000415085	4.15085E-07	55	4150.8539	3501.6626	3501.6626	600.4160	649.1913	15.6399
5	0.001	0.000001	11	4198.8539	3453.6626	3453.6626	600.5240	745.1913	17.7475
5	0.001	0.000001	22	4198.8539	3505.6626	3505.6626	600.0140	693.1913	16.5091
5	0.001	0.000001	33	4198.8539	3459.6626	3459.6626	600.3870	739.1913	17.6046
5	0.001	0.000001	44	4198.8539	3425.5435	3425.5435	600.2620	773.3104	18.4172
5	0.001	0.000001	55	4198.8539	3529.6626	3529.6626	600.2780	669.1913	15.9375
5	0.0001	0.0000001	11	4198.8539	3453.6626	3453.6626	599.7930	745.1913	17.7475
5	0.0001	0.0000001	22	4198.8539	3505.6626	3505.6626	601.1690	693.1913	16.5091
5	0.0001	0.0000001	33	4198.8539	3451.6626	3451.6626	600.4970	747.1913	17.7951
5	0.0001	0.0000001	44	4198.8539	3425.5435	3425.5435	599.8100	773.3104	18.4172
5	0.0001	0.0000001	55	4198.8539	3529.6626	3529.6626	600.1370	669.1913	15.9375
5	0.000419885	4.19885E-07	11	4198.8539	3477.6626	3477.6626	600.0760	721.1913	17.1759
5	0.000419885	4.19885E-07	22	4198.8539	3523.9009	3523.9009	600.9190	674.9530	16.0747
5	0.000419885	4.19885E-07	33	4198.8539	3433.6626	3433.6626	600.4330	765.1913	18.2238
5	0.000419885	4.19885E-07	44	4198.8539	3469.9009	3469.9009	600.2650	728.9530	17.3608
5	0.000419885	4.19885E-07	55	4198.8539	3518.0200	3518.0200	600.2350	680.8339	16.2148
10	0.001	0.000001	11	4158.8539	3489.9009	3489.9009	599.7700	668.9530	16.0850
10	0.001	0.000001	22	4158.8539	3573.7818	3573.7818	599.9260	585.0722	14.0681
10	0.001	0.000001	33	4158.8539	3477.6626	3477.6626	599.7530	681.1913	16.3793
10	0.001	0.000001	44	4158.8539	3553.6626	3553.6626	599.4100	605.1913	14.5519
10	0.001	0.000001	55	4158.8539	3523.6626	3523.6626	599.6600	635.1913	15.2732
10	0.0001	0.0000001	11	4158.8539	3479.7818	3479.7818	600.2070	679.0722	16.3283
10	0.0001	0.0000001	22	4158.8539	3525.7818	3525.7818	599.9560	633.0722	15.2223
10	0.0001	0.0000001	33	4158.8539	3463.6626	3463.6626	600.4880	695.1913	16.7159
10	0.0001	0.0000001	44	4158.8539	3519.7818	3519.7818	599.9100	639.0722	15.3665
10	0.0001	0.0000001	55	4158.8539	3517.7818	3517.7818	600.1760	641.0722	15.4146
10	0.000415885	4.15885E-07	11	4158.8539	3479.7818	3479.7818	599.7590	679.0722	16.3283
10	0.000415885	4.15885E-07	22	4158.8539	3493.5435	3493.5435	600.0060	665.3104	15.9974
10	0.000415885	4.15885E-07	33	4158.8539	3463.6626	3463.6626	600.1790	695.1913	16.7159
10	0.000415885	4.15885E-07	44	4158.8539	3517.7818	3517.7818	599.8080	641.0722	15.4146
10	0.000415885	4.15885E-07	55	4158.8539	3529.7818	3529.7818	599.8080	629.0722	15.1261

TABLE A-3
P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC C

K	Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
3	0.001	0.000001	11	4150.854	3469.663	3469.663	600.34	681.1913	16.41087
3	0.001	0.000001	22	4150.854	3463.663	3463.663	599.996	687.1913	16.55542
3	0.001	0.000001	33	4150.854	3461.544	3461.544	599.825	689.3104	16.60647
3	0.001	0.000001	44	4150.854	3441.782	3441.782	599.606	709.0722	17.08256
3	0.001	0.000001	55	4150.854	3483.663	3483.663	600.261	667.1913	16.07359
3	0.0001	1E-07	11	4150.854	3513.663	3513.663	599.543	637.1913	15.35085
3	0.0001	1E-07	22	4150.854	3497.663	3497.663	599.964	653.1913	15.73631
3	0.0001	1E-07	33	4150.854	3493.782	3493.782	600.48	657.0722	15.82981
3	0.0001	1E-07	44	4150.854	3453.663	3453.663	599.623	697.1913	16.79633
3	0.0001	1E-07	55	4150.854	3493.901	3493.901	599.785	656.953	15.82694
3	0.000415	4.15E-07	11	4150.854	3513.663	3513.663	599.834	637.1913	15.35085
3	0.000415	4.15E-07	22	4150.854	3485.544	3485.544	600.258	665.3104	16.02828
3	0.000415	4.15E-07	33	4150.854	3441.544	3441.544	600.086	709.3104	17.0883
3	0.000415	4.15E-07	44	4150.854	3452.663	3452.663	599.695	698.1913	16.82043
3	0.000415	4.15E-07	55	4150.854	3501.663	3501.663	600.195	649.1913	15.63995
5	0.001	0.000001	11	4198.854	3453.663	3453.663	600.602	745.1913	17.74749
5	0.001	0.000001	22	4198.854	3505.663	3505.663	600.289	693.1913	16.50906
5	0.001	0.000001	33	4198.854	3459.663	3459.663	599.898	739.1913	17.6046
5	0.001	0.000001	44	4198.854	3431.544	3431.544	600.398	767.3104	18.27428
5	0.001	0.000001	55	4198.854	3451.663	3451.663	600.445	747.1913	17.79512
5	0.0001	1E-07	11	4198.854	3453.663	3453.663	600.383	745.1913	17.74749
5	0.0001	1E-07	22	4198.854	3505.663	3505.663	599.652	693.1913	16.50906
5	0.0001	1E-07	33	4198.854	3451.663	3451.663	599.876	747.1913	17.79512
5	0.0001	1E-07	44	4198.854	3431.544	3431.544	599.443	767.3104	18.27428
5	0.0001	1E-07	55	4198.854	3529.663	3529.663	599.617	669.1913	15.93747
5	0.00042	4.2E-07	11	4198.854	3477.663	3477.663	600.336	721.1913	17.17591
5	0.00042	4.2E-07	22	4198.854	3519.782	3519.782	599.664	679.0722	16.1728
5	0.00042	4.2E-07	33	4198.854	3433.663	3433.663	599.898	765.1913	18.22381
5	0.00042	4.2E-07	44	4198.854	3469.901	3469.901	599.461	728.953	17.36076
5	0.00042	4.2E-07	55	4198.854	3518.02	3518.02	600.227	680.8339	16.21476
10	0.001	0.000001	11	4159.854	3489.901	3489.901	599.726	669.953	16.10521
10	0.001	0.000001	22	4159.854	3545.901	3545.901	599.445	613.953	14.759
10	0.001	0.000001	33	4159.854	3447.663	3447.663	599.649	712.1913	17.12058
10	0.001	0.000001	55	4159.854	3531.663	3531.663	599.664	628.1913	15.10128
10	0.0001	1E-07	11	4159.854	4158.854	4158.854	600.422	1	0.024039
10	0.0001	1E-07	22	4159.854	3533.782	3533.782	600.398	626.0722	15.05034
10	0.0001	1E-07	33	4159.854	3463.663	3463.663	600.383	696.1913	16.73596
10	0.0001	1E-07	44	4159.854	3519.782	3519.782	600.726	640.0722	15.38689
10	0.0001	1E-07	55	4159.854	3517.782	3517.782	600.257	642.0722	15.43497
10	0.000416	4.16E-07	11	4159.854	3479.782	3479.782	600.32	680.0722	16.34846
10	0.000416	4.16E-07	22	4159.854	3493.544	3493.544	599.774	666.3104	16.01764
10	0.000416	4.16E-07	33	4159.854	3463.663	3463.663	600.226	696.1913	16.73596
10	0.000416	4.16E-07	44	4159.854	3517.782	3517.782	599.898	642.0722	15.43497
10	0.000416	4.16E-07	55	4159.854	3517.782	3517.782	599.695	642.0722	15.43497

TABLE A-4
P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC D

K	Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
3	0.001	0.000001	11	10169.6	9142.246	9142.246	1199.773	1027.358	10.10224
3	0.001	0.000001	22	10169.6	9240.488	9240.488	1200.086	929.1165	9.136211
3	0.001	0.000001	33	10169.6	9195.649	9195.649	1200.632	973.9556	9.577124
3	0.001	0.000001	44	10169.6	9192.726	9192.726	1199.851	976.8783	9.605863
3	0.001	0.000001	55	10169.6	9154.127	9154.127	1202.086	1015.477	9.985417
3	0.0001	1E-07	11	10169.6	9116.127	9116.127	1199.337	1053.477	10.35908
3	0.0001	1E-07	22	10169.6	9202.367	9202.367	1201.057	967.2374	9.511062
3	0.0001	1E-07	33	10169.6	9172.367	9172.367	1199.398	997.2374	9.806059
3	0.0001	1E-07	44	10169.6	9130.127	9130.127	1200.835	1039.477	10.22141
3	0.0001	1E-07	55	10169.6	9208.726	9208.726	1200.148	960.8783	9.448531
3	0.001017	1.02E-06	11	10169.6	9190.246	9190.246	1199.257	979.3583	9.630249
3	0.001017	1.02E-06	22	10169.6	9198.367	9198.367	1200.804	971.2374	9.550395
3	0.001017	1.02E-06	33	10169.6	9269.087	9269.087	1199.804	900.5174	8.854989
3	0.001017	1.02E-06	44	10169.6	9192.726	9192.726	1199.203	976.8783	9.605863
3	0.001017	1.02E-06	55	10169.6	9170.127	9170.127	1199.547	999.4774	9.828085
5	0.001	0.000001	11	10274.32	9318.286	9318.286	1199.39	956.0383	9.30512
5	0.001	0.000001	22	10274.32	9194.127	9194.127	1200.688	1080.197	10.51356
5	0.001	0.000001	33	10274.32	9276.607	9276.607	1199.031	997.7174	9.710783
5	0.001	0.000001	44	10274.32	9338.127	9338.127	1201.563	936.1974	9.112009
5	0.001	0.000001	55	10274.32	9300.726	9300.726	1200.262	973.5983	9.476032
5	0.0001	1E-07	11	10274.32	9318.486	9318.486	1199.688	955.8383	9.303174
5	0.0001	1E-07	22	10274.32	9194.127	9194.127	1199.766	1080.197	10.51356
5	0.0001	1E-07	33	10274.32	9276.607	9276.607	1200.312	997.7174	9.710783
5	0.0001	1E-07	44	10274.32	9338.127	9338.127	1200.359	936.1974	9.112009
5	0.0001	1E-07	55	10274.32	9292.726	9292.726	1200.047	981.5983	9.553896
5	0.001027	1.03E-06	11	10274.32	9318.486	9318.486	1198.859	955.8383	9.303174
5	0.001027	1.03E-06	22	10274.32	9246.008	9246.008	1200.166	1028.317	10.0086
5	0.001027	1.03E-06	33	10274.32	9286.127	9286.127	1199.898	988.1974	9.618125
5	0.001027	1.03E-06	44	10274.32	9338.127	9338.127	1200.742	936.1974	9.112009
5	0.001027	1.03E-06	55	10274.32	9292.726	9292.726	1200.851	981.5983	9.553896
10	0.001	0.000001	11	10306.04	9466.607	9466.607	1199.914	839.4374	8.145098
10	0.001	0.000001	22	10306.04	9406.847	9406.847	1199.8	899.1974	8.724952
10	0.001	0.000001	33	10306.04	9488.367	9488.367	1202.649	817.6774	7.93396
10	0.001	0.000001	44	10306.04	9478.966	9478.966	1199.492	827.0783	8.025177
10	0.001	0.000001	55	10306.04	9580.607	9580.607	1199.004	725.4374	7.038951
10	0.0001	1E-07	11	10306.04	9400.367	9400.367	1199.906	905.6774	8.787827
10	0.0001	1E-07	22	10306.04	9510.726	9510.726	1200.313	795.3183	7.717008
10	0.0001	1E-07	33	10306.04	9442.607	9442.607	1199.328	863.4374	8.377971

TABLE A-5
P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC E

Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
0.001	0.000001	11	10274.32	9318.486	9318.486	1200.305	955.8383	9.303174
0.001	0.000001	22	10274.32	9194.127	9194.127	1200.258	1080.197	10.51356
0.001	0.000001	33	10274.32	9276.607	9276.607	1200.738	997.7174	9.710783
0.0001	0.0000001	11	10274.32	9264.248	9264.248	1201.849	1010.077	9.831075
0.0001	0.0000001	22	10274.32	9197.528	9197.528	1199.258	1076.797	10.48046
0.0001	0.0000001	33	10274.32	9290.127	9290.127	1200.274	984.1974	9.579193
0.001027	1.02743E-06	11	10274.32	9318.486	9318.486	1199.148	955.8383	9.303174
0.001027	1.02743E-06	22	10274.32	9246.008	9246.008	1200.148	1028.317	10.0086
0.001027	1.02743E-06	33	10274.32	9286.127	9286.127	1199.023	988.1974	9.618125

TABLE A-6
P2P 1+1 PROTECTION NODE DISJOINT, TRAFFIC F

Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
0.001	0.000001	11	10274.32433	9318.486071	9318.486071	1200.257	955.8382559	9.303173868
0.001	0.000001	22	10274.32433	9194.126942	9194.126942	1200.054	1080.197385	10.51356129
0.001	0.000001	33	10274.32433	9276.606941	9276.606941	1199.742	997.7173858	9.710783444
0.0001	0.0000001	11	10274.32433	9264.247812	9264.247812	1199.21	1010.076515	9.831074853
0.0001	0.0000001	22	10274.32433	9181.527812	9181.527812	1198.882	1092.796515	10.63618862
0.0001	0.0000001	33	10274.32433	9290.126942	9290.126942	1200.055	984.1973853	9.579193278
0.00102743	1.02743E-06	11	10274.32433	9318.486071	9318.486071	1199.539	955.8382559	9.303173868
0.00102743	1.02743E-06	22	10274.32433	9246.007812	9246.007812	1200.601	1028.316515	10.00860477
0.00102743	1.02743E-06	33	10274.32433	9286.126942	9286.126942	1201.382	988.1973853	9.618125279

TABLE A-7
P2P FRR BYPASS PROTECTION, TRAFFIC A, SUBCASE 1A

	Temperature			Cost							Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
3	0.001	0.000001	11	4150.85	3678.85	3678.85	600.112	N	—	3678.85	472	11.3712	472	11.3712
3	0.001	0.000001	22	4150.85	3720.97	3720.97	600.324	Y	0.07	3736.97	429.88	10.3564	413.88	9.9710
3	0.001	0.000001	33	4150.85	3744.85	3744.85	599.743	N	—	3744.85	406	9.7811	406	9.7811
3	0.001	0.000001	44	4150.85	3722.97	3722.97	599.933	Y	0.06	3738.97	427.88	10.3083	411.88	9.9228
3	0.001	0.000001	55	4150.85	3728.85	3728.85	599.723	N	—	3728.85	422	10.1666	422	10.1666
3	0.0001	0.0000001	11	4150.85	3710.85	3710.85	600.264	N	—	3710.85	440	10.6002	440	10.6002
3	0.0001	0.0000001	22	4150.85	3682.85	3682.85	599.502	N	—	3682.85	468	11.2748	468	11.2748
3	0.0001	0.0000001	33	4150.85	3718.85	3718.85	600.864	N	—	3718.85	432	10.4075	432	10.4075
3	0.0001	0.0000001	44	4150.85	3722.97	3722.97	600.043	Y	0.071	3738.97	427.88	10.3083	411.88	9.9228
3	0.0001	0.0000001	55	4150.85	3736.85	3736.85	599.642	N	—	3736.85	414	9.9739	414	9.9739
3	0.000415085	4.15085E-07	11	4150.85	3710.85	3710.85	600.464	N	—	3710.85	440	10.6002	440	10.6002
3	0.000415085	4.15085E-07	22	4150.85	3682.85	3682.85	600	N	—	3682.85	468	11.2748	468	11.2748
3	0.000415085	4.15085E-07	33	4150.85	3718.85	3718.85	600.925	N	—	3718.85	432	10.4075	432	10.4075
3	0.000415085	4.15085E-07	44	4150.85	3722.97	3722.97	3722.97	Y	0.07	3738.97	427.88	10.3083	411.88	9.9228
3	0.000415085	4.15085E-07	55	4150.85	3736.85	3736.85	599.773	N	—	3736.85	414	9.9739	414	9.9739
5	0.001	0.000001	11	4198.85	3758.85	3758.85	600.894	N	—	3758.85	440	10.4791	440	10.4791
5	0.001	0.000001	22	4198.85	3796.85	3796.85	600.023	N	—	3796.85	402	9.5741	402	9.5741
5	0.001	0.000001	33	4198.85	3786.85	3786.85	599.753	N	—	3786.85	412	9.8122	412	9.8122
5	0.001	0.000001	44	4198.85	3844.97	3844.97	600.424	Y	0.05	3852.97	353.88	8.4280	345.88	8.2375
5	0.001	0.000001	55	4198.85	3740.97	3740.97	599.923	Y	0.07	3764.97	457.88	10.9049	433.88	10.3333
5	0.0001	0.0000001	11	4198.85	3714.85	3714.85	600.604	N	—	3714.85	484	11.5270	484	11.5270
5	0.0001	0.0000001	22	4198.85	3706.85	3706.85	600.053	N	—	3706.85	492	11.7175	492	11.7175
5	0.0001	0.0000001	33	4198.85	3746.85	3746.85	600.364	N	—	3746.85	452	10.7649	452	10.7649
5	0.0001	0.0000001	44	4198.85	3766.85	3766.85	600.454	N	—	3766.85	432	10.2885	432	10.2885
5	0.0001	0.0000001	55	4198.85	3704.85	3704.85	600.263	N	—	3704.85	494	11.7651	494	11.7651
5	0.000419885	4.19895E-07	11	4198.85	3714.85	3714.85	600.594	N	—	3714.85	484	11.5270	484	11.5270
5	0.000419885	4.19895E-07	22	4198.85	3706.85	3706.85	600.133	N	—	3706.85	492	11.7175	492	11.7175
5	0.000419885	4.19895E-07	33	4198.85	3746.85	3746.85	600.464	N	—	3746.85	452	10.7649	452	10.7649
5	0.000419885	4.19895E-07	44	4198.85	3768.85	3768.85	599.462	N	—	3768.85	430	10.2409	430	10.2409
5	0.000419885	4.19895E-07	55	4198.85	3704.85	3704.85	600.343	N	—	3704.85	494	11.7651	494	11.7651
10	0.001	0.000001	11	4158.85	3766.85	3766.85	599.863	N	—	3766.85	392	9.4257	392	9.4257
10	0.001	0.000001	22	4158.85	3860.85	3860.85	600.363	N	—	3860.85	298	7.1654	298	7.1654
10	0.001	0.000001	33	4158.85	3829.22	3829.22	600.784	Y	0.13	3877.22	329.63	7.9260	281.63	6.7718
10	0.001	0.000001	44	4158.85	3808.97	3808.97	599.492	Y	0.06	3816.97	349.88	8.4129	341.88	8.2205
10	0.001	0.000001	55	4158.85	3758.97	3758.97	599.832	Y	0.06	3766.97	399.88	9.6152	391.88	9.4228
10	0.0001	0.0000001	11	4158.85	3738.85	3738.85	599.672	N	—	3738.85	420	10.0989	420	10.0989
10	0.0001	0.0000001	22	4158.85	3830.97	3830.97	599.622	Y	0.061	3846.97	327.88	7.8839	311.88	7.4992
10	0.0001	0.0000001	33	4158.85	3782.85	3782.85	599.873	N	—	3782.85	376	9.0410	376	9.0410
10	0.0001	0.0000001	44	4158.85	3808.97	3808.97	600.924	Y	0.05	3824.97	349.88	8.4129	333.88	8.0282
10	0.0001	0.0000001	55	4158.85	2746.85	2746.85	599.822	N	—	2746.85	1412	33.9517	1412	33.9517
10	0.000415885	4.15885E-07	11	4158.85	3738.85	3738.85	599.702	N	—	3738.85	420	10.0989	420	10.0989
10	0.000415885	4.15885E-07	22	4158.85	3830.97	3830.97	599.712	Y	0.06	3846.97	327.88	7.8839	311.88	7.4992
10	0.000415885	4.15885E-07	33	4158.85	3782.85	3782.85	600.013	N	—	3782.85	376	9.0410	376	9.0410
10	0.000415885	4.15885E-07	44	4158.85	3808.97	3808.97	600.894	Y	0.06	3824.97	349.88	8.4129	333.88	8.0282
10	0.000415885	4.15885E-07	55	4158.85	3746.85	3746.85	600.083	N	—	3746.85	412	9.9066	412	9.9066

TABLE A-8
P2P FRR BYPASS PROTECTION, TRAFFIC A, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	4285.09	3835.09	3835.09	600.043	N	—	3835.09	450	10.5015	450	10.5015
0.001	0.000001	22	4285.09	3815.21	3815.21	599.793	N	—	3815.21	469.88	10.9655	469.88	10.9655
0.001	0.000001	33	4285.09	3831.09	3831.09	600.213	N	—	3831.09	454	10.5949	454	10.5949
0.0001	0.0000001	11	4285.09	3873.21	3873.21	600.024	Y	0.05	3897.21	411.88	9.6119	387.88	9.0519
0.0001	0.0000001	22	4285.09	3857.21	3857.21	600.424	Y	0.08	3873.21	427.88	9.9853	411.88	9.6119
0.0001	0.0000001	33	4285.09	3821.09	3821.09	600.033	N	—	3821.09	464	10.8282	464	10.8282
0.000419885	4.19895E-07	11	4285.09	3873.21	3873.21	600.013	Y	0.06	3897.21	411.88	9.6119	387.88	9.0519
0.000419885	4.19895E-07	22	4285.09	3875.21	3875.21	599.562	Y	0.08	3891.21	409.88	9.5653	393.88	9.1919
0.000419885	4.19895E-07	33	4285.09	3831.09	3831.09	599.572	N	—	3831.09	454	10.5949	454	10.5949

TABLE A-9
P2P FRR BYPASS PROTECTION, TRAFFIC B, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	4198.85	3758.85	3758.85	600.764	N	—	3758.85	440	10.47906	440	10.47906
0.001	0.000001	22	4198.85	3706.85	3706.85	599.632	N	—	3706.85	492	11.71749	492	11.71749
0.001	0.000001	33	4198.85	3786.85	3786.85	600.664	N	—	3786.85	412	9.81221	412	9.81221
0.0001	1E-07	11	4198.85	3714.85	3714.85	600.273	N	—	3714.85	484	11.52697	484	11.52697
0.0001	1E-07	22	4198.85	3706.85	3706.85	599.723	N	—	3706.85	492	11.71749	492	11.71749
0.0001	1E-07	33	4198.85	3746.85	3746.85	599.662	N	—	3746.85	452	10.76485	452	10.76485
0.00042	4.2E-07	11	4198.85	3714.85	3714.85	600.183	N	—	3714.85	484	11.52697	484	11.52697
0.00042	4.2E-07	22	4198.85	3706.85	3706.85	599.743	N	—	3706.85	492	11.71749	492	11.71749
0.00042	4.2E-07	33	4198.85	3746.85	3746.85	599.803	N	—	3746.85	452	10.76485	452	10.76485

TABLE A-10
P2P FRR BYPASS PROTECTION, TRAFFIC B, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	4285.09	3861.09	3861.09	600.694	N		3861.09	424	9.894775	424	9.894775
0.001	0.000001	22	4285.09	3857.21	3857.21	600.564	Y	0.08	3873.21	427.88	9.985321	411.88	9.611933
0.001	0.000001	33	4285.09	3823.09	3823.09	600.343	N		3823.09	462	10.78157	462	10.78157
0.0001	1E-07	11	4285.09	3873.21	3873.21	599.943	Y	0.07	3897.21	411.88	9.611933	387.88	9.051852
0.0001	1E-07	22	4285.09	3857.21	3857.21	600.413	Y	0.08	3873.21	427.88	9.985321	411.88	9.611933
0.0001	1E-07	33	4285.09	3829.09	3829.09	599.693	N		3829.09	456	10.64155	456	10.64155
0.00042	4.2E-07	11	4285.09	3881.21	3881.21	599.992	Y	0.06	3889.21	403.88	9.42524	395.88	9.238546
0.00042	4.2E-07	22	4285.09	3857.21	3857.21	600.243	Y	0.09	3865.21	427.88	9.985321	419.88	9.798627
0.00042	4.2E-07	33	4285.09	3831.09	3831.09	600.323	N		3831.09	454	10.59488	454	10.59488

TABLE A-11
P2P FRR BYPASS PROTECTION, TRAFFIC C, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	4198.85	3758.85	3758.85	600.894	N	–	3758.85	440	10.47906	440	10.47906
0.001	0.000001	22	4198.85	3706.85	3706.85	600.353	N	–	3706.85	492	11.71749	492	11.71749
0.001	0.000001	33	4198.85	3786.85	3786.85	600.564	N	–	3786.85	412	9.81221	412	9.81221
0.0001	1E-07	11	4198.85	3714.85	3714.85	600.602	N	–	3714.85	484	11.52697	484	11.52697
0.0001	1E-07	22	4198.85	3706.85	3706.85	600.203	N	–	3706.85	492	11.71749	492	11.71749
0.0001	1E-07	33	4198.85	3746.85	3746.85	600.223	N	–	3746.85	452	10.76485	452	10.76485
0.00042	4.2E-07	11	4198.85	3714.85	3714.85	599.693	N	–	3714.85	484	11.52697	484	11.52697
0.00042	4.2E-07	22	4198.85	3706.85	3706.85	600.323	N	–	3706.85	492	11.71749	492	11.71749
0.00042	4.2E-07	33	4198.85	3772.85	3772.85	600.073	N	–	3772.85	426	10.14564	426	10.14564

TABLE A-12
P2P FRR BYPASS PROTECTION, TRAFFIC C, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	4285.09	3835.09	3835.09	600.563	N		3835.09	450	10.50153	450	10.50153
0.001	0.000001	22	4285.09	3815.21	3815.21	599.853	Y	0.07	3831.21	469.88	10.96546	453.88	10.59208
0.001	0.000001	33	4285.09	3815.09	3815.09	600.694	N		3815.09	470	10.96826	470	10.96826
0.0001	1E-07	11	4285.09	3873.21	3873.21	600.764	Y	0.06	3897.21	411.88	9.611933	387.88	9.051852
0.0001	1E-07	22	4285.09	3857.21	3857.21	600.314	Y	0.09	3873.21	427.88	9.985321	411.88	9.611933
0.0001	1E-07	33	4285.09	3821.09	3821.09	601.105	N		3821.09	464	10.82824	464	10.82824
0.00042	4.2E-07	11	4285.09	3873.21	3873.21	600.664	Y	0.06	3897.21	411.88	9.611933	387.88	9.051852
0.00042	4.2E-07	22	4285.09	3857.21	3857.21	600.023	Y	0.07	3873.21	427.88	9.985321	411.88	9.611933
0.00042	4.2E-07	33	4285.09	3815.09	3815.09	599.833	N		3815.09	470	10.96826	470	10.96826

TABLE A-13
P2P FRR BYPASS PROTECTION, TRAFFIC D, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10274.3	9954.32	9954.32	1202.05	N	9954.32	9954.32	319.98	3.114373	319.98	3.114373
0.001	0.000001	22	10274.3	9890.57	9890.57	1200.59	Y	0.39	9914.59	383.73	3.734853	359.71	3.501066
0.001	0.000001	33	10274.3	9910.45	9910.45	1200.5	Y	0.591	9958.47	363.85	3.54136	315.83	3.073981
0.0001	0.0000001	11	10274.3	9890.32	9890.32	1200.87	N	9890.32	9890.32	383.98	3.737286	383.98	3.737286
0.0001	0.0000001	22	10274.3	9866.32	9866.32	1199.79	N	9866.32	9866.32	407.98	3.970879	407.98	3.970879
0.0001	0.0000001	33	10274.3	9910.45	9910.45	1203.01	Y	0.21	9926.47	363.85	3.54136	347.83	3.385437
0.001027	1.02743E-06	11	10274.3	9954.32	9954.32	1202.48	N	9954.32	9954.32	319.98	3.114373	319.98	3.114373
0.001027	1.02743E-06	22	10274.3	9986.45	9986.45	1200.64	Y	0.24	10002.5	287.85	2.801651	271.8	2.645436
0.001027	1.02743E-06	33	10274.3	9910.45	9910.45	1200.33	Y	0.591	9958.47	363.85	3.54136	315.83	3.073981

TABLE A-14
P2P FRR BYPASS PROTECTION, TRAFFIC D, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10599.4	10261.5	10261.5	1200.2	Y	0.941	10309.6	337.9	3.187916	289.8	2.734117
0.001	0.000001	22	10599.4	10185.4	10185.4	1200.33	Y	0.691	10193.4	414	3.905881	406	3.830405
0.001	0.000001	33	10599.4	10135.4	10135.4	1200.9	Y	0.721	10143.4	464	4.377606	456	4.30213
0.0001	0.0000001	11	10599.4	10191.6	10191.6	1200.19	Y	1.121	10247.7	407.8	3.847388	351.7	3.318112
0.0001	0.0000001	22	10599.4	10193.4	10193.4	1199.93	Y	0.701	10209.4	406	3.830405	390	3.679454
0.0001	0.0000001	33	10599.4	10173.5	10173.5	1199.67	Y	0.831	10213.6	425.9	4.018152	385.8	3.639829
0.001027	1.02743E-06	11	10599.4	10319.4	10319.4	1200.57	Y	0.801	10335.4	280	2.641659	264	2.490707
0.001027	1.02743E-06	22	10599.4	10185.4	10185.4	1200.31	Y	0.691	10193.4	414	3.905881	406	3.830405
0.001027	1.02743E-06	33	10599.4	10135.4	10135.4	1201.03	Y	0.721	10143.4	464	4.377606	456	4.30213

TABLE A-15
P2P FRR BYPASS PROTECTION, TRAFFIC E, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.001	0.000001	22	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.001	0.000001	33	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.0001	1E-07	11	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.0001	1E-07	22	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.0001	1E-07	33	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.001027	1.03E-06	11	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.001027	1.03E-06	22	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709
0.001027	1.03E-06	33	10274.3	9910.45	9910.45	1201.38	Y	0.641	9942.47	363.85	3.54136	331.83	3.229709

TABLE A-16
P2P FRR BYPASS PROTECTION, TRAFFIC E, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10599.4	10261.5	10261.5	1199.83	Y	0.981	10301.6	337.9	3.187916	297.8	2.809593
0.001	0.000001	22	10599.4	10185.4	10185.4	1202.19	Y	0.701	10193.4	414	3.905881	406	3.830405
0.001	0.000001	33	10599.4	10135.4	10135.4	1202.23	Y	0.681	10151.4	464	4.377606	448	4.226654
0.0001	1E-07	11	10599.4	10199.6	10199.6	1201.18	Y	1.062	10247.7	399.8	3.771912	351.7	3.318112
0.0001	1E-07	22	10599.4	10193.4	10193.4	1201.65	Y	0.691	10209.4	406	3.830405	390	3.679454
0.0001	1E-07	33	10599.4	10173.5	10173.5	1203.93	Y	0.771	10205.6	425.9	4.018152	393.8	3.715305
0.001027	1.03E-06	11	10599.4	10319.4	10319.4	1200.89	Y	0.71	10343.4	280	2.641659	256	2.415231
0.001027	1.03E-06	22	10599.4	19185.4	19185.4	1200.87	Y	0.671	10193.4	-8586	-81.0046	406	3.830405
0.001027	1.03E-06	33	10599.4	10135.4	10135.4	1199	Y	0.691	10151.4	464	4.377606	448	4.226654

TABLE A-17
P2P FRR BYPASS PROTECTION, TRAFFIC F, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10274.3	9954.32	9954.32	1201.31	N		9954.32	319.98	3.114373	319.98	3.114373
0.001	0.000001	22	10274.3	9906.57	9906.57	1200.16	Y	0.381	9922.59	367.73	3.579125	351.71	3.423202
0.001	0.000001	33	10274.3	9910.45	9910.45	1202.09	Y	0.571	9942.47	363.85	3.54136	331.83	3.229709
0.0001	1E-07	11	10274.3	9890.32	9890.32	1201.78	N		9890.32	383.98	3.737286	383.98	3.737286
0.0001	1E-07	22	10274.3	9866.32	9866.32	1199.08	N		9866.32	407.98	3.970879	407.98	3.970879
0.0001	1E-07	33	10274.3	9910.45	9910.45	1201.44	Y	0.21	9926.47	363.85	3.54136	347.83	3.385437
0.001027	1.03E-06	11	10274.3	9954.32	9954.32	1203.01	N		9954.32	319.98	3.114373	319.98	3.114373
0.001027	1.03E-06	22	10274.3	9922.57	9922.57	1200.87	Y	0.36	9954.59	351.73	3.423396	319.71	3.111745
0.001027	1.03E-06	33	10274.3	9910.45	9910.45	1202.36	Y	0.561	9942.47	363.85	3.54136	331.83	3.229709

TABLE A-18
P2P FRR BYPASS PROTECTION, TRAFFIC F, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	10599.4	10261.5	10261.5	1202.09	Y	0.942	10325.6	337.9	3.187916	273.8	2.583165
0.001	0.000001	22	10599.4	10185.4	10185.4	1199.3	Y	0.631	10201.4	414	3.905881	398	3.75493
0.001	0.000001	33	10599.4	10135.4	10135.4	1200.67	Y	0.661	10151.4	464	4.377606	448	4.226654
0.0001	1E-07	11	10599.4	10191.6	10191.6	1201.15	Y	1.092	10263.7	407.8	3.847388	335.7	3.16716
0.0001	1E-07	22	10599.4	10193.4	10193.4	1199.76	Y	0.651	10209.4	406	3.830405	390	3.679454
0.0001	1E-07	33	10599.4	10173.5	10173.5	1201.14	Y	0.862	10197.6	425.9	4.018152	401.8	3.790781
0.001027	1.03E-06	11	10599.4	10319.4	10319.4	1203.95	Y	0.62	10343.4	280	2.641659	256	2.415231
0.001027	1.03E-06	22	10599.4	10185.4	10185.4	1199.13	Y	0.631	10201.4	414	3.905881	398	3.75493
0.001027	1.03E-06	33	10599.4	10135.4	10135.4	1200.7	Y	0.65	10151.4	464	4.377606	448	4.226654

TABLE A-19
P2P FRR BYPASS PROTECTION, TRAFFIC G, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13328.6	12896.6	12896.6	2099.33	Y	3.185	12960.7	432	3.241151	367.9	2.76023
0.001	0.000001	22	13328.6	12896.6	12896.6	2102.11	Y	2.975	12968.7	432	3.241151	359.9	2.700209
0.001	0.000001	33	13328.6	12928.6	12928.6	2100.21	Y	2.954	13008.7	400	3.001065	319.9	2.400102
0.0001	0.0000001	11	13328.6	12904.6	12904.6	2104.56	Y	2.995	12952.7	424	3.181129	375.9	2.820251
0.0001	0.0000001	22	13328.6	12840.6	12840.6	2100.41	Y	2.955	12920.7	488	3.6613	407.9	3.060336
0.0001	0.0000001	33	13328.6	12976.6	12976.6	2099.57	Y	3.335	13024.7	352	2.640938	303.9	2.280059
0.001333	1.33286E-06	11	13328.6	12840.6	12840.6	2105.55	Y	2.693	12912.7	488	3.6613	415.9	3.120358
0.001333	1.33286E-06	22	13328.6	13024.6	13024.6	2101.2	Y	3.174	13112.7	304	2.28081	215.9	1.619825
0.001333	1.33286E-06	33	13328.6	12928.6	12928.6	2099.05	Y	3.045	12984.7	400	3.001065	343.9	2.580166

TABLE A-20
P2P FRR BYPASS PROTECTION, TRAFFIC G, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13633.1	13189.2	13189.2	2101.12	Y	3.625	13317.3	443.9	3.256046	315.8	2.316421
0.001	0.000001	22	13633.1	13305.1	13305.1	2101.99	Y	3.245	13409.2	328	2.405909	223.9	1.642326
0.001	0.000001	33	13633.1	13309.2	13309.2	2101.88	Y	3.956	13413.3	323.9	2.375835	219.8	1.612253
0.0001	0.0000001	11	13633.1	13241.1	13241.1	2099.33	Y	3.454	13313.2	392	2.875355	319.9	2.346495
0.0001	0.0000001	22	13633.1	13361.1	13361.1	2192.55	Y	3.395	13433.2	272	1.995144	199.9	1.466284
0.0001	0.0000001	33	13633.1	13301.2	13301.2	2103.21	Y	3.375	13373.3	331.9	2.434516	259.8	1.905656
0.001333	1.33286E-06	11	13633.1	13213.2	13213.2	2099.97	Y	3.726	13317.3	419.9	3.080004	315.8	2.316421
0.001333	1.33286E-06	22	13633.1	13257.1	13257.1	2102.22	Y	3.225	13353.2	376	2.757993	279.9	2.053091
0.001333	1.33286E-06	33	13633.1	13393.1	13393.1	2101.13	Y	3.475	13473.2	240	1.760421	159.9	1.172881

TABLE A-21
P2P FRR BYPASS PROTECTION, TRAFFIC H, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13328.6	12896.6	12896.6	1206.9	Y	2.844	12968.7	432	3.241151	359.9	2.700209
0.001	0.000001	22	13328.6	12888.6	12888.6	2105.77	Y	3.204	12952.7	440	3.301172	375.9	2.820251
0.001	0.000001	33	13328.6	12928.6	12928.6	2102.54	Y	3.134	12968.7	400	3.001065	359.9	2.700209
0.0001	1E-07	11	13328.6	12904.6	12904.6	2102.5	Y	2.965	12960.7	424	3.181129	367.9	2.76023
0.0001	1E-07	22	13328.6	12840.6	12840.6	2120.21	Y	2.724	12944.7	488	3.6613	383.9	2.880272
0.0001	1E-07	33	13328.6	12976.6	12976.6	2097.94	Y	3.375	13064.7	352	2.640938	263.9	1.979953
0.001333	1.33E-06	11	13328.6	13000.6	13000.6	2102.05	Y	2.994	13064.7	328	2.460874	263.9	1.979953
0.001333	1.33E-06	22	13328.6	13024.6	13024.6	2099.24	Y	3.165	13096.7	304	2.28081	231.9	1.739868
0.001333	1.33E-06	33	13328.6	12920.6	12920.6	2102.73	Y	4.426	13008.7	408	3.061087	319.9	2.400102

TABLE A-22
P2P FRR BYPASS PROTECTION, TRAFFIC H, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13633.1	13189.2	13189.2	2103.41	Y	7.531	13317.3	443.9	3.256046	315.8	2.316421
0.001	0.000001	22	13633.1	13321.1	13321.1	2100.03	Y	3.545	13417.2	312	2.288548	215.9	1.583646
0.001	0.000001	33	13633.1	13301.2	13301.2	2103.86	Y	3.475	13405.3	331.9	2.434516	227.8	1.670933
0.0001	1E-07	11	13633.1	13241.1	13241.1	2100.55	Y	3.445	13345.2	392	2.875355	287.9	2.111772
0.0001	1E-07	22	13633.1	13361.1	13361.1	2102.14	Y	3.586	13409.2	272	1.995144	223.9	1.642326
0.0001	1E-07	33	13633.1	13301.2	13301.2	2100.2	Y	3.766	13381.3	331.9	2.434516	251.8	1.846975
0.001333	1.33E-06	11	13633.1	13213.2	13213.2	2101.75	Y	3.766	13333.3	419.9	3.080004	299.8	2.19906
0.001333	1.33E-06	22	13633.1	13281.1	13281.1	2103.3	Y	3.184	13377.2	352	2.581951	255.9	1.877049
0.001333	1.33E-06	33	13633.1	13393.1	13393.1	2107.39	Y	4.095	13497.2	240	1.760421	135.9	0.996839

TABLE A-23
P2P FRR BYPASS PROTECTION, TRAFFIC I, SUBCASE 1A

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13328.6	12896.6	12896.6	2098.97	Y	3.065	12960.7	432	3.241151	367.9	2.76023
0.001	0.000001	22	13328.6	12888.6	12888.6	2100.93	Y	3.315	12976.7	440	3.301172	351.9	2.640187
0.001	0.000001	33	13328.6	12928.6	12928.6	2103.25	Y	3.165	12984.7	400	3.001065	343.9	2.580166
0.0001	1E-07	11	13328.6	12904.6	12904.6	2100.18	Y	2.974	12968.7	424	3.181129	359.9	2.700209
0.0001	1E-07	22	13328.6	12840.6	12840.6	2102.07	Y	3.295	12952.7	488	3.6613	375.9	2.820251
0.0001	1E-07	33	13328.6	12976.6	12976.6	2100.35	Y	3.425	13064.7	352	2.640938	263.9	1.979953
0.001333	1.33E-06	11	13328.6	13000.6	13000.6	2104.77	Y	2.985	13096.7	328	2.460874	231.9	1.739868
0.001333	1.33E-06	22	13328.6	13024.6	13024.6	2098.3	Y	3.144	13128.7	304	2.28081	199.9	1.499782
0.001333	1.33E-06	33	13328.6	12920.6	12920.6	2099	Y	3.214	12992.7	408	3.061087	335.9	2.520145

TABLE A-24
P2P FRR BYPASS PROTECTION, TRAFFIC I, SUBCASE 1B

Temperature			Cost							Before IMT		After IMT	
Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Final Price	Gain	Gain %	Gain	Gain %
0.001	0.000001	11	13633.1	13189.2	13189.2	2103.32	Y	6.91	13301.3	443.9	3.256046	331.8	2.433782
0.001	0.000001	22	13633.1	13369.1	13369.1	2102.3	Y	3.546	13449.2	264	1.936463	183.9	1.348923
0.001	0.000001	33	13633.1	13309.2	13309.2	2100.84	Y	3.645	13397.3	323.9	2.375835	235.8	1.729614
0.0001	1E-07	11	13633.1	13241.1	13241.1	2100.25	Y	3.065	13321.2	392	2.875355	311.9	2.287814
0.0001	1E-07	22	13633.1	13361.1	13361.1	2099.56	Y	3.515	13441.2	272	1.995144	191.9	1.407604
0.0001	1E-07	33	13633.1	13301.2	13301.2	2102.46	Y	3.706	13389.3	331.9	2.434516	243.8	1.788295
0.001333	1.33E-06	11	13633.1	13213.2	13213.2	2098.07	Y	3.995	13341.3	419.9	3.080004	291.8	2.140379
0.001333	1.33E-06	22	13633.1	13249.1	13249.1	2102.14	Y	3.405	13337.2	384	2.816674	295.9	2.170453
0.001333	1.33E-06	33	13633.1	13393.1	13393.1	2103.57	Y	3.315	13481.2	240	1.760421	151.9	1.1142

TABLE A-25
P2MP NO PROTECTION, TRAFFIC A, SUBCASE 1A

K	Initial Temp.	Final Temp.	Seed	Initial Cost	Final Cost	Best Cost	Time Used	Gain	Gain %
3	0.001	0.000001	11	7337.78	7062.94	7062.94	604.629	274.84	3.745547
3	0.001	0.000001	22	7337.78	7169.3	7169.3	601.735	168.48	2.296062
3	0.001	0.000001	33	7337.78	7141.06	7141.06	600.233	196.72	2.68092
3	0.001	0.000001	44	7337.78	7163.18	7163.18	600.473	174.6	2.379466
3	0.001	0.000001	55	7337.78	7161.54	7161.54	609.296	176.24	2.401816
3	0.0001	1E-07	11	7337.78	7062.94	7062.94	604.439	274.84	3.745547
3	0.0001	1E-07	22	7337.78	7157.18	7157.18	599.602	180.6	2.461235
3	0.0001	1E-07	33	7337.78	7169.3	7169.3	599.612	168.48	2.296062
3	0.0001	1E-07	44	7337.78	7145.18	7145.18	606.532	192.6	2.624772
3	0.0001	1E-07	55	7337.78	7161.54	7161.54	609.296	176.24	2.401816
3	0.000415	4.15E-07	11	7337.78	7034.58	7034.58	600.123	303.2	4.13204
3	0.000415	4.15E-07	22	7337.78	—	—	—	—	—
3	0.000415	4.15E-07	33	7337.78	—	—	—	—	—
3	0.000415	4.15E-07	44	7337.78	—	—	—	—	—
3	0.000415	4.15E-07	55	7337.78	—	—	—	—	—
5	0.001	0.000001	11	7422.26	7187.66	7187.66	600.043	234.6	3.160762
5	0.001	0.000001	22	7422.26	7169.42	7169.42	599.502	252.84	3.40651
5	0.001	0.000001	33	7422.26	7231.78	7231.78	603.618	190.48	2.566334
5	0.001	0.000001	44	7422.26	7221.78	7221.78	600.644	200.48	2.701064
5	0.001	0.000001	55	7422.26	7223.78	7223.78	602.266	198.48	2.674118
5	0.0001	1E-07	11	7422.26	7165.54	7165.54	605.16	256.72	3.458785
5	0.0001	1E-07	22	7422.26	7177.66	7177.66	606.552	244.6	3.295492
5	0.0001	1E-07	33	7422.26	7231.78	7231.78	603.648	190.48	2.566334
5	0.0001	1E-07	44	7422.26	7181.3	7181.3	604.059	240.96	3.246451
5	0.0001	1E-07	55	7422.26	7223.78	7223.78	603.288	198.48	2.674118
5	0.00042	4.2E-07	11	7422.26	7171.66	7171.66	600.354	250.6	3.37633
5	0.00042	4.2E-07	22	7422.26	7169.42	7169.42	606.232	252.84	3.40651
5	0.00042	4.2E-07	33	7422.26	7231.78	7231.78	603.758	190.48	2.566334
5	0.00042	4.2E-07	44	7422.26	7221.78	7221.78	600.714	200.48	2.701064
5	0.00042	4.2E-07	55	7422.26	7223.78	7223.78	604.46	198.48	2.674118
10	0.001	0.000001	11	7446.5	7289.66	7289.66	605.751	156.84	2.106224
10	0.001	0.000001	22	7446.5	7296.02	7296.02	599.783	150.48	2.020815
10	0.001	0.000001	33	7446.5	7273.66	7273.66	599.763	172.84	2.32109
10	0.001	0.000001	44	7446.5	7321.9	7321.9	602.667	124.6	1.673269
10	0.001	0.000001	55	7446.5	7205.3	7205.3	604.189	241.2	3.239106
10	0.0001	1E-07	11	7446.5	7289.66	7289.66	605.151	156.84	2.106224
10	0.0001	1E-07	22	7446.5	7296.02	7296.02	602.646	150.48	2.020815
10	0.0001	1E-07	33	7446.5	7273.66	7273.66	599.843	172.84	2.32109
10	0.0001	1E-07	44	7446.5	7247.54	7247.54	604.159	198.96	2.671859
10	0.0001	1E-07	55	7446.5	7229.54	7229.54	604.159	216.96	2.913584
10	0.000416	4.16E-07	11	7446.5	7289.66	7289.66	605.141	156.84	2.106224
10	0.000416	4.16E-07	22	7446.5	7296.02	7296.02	599.823	150.48	2.020815
10	0.000416	4.16E-07	33	7446.5	7273.66	7273.66	603.879	172.84	2.32109
10	0.000416	4.16E-07	44	7446.5	7247.54	7247.54	604.109	198.96	2.671859
10	0.000416	4.16E-07	55	7446.5	7205.3	7205.3	604.279	241.2	3.239106

TABLE A-26
P2MP NO PROTECTION, TRAFFIC B, SUBCASE 1A

	Temperature			Cost									Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Price After IMT	IMT	Price After IMT	Gain	Gain %	Gain	Gain %
3	0.001	0.000001	11	19470.8	19444.8	19444.8	1208.22	Y	129.416	19756.8	N	3471.6626	26	0.1335	-2263.4426	-187.3370
3	0.001	0.000001	22	19470.8	19382.3	19382.3	1277.86	Y	117.429	19718.3	N	3467.6626	88.5	0.4545	-2189.8026	-171.3648
3	0.001	0.000001	33	19470.8	19340.3	19340.3	1220.67	Y	116.878	19684.3	N	3469.5435	130.5	0.6702	-2248.8735	-184.2327
3	0.001	0.000001	44	19470.8	19410.9	19410.9	1248.44	Y	137.168	19770.9	N	3441.7818	59.9	0.3076	-2193.3418	-175.6866
3	0.001	0.000001	55	19470.8	19346.4	19346.4	1204.62	Y	119.222	19674.4	N	3483.6626	124.4	0.6389	-2279.0426	-189.1918
3	0.0001	0.0000001	11	19470.8	19412.8	19412.8	1226.54	Y	136.296	19764.8	N	3513.6626	58	0.2979	-2287.1226	-186.4695
3	0.0001	0.0000001	22	19470.8	19382.3	19382.3	1261.8	Y	117.359	19718.3	N	3497.6626	88.5	0.4545	-2235.8626	-177.1963
3	0.0001	0.0000001	33	19470.8	19340.3	19340.3	1220.3	Y	116.758	19684.3	N	3493.7818	130.5	0.6702	-2273.4818	-186.3052
3	0.0001	0.0000001	44	19470.8	19410.9	19410.9	1247.82	Y	137.247	19770.9	N	3461.6626	59.9	0.3076	-2213.8426	-177.4168
3	0.0001	0.0000001	55	19470.8	19354.4	19354.4	1202.55	Y	119.672	19714.4	N	3493.9009	116.4	0.5978	-2291.3509	-190.5410
3	0.00194708	1.94708E-06	11	19470.8	19412.3	19412.3	1209.21	Y	116.498	19732.3	N	3513.6626	58.5	0.3004	-2304.4526	-190.5751
3	0.00194708	1.94708E-06	22	19470.8	19414.5	19414.5	1269.92	Y	117.74	19742.6	N	3485.5435	56.3	0.2892	-2215.6235	-174.4695
3	0.00194708	1.94708E-06	33	19470.8	19340.3	19340.3	1220.27	Y	116.838	19684.3	N	3441.5435	130.5	0.6702	-2221.2735	-182.0313
3	0.00194708	1.94708E-06	44	19470.8	19418.9	19418.9	1324.38	Y	121.715	19762.9	N	3453.6626	51.9	0.2666	-2129.2826	-160.7758
3	0.00194708	1.94708E-06	55	19470.8	19346.4	19346.4	1204.61	Y	119.191	19674.4	N	3501.6626	124.4	0.6389	-2297.0526	-190.6885
5	0.001	0.000001	11	19535	19468.8	19468.8	1290.39	Y	118.621	19796.8	N	3453.6626	66.2	0.3389	-2163.2726	-167.6449
5	0.001	0.000001	22	19535	19430.5	19430.5	1205.44	Y	116.598	19742.6	N	3505.6626	104.5	0.5349	-2300.2226	-190.8202
5	0.001	0.000001	33	19535	19478.8	19478.8	1217.23	Y	134.303	19830.8	N	3459.6626	56.2	0.2877	-2242.4326	-184.2242
5	0.001	0.000001	44	19535	19430.8	19430.8	1340.11	Y	118.12	19766.8	N	3425.5435	104.2	0.5334	-2085.4335	-155.6166
5	0.001	0.000001	55	19535	19454.8	19454.8	1215.33	Y	120.263	19782.8	N	3529.6626	80.2	0.4105	-2314.3326	-190.4283
5	0.0001	0.0000001	11	19535	19444.8	19444.8	1338.36	Y	117.689	19772.8	N	3477.6626	90.2	0.4617	-2139.3026	-159.8451
5	0.0001	0.0000001	22	19535	19414.8	19414.8	1287.08	Y	117.098	19782.8	N	3519.7818	120.2	0.6153	-2232.7018	-173.4703
5	0.0001	0.0000001	33	19535	19478.8	19478.8	1217.47	Y	134.253	19830.8	N	3433.6626	56.2	0.2877	-2216.1926	-182.0326
5	0.0001	0.0000001	44	19535	19414.8	19414.8	1300.82	Y	118.73	19710.8	N	3469.9009	120.2	0.6153	-2169.0809	-166.7472
5	0.0001	0.0000001	55	19535	19454.8	19454.8	1215.69	Y	120.383	19782.8	N	3451.7818	80.2	0.4105	-2236.0918	-183.9360
5	0.00194708	1.94708E-06	11	19535	19461	19461	1205.54	Y	128.124	19765	N	3477.6626	74	0.3788	-2272.1226	-188.4734
5	0.00194708	1.94708E-06	22	19535	19478.5	19478.5	1210.27	Y	118.331	19782.6	N	3519.7818	56.5	0.2892	-2309.5118	-190.8262
5	0.00194708	1.94708E-06	33	19535	19510.8	19510.8	1214.92	Y	137.798	19838.8	N	3433.6636	24.2	0.1239	-2218.7436	-182.6247
5	0.00194708	1.94708E-06	44	19535	19430.8	19430.8	1340.67	Y	118.24	19766.8	N	3469.9009	104.2	0.5334	-2129.2309	-158.8184
5	0.00194708	1.94708E-06	55	19535	19454.8	19454.8	1215.59	Y	120.343	19782.8	N	3518.0200	80.2	0.4105	-2302.4300	-189.4084
10	0.001	0.000001	11	19574.5	19486.3	19486.3	1254.89	Y	133.112	19830.3	N	3489.9009	88.2	0.4506	-2235.0109	-178.1041
10	0.001	0.000001	22	19574.5	19462.3	19462.3	1252.27	Y	117.118	19790.3	N	3545.9009	112.2	0.5732	-2293.6309	-183.1579
10	0.001	0.000001	33	19574.5	19470.3	19470.3	1202.75	Y	119.492	19814.3	N	3463.6626	104.2	0.5323	-2260.9126	-187.9786
10	0.001	0.000001	44	19574.5	19462.3	19462.3	1292.82	Y	117.369	19774.3	N	3553.6626	112.2	0.5732	-2260.8426	-174.8768
10	0.001	0.000001	55	19574.5	19518.8	19518.8	1228.57	Y	119.352	19870.8	N	3531.6626	55.7	0.2846	-2303.0926	-187.4612
10	0.0001	0.0000001	11	19574.5	19486.3	19486.3	1254.68	Y	133.242	19830.3	N	3479.7818	88.2	0.4506	-2225.1018	-177.3442
10	0.0001	0.0000001	22	19574.5	19462.3	19462.3	1281.6	Y	117.228	19790.3	N	3515.7818	112.2	0.5732	-2234.1818	-174.3275
10	0.0001	0.0000001	33	19574.5	19470.3	19470.3	1202.76	Y	119.682	19814.3	N	3463.6626	104.2	0.5323	-2260.9026	-187.9762
10	0.0001	0.0000001	44	19574.5	19462.3	19462.3	1292.72	Y	117.369	19774.3	N	3511.7818	112.2	0.5732	-2219.0618	-171.6583
10	0.0001	0.0000001	55	19574.5	19478.5	19478.5	1282.46	Y	136.026	19838.6	N	3517.7818	96	0.4904	-2235.3218	-174.2995
10	0.00194708	1.94708E-06	11	19574.5	19534.3	19534.3	1201.59	Y	117.87	19870.3	N	3479.7818	40.2	0.2054	-2278.1918	-189.5981
10	0.00194708	1.94708E-06	22	19574.5	19470.3	19470.3	1261.73	Y	117.319	19798.3	N	3493.5435	104.2	0.5323	-2231.8135	-176.8852
10	0.00194708	1.94708E-06	33	19574.5	19470.3	19470.3	1202.61	Y	119.722	19814.3	N	3463.6626	104.2	0.5323	-2261.0526	-188.0121
10	0.00194708	1.94708E-06	44	19574.5	19462.3	19462.3	1255.36	Y	118.16	19766.3	N	3517.7818	112.2	0.5732	-2262.4218	-180.2210
10	0.00194708	1.94708E-06	55	19574.5	19518.8	19518.8	1228.41	Y	119.121	19870.8	N	3517.7818	55.7	0.2846	-2289.3718	-186.3687

TABLE A-27
P2MP NO PROTECTION, TRAFFIC C, SUBCASE 1A

	Temperature			Cost							Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Price After IMT	Gain	Gain %	Gain	Gain %
3	0.001	0.000001	11	26232.6	26232.6	26232.6	2179.03	Y	337.215	27188.7	0	0	-956.1	-3.6447
3	0.001	0.000001	22	26232.6	26220.7	26220.7	2119.47	Y	374.379	27132.8	11.9	0.045363	-900.2	-3.43161
3	0.001	0.000001	33	26232.6	26248.6	26232.6	2257.44	Y	339.808	27132.7	0	0	-900.1	-3.43123
3	0.001	0.000001	44	26232.6	26264.6	26232.6	2171.52	Y	339.678	27124.7	0	0	-892.1	-3.40073
3	0.001	0.000001	55	26232.6	26232.8	26232.6	2104.5	Y	347.42	27172.9	0	0	-940.3	-3.58447
3	0.0001	1E-07	11	26232.6	26232.6	26232.6	2178.51	Y	336.824	27188.7	0	0	-956.1	-3.6447
3	0.0001	1E-07	22	26232.6	26220.7	26220.7	2105.04	Y	374.69	27132.8	11.9	0.045363	-900.2	-3.43161
3	0.0001	1E-07	33	26232.6	26240.6	26232.6	2276.79	Y	339.859	27144.7	0	0	-912.1	-3.47697
3	0.0001	1E-07	44	26232.6	26264.6	26232.6	2169.66	Y	337.916	27124.7	0	0	-892.1	-3.40073
3	0.0001	1E-07	55	26232.6	26232.6	26232.6	2107.48	Y	347.019	27172.9	0	0	-940.3	-3.58447
3	0.001947	1.95E-06	11	26232.6	26232.6	26232.6	2145.14	Y	337.385	27188.7	0	0	-956.1	-3.6447
3	0.001947	1.95E-06	22	26232.6	–	–	–	–	–	–	–	–	–	–
3	0.001947	1.95E-06	33	26232.6	–	–	–	–	–	–	–	–	–	–
3	0.001947	1.95E-06	44	26232.6	–	–	–	–	–	–	–	–	–	–
3	0.001947	1.95E-06	55	26232.6	–	–	–	–	–	–	–	–	–	–
5	0.001	0.000001	11	26289.6	26273.3	26273.3	2344.99	Y	351.125	27225.4	16.3	0.062002	-935.8	-3.55958
5	0.001	0.000001	22	26289.6	26205	26205	2309.84	Y	339.068	27057	84.6	0.3218	-767.4	-2.91903
5	0.001	0.000001	33	26289.6	26209.3	26209.3	2106.49	Y	357.023	27133.4	80.3	0.305444	-843.8	-3.20963
5	0.001	0.000001	44	26289.6	26177.1	26177.1	2444.38	Y	344.586	27045.1	112.5	0.427926	-755.5	-2.87376
5	0.001	0.000001	55	26289.6	26257.6	26257.6	2257.8	Y	347.41	27117.6	32	0.121721	-828	-3.14953
5	0.0001	1E-07	11	26289.6	26273.3	26273.3	2343.99	Y	351.134	27225.4	16.3	0.062002	-935.8	-3.55958
5	0.0001	1E-07	22	26289.6	26205	26205	2342.48	Y	338.827	27057	84.6	0.3218	-767.4	-2.91903
5	0.0001	1E-07	33	26289.6	26209.3	26209.3	2098.67	Y	398.122	27177.4	80.3	0.305444	-887.8	-3.377
5	0.0001	1E-07	44	26289.6	26173	26173	2228.93	Y	345.286	27109	116.6	0.443521	-819.4	-3.11682
5	0.0001	1E-07	55	26289.6	26257.6	26257.6	2246.63	Y	346.788	27117.6	32	0.121721	-828	-3.14953
5	0.001947	1.95E-06	11	26289.6	26273.3	26273.3	2352.35	Y	351.386	27225.4	16.3	0.062002	-935.8	-3.55958
5	0.001947	1.95E-06	22	26289.6	26233.1	26233.1	2318.47	Y	341.972	27161.1	56.5	0.214914	-871.5	-3.315
5	0.001947	1.95E-06	33	26289.6	26209.3	26209.3	2108.64	Y	397.812	27177.4	80.3	0.305444	-887.8	-3.377
5	0.001947	1.95E-06	44	26289.6	26197	26197	2418.53	Y	347.29	27121	92.6	0.352231	-831.4	-3.16247
5	0.001947	1.95E-06	55	26289.6	26237.4	26237.4	2145.49	Y	349.773	27141.5	52.2	0.198558	-851.9	-3.24044
10	0.001	0.000001	11	26309.2	26256.8	26256.8	2138.15	Y	344.826	27152.9	52.4	0.19917	-843.7	-3.20686
10	0.001	0.000001	22	26309.2	26289.1	26289.1	2139.4	Y	339.338	27229.1	20.1	0.076399	-919.9	-3.4965
10	0.001	0.000001	33	26309.2	26309	26309	2397.47	Y	345.247	27137	0.2	0.00076	-827.8	-3.14643
10	0.001	0.000001	44	26309.2	26245	26245	2139.63	Y	349.823	27169	64.2	0.244021	-859.8	-3.26806
10	0.001	0.000001	55	26309.2	26309.2	26309.2	2389.74	Y	340.87	27169.3	0	0	-860.1	-3.2692
10	0.0001	1E-07	11	26309.2	26253	26253	2103.74	Y	411.191	27141	56.2	0.213613	-831.8	-3.16163
10	0.0001	1E-07	22	26309.2	26248.8	26248.8	2271.92	Y	341.641	27128.9	60.4	0.229577	-819.7	-3.11564
10	0.0001	1E-07	33	26309.2	26293	26293	2113.76	Y	346.308	27161	16.2	0.061575	-851.8	-3.23765
10	0.0001	1E-07	44	26309.2	26204.7	26204.7	2293.17	Y	342.673	27112.8	104.5	0.397199	-803.6	-3.05444
10	0.0001	1E-07	55	26309.2	26285	26285	2327.87	Y	337.946	27109	24.2	0.091983	-799.8	-3.04
10	0.001947	1.95E-06	11	26309.2	26261	26261	1303.19	Y	335.803	27165	48.2	0.183206	-855.8	-3.25285
10	0.001947	1.95E-06	22	26309.2	26309.2	26309.2	846.116	Y	339.117	27161.3	0	0	-852.1	-3.23879
10	0.001947	1.95E-06	33	26309.2	26325.2	26309.2	938.509	Y	340.67	27229.3	0	0	-920.1	-3.49726
10	0.001947	1.95E-06	44	26309.2	26277.2	26277.2	625.259	Y	346.559	27145.3	32	0.12163	-836.1	-3.17798
10	0.001947	1.95E-06	55	26309.2	26309.2	26309.2	781.914	Y	338.467	27141.3	0	0	-832.1	-3.16277

TABLE A-28
P2MP NO PROTECTION, 10% CONSTRAINTS, TRAFFIC A, SUBCASE 1A

	Temperature			Cost							Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Price After IMT	Gain	Gain %	Gain	Gain %
5	0.001	0.000001	11	7490.38	7231.54	7231.54	602.616	N	—	7231.54	258.84	3.455632	258.84	3.455632
5	0.001	0.000001	22	7490.38	7269.54	7269.54	600.123	N	—	7269.54	220.84	2.948315	220.84	2.948315
5	0.001	0.000001	33	7490.38	7320.02	7320.02	625.35	N	—	7320.02	170.36	2.274384	170.36	2.274384
5	0.0001	0.0000001	44	7490.38	7223.54	7223.54	600.444	N	—	7223.54	266.84	3.562436	266.84	3.562436
5	0.0001	0.0000001	55	7490.38	7269.54	7269.54	600.304	N	—	7269.54	220.84	2.948315	220.84	2.948315
5	0.0001	0.0000001	11	7490.38	7320.02	7320.02	625.85	N	—	7320.02	170.36	2.274384	170.36	2.274384
5	0.000749	7.49038E-07	22	7490.38	7231.54	7231.54	600.614	N	—	7231.54	258.84	3.455632	258.84	3.455632
5	1.000749	0.001000749	33	7490.38	7269.54	7269.54	600.634	N	—	7269.54	220.84	2.948315	220.84	2.948315
5	2.000749	0.002000749	44	7490.38	7320.02	7320.02	625.92	N	—	7320.02	170.36	2.274384	170.36	2.274384

TABLE A-29
P2MP NO PROTECTION, 10% CONSTRAINTS, TRAFFIC B, SUBCASE 1A

	Temperature			Cost							Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Price After IMT	Gain	Gain %	Gain	Gain %
5	0.001	0.000001	11	19535	19468	19468	1330.21	Y	118.15	19812.8	67	0.342974	-277.8	-1.42206
5	0.001	0.000001	22	19535	19430.5	19430.5	1225.93	Y	118.53	19782.6	104.5	0.534937	-247.6	-1.26747
5	0.001	0.000001	33	19535	19478.8	19478.8	1217.66	Y	134.163	19830.8	56.2	0.287689	-295.8	-1.51421
5	0.0001	0.0000001	44	19535	19444.8	19444.8	1338.66	Y	117.769	19772.8	90.2	0.461735	-237.8	-1.2173
5	0.0001	0.0000001	55	19535	19414.8	19414.8	1288.11	Y	118.4	19782.8	120.2	0.615306	-247.8	-1.26849
5	0.0001	0.0000001	11	19535	19478.8	19478.8	1223.43	Y	134.243	19830.8	56.2	0.287689	-295.8	-1.51421
5	0.001954	1.9535E-06	22	19535	19493	19493	612.14	Y	119.061	19853	42	0.214999	-318	-1.62785
5	0.001954	1.9535E-06	33	19535	19494.8	19494.8	618.499	Y	117.86	19830.8	40.2	0.205784	-295.8	-1.51421
5	0.001954	1.9535E-06	44	19535	19535	19535	615.435	Y	138.569	19863	0	0	-328	-1.67904

TABLE A-30
P2MP NO PROTECTION, 10% CONSTRAINTS, TRAFFIC C, SUBCASE 1A

	Temperature			Cost							Before IMT		After IMT	
K	Initial	Final	Seed	Initial	Final	Best	Time Used	IMT	IMT Time	Price After IMT	Gain	Gain %	Gain	Gain %
5	0.001	0.000001	11	26289.6	26273.3	26273.3	2240.77	Y	351.496	27257.4	16.3	0.062002	-967.8	-3.6813
5	0.001	0.000001	22	26289.6	26205	26205	2332.65	Y	338.887	27057	84.6	0.3218	-767.4	-2.91903
5	0.001	0.000001	33	26289.6	26201.1	26201.1	2142.07	Y	399.424	27165.2	88.5	0.336635	-875.6	-3.33059
5	0.0001	0.0000001	44	26289.6	26273.3	26273.3	2344.32	Y	351.275	27225.4	16.3	0.062002	-935.8	-3.55958
5	0.0001	0.0000001	55	26289.6	26205	26205	2302.75	Y	338.807	27057	84.6	0.3218	-767.4	-2.91903
5	0.0001	0.0000001	11	26289.6	26201.1	26201.1	2137.19	Y	399.714	27165.2	88.5	0.336635	-875.6	-3.33059
5	0.000749	7.49038E-07	22	26289.6	26281.3	26281.3	618.009	Y	347.921	27205.4	8.3	0.031571	-915.8	-3.48351
5	1.000749	0.001000749	33	26289.6	26273.6	26273.6	851.324	Y	348.802	27169.6	16	0.060861	-880	-3.34733
5	2.000749	0.002000749	44	26289.6	26273.3	26273.3	617.669	Y	354.991	27209.4	16.3	0.062002	-919.8	-3.49872

TABLE A-31
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC A

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	11035.64172	10858.9217	10858.9217	462126.0792	302452.7995	302452.7995	601.016	No	
	0.0001	0.0000001	11035.64172	10813.4017	10813.4017	462126.0792	265123.0396	265123.0396	602.453	No	
	0.001104	1.104E-06	11035.64172	11051.6417	11051.4017	462126.0792	416621.9193	416621.9193	867.906	No	
1B	0.001	0.000001	11252.36171	11016.0026	11016.0026	430790.8793	359401.1194	359401.1194	600.313	No	
	0.0001	0.0000001	11252.36171	10923.1617	10923.1617	430790.8793	325068.6395	325068.6395	600.359	No	
	0.001125	1.125E-06	11252.36171	11192.2408	11192.2408	430790.8793	416621.9193	416621.9193	623.187	No	
1C	0.001	0.000001	11262.36171	11154.0008	11154.0008	379837.1194	296730.7195	296730.7195	601.5	No	
	0.0001	0.0000001	11262.36171	11037.8817	11037.8817	379837.1194	313896.9595	313896.9595	602.25	No	
	0.001126	1.126E-06	11262.36171	11290.0008	11290.0008	379837.1194	331063.1994	331063.1994	605.235	No	
1D	0.001	0.000001	11397.6	11268.8	11268.8	234605	200000	200000	601.765	4.625	IMT:11292.9
	0.0001	0.0000001	11397.6	11157.1	11157.1	234605	156948	156948	602.313	5.422	IMT:11185.1
	0.00114	1.14E-06	11397.6	11244.6	11244.6	234605	200000	200000	600.158	5.294	IMT:11260.6

TABLE A-32
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC B

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	14716.03997	14603.56	14603.56	2027523.677	1884744.157	1884744.157	600.609	4.594	IMT:14675.59375
	0.0001	0.0000001	14716.03997	14499.32	14499.32	2027523.677	1864853.117	1864853.117	600.563	2.453	IMT:14587.3535156
	0.001472	1.472E-06	14716.03997	14587.56	14587.56	2027523.677	1762400.637	1762400.637	605.625	2.532	IMT:14675.59375
1B	0.001	0.000001	14668	14574	14574	1.84E+06	1.71E+06	1.71E+06	600.125	8.953	IMT:14646.1
	0.0001	0.0000001	14651.79997	14547.08	14547.08	1836787.677	1651228.797	1651228.797	603.125	2.375	IMT:14619.1132813
	0.001467	1.467E-06	14668	14606	14606	1.84E+06	1.71E+06	1.71E+06	602.693	9.895	IMT:14694.1
1C	0.001	0.000001	14651.6	14402.4	14402.4	1.54E+06	1.44E+06	1.44E+06	602.766	8.313	IMT:14450.4
	0.0001	0.0000001	14651.6	14382.7	14382.7	1.54E+06	1.41E+06	1.41E+06	602.234	7.718	IMT:14438.8
	0.001465	1.465E-06	14651.6	14418.4	14418.4	1.54E+06	1.48E+06	1.48E+06	603.564	8.541	IMT:14466.4
1D	0.001	0.000001	14843.8	14642.8	14642.8	903544	880928	880928	602.484	8.781	IMT:14714.9
	0.0001	0.0000001	14843.8	14667.1	14667.1	903544	806813	806813	609.578	8.578	IMT:14747.1
	0.001484	1.484E-06	14843.8	14683.1	14683.1	903544	880928	880928	602.499	9.188	IMT:14755.1

TABLE A-33
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC C

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	13011.84084	12971.6008	12971.6008	1365669.758	1191555.038	1191555.038	601.156	1.828	IMT:12995.6308594
	0.0001	0.0000001	13011.84084	12795.6008	12795.6008	1365669.758	1168939.198	1168939.198	600.688	1.422	IMT:12827.6308594
	0.001301	1.301E-06	13011.84084	12867.1208	12867.1208	1365669.758	1180383.358	1180383.358	600.75	1.391	IMT:12883.1503906
1B	0.001	0.000001	12987.8	12979.8	12979.8	1.32E+06	1.13E+06	1.13E+06	608.703	6.015	IMT:13019.9
	0.0001	0.0000001	12987.8	12851.4	12851.4	1.32E+06	1.19E+06	1.19E+06	605.672	4.625	IMT:12875.4
	0.001299	1.299E-06	12987.8	13043.8	13043.8	1.32E+06	1.10E+06	1.10E+06	603.745	6.567	IMT:13075.9
1C	0.001	0.000001	13028.1	13077.8	13077.8	1.10E+06	938966	938966	601.468	6.297	IMT:13117.9
	0.0001	0.0000001	13028.1	12907.8	12907.8	1.10E+06	876568	876568	601.719	5.296	IMT:12927.9
	0.001303	1.303E-06	13028.1	13077.8	13077.8	1.10E+06	950410	950410	602.09	6.755	IMT:13109.9
1D	0.001	0.000001	13067.8	12947.8	12947.8	767031	679020	679020	600.485	6.75	IMT:12983.9
	0.0001	0.0000001	13067.8	12947.6	12947.6	767031	715805	715805	601.203	6.766	IMT:12983.6
	0.001307	1.307E-06	13067.8	12971.6	12971.6	767031	696186	696186	605.786	6.711	IMT:13007.6

TABLE A-34
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC D

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	31787.00776	31794.7678	31794.7678	2044144.957	1986924.157	1986924.157	1218.672	73.563	IMT:33050.8359375
	0.0001	0.0000001	31787.00776	31771.0078	31771.0078	2044144.957	1986924.157	1986924.157	1209.719	78.485	IMT:33107.078125
	0.003179	3.179E-06	31787.00776	31754.5278	31754.5278	2044144.957	1986924.157	1986924.157	1212.469	74.422	IMT:33090.59375
1B	0.001	0.000001	31834.8	31838.9	31814.9	1.91E+06	1.86E+06	1.86E+06	1248.88	178.125	IMT:32755
	0.0001	0.0000001	31834.8	31766.4	31766.4	1.91E+06	1.87E+06	1.87E+06	1266.36	173.797	IMT:32754.5
	0.003183	3.183E-06	31834.8	31818.8	31802.5	1.91E+06	1.86E+06	1.86E+06	1222.42	198.849	IMT:32818.6
1C	0.001	0.000001	32036.2	32067.5	32067.5	1.62E+06	1.61E+06	1.61E+06	1233.22	179.297	IMT:33079.6
	0.0001	0.0000001	32036.2	31951.4	31951.4	1.62E+06	1.60E+06	1.60E+06	1265.64	178.344	IMT:32967.4
	0.003204	3.204E-06	32036.2	32083.5	32083.5	1.62E+06	1.61E+06	1.61E+06	1208.99	228.546	IMT:33095.6
1D	0.001	0.000001	32692.2	32575.9	32575.9	1.02E+06	1.02E+06	1.02E+06	1236.69	198.375	IMT:33599.9
	0.0001	0.0000001	32692.2	32559.9	32559.9	1.02E+06	1.02E+06	1.02E+06	1203.98	207.89	IMT:33627.9
	0.003269	3.269E-06	32692.2	32680.1	32652	1.02E+06	1.02E+06	1.02E+06	1239.05	227.146	IMT:33720

TABLE A-35
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC E

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	42610.53296	42663.3738	42663.3738	8961594.705	8887480.145	8887480.145	1300.109	239.968	IMT:43671.4375
	0.0001	0.0000001	42610.53296	42663.6138	42663.6138	8961594.705	8907371.185	8907371.185	1279.469	242.734	IMT:43615.6796875
	0.004261	4.261E-06	42610.53296	42671.3738	42671.3738	8961594.705	8864591.825	8864591.825	1217.047	167.609	IMT:43615.4375
1B	0.001	0.000001	42795.2547	42763.2547	42763.2547	8335435.666	8286661.746	8286661.746	1290.36	192.719	IMT:43731.3203125
	0.0001	0.0000001	42795.2547	42739.2547	42739.2547	8335435.666	8289659.026	8289659.026	1371.719	255.422	IMT:43739.3203125
	0.00428	4.28E-06	42795.2547	42779.2547	42771.2547	8335435.666	8286661.746	8286661.746	1200.406	191.953	IMT:43763.3203125
1C	0.001	0.000001	42735.6	42771.5	42755.5	6.95E+06	6.89E+06	6.89E+06	1210.69	361.421	IMT:43663.6
	0.0001	0.0000001	42735.6	42779.5	42779.5	6.95E+06	6.87E+06	6.87E+06	1272.13	343.844	IMT:43707.6
	0.004274	4.274E-06	42735.6	42791.4	42791.4	6.95E+06	6.87E+06	6.87E+06	1241.14	426.624	IMT:43699.4
1D	0.001	0.000001	42566.4	42518.4	42502.2	4.30E+06	4.29E+06	4.29E+06	1349.45	378.828	IMT:43406.2
	0.0001	0.0000001	42566.4	42502.2	42502.2	4.30E+06	4.29E+06	4.29E+06	1299.3	739.344	IMT:43410.2
	0.004257	4.257E-06	42566.4	42518.4	42502.2	4.30E+06	4.29E+06	4.29E+06	1261.56	588.25	IMT:43418.2

TABLE A-36
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC F

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	37070.77297	37143.0147	37127.013	5492651.831	5487202.231	5487202.231	1200.485	227.766	IMT:38263.0625
	0.0001	0.0000001	37070.77297	37099.1338	37070.773	5492651.831	5492651.831	5492651.831	1202.203	214.422	IMT:38110.8203125
	0.003707	3.707E-06	37070.8	37175	37151	5.49E+06	5.47E+06	5.47E+06	1220.52	418.516	IMT:38063.1
1B	0.001	0.000001	37278.5	37254.8	37254.8	4.99E+06	4.87E+06	4.87E+06	1246.38	348.516	IMT:38218.8
	0.0001	0.0000001	37278.5	37238.8	37238.8	4.99E+06	4.87E+06	4.87E+06	1276.16	452.109	IMT:38206.8
	0.004257	4.257E-06	42566.4	42542.4	42542.4	4.30E+06	4.30E+06	4.30E+06	1699.86	1592.87	IMT:43434.5
1C	0.001	0.000001	36917.6	36970.2	36953.9	4.40E+06	4.35E+06	4.35E+06	1213.19	479.969	IMT:37882
	0.0001	0.0000001	36917.6	36933.8	36933.8	4.40E+06	4.35E+06	4.35E+06	1220	253.781	IMT:37857.9
	0.003692	3.692E-06	36917.6	36966.1	36953.9	4.40E+06	4.35E+06	4.35E+06	1232.75	254.969	IMT:37950
1D	0.001	0.000001	37639.3	37575.3	37575.3	2.77E+06	2.76E+06	2.76E+06	1248.14	269.75	IMT:38599.3
	0.0001	0.0000001	37639.3	37551.3	37551.3	2.77E+06	2.76E+06	2.76E+06	1203.47	292.282	IMT:38543.3
	0.003764	3.764E-06	37639.3	37611.4	37583.3	2.77E+06	2.76E+06	2.76E+06	1219.33	414.75	IMT:38559.3

TABLE A-37
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC G

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	59949.52857	59953.6494	59941.5286	13108467.82	13045524.94	13045524.94	2128.562	672.5	IMT:61325.625
	0.0001	0.0000001	59949.52857	59949.5286	59949.5286	13108467.82	13031355.98	13031355.98	2182.875	621.797	IMT:61293.625
	0.005995	5.995E-06	59949.52857	59961.6494	59961.6494	13108467.82	13031355.98	13031355.98	2170.985	670.079	IMT:61265.7460938
1B	0.001	0.000001	59977.40944	60008.9294	59953.1694	12288847.98	12288847.98	12288847.98	2298.578	607.782	IMT:61313.2695313
	0.0001	0.0000001	59977.40944	59952.9294	59952.9294	12288847.98	12288847.98	12288847.98	2152.469	609.938	IMT:61385.0273438
	0.006008	6.008E-06	60077.1	60101.3	60077.1	1.22E+07	1.22E+07	1.22E+07	2105.91	1196.34	IMT:61325.2
1C	0.001	0.000001	60266.9	60270.7	60258.9	1.02E+07	1.02E+07	1.02E+07	2196.2	2103.59	IMT:61479
	0.0001	0.0000001	60266.9	60246.7	60246.7	1.02E+07	1.02E+07	1.02E+07	2229.01	1200.39	IMT:61446.8
	0.006027	6.027E-06	60266.9	60278.7	60258.9	1.02E+07	1.02E+07	1.02E+07	2247.3	1197.67	IMT:61527
1D	0.001	0.000001	59873.41292	59902.0121	59865.4129	6385296.309	6385296.309	6385296.309	2235.641	690.687	IMT:61409.515625
	0.0001	0.0000001	59873.41292	59865.6529	59865.4129	6385296.309	6385296.309	6385296.309	2162.047	675.5	IMT:61401.515625
	0.006018	6.018E-06	60178.4	60150.3	60150.3	6.33E+06	6.33E+06	6.33E+06	2123.99	1286.2	IMT:61462.4

TABLE A-38
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC H

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	44172.01383	44281.093	44281.093	2959405.275	2956407.995	2956407.995	2128.703	257.313	IMT:46393.1679688
	0.0001	0.0000001	44172.01383	44204.4938	44204.4938	2959405.275	2956407.995	2956407.995	2176.578	250.968	IMT:46268.5703125
	0.004417	4.417E-06	44172.01383	44305.093	44305.093	2959405.275	2956407.995	2956407.995	2231.688	286.297	IMT:46409.1679688
1B	0.001	0.000001	44243	44299.2	44299.2	2.70E+06	2.67E+06	2.67E+06	2202	631.703	IMT:45923.3
	0.0001	0.0000001	44243	44283.2	44283.2	2.70E+06	2.67E+06	2.67E+06	2167.92	564.125	IMT:45811.3
	0.004424	4.424E-06	44243	44323.2	44323.2	2.70E+06	2.67E+06	2.67E+06	2123.49	560.985	IMT:45795.3
1C	0.001	0.000001	44527.6	44455.3	44455.3	2.33E+06	2.31E+06	2.31E+06	2149.08	530.718	IMT:45959.4
	0.0001	0.0000001	44527.6	44447.3	44447.3	2.33E+06	2.31E+06	2.31E+06	2137.64	569.047	IMT:46031.4
	0.004453	4.453E-06	44527.6	44463.3	44463.3	2.33E+06	2.29E+06	2.29E+06	2225.84	542.625	IMT:46007.4
1D	0.001	0.000001	45140.4	45192.5	45192.5	1.54E+06	1.52E+06	1.52E+06	2110.56	645.094	IMT:46912.6
	0.0001	0.0000001	45140.4	45128.5	45128.5	1.54E+06	1.52E+06	1.52E+06	2198.34	610.296	IMT:46860.6
	0.004514	4.514E-06	45140.4	45216.5	45124.4	1.54E+06	1.54E+06	1.54E+06	2205.33	592.906	IMT:46704.5

TABLE A-39
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC I

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	51838.9399	51774.9399	51774.9399	7852328.627	7801102.387	7801102.387	2132.766	458.782	IMT:53407.0117188
	0.0001	0.0000001	51838.9399	51790.6999	51790.6999	7852328.627	7803827.187	7803827.187	2215.828	440.671	IMT:53590.7734375
	0.005184	5.184E-06	51838.9399	51814.9399	51806.6999	7852328.627	7820993.427	7820993.427	2299.204	479.078	IMT:53590.7695313
1B	0.001	0.000001	51830.5	51842.3	51842.3	7.13E+06	7.05E+06	7.05E+06	2266.8	1029.13	IMT:53342.4
	0.0001	0.0000001	51830.5	51842.3	51842.3	7.13E+06	7.05E+06	7.05E+06	2177.97	996.797	IMT:53322.4
	0.005183	5.183E-06	51830.5	51850.3	51850.3	7.13E+06	7.07E+06	7.07E+06	2174.53	844.469	IMT:53382.4
1C	0.001	0.000001	51638.5	51586.3	51586.3	6.22E+06	6.21E+06	6.21E+06	2260.63	852.718	IMT:53078.4
	0.0001	0.0000001	51638.5	51586.3	51586.3	6.22E+06	6.21E+06	6.21E+06	2378.36	815.156	IMT:53078.4
	0.005164	5.164E-06	51638.5	51578.3	51578.3	6.22E+06	6.18E+06	6.18E+06	2181.17	905.031	IMT:53050.4
1D	0.001	0.000001	52127.2	52119.2	52095.2	4.10E+06	4.08E+06	4.08E+06	2289.53	884.922	IMT:53635.2
	0.0001	0.0000001	52127.2	52111.2	52095.2	4.10E+06	4.08E+06	4.08E+06	2103.61	908.015	IMT:53619.2
	0.005213	5.213E-06	52127.2	52119.2	52095.2	4.10E+06	4.08E+06	4.08E+06	2126.13	955.672	IMT:53599.2

TABLE A-40
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC A

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	11051.64172	10859.1617	10859.1617	234332.7996	226158.3996	226158.3996	601.285	No	
	0.0001	0.0000001	11051.64172	10906.9217	10906.9217	234332.7996	212534.3996	212534.3996	601.239	No	
	0.001105	1.105E-06	11051.64172	10884.1217	10884.1217	234332.7996	220708.7996	220708.7996	605.217	No	
1B	0.001	0.000001	11262.36171	11116.3617	11116.3617	217983.9996	188011.1997	188011.1997	601.519	0.922	IMT:11132.3886719
	0.0001	0.0000001	11262.36171	10993.7626	10993.7626	217983.9996	193460.7997	193460.7997	600.218	No	
	0.001126	1.126E-06	11262.36171	11092.3617	11092.3617	217983.9996	188011.1997	188011.1997	602.297	0.859	IMT:11116.3886719
1C	0.001	0.000001	11310.36171	11166.1217	11166.1217	188011.1997	155313.5997	155313.5997	601.59	No	
	0.0001	0.0000001	11310.36171	11029.6417	11029.6417	188011.1997	158038.3997	158038.3997	603.972	No	
	0.001131	1.131E-06	11310.36171	11077.4017	11077.4017	188011.1997	155313.5997	155313.5997	602.684	No	
1D	0.001	0.000001	11469.6	11248.7	11248.7	111717	103542	103542	603.109	4.828	IMT:11272.8
	0.0001	0.0000001	11469.6	11216.7	11216.7	111717	100818	100818	601.312	8.438	IMT:11256.8
	0.001147	1.147E-06	11469.6	11329	11329	111717	73569.6	73569.6	603.434	5.051	IMT:11369

TABLE A-41
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC B

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	14796.51997	14828.28	14828.28	1035423.998	1002726.398	1002726.398	601.504	3.422	IMT:14932.3144531
	0.0001	0.0000001	14796.51997	14692.04	14692.04	1035423.998	1016350.398	1016350.398	602.582	3.328	IMT:14772.0742188
	0.00148	1.48E-06	14796.51997	14828.28	14828.28	1035423.998	1002726.398	1002726.398	605.178	2.864	IMT:14900.3144531
1B	0.001	0.000001	14708	14635.6	14635.6	931882	893734	893734	600.156	7.937	IMT:14691.6
	0.0001	0.0000001	14708	14611.6	14611.6	931882	877386	877386	605.375	8.156	IMT:14683.6
	0.001471	1.471E-06	14708	14643.1	14643.1	931882	910083	910083	616.513	34.93	IMT:14691.1
1C	0.001	0.000001	14788.3	14639.2	14639.2	790192	782018	782018	601.594	8.812	IMT:14711.2
	0.0001	0.0000001	14788.3	14527	14527	790192	776568	776568	602.343	7.89	IMT:14591
	0.001479	1.479E-06	14788.3	14763.8	14763.8	790192	787467	787467	605.287	23.243	IMT:14827.8
1D	0.001	0.000001	15029	14827.6	14827.6	435968	422344	422344	604.672	8.828	IMT:14891.6
	0.0001	0.0000001	15029	14731.3	14731.3	435968	430518	430518	600.156	9.375	IMT:14795.4
	0.001503	1.503E-06	15029	14852	14852	435968	435968	435968	638.234	20.96	IMT:14916.1

TABLE A-42
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC C

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	13051.6	12971.6	12971.6	700274	637603	637603	600.359	5.11	IMT:12991.6
	0.0001	0.0000001	13051.60084	12995.1208	12995.1208	700273.5988	683924.7989	683924.7989	603.867	2.609	IMT:13043.1503906
	0.001305	1.305E-06	13051.60084	12899.1208	12899.1208	700273.5988	618529.599	618529.599	601.187	1.265	IMT:12955.1503906
1B	0.001	0.000001	13027.6	12963.8	12963.8	675750	621254	621254	605.39	4.782	IMT:12987.9
	0.0001	0.0000001	13027.6	12899.1	12899.1	675750	626704	626704	604.035	4.927	IMT:12915.2
	0.001303	1.303E-06	13027.6	13043.1	13043.1	675750	670301	670301	607.269	11.116	IMT:13059.2
1C	0.001	0.000001	13148.1	13083.6	13083.6	558584	542235	542235	602.078	4.953	IMT:13103.6
	0.0001	0.0000001	13148.1	13140.1	13140.1	558584	493189	493189	607.032	5.031	IMT:13156.1
	0.001315	1.315E-06	13148.1	13123.8	13123.8	558584	553134	553134	625.215	22.923	IMT:13143.9
1D	0.001	0.000001	13096.2	13080	13080	392371	378747	378747	602.515	6.547	IMT:13124
	0.0001	0.0000001	13096.2	12960	12960	392371	386922	386922	604.031	6.781	IMT:12996
	0.00131	1.31E-06	13096.2	13136.2	13136.2	392371	389646	389646	625.596	31.165	IMT:13180.2

TABLE A-43
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC D

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	31806.64863	31830.6486	31806.6486	1049047.998	1051772.798	1049047.998	1215.937	72.484	IMT:33110.71875
	0.0001	0.0000001	31806.64863	31734.4086	31734.4086	1049047.998	1046323.198	1046323.198	1234.172	71.407	IMT:32958.4765625
	0.003181	3.181E-06	31806.6	31838.6	31806.6	1049050	1051770	1049050	1328.47	214.375	IMT:32762.7
1B	0.001	0.000001	31834.8	31754.5	31754.5	978203	978203	978203	1213.84	176.516	IMT:32738.6
	0.0001	0.0000001	31834.8	31746.3	31746.3	978203	972754	972754	1231.77	174.64	IMT:32706.4
	0.003183	3.183E-06	31834.8	31786.3	31786.3	978203	978203	978203	1292.34	179.89	IMT:32806.4
1C	0.001	0.000001	32092	32116	32116	833789	831064	831064	1262.97	183.171	IMT:33048
	0.0001	0.0000001	32092	32076	32076	833789	831064	831064	1266.3	182.406	IMT:33080
	0.003209	3.209E-06	32092	32135.8	32135.8	833789	831064	831064	1253.63	175.829	IMT:33103.9
1D	0.001	0.000001	32788.5	32784.1	32784.1	509538	509538	509538	1217.73	203.703	IMT:33840.2
	0.0001	0.0000001	32788.5	32692.2	32692.2	509538	509538	509538	1259.58	228.5	IMT:33756.3
	0.003279	3.279E-06	32788.5	32816.1	32788.5	509538	509538	509538	1229.59	186.735	IMT:33912.5

TABLE A-44
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC E

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	42882.77296	42866.773	42850.773	4618535.992	4618535.992	4618535.992	1210.047	173.234	IMT:43842.8359375
	0.0001	0.0000001	42882.77296	42850.773	42850.773	4618535.992	4613086.392	4613086.392	1310.359	179.391	IMT:43874.8359375
	0.004288	4.288E-06	42882.8	42838.7	42874.8	4618540	4621260	4618540	1243.72	450.137	IMT:43706.8
1B	0.001	0.000001	42979.5	42891.5	42891.5	4297010	4288840	4288840	1293.92	354.985	IMT:43731.6
	0.0001	0.0000001	42979.5	42891.5	42891.5	4297010	4288840	4288840	1240.06	373.812	IMT:43731.6
	0.004298	4.298E-06	42979.5	42907.5	42907.5	4297010	4288840	4288840	1226.14	675.289	IMT:43787.6
1C	0.001	0.000001	42988.4	42956.2	42956.2	3561310	3561310	3561310	1228.88	1171.94	IMT:43824.3
	0.0001	0.0000001	42988.4	42956.2	42956.2	3561310	3561310	3561310	1282	420.75	IMT:43784.3
	0.004299	4.299E-06	42988.4	42988.2	42964.4	3561310	3561310	3561310	1203.31	346.829	IMT:43820.5
1D	0.001	0.000001	43064.1	43060.2	43040.1	2138970	2138970	2138970	1206.11	643	IMT:44036.2
	0.0001	0.0000001	43064.1	43052.2	43040.1	2138970	2138970	2138970	1287.39	440.578	IMT:43980.2
	0.004306	4.306E-06	43064.1	43068.2	43040.1	2138970	2138970	2138970	1246.83	360.235	IMT:43920.2

TABLE A-45
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC F

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	37238.53471	37294.7747	37238.5347	2831067.195	2831067.195	2831067.195	1203.781	126.969	IMT:38358.5820313
	0.0001	0.0000001	37238.53471	37214.533	37214.533	2831067.195	2831067.195	2831067.195	1266.859	108.672	IMT:38262.5820313
	0.003724	3.724E-06	37238.5	37367	37238.5	2831070	2833790	2831070	1219.22	250.36	IMT:38230.6
1B	0.001	0.000001	37442.9	37398.5	37398.5	2566760	2564040	2564040	1223.89	239.671	IMT:38282.6
	0.0001	0.0000001	37442.9	37398.5	37398.5	2566760	2564040	2564040	1279.56	245.75	IMT:38282.6
	0.003744	3.744E-06	37442.9	37491.1	37491.1	2566760	2553140	2553140	1202.96	341.379	IMT:38399.2
1C	0.001	0.000001	37287	37423.5	37339.4	2245240	2242510	2242510	1252.72	251.36	IMT:38267.4
	0.0001	0.0000001	37287	37355.4	37355.4	2245240	2239790	2239790	1228.98	255.406	IMT:38263.4
	0.003729	3.729E-06	37287	37459.6	37339.4	2245240	2247960	2242510	1269.22	260.625	IMT:38247.4
1D	0.001	0.000001	38104.7	38064.2	38064.2	1414170	1414170	1414170	1244.86	288.953	IMT:39100.3
	0.0001	0.0000001	38104.7	38044.3	38044.3	1414170	1414170	1414170	1202.06	297.062	IMT:39088.4
	0.00381	3.81E-06	38104.7	38080.7	38104.7	1414170	1416900	1414170	1246.78	278.188	IMT:39104.7

TABLE A-46
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC G

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	60395.33292	60387.0929	60387.0929	6730255.989	6727531.189	6727531.189	2437.11	642.11	IMT:61779.2070313
	0.0001	0.0000001	60395.33292	60387.0929	60387.0929	6730255.989	6727531.189	6727531.189	2110.329	660.875	IMT:61771.2070313
	0.00604	6.04E-06	60395.3	60387.1	60387.1	6730260	6727530	6727530	2165.07	2405.16	IMT:61627.2
1B	0.001	0.000001	60642.9	60634.9	60634.9	6239790	6234340	6234340	2419.53	1146.58	IMT:61887
	0.0001	0.0000001	60642.9	60634.9	60634.9	6239790	6234340	6234340	2111.41	1159.98	IMT:61883
	0.006064	6.064E-06	60642.9	60610.6	60642.9	6239790	6253420	6239790	2342.59	1145.75	IMT:61915
1C	0.001	0.000001	60567.2	60551	60551	5193470	5190740	5190740	2456.88	1214.34	IMT:61895.1
	0.0001	0.0000001	60567.2	60551	60551	5193470	5190740	5190740	2467.97	1206.34	IMT:61895.1
	0.006057	6.057E-06	60567.2	60551	60551	5193470	5190740	5190740	2519.45	1164.64	IMT:61787.1
1D	0.001	0.000001	60798	60818.4	60798	3133520	3133520	3133520	2315.39	1222.92	IMT:62070.1
	0.0001	0.0000001	60798	60810.4	60798	3133520	3133520	3133520	2358.05	1252.27	IMT:62066.1
	0.00608	6.08E-06	60798	60818.4	60798	3133520	3133520	3133520	2300.06	1203.34	IMT:62034.1

TABLE A-47
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC H

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	44388.49383	44332.7338	44332.7338	1517713.597	1517713.597	1517713.597	2169.157	255.594	IMT:46364.8085938
	0.0001	0.0000001	44388.49383	44372.4938	44372.4938	1517713.597	1506814.397	1506814.397	2184.172	468.468	IMT:46452.5664063
	0.004439	4.439E-06	44388.5	44468.7	44388.5	1517710	1520440	1517710	2142.42	1062.83	IMT:45936.6
1B	0.001	0.000001	44379.5	44407.3	44379.5	1381470	1381470	1381470	2262.87	669.3	IMT:45959.5
	0.0001	0.0000001	44379.5	44323.2	44323.2	1381470	1381470	1381470	2127.84	655.672	IMT:45983.3
	0.004438	4.438E-06	44379.5	44419.2	44379.5	1381470	1381470	1381470	2120.32	1023.18	IMT:46035.5
1C	0.001	0.000001	44684.2	44651.9	44627.9	1196190	1196190	1196190	2181.84	526.157	IMT:46164
	0.0001	0.0000001	44684.2	44619.9	44619.9	1196190	1196190	1196190	2108.7	599.813	IMT:46072
	0.004468	4.468E-06	44684.2	44728.3	44728.3	1196190	1193460	1193460	2155.47	570.843	IMT:46304.4
1D	0.001	0.000001	45240.3	45192.3	45192.3	771118	771118	771118	2147.44	1538.77	IMT:46848.4
	0.0001	0.0000001	45240.3	45152.3	45152.3	771118	771118	771118	2144.5	610.985	IMT:46872.4
	0.004524	4.524E-06	45240.3	45208.3	45200.3	771118	771118	771118	2130.38	634.281	IMT:46880.4

TABLE A-48
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC I

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	52083.29903	52067.299	52067.299	4051777.593	4046327.993	4046327.993	2185.672	465.203	IMT:53763.375
	0.0001	0.0000001	52083.29903	52051.299	52051.299	4051777.593	4046327.993	4046327.993	2153.063	431.109	IMT:53675.375
	0.005208	5.208E-06	52083.3	52067.3	52067.3	4051780	4051780	4051780	2396.03	1853.99	IMT:53491.4
1B	0.001	0.000001	52095.4	52091.3	52079.2	3670310	3670310	3670310	2296.55	847	IMT:53475.2
	0.0001	0.0000001	52095.4	52091.3	52079.2	3670310	3670310	3670310	2108.05	890.438	IMT:53475.2
	0.00521	5.21E-06	52095.4	52091.3	52079.2	3670310	3678480	3670310	2118.91	1054.69	IMT:53451.2
1C	0.001	0.000001	52111.9	52087.7	52087.7	3177120	3177120	3177120	2246.94	860.375	IMT:53503.7
	0.0001	0.0000001	52111.9	52099.8	52099.8	3177120	3177120	3177120	2110.7	859.016	IMT:53587.9
	0.005211	5.211E-06	52111.9	52103.7	52111.9	3177120	3179840	3177120	2233.03	1192.64	IMT:53608
1D	0.001	0.000001	52729.1	52668.7	52668.7	2081750	2081750	2081750	2229.97	906.469	IMT:54216.8
	0.0001	0.0000001	52729.1	52668.7	52668.7	2081750	2081750	2081750	2195.44	876.704	IMT:54216.8
	0.005273	5.273E-06	52729.1	52676.7	52676.7	2081750	2081750	2081750	2886.23	1566.83	IMT:54204.8

TABLE A-49
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC A

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	11067.64172	10939.4017	10939.4017	365123.1994	247956.7996	247956.7996	604.988	No	
	0.0001	0.0000001	11067.64172	10754.9217	10754.9217	365123.1994	231607.9996	231607.9996	602.114	No	
	0.001107	1.107E-06	11067.64172	10962.9217	10962.9217	365123.1994	264305.5996	264305.5996	602.843	No	
1B	0.001	0.000001	11324.84171	11146.2408	11146.2408	340599.9994	245231.9996	245231.9996	606.426	No	
	0.0001	0.0000001	11324.84171	11054.3617	11054.3617	340599.9994	223433.5996	223433.5996	603.655	No	
	0.001132	1.132E-06	11340.8	11116.4	11116.4	335150	242507	242507	602.917	No	
1C	0.001	0.000001	11332.36171	11071.5208	11071.5208	305177.5995	223433.5996	223433.5996	602.667	No	
	0.0001	0.0000001	11332.36171	11159.7608	11159.7608	305177.5995	226158.3996	226158.3996	600.178	No	
	0.001133	1.133E-06	11332.4	11143.3	11143.3	305178	217984	217984	604.66	No	
1D	0.001	0.000001	11381.6	11246.8	11246.8	168938	136240	136240	601.459	5.175	IMT:11294.9
	0.0001	0.0000001	11381.6	11164.4	11164.4	168938	136240	136240	602.61	5.233	IMT:11188.4
	0.001138	1.138E-06	11381.6	11244.8	11244.8	168938	152589	152589	602.399	5.288	IMT:11260.9

TABLE A-50
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC B

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	14700.03997	14507.56	14507.56	1694825.597	1471391.998	1471391.998	602.223	3.344	IMT:14603.59375
	0.0001	0.0000001	14700.03997	14443.08	14443.08	1694825.597	1474116.798	1474116.798	601.707	3.359	IMT:14515.1132813
	0.00147	1.47E-06	14700.03997	14507.56	14507.56	1694825.597	1471391.998	1471391.998	605.813	3.094	IMT:14603.59375
1B	0.001	0.000001	14692.5	14636.3	14636.3	1531340	1305180	1305180	602.477	8.311	IMT:14700.3
	0.0001	0.0000001	14692.5	14564.3	14564.3	1531340	1313350	1313350	602.063	8.859	IMT:14644.3
	0.001469	1.469E-06	14692.5	14652.3	14652.3	1531340	1305180	1305180	600.223	8.925	IMT:14716.3
1C	0.001	0.000001	14732.3	14543.4	14543.4	1261580	1130790	1130790	600.827	9.298	IMT:14599.5
	0.0001	0.0000001	14732.3	14551.7	14551.7	1261580	1122620	1122620	610.938	8.266	IMT:14615.7
	0.001473	1.473E-06	14732.3	14543.4	14543.4	1261580	1130790	1130790	606.523	8.672	IMT:14607.5
1D	0.001	0.000001	14868.5	14723.8	14723.8	692099	653952	653952	602.14	10.032	IMT:14779.8
	0.0001	0.0000001	14868.5	14619.1	14619.1	692099	626704	626704	600.687	9.313	IMT:14675.1
	0.001487	1.487E-06	14868.5	14731.8	14731.8	692099	632154	632154	602.868	9.079	IMT:14811.8

TABLE A-51
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC C

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	13019.8	13080.2	13080.2	1168940	1005450	1005450	609.535	13.734	IMT:13104.2
	0.0001	0.0000001	13019.84084	12987.6008	12987.6008	1168939.198	1076295.998	1076295.998	614.586	4.875	IMT:13027.6308594
	0.001302	1.302E-06	13019.84084	13064.2	13064.2	1168939.198	929156.7984	929156.7984	601.734	1.719	IMT:13104.2304688
1B	0.001	0.000001	12988.56084	12964.0808	12964.0808	1125342.398	1035423.998	1035423.998	617.476	5.922	IMT:13004.1113281
	0.0001	0.0000001	12988.56084	12908.0808	12908.0808	1125342.398	1019075.198	1019075.198	606.258	3.687	IMT:12948.1113281
	0.001299	1.299E-06	12948.1	12972.1	12972.1	1125340	923707	923707	606.286	5.958	IMT:13012.1
1C	0.001	0.000001	13164.6	13081.7	13081.7	929157	762944	762944	602.234	6.641	IMT:13101.8
	0.0001	0.0000001	13164.6	12928	12928	929157	809266	809266	606.406	4.094	IMT:12936
	0.001316	1.316E-06	13164.6	13088.2	13088.2	929157	779293	779293	602.864	6.202	IMT:13116.2
1D	0.001	0.000001	13140.1	13060.3	13060.3	645778	561309	561309	603.797	7.969	IMT:13088.4
	0.0001	0.0000001	13140.1	13008.2	13008.2	645778	542235	542235	602.859	7.734	IMT:13040.2
	0.001314	1.314E-06	13140.1	13052.1	13052.1	645778	561309	561309	602.051	6.654	IMT:13080.1

TABLE A-52
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC D

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	31919.36689	31903.1269	31903.1269	1719348.797	1689375.997	1689375.997	1288.403	161.432	IMT:33183.1953125
	0.0001	0.0000001	31919.36689	31875.006	31875.006	1719348.797	1651228.797	1651228.797	1253.936	267.427	IMT:33123.0742188
	0.003192	3.192E-06	31919.36689	31879.1269	31879.1269	1719348.797	1651228.797	1651228.797	1223.047	74.281	IMT:33127.1953125
1B	0.001	0.000001	31903.1	31774.4	31774.4	1615810	1594010	1594010	1220.2	234.496	IMT:32766.5
	0.0001	0.0000001	31903.1	31806.9	31806.9	1615810	1566760	1566760	1217.18	223.987	IMT:32807
	0.00319	3.19E-06	31903.1	31826.8	31826.8	1615810	1588560	1588560	1240.78	206.408	IMT:32854.8
1C	0.001	0.000001	32091.7	32075.7	32075.7	1354230	1346050	1346050	1200.04	307.612	IMT:33039.8
	0.0001	0.0000001	32091.7	32051.7	32051.7	1354230	1346050	1346050	1217.62	276.638	IMT:33007.8
	0.003209	3.209E-06	32091.7	32159.6	32143.6	1354230	1302450	1302450	1247.88	212.965	IMT:33135.7
1D	0.001	0.000001	32977.77037	32981.4112	32977.7704	880110.3985	880110.3985	880110.3985	1249.859	188.477	IMT:34545.828125
	0.0001	0.0000001	32590	32590	32590	814715	814715	814715	1229.95	337.062	IMT:33718
	0.003259	3.259E-06	32590	32724	32724	814715	795642	795642	1215.02	239.788	IMT:33800

TABLE A-53
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC E

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	42642.77296	42574.6521	42574.6521	7722083.187	7659412.787	7659412.787	1276.774	377.299	IMT:43678.7148438
	0.0001	0.0000001	42642.77296	42494.4121	42494.4121	7722083.187	7596742.387	7596742.387	1212.414	259.455	IMT:43470.4726563
	0.004264	4.264E-06	42642.77296	42554.533	42518.6521	7722083.187	7596742.387	7596742.387	1252.25	173.328	IMT:43478.7148438
1B	0.001	0.000001	42618.8	42670.9	42662.9	7215270	7204370	7204370	1228.94	614.66	IMT:43531
	0.0001	0.0000001	42735.13557	42711.1356	42711.1356	7212545.588	7168948.788	7168948.788	1410.517	486.987	IMT:43639.203125
	0.004274	4.274E-06	42618.8	42662.9	42662.9	7215270	7185300	7185300	1266.94	754.032	IMT:43567
1C	0.001	0.000001	42804	42740	42740	5953690	5899190	5899190	1306.65	523.878	IMT:43612
	0.0001	0.0000001	42804	42707.7	42707.7	5953690	5899190	5899190	1339.12	934.256	IMT:43583.8
	0.00428	4.28E-06	42804	42715.7	42715.7	5953690	5937340	5937340	1334.21	751.759	IMT:43607.8
1D	0.001	0.000001	42437.9	42373.9	42373.9	3539520	3539520	3539520	1229.68	992.007	IMT:43314
	0.0001	0.0000001	42437.9	42397.9	42397.9	3539520	3539520	3539520	1287.81	751.646	IMT:43262
	0.004244	4.244E-06	42437.9	42413.9	42405.9	3539520	3539520	3539520	1365.65	778.818	IMT:43358

TABLE A-54
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC F

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	37178.89384	37118.533	37118.533	4754775.992	4607636.792	4607636.792	1219.031	117.11	IMT:38238.578125
	0.0001	0.0000001	37178.89384	37130.6521	37130.6521	4754775.992	4588563.192	4588563.192	1210.265	124.844	IMT:38282.6953125
	0.003718	3.718E-06	37178.9	37146.7	37146.7	4754780	4607640	4607640	1267.15	480.094	IMT:38142.7
1B	0.001	0.000001	37423.5	37415.3	37415.3	4310630	4264310	4264310	1235.01	680.708	IMT:38427.3
	0.0001	0.0000001	37423.5	37399.3	37399.3	4310630	4264310	4264310	1250.27	759.879	IMT:38371.3
	0.003742	3.742E-06	37423.5	37383.3	37383.3	4310630	4264310	4264310	1212.92	762.856	IMT:38315.3
1C	0.001	0.000001	36921.9	36990	36990	3792920	3773850	3773850	1215.26	510.925	IMT:37930.1
	0.0001	0.0000001	36921.9	36945.9	36945.9	3792920	3773850	3773850	1237.56	680.239	IMT:37870
	0.003692	3.692E-06	36921.9	36957.8	36957.8	3792920	3752050	3752050	1209.88	254.219	IMT:37885.9
1D	0.001	0.000001	37860.3	37900.3	37860.1	2351500	2351500	2351500	1254.46	624.879	IMT:38836.1
	0.0001	0.0000001	37860.3	37872.2	37860.1	2351500	2351500	2351500	1243.85	784.521	IMT:38860.1
	0.003786	3.786E-06	37860.3	37944.5	37860.1	2351500	2351500	2351500	1268.35	323.792	IMT:38840.1

TABLE A-55
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC G

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	59832.92944	59820.5703	59820.5703	11337892.78	11321543.98	11321543.98	2117.734	740.016	IMT:61228.6601563
	0.0001	0.0000001	59832.92944	59804.5703	59804.5703	11337892.78	11321543.98	11321543.98	2153.25	670.375	IMT:61188.6601563
	0.005983	5.983E-06	59832.9	59812.6	59812.6	11337900	11321500	11321500	2265.3	1145.7	IMT:61080.7
1B	0.001	0.000001	60121.2	60108.8	60108.8	10550400	10506800	10506800	2155.44	1482.68	IMT:61320.9
	0.0001	0.0000001	60121.2	60108.8	60108.8	10550400	10506800	10506800	2395.33	1498.4	IMT:61408.9
	0.006012	6.012E-06	60121.2	60116.8	60116.8	10550400	10506800	10506800	2247.95	1135.8	IMT:61380.9
1C	0.001	0.000001	59941.8	59965.8	59965.8	8768410	8754780	8754780	2362.64	1667.74	IMT:61309.9
	0.0001	0.0000001	59941.8	59965.8	59965.8	8768410	8754780	8754780	2591.63	1627.5	IMT:61257.9
	0.005994	5.994E-06	59941.8	59965.8	59965.8	8768410	8754780	8754780	2449.73	1171.92	IMT:61345.9
1D	0.001	0.000001	60041.7	59997.5	59997.5	5291560	5291560	5291560	2579.24	1508.09	IMT:61277.6
	0.0001	0.0000001	60041.7	59989.5	59989.5	5291560	5291560	5291560	2281.98	2394.31	IMT:61277.6
	0.006004	6.004E-06	60041.7	60021.5	60017.7	5291560	5291560	5291560	2234.72	1193.91	IMT:61309.8

TABLE A-56
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC H

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	44124.01383	44168.3747	44168.3747	2547687.996	2539513.596	2539513.596	2291.997	992.747	IMT:46128.4453125
	0.0001	0.0000001	44124.01383	44100.0138	44100.0138	2547687.996	2534063.996	2534063.996	2190.006	836.12	IMT:46188.0820313
	0.004412	4.412E-06	44124.01383	44167.893	44164.0138	2547687.996	2539513.596	2539513.596	2112.047	294.953	IMT:46356.0820313
1B	0.001	0.000001	44202.7	44218.5	44190.6	2346050	2329700	2329700	2136.74	1342.02	IMT:45678.7
	0.0001	0.0000001	44202.7	44174.4	44174.4	2346050	2329700	2329700	2120.29	1215.85	IMT:45742.4
	0.00442	4.42E-06	44202.7	44206.9	44190.6	2346050	2329700	2329700	2229.5	543.968	IMT:45758.7
1C	0.001	0.000001	44403.7	44339.5	44339.5	2008180	1945510	1945510	2105.16	756.871	IMT:45863.5
	0.0001	0.0000001	44403.7	44331.5	44331.5	2008180	1945510	1945510	2154.24	679.795	IMT:45855.5
	0.00444	4.44E-06	44403.7	44391.6	44391.6	2008180	1945510	1945510	2158.7	819.328	IMT:46063.7
1D	0.001	0.000001	45108.7	45132.7	45132.7	1267030	1223440	1223440	2108.17	1348.81	IMT:46732.7
	0.0001	0.0000001	45108.7	45108.7	45108.7	1267030	1247960	1247960	2326.27	774.093	IMT:46696.7
	0.004511	4.511E-06	45108.7	45164.9	45164.9	1267030	1188010	1188010	2273.81	1015.48	IMT:46805

TABLE A-57
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC I

	Temperature		Cost			Penalty					
Subcase	Initial	Final	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	51702.69816	51694.6982	51694.6982	6877395.188	6858321.588	6858321.588	2250.837	636.15	IMT:53366.765625
	0.0001	0.0000001	51702.69816	51662.6982	51662.6982	6877395.188	6858321.588	6858321.588	2110.136	737.056	IMT:53430.765625
	0.00517	5.17E-06	51702.69816	51710.6982	51710.6982	6877395.188	6839247.989	6839247.989	2217.609	466.75	IMT:53398.765625
1B	0.001	0.000001	51918.9	51874.8	51870.7	6250690	6223440	6223440	2111.02	1155.53	IMT:53274.8
	0.0001	0.0000001	51918.9	51838.7	51838.7	6250690	6223440	6223440	2151.99	1127.83	IMT:53306.8
	0.005192	5.192E-06	51918.9	51882.8	51870.7	6250690	6223440	6223440	2625.01	1914.46	IMT:53354.8
1C	0.001	0.000001	51634.1	51670.5	51670.5	5406000	5378760	5378760	2192.55	1057.39	IMT:53130.5
	0.0001	0.0000001	51634.1	51670.5	51670.5	5406000	5378760	5378760	2266.1	1058.83	IMT:53122.5
	0.005163	5.163E-06	51634.1	51658.3	51626.1	5406000	5406000	5406000	2448.44	1917.62	IMT:53102.2
1D	0.001	0.000001	52147.8	52228	52147.8	3493190	3493190	3493190	2215.21	1135.48	IMT:53687.9
	0.0001	0.0000001	52147.8	52172	52147.8	3493190	3493190	3493190	2202.47	1145.05	IMT:53695.9
	0.005215	5.215E-06	52147.8	52240.1	52147.8	3493190	3493190	3493190	2450.1	2312.16	IMT:53611.9

TABLE A-58
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC A

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	11107.88171	10963.4017	10963.4017	605.142	No	
	0.0001	0.0000001	11107.88171	10947.4017	10947.4017	600.566	No	
	0.001111	1.111E-06	11107.88171	10875.4017	10875.4017	669.75	No	
1B	0.001	0.000001	11302.36171	11194.0026	11194.0026	604.401	No	
	0.0001	0.0000001	11302.36171	11186.0026	11186.0026	601.517	No	
	0.00113	1.13E-06	11294.6	11124.4	11124.4	600.91	No	
1C	0.001	0.000001	11326.60171	11254.3617	11254.3617	634.64	No	
	0.0001	0.0000001	11326.60171	11246.3617	11246.3617	626.492	No	
	0.001133	1.133E-06	11324.4	10941.4	10941.4	600.374	No	
1D	0.001	0.000001	11369.20084	11328.9608	11328.9608	612.853	7.621	IMT:11392.9882813
	0.0001	0.0000001	11369.20084	11304.7208	11304.7208	601.778	6.269	IMT:11344.7480469
	0.001137	1.137E-06	11477.6	11129	11129	600.526	5.365	IMT:11153

TABLE A-59
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC B

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	14780.03997	14731.8	14731.8	633.502	13.499	IMT:14819.8339844
	0.0001	0.0000001	14780.03997	14683.56	14683.56	626.522	12.788	IMT:14763.59375
	0.001478	1.478E-06	14780.03997	14691.56	14691.56	606.422	2.531	IMT:14779.59375
1B	0.001	0.000001	14659.55997	14651.8	14651.8	613.454	13.99	IMT:14723.8339844
	0.0001	0.0000001	14659.55997	14651.56	14651.56	650.886	13.108	IMT:14707.59375
	0.001466	1.466E-06	14731.8	14579.3	14579.3	604.491	8.545	IMT:14643.4
1C	0.001	0.000001	14828.51997	14611.8	14611.8	602.318	2.762	IMT:14683.8339844
	0.0001	0.0000001	14828.5	14523.1	14523.1	602.952	8.891	IMT:14587.1
	0.001483	1.483E-06	14828.5	14555.3	14555.3	605.339	8.594	IMT:14627.4
1D	0.001	0.000001	15061	14747.8	14747.8	600.55	8.805	IMT:14819.8
	0.0001	0.0000001	15061	14691.6	14691.6	600.548	8.668	IMT:14747.6
	0.001506	1.506E-06	15061	14699.6	14699.6	600.898	8.516	IMT:14763.6

TABLE A-60
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC C

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	13107.84084	12834.8808	12834.8808	602.968	1.296	IMT:12874.9101563
	0.0001	0.0000001	13107.84084	13003.6008	13003.6008	605.913	5.278	IMT:13035.6308594
	0.001311	1.311E-06	13107.84084	12874.8808	12874.8808	602.187	1.672	IMT:12914.9101563
1B	0.001	0.000001	13108.08084	13012.0808	13012.0808	600.285	4.185	IMT:13044.1113281
	0.0001	0.0000001	13108.08084	13084.0808	13084.0808	654.338	11.296	IMT:13108.1113281
	0.001311	1.311E-06	13075.8	12843.4	12843.4	602.764	4.797	IMT:12867.4
1C	0.001	0.000001	13221.84084	13189.8408	13189.8408	644.379	10.055	IMT:13237.8710938
	0.0001	0.0000001	13221.84084	13181.8408	13181.8408	602.198	10.996	IMT:13245.8710938
	0.001322	1.322E-06	13204.3	12947.6	12947.6	602.611	5.047	IMT:12967.6
1D	0.001	0.000001	13178	12935.5	12935.5	601.214	6.376	IMT:12971.5
	0.0001	0.0000001	13178	12984	12984	603.837	6.694	IMT:13020
	0.001318	1.318E-06	13178	13015.7	13015.7	600.875	6.828	IMT:13043.8

TABLE A-61
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC D

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	31770.28776	31770.2878	31770.2878	1714.372	211.016	IMT:33074.3554688
	0.0001	0.0000001	31770.28776	31738.0478	31738.0478	1219.315	174.423	IMT:33050.1171875
	0.003177	3.177E-06	31770.28776	31714.0478	31714.0478	1218	105.641	IMT:33010.1132813
1B	0.001	0.000001	31875.00776	31867.0078	31867.0078	1439.637	302.115	IMT:33219.078125
	0.0001	0.0000001	31875.00776	31867.0078	31867.0078	1597.529	270.569	IMT:33171.078125
	0.003188	3.188E-06	31787	31702.4	31702.4	1241.39	192.708	IMT:32706.5
1C	0.001	0.000001	31877.72776	31877.7278	31877.7278	1200.67	279.872	IMT:33221.8007813
	0.0001	0.0000001	31877.72776	31877.7278	31877.7278	1750.485	303.541	IMT:33317.8007813
	0.003188	3.188E-06	32028.8	31940.8	31940.8	1235.17	195.498	IMT:32920.8
1D	0.001	0.000001	32712.6	32628.2	32628.2	1261.07	218.252	IMT:33736.3
	0.0001	0.0000001	32993.77037	32993.7704	32993.7704	1205.31	800.12	IMT:34537.828125
	0.003299	3.299E-06	32712.6	32692.5	32692.5	1290.97	203.312	IMT:33776.5

TABLE A-62
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC E

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	42611.01296	42590.8921	42590.8921	1494.501	512.21	IMT:43614.9570313
	0.0001	0.0000001	42611.01296	42611.013	42611.013	1279.511	563.692	IMT:43603.078125
	0.004261	4.261E-06	42611.01296	42699.013	42611.013	1274.078	208.578	IMT:43507.078125
1B	0.001	0.000001	42735.13383	42735.1338	42727.1338	2076.209	602.223	IMT:43727.1992188
	0.0001	0.0000001	42735.13383	42727.1338	42727.1338	1817.408	758.096	IMT:43767.1992188
	0.004274	4.274E-06	42663.1	42674.8	42663.1	1201.2	1149.09	IMT:43547.2
1C	0.001	0.000001	42428.05296	42428.053	42428.053	1359.717	410.75	IMT:43436.1132813
	0.0001	0.0000001	42820	42695.1	42695.1	1215.31	498.718	IMT:43511.2
	0.004282	4.282E-06	42820	42780	42780	1292.1	1053.44	IMT:43624
1D	0.001	0.000001	42883.7	42896.1	42883.7	1241.14	471.033	IMT:43807.8
	0.0001	0.0000001	42883.7	42835.7	42835.7	1288.32	403.164	IMT:43771.8
	0.004288	4.288E-06	42883.7	42928.1	42883.7	1217.15	1089.3	IMT:43783.8

TABLE A-63
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC F

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	37150.29471	37182.5347	37150.2947	1308.028	620.272	IMT:38294.3398438
	0.0001	0.0000001	37150.29471	37150.2947	37150.2947	1259.341	519.297	IMT:38318.3398438
	0.003715	3.715E-06	37150.29471	37110.293	37110.293	1244.578	144.953	IMT:38142.3398438
1B	0.001	0.000001	37238.77123	37206.7712	37206.7712	1331.234	391.182	IMT:38350.8125
	0.0001	0.0000001	37238.77123	37214.5312	37214.5312	1683.411	415.247	IMT:38350.5703125
	0.003724	3.724E-06	37395.1	37363.1	37363.1	1328.01	355.268	IMT:38247.2
1C	0.001	0.000001	37225.3	37103	37103	1202.67	331.466	IMT:37999.1
	0.0001	0.0000001	37225.3	37121	37121	1243.33	294.207	IMT:38069.1
	0.003723	3.723E-06	37225.3	37119	37119	1200.07	334.206	IMT:37999.1
1D	0.001	0.000001	38116.6	38012.1	38012.1	1283.78	468.802	IMT:38940.1
	0.0001	0.0000001	37972.33558	37972.3356	37972.3356	1275.41	447.633	IMT:39220.3828125
	0.003797	3.797E-06	38116.6	38028.3	38028.3	1259.26	755.021	IMT:39028.4

TABLE A-64
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC G

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	59921.65292	59901.5321	59901.5321	2197.532	681.188	IMT:61277.6367188
	0.0001	0.0000001	59921.65292	59893.5321	59893.5321	2374.925	1699.81	IMT:61229.6367188
	0.005992	5.992E-06	59921.65292	59901.5321	59901.5321	2363.735	670.641	IMT:61277.6367188
1B	0.001	0.000001	59973.77205	59965.5321	59965.5321	2322.426	949.12	IMT:61373.6367188
	0.0001	0.0000001	59973.77205	59941.5321	59941.5321	2197.494	1761.417	IMT:61413.6367188
	0.005997	5.997E-06	60185.7	60177.7	60177.7	2858.44	1502.66	IMT:61333.8
1C	0.001	0.000001	60194.1	60182.2	60182.2	2414.05	1449.91	IMT:61410.3
	0.0001	0.0000001	59640.93118	59612.8103	59612.8103	2134.34	1084.427	IMT:60948.9101563
	0.005964	5.964E-06	60194.1	60222.2	60194.1	2544.72	2664.11	IMT:61410.2
1D	0.001	0.000001	60379.33292	60383.4538	60371.3329	2279.116	1107.598	IMT:61851.4414063
	0.0001	0.0000001	60379.33292	60371.3329	60371.3329	2166.261	1466.631	IMT:61843.4414063
	0.006038	6.038E-06	60534.5	60534.5	60534.5	2512.91	2994.36	IMT:61746.6

TABLE A-65
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC H

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	44370.97383	44258.4938	44258.4938	2123.987	437.751	IMT:46570.5625
	0.0001	0.0000001	44370.97383	44354.9738	44354.9738	2111.528	611.867	IMT:46443.046875
	0.004437	4.437E-06	44370.97383	44282.4938	44282.4938	2129.078	281.812	IMT:46346.5664063
1B	0.001	0.000001	44411.2	44250.5	44250.5	2104.65	672.633	IMT:45890.6
	0.0001	0.0000001	44411.2	44226.5	44226.5	2107.81	747.162	IMT:45714.6
	0.004441	4.441E-06	44411.2	44315	44315	2100.28	679.797	IMT:45855.1
1C	0.001	0.000001	44672.3	44604.2	44604.2	2123.8	781.221	IMT:46120.3
	0.0001	0.0000001	44672.3	44620.2	44620.2	2112.9	700.384	IMT:46188.3
	0.004467	4.467E-06	44672.3	44644.2	44644.2	2421.97	710.047	IMT:46284.3
1D	0.001	0.000001	45216.8	45161	45161	2182.72	733.694	IMT:46797.1
	0.0001	0.0000001	45216.8	45128.8	45128.8	2151.9	728.061	IMT:46820.9
	0.004522	4.522E-06	45216.8	45204.9	45200.8	2196.53	621.875	IMT:46780.9

TABLE A-66
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC I

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	51786.33903	51762.579	51762.579	2165.807	1602.24	IMT:53426.6523438
	0.0001	0.0000001	51786.33903	51730.339	51730.339	2420.545	1048.858	IMT:53434.4101563
	0.005179	5.179E-06	51786.33903	51722.339	51722.339	2218.25	475.015	IMT:53426.4101563
1B	0.001	0.000001	51987.3	51911.2	51911.2	2199.53	1089.54	IMT:53339.3
	0.0001	0.0000001	51987.3	51903.2	51903.2	2170.87	1091.92	IMT:53287.3
	0.005199	5.199E-06	51987.3	51927.2	51927.2	2140.31	951.156	IMT:53367.3
1C	0.001	0.000001	52003.3	51987.3	51987.3	2101.78	1199.66	IMT:53519.4
	0.0001	0.0000001	52003.3	51971.3	51971.3	2348.94	1101.67	IMT:53455.4
	0.0052	5.2E-06	52003.3	51987.3	51987.3	2359.39	1065.1	IMT:53491.4
1D	0.001	0.000001	52629.2	52541	52541	2265.04	1117.56	IMT:54057
	0.0001	0.0000001	52629.2	52541	52541	2179.76	1123.33	IMT:54053
	0.005263	5.263E-06	52629.2	52541	52541	2111.67	1132.08	IMT:54029

TABLE A-67
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC A

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	11051.64172	10931.4017	10931.4017	605.503	No	
	0.0001	0.0000001	11051.64172	10955.4017	10955.4017	600.536	No	
	0.001105	1.105E-06	11051.64172	10779.4017	10779.4017	600.328	No	
1B	0.001	0.000001	11262.36171	11221.8817	11221.8817	605.242	No	
	0.0001	0.0000001	11262.36171	11221.8817	11221.8817	604.351	No	
	0.001126	1.126E-06	11302.8	10947.6	10947.6	602.328	No	
1C	0.001	0.000001	11310.36171	11230.1217	11230.1217	602.118	No	
	0.0001	0.0000001	11310.36171	11254.1217	11254.1217	608.386	No	
	0.001131	1.131E-06	11292.1	10979.4	10979.4	603.68	No	
1D	0.001	0.000001	11345.20084	11296.4808	11296.4808	601.928	5.758	IMT:11336.5078125
	0.0001	0.0000001	11345.20084	11264.2408	11264.2408	605.273	5.397	IMT:11304.2675781
	0.001135	1.135E-06	11469.6	11200.7	11200.7	600.804	3.844	IMT:11212.8

TABLE A-68
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC B

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	14796.51997	14724.28	14724.28	601.977	14.57	IMT:14820.3144531
	0.0001	0.0000001	14796.51997	14716.28	14716.28	605.142	7.28	IMT:14812.3144531
	0.00148	1.48E-06	14796.51997	14571.8	14571.8	600.282	2.719	IMT:14659.8339844
1B	0.001	0.000001	14708.27997	14644.04	14644.04	608.868	7.201	IMT:14732.0742188
	0.0001	0.0000001	14708.27997	14643.8	14643.8	610.921	6.88	IMT:14731.8339844
	0.001471	1.471E-06	14708	14499.3	14499.3	606.286	14.5	IMT:14563.4
1C	0.001	0.000001	14788.3	14547.8	14547.8	600.955	9.433	IMT:14627.8
	0.0001	0.0000001	14788.3	14563.6	14563.6	602.595	8.86	IMT:14635.6
	0.001479	1.479E-06	14788.3	14611.6	14611.6	600.968	19.094	IMT:14691.6
1D	0.001	0.000001	15029	14779.8	14779.8	600.537	9.607	IMT:14851.8
	0.0001	0.0000001	15029	14755.8	14755.8	601.117	8.718	IMT:14819.8
	0.001503	1.503E-06	15029	14779.8	14779.8	603.442	10	IMT:14859.8

TABLE A-69
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC C

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	13051.60084	12770.8808	12770.8808	605.032	1.329	IMT:12802.9101563
	0.0001	0.0000001	13051.60084	12938.8808	12938.8808	619.419	4.727	IMT:12978.9101563
	0.001305	1.305E-06	13051.60084	12826.8808	12826.8808	602.218	1.953	IMT:12850.9101563
1B	0.001	0.000001	13067.84084	13019.3608	13019.3608	611.291	7.901	IMT:13059.390625
	0.0001	0.0000001	13067.84084	13019.3608	13019.3608	642.807	7.651	IMT:13043.390625
	0.001307	1.307E-06	13027.6	12850.6	12850.6	604.863	6.516	IMT:12866.7
1C	0.001	0.000001	13148.1	12898.6	12898.6	601.805	4.894	IMT:12918.7
	0.0001	0.0000001	13148.1	12931.4	12931.4	600.466	5.143	IMT:12951.4
	0.001315	1.315E-06	13148.1	13075.8	13075.8	603.426	5.64	IMT:13095.9
1D	0.001	0.000001	13096.2	12914	12914	600.818	6.86	IMT:12950
	0.0001	0.0000001	13096.2	12922	12922	604.134	6.438	IMT:12950
	0.00131	1.31E-06	13096.2	13008	13008	603.316	9.953	IMT:13068

TABLE A-70
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC D

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	31806.64863	31822.8886	31806.6486	3085.608	635.38	IMT:33062.71875
	0.0001	0.0000001	31806.64863	31758.6486	31758.6486	1342.464	308.224	IMT:32990.71875
	0.003181	3.181E-06	31806.64863	31742.6486	31742.6486	1206.891	86.484	IMT:32966.71875
1B	0.001	0.000001	31915.00776	31907.0078	31907.0078	1404.678	311.842	IMT:33195.078125
	0.0001	0.0000001	31915.00776	31907.0078	31907.0078	1576.167	377.637	IMT:33235.078125
	0.003192	3.192E-06	31834.8	31706.3	31706.3	1218.01	236.329	IMT:32694.4
1C	0.001	0.000001	31971.48776	31971.4878	31971.4878	1582.27	271.094	IMT:33331.5585938
	0.0001	0.0000001	31971.48776	31971.4878	31971.4878	1273.508	287.147	IMT:33283.5585938
	0.003197	3.197E-06	32092	32076	32076	1326.34	562.847	IMT:33004
1D	0.001	0.000001	32788.5	32696.1	32696.1	1221.02	368.484	IMT:33732.2
	0.0001	0.0000001	32788.5	32696.1	32696.1	1209	239.028	IMT:33744.2
	0.003279	3.279E-06	32788.5	32808.1	32788.5	1267.17	502.097	IMT:33872.5

TABLE A-71
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC E

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	42882.77296	42870.6521	42870.6521	2091.392	764.862	IMT:43806.7148438
	0.0001	0.0000001	42882.77296	42870.6521	42870.6521	1325.091	459.077	IMT:43806.7148438
	0.004288	4.288E-06	42882.77296	42814.6521	42814.6521	1247.563	224.968	IMT:43774.7148438
1B	0.001	0.000001	43047.61209	43023.6121	43023.6121	1287.654	754.916	IMT:43855.6757813
	0.0001	0.0000001	43047.61209	43023.6121	43023.6121	3341.115	441.794	IMT:43967.6757813
	0.004305	4.305E-06	42979.5	42951.6	42951.6	1459.18	944.694	IMT:43771.7
1C	0.001	0.000001	42988.4	42928.1	42928.1	1313.18	414.171	IMT:43800.2
	0.0001	0.0000001	42988.4	42884	42884	1208.06	416.218	IMT:43776
	0.004299	4.299E-06	42988.4	42948.2	42948.2	1217.41	999.21	IMT:43840.3
1D	0.001	0.000001	43348.93122	43332.9312	43332.9312	1621.804	741.602	IMT:44284.9960938
	0.0001	0.0000001	43348.93122	43332.9312	43332.9312	2290.604	1205.614	IMT:44332.9960938
	0.004335	4.335E-06	43064.1	43016.1	43016.1	1212.26	501.941	IMT:43908.2

TABLE A-72
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC F

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	37238.53471	37246.7747	37238.5347	2202.617	403.89	IMT:38326.5820313
	0.0001	0.0000001	37238.53471	37238.5347	37238.5347	1948.111	309.975	IMT:38286.5820313
	0.003724	3.724E-06	37238.53471	37238.7747	37238.5347	1229.937	121.782	IMT:38302.5820313
1B	0.001	0.000001	37442.9	37305.7	37305.7	1204.83	279.479	IMT:38217.7
	0.0001	0.0000001	37442.9	37298.4	37298.4	1210.13	312.023	IMT:38174.5
	0.003744	3.744E-06	37442.9	37406.3	37406.3	1257.17	625.8	IMT:38338.3
1C	0.001	0.000001	37287	37267.1	37267.1	1290.13	274.573	IMT:38199.2
	0.0001	0.0000001	37287	37274.9	37274.9	1299.73	746.911	IMT:38178.9
	0.003729	3.729E-06	37287	37315.1	37287	1208.4	692.88	IMT:38187
1D	0.001	0.000001	38104.7	38060.8	38060.8	1251.66	712.661	IMT:39000.9
	0.0001	0.0000001	38104.7	38028.6	38028.6	1225.73	436.362	IMT:39044.6
	0.00381	3.81E-06	38104.7	38004.1	38004.1	1201.91	412.299	IMT:38964.1

TABLE A-73
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC G

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	60395.33292	60330.3729	60330.3729	2328.093	656.766	IMT:61730.484375
	0.0001	0.0000001	60395.33292	60358.7321	60358.7321	2122.715	1146.393	IMT:61710.84375
	0.00604	6.04E-06	60395.33292	60330.3729	60330.3729	2403.328	675.25	IMT:61642.484375
1B	0.001	0.000001	60386.12944	60317.7686	60317.7686	2382.081	927.042	IMT:61749.8710938
	0.0001	0.0000001	60386.12944	60333.7686	60333.7686	2233.445	1928.145	IMT:61709.8710938
	0.006039	6.039E-06	60642.9	60590.5	60590.5	2583	3075.02	IMT:62006.6
1C	0.001	0.000001	60567.2	60554.9	60554.9	2168.52	1579.22	IMT:61803
	0.0001	0.0000001	60567.2	60527	60527	2217.16	1865.72	IMT:61775.1
	0.006057	6.057E-06	60567.2	60554.9	60554.9	2349.6	1703.95	IMT:61787
1D	0.001	0.000001	60798	60810.4	60798	2308.15	1985.59	IMT:62138.1
	0.0001	0.0000001	60462.97379	60430.9738	60430.9738	2254.359	1212.946	IMT:61879.078125
	0.006046	6.046E-06	60798	60826.4	60798	2372.59	2287.7	IMT:62066.1

TABLE A-74
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC H

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	44388.49383	44316.2538	44316.2538	2121.92	385.487	IMT:46276.3242188
	0.0001	0.0000001	44388.49383	44340.2538	44340.2538	2122.071	829.754	IMT:46380.3242188
	0.004439	4.439E-06	44388.49383	44332.4938	44332.4938	2123.938	285.797	IMT:46316.5664063
1B	0.001	0.000001	44379.5	44283.2	44283.2	2154.59	708.942	IMT:45919.3
	0.0001	0.0000001	44379.5	44235.2	44235.2	2177.53	700.065	IMT:45783.3
	0.004438	4.438E-06	44379.5	44263.1	44263.1	2112.44	500.156	IMT:45871.2
1C	0.001	0.000001	44684.2	44515.9	44515.9	2159.14	790.019	IMT:46144
	0.0001	0.0000001	44684.2	44552.1	44552.1	2113.74	983.781	IMT:46156.1
	0.004468	4.468E-06	44684.2	44559.8	44559.8	2152.15	726.178	IMT:46071.9
1D	0.001	0.000001	45240.3	45200.3	45200.3	2104.09	1324.09	IMT:46840.4
	0.0001	0.0000001	45240.3	45168.3	45168.3	2122.51	1798.15	IMT:46756.4
	0.004524	4.524E-06	45240.3	45139.9	45139.9	2113.58	788.138	IMT:46732

TABLE A-75
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC I

	Temperature		Cost					
Subcase	Initial	Final	Initial	Final	Best	Time Used	IMT Time	Price After IMT
1A	0.001	0.000001	52083.29903	52087.6582	52083.299	2225.574	1613.741	IMT:53691.375
	0.0001	0.0000001	52083.29903	52003.0573	52003.0573	2362.842	1392.033	IMT:53667.1289063
	0.005208	5.208E-06	52083.29903	52031.1799	52031.1799	2220.125	427.703	IMT:53799.2539063
1B	0.001	0.000001	52095.4	52067.1	52067.1	2291.03	1259.07	IMT:53571.1
	0.0001	0.0000001	52163.53903	52147.539	52147.539	2192.2	789.057	IMT:53755.609375
	0.005216	5.216E-06	52095.4	52083.3	52079.2	2115.51	1848.84	IMT:53471.2
1C	0.001	0.000001	52111.9	52063.9	52063.9	2219.53	2092.54	IMT:53500
	0.0001	0.0000001	52111.9	52063.9	52063.9	2289.62	2098.61	IMT:53548
	0.005211	5.211E-06	52111.9	52107.8	52107.8	2255.82	1076.4	IMT:53567.9
1D	0.001	0.000001	52729.1	52705.1	52705.1	2353.41	952.343	IMT:54241.2
	0.0001	0.0000001	52729.1	52685	52685	2513.23	2247.38	IMT:54101
	0.005273	5.273E-06	52729.1	52685	52685	2103.89	1393.96	IMT:54117

TABLE A-76
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC A

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.0014716	1.4716E-06	14579.6	23511.9	23375.6	23375.6	1.16E+07	1.14E+07	1.14E+07	603.285	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	23511.9	23471.9	23471.9	2027520	1982020	1982020	600.66	29.625	IMT:23783.9
	3.3	0.0014716	1.4716E-06	14579.6	23511.9	23491.5	23491.5	2027520	1907630	1907630	609.176	29.751	IMT:23811.6
2B	3.1	0.0014716	1.4716E-06	14579.6	23576.4	23315.6	23315.6	1.15E+07	1.11E+07	1.11E+07	618.297	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	23576.4	23431.6	23431.6	1840060	1731610	1731610	606.266	25.266	IMT:23799.7
	3.3	0.0014716	1.4716E-06	14579.6	23568.4	23564.4	23564.4	1840060	1782840	1782840	600.672	22.406	IMT:23964.4
2C	3.1	0.0014716	1.4716E-06	14579.6	23379.5	23267.3	23267.3	1.04E+07	1.03E+07	1.03E+07	605.937	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	23206.8	23251.2	23251	1542510	1528340	1528340	600.89	24.562	IMT:23603.1
	3.3	0.0014716	1.4716E-06	14579.6	23218.8	23299.4	23299.3	1542510	1479840	1479840	602.167	27.502	IMT:23679.3
2D	3.1	0.0014716	1.4716E-06	14579.6	23379.5	23259.3	23259.3	1.04E+07	1.02E+07	1.02E+07	602.082	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	23379.5	23347.3	23347.3	903544	900546	900546	609.625	24.078	IMT:23707.3
	3.3	0.0014716	1.4716E-06	14579.6	23367.5	23182.8	23182.8	903544	883380	883380	610.513	23.924	IMT:23558.9

TABLE A-77
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC B

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.0014716	1.4716E-06	14579.6	51451.6	51419.6	51419.6	5.35E+07	5.34E+07	5.34E+07	1213.37	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	51451.6	51511.5	51463.5	8961590	8944430	8944430	1286.12	539.693	IMT:52471.5
	3.3	0.0014716	1.4716E-06	14579.6	51451.6	51423.5	51423.5	8961590	8944430	8944430	628.536	568.296	IMT:52463.5
2B	3.1	0.0014716	1.4716E-06	14579.6	51403.4	51363.4	51363.4	5.28E+07	5.27E+07	5.27E+07	1226.98	0.016	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	51403.4	51451.4	51427.4	8364320	8324260	8324260	1223.52	834.49	IMT:52411.4
	3.3	0.0014716	1.4716E-06	14579.6	51403.4	51443.4	51443.4	8364320	8349880	8349880	1253.51	791.802	IMT:52459.4
2C	3.1	0.0014716	1.4716E-06	14579.6	51576	51543.7	51543.7	5.16E+07	5.16E+07	5.16E+07	1204.54	0.11	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	51576	51551.7	51551.7	6945240	6945240	6945240	1200.15	906.084	IMT:52527.8
	3.3	0.0014716	1.4716E-06	14579.6	51576	51543.7	51543.7	6945240	6911180	6911180	1206.98	908.677	IMT:52519.8
2D	3.1	0.0014716	1.4716E-06	14579.6	51290.8	51234.5	51234.5	4.87E+07	4.86E+07	4.86E+07	1205.25	0.078	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	51290.8	51322.8	51274.8	4303000	4303000	4303000	1251.22	581.625	IMT:52234.8
	3.3	0.0014716	1.4716E-06	14579.6	51290.8	51254.9	51254.9	4303000	4214180	4214180	1224.27	630.113	IMT:52294.9

TABLE A-78
P2MP 1+1 PROTECTION NODE DISJOINT, TRAFFIC C

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.0014716	1.4716E-06	14579.6	68503	68418.4	68418.4	8.02E+07	8.00E+07	8.00E+07	2120.58	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	68503	68486.7	68486.7	13108500	13059700	13059700	2171.37	2334.44	IMT:69741.9
	3.3	0.0014716	1.4716E-06	14579.6	68503	68466.6	68462.5	13108500	13028600	13028600	2104.76	2346.86	IMT:69757.7
2B	3.1	0.0014716	1.4716E-06	14579.6	68751.9	68712.2	68712.2	7.96E+07	7.94E+07	7.94E+07	2202.33	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	68751.9	68792.2	68784.2	12201400	12167600	12167600	2100.26	3093.77	IMT:70087.3
	3.3	0.0014716	1.4716E-06	14579.6	68751.9	68784.4	68776.4	12201400	12158600	12158600	2102.37	2753.16	IMT:70055.5
2C	3.1	0.0014716	1.4716E-06	14579.6	68563.6	68527.5	68527.5	7.34E+07	7.33E+07	7.33E+07	2142.36	0.203	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	68563.6	68651.8	68643.8	6325620	6282840	6282840	2190.59	1825.58	IMT:70034.9
	3.3	0.0014716	1.4716E-06	14579.6	68563.6	68555.8	68543.7	6325620	6325620	6325620	2115.72	1883.47	IMT:69934.8
2D	3.1	0.0014716	1.4716E-06	14579.6	68563.6	68527.5	68527.5	7.34E+07	7.33E+07	7.33E+07	2106.2	0	IMT:14579.6
	3.2	0.0014716	1.4716E-06	14579.6	68563.6	68659.8	68643.8	6325620	6282840	6282840	2173.89	1717.88	IMT:70058.9
	3.3	0.0014716	1.4716E-06	14579.6	68563.6	68580.1	68580.1	6325620	6319900	6319900	2233.89	1663.09	IMT:69995.1

TABLE A-79
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC A

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00110516	1.10516E-06	10875.2	25218.8	24858.1	24858.1	1.77E+07	1.74E+07	1.74E+07	607.188	No	
	3.2	0.00110516	1.10516E-06	10875.2	25218.8	25150.8	25150.8	1133520	1130790	1130790	612.844	27.828	IMT:25622.9
	3.3	0.00110516	1.10516E-06	10875.2	25218.8	25150.8	25150.8	1133520	1130790	1130790	612.797	27.86	IMT:25622.9
2B	3.1	0.00110516	1.10516E-06	10875.2	25051.1	25003.1	25003.1	1.74E+07	1.74E+07	1.74E+07	602.639	No	
	3.2	0.00110516	1.10516E-06	10875.2	25051.1	25055.2	25055.2	1029970	1027250	1027250	606.945	59.177	IMT:25535.3
	3.3	0.00110516	1.10516E-06	10875.2	25051.1	25055.2	25055.2	1029970	1027250	1027250	616.619	62.561	IMT:25535.3
2C	3.1	0.00110516	1.10516E-06	10875.2	24818.1	24650	24650	1.71E+07	1.69E+07	1.69E+07	611.531	No	
	3.2	0.00110516	1.10516E-06	10875.2	24818.1	24678	24678	888285	863762	863762	602.156	28.656	IMT:25126.1
	3.3	0.00110516	1.10516E-06	10875.2	24818.1	24678	24678	888285	863762	863762	601.953	28.719	IMT:25126.1
2D	3.1	0.00110516	1.10516E-06	10875.2	24982.8	24850.7	24850.7	1.69E+07	1.68E+07	1.68E+07	649.446	No	
	3.2	0.00110516	1.10516E-06	10875.2	24982.8	24874.7	24874.7	534061	531336	531336	614.626	62.401	IMT:25346.8
	3.3	0.00110516	1.10516E-06	10875.2	24982.8	24830.7	24830.7	534061	531336	531336	605.406	31.406	IMT:25294.8

TABLE A-80
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC B

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00110516	1.10516E-06	10875.2	52285.5	52309.8	52285.5	5.42E+07	5.42E+07	5.42E+07	694.472	No	
	3.2	0.00110516	1.10516E-06	10875.2	52285.5	52269.5	52269.5	4716630	4716630	4716630	1219.89	617.391	IMT:53441.5
	3.3	0.00110516	1.10516E-06	10875.2	52285.5	52281.4	52273.4	4716630	4713900	4713900	1300.19	686.718	IMT:53401.4
2B	3.1	0.00110516	1.10516E-06	10875.2	52189.1	52181.1	52181.1	5.38E+07	5.38E+07	5.38E+07	1374.8	No	
	3.2	0.00110516	1.10516E-06	10875.2	52189.1	52197.1	52189.1	4395100	4395100	4395100	1329.99	1384.38	IMT:53369.1
	3.3	0.00110516	1.10516E-06	10875.2	52189.1	52173.1	52173.1	4395100	4392380	4392380	1251.95	670.313	IMT:53197.1
2C	3.1	0.00110516	1.10516E-06	10875.2	52293.5	52237.3	52237.3	5.32E+07	5.31E+07	5.31E+07	1309.41	No	
	3.2	0.00110516	1.10516E-06	10875.2	52293.5	52261.3	52261.3	3659410	3656680	3656680	1244.13	1375.77	IMT:53341.3
	3.3	0.00110516	1.10516E-06	10875.2	52293.5	52301.5	52285.5	3659410	3659410	3659410	1295.6	1452.61	IMT:53365.5
2D	3.1	0.00110516	1.10516E-06	10875.2	52406	52393.7	52393.7	5.19E+07	5.19E+07	5.19E+07	1228.65	No	
	3.2	0.00110516	1.10516E-06	10875.2	52406	52417.7	52393.7	2237060	2237060	2237060	1245.37	1485.45	IMT:53473.7
	3.3	0.00110516	1.10516E-06	10875.2	52406	52417.7	52393.7	2237060	2237060	2237060	1270.82	1588.43	IMT:53457.7

TABLE A-81
P2MP 1+1 PROTECTION BEST EFFORT NODE DISJOINT, TRAFFIC C

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00110516	1.10516E-06	10875.2	69446.9	69454.9	69446.9	7.89E+07	7.90E+07	7.89E+07	2322.8	No	
	3.2	0.00110516	1.10516E-06	10875.2	69446.9	69446.9	69446.9	6828350	6828350	6828350	2459.03	4902.86	IMT:70982
	3.3	0.00110516	1.10516E-06	10875.2	69446.9	69374.9	69374.9	6828350	6822900	6822900	2182.86	1706.39	IMT:70790
2B	3.1	0.00110516	1.10516E-06	10875.2	69659.1	69655.2	69655.2	7.87E+07	7.87E+07	7.87E+07	2653.49	No	
	3.2	0.00110516	1.10516E-06	10875.2	69659.1	69675.3	69675.3	6337880	6335160	6335160	2267.09	1753.41	IMT:71018.3
	3.3	0.00110516	1.10516E-06	10875.2	69659.1	69675.3	69654.9	6337880	6337880	6337880	2136.74	1867.08	IMT:71062
2C	3.1	0.00110516	1.10516E-06	10875.2	69481.6	69401.6	69401.6	7.75E+07	7.74E+07	7.74E+07	2231.23	No	
	3.2	0.00110516	1.10516E-06	10875.2	69481.6	69425.6	69425.6	5291560	5291560	5291560	2117.59	2941.08	IMT:70864.7
	3.3	0.00110516	1.10516E-06	10875.2	69481.6	69425.6	69425.6	5291560	5291560	5291560	2204.5	2948.47	IMT:70864.7
2D	3.1	0.00110516	1.10516E-06	10875.2	69694.9	69623.2	69623.2	7.57E+07	7.56E+07	7.56E+07	2280.47	No	
	3.2	0.00110516	1.10516E-06	10875.2	69694.9	69679.2	69679.2	3231610	3231610	3231610	2234.66	2843.38	IMT:71070.2
	3.3	0.00110516	1.10516E-06	10875.2	69694.9	69687.2	69687.2	3231610	3231610	3231610	2144.47	2859.03	IMT:71158.2

TABLE A-82
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC A

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00147	1.47E-06	14699.8	23611.8	23291.2	23291.2	1.13E+07	1.09E+07	1.09E+07	601.395	0.015	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	23611.8	23431.6	23431.6	1694830	1659400	1659400	608.004	26.203	IMT:23775.7
	3.3	0.00147	1.47E-06	14699.8	23611.8	23596.2	23596.2	1694830	1594010	1594010	602.772	30.5	IMT:23940.3
2B	3.1	0.00147	1.47E-06	14699.8	23608.4	23472	23472	1.10E+07	1.08E+07	1.08E+07	601.739	0.015	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	23608.4	23487.8	23487.8	1531340	1430520	1430520	612.691	25.922	IMT:23875.8
	3.3	0.00147	1.47E-06	14699.8	23608.4	23487.4	23487.4	1531340	1509540	1509540	602.381	30.563	IMT:23823.5
2C	3.1	0.00147	1.47E-06	14699.8	23439.6	23250.9	23250.9	1.06E+07	1.03E+07	1.03E+07	604.985	0.015	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	23439.6	23395.6	23395.6	1261580	1231610	1231610	604.067	29.423	IMT:23723.7
	3.3	0.00147	1.47E-06	14699.8	23431.6	23331.4	23331.4	1261580	1239780	1239780	603.422	27.156	IMT:23683.5
2D	3.1	0.00147	1.47E-06	14699.8	23287	23126.3	23126.3	9.92E+06	9.77E+06	9.77E+06	609.375	0	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	23287	23291	23291	692099	678475	678475	604.191	29.453	IMT:23635.1
	3.3	0.00147	1.47E-06	14699.8	23287	23263.4	23263.4	692099	662126	662126	605.417	30	IMT:23687.5

TABLE A-83
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC B

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00147	1.47E-06	14699.8	51519	51407	51407	5.23E+07	5.20E+07	5.20E+07	1227.49	0	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	51519	51499.4	51499.4	7722080	7648510	7648510	1236.19	865.053	IMT:52491.4
	3.3	0.00147	1.47E-06	14699.8	51519	51499.1	51499.1	7722080	7713910	7713910	687.144	742.442	IMT:52523.2
2B	3.1	0.00147	1.47E-06	14699.8	51515.6	51445.6	51445.6	5.17E+07	5.15E+07	5.15E+07	1266.94	0.016	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	51515.6	51580.1	51580.1	7215270	7092650	7092650	1211.1	899.99	IMT:52612.1
	3.3	0.00147	1.47E-06	14699.8	51515.6	51547.9	51547.9	7215270	7076310	7076310	1293.13	739.879	IMT:52547.9
2C	3.1	0.00147	1.47E-06	14699.8	51708.1	51651.9	51651.9	5.07E+07	5.05E+07	5.05E+07	1238.12	0.016	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	51708.1	51667.9	51667.9	5953690	5869220	5869220	1336.34	749.911	IMT:52603.9
	3.3	0.00147	1.47E-06	14699.8	51708.1	51647.7	51647.7	5953690	5904640	5904640	1218.85	892.584	IMT:52735.8
2D	3.1	0.00147	1.47E-06	14699.8	51190.8	51085.8	51085.8	4.77E+07	4.75E+07	4.75E+07	1224.87	0.015	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	51190.8	51150.1	51150.1	3539520	3525890	3525890	1204.56	933.412	IMT:52118.1
	3.3	0.00147	1.47E-06	14699.8	51190.8	51150.8	51150.8	3539520	3536790	3536790	1203.07	860.022	IMT:52182.8

TABLE A-84
P2MP 1+1 PROTECTION LINK DISJOINT, TRAFFIC C

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00147	1.47E-06	14699.8	68379.1	68391.7	68391.7	7.81E+07	7.80E+07	7.80E+07	2249.82	0.016	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	68379.1	68443.3	68443.3	11337900	11277900	11277900	2315.66	2426.41	IMT:69738.5
	3.3	0.00147	1.47E-06	14699.8	68379.1	68415	68415	11337900	11302500	11302500	2248	2489.72	IMT:69782.1
2B	3.1	0.00147	1.47E-06	14699.8	68724.1	68679.9	68679.9	7.77E+07	7.76E+07	7.76E+07	2277.97	0	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	68724.1	68703.9	68703.9	10550400	10515000	10515000	2155.75	2454	IMT:69975
	3.3	0.00147	1.47E-06	14699.8	68724.1	68695.9	68687.9	10550400	10525900	10525900	2122.11	2725.89	IMT:69927
2C	3.1	0.00147	1.47E-06	14699.8	68519.2	68435.1	68435.1	7.57E+07	7.55E+07	7.55E+07	2127.77	0	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	68519.2	68479.2	68479.2	8768410	8754780	8754780	2158	2712.22	IMT:69766.4
	3.3	0.00147	1.47E-06	14699.8	68519.2	68507.1	68490.9	8768410	8768410	8768410	2113.53	2770.92	IMT:69866
2D	3.1	0.00147	1.47E-06	14699.8	68483.1	68414.7	68414.7	7.22E+07	7.21E+07	7.21E+07	2135.3	0.016	IMT:14699.8
	3.2	0.00147	1.47E-06	14699.8	68483.1	68438.7	68434.9	5291560	5291560	5291560	2107.47	3018.61	IMT:69842
	3.3	0.00147	1.47E-06	14699.8	68483.1	68563.3	68535.2	5291560	5264310	5264310	2101.23	2703.11	IMT:69870.4

TABLE A-85
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC A

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.001478	0.000001478	14731.6	24001.6	23648.4	23648.4	1.02E+07	9.80E+06	9.80E+06	605.222	0.016	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	24001.6	23704.4	23704.4	0	0	0	607.614	28.61	IMT:24028.4
	3.3	0.001478	0.000001478	14731.6	24001.6	23535.6	23535.6	0	0	0	608.725	28.391	IMT:23879.7
2B	3.1	0.001478	0.000001478	14731.6	23905.2	23652.5	23652.5	1.01E+07	9.80E+06	9.80E+06	612.441	0.016	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	23905.2	23680.6	23680.6	0	0	0	603.191	26.297	IMT:24008.7
	3.3	0.001478	0.000001478	14731.6	23905.2	23624.1	23624.1	0	0	0	600.393	29.078	IMT:24008.2
2C	3.1	0.001478	0.000001478	14731.6	23563.6	23407.4	23407.4	9.59E+06	9.41E+06	9.41E+06	609.625	0.016	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	23563.6	23407.4	23407.4	0	0	0	606.332	29.719	IMT:23759.5
	3.3	0.001478	0.000001478	14731.6	23555.6	23351.2	23351.2	0	0	0	613.41	28.563	IMT:23687.2
2D	3.1	0.001478	0.000001478	14731.6	23560.1	23459.6	23459.6	9.75E+06	9.59E+06	9.59E+06	603.137	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	23560.1	23463.6	23463.6	0	0	0	602.535	27.579	IMT:23759.7
	3.3	0.001478	0.000001478	14731.6	23560.1	23476	23476	0	0	0	616.81	30.125	IMT:23860.1

TABLE A-86
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC B

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.001478	0.000001478	14731.6	51547.1	51450.9	51446.8	4.48E+07	4.47E+07	4.47E+07	1202.32	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	51547.1	51466.9	51466.9	0	0	0	1216.08	798.359	IMT:52378.9
	3.3	0.001478	0.000001478	14731.6	51547.1	51503	51503	0	0	0	620.019	725.739	IMT:52399.1
2B	3.1	0.001478	0.000001478	14731.6	51455.3	51371.1	51371.1	4.46E+07	4.45E+07	4.45E+07	1205.52	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	51455.3	51330.9	51330.9	0	0	0	1214.98	860.928	IMT:52282.9
	3.3	0.001478	0.000001478	14731.6	51455.3	51367	51367	0	0	0	1211.31	825.863	IMT:52327.1
2C	3.1	0.001478	0.000001478	14731.6	51480.2	51403.9	51403.9	4.46E+07	4.46E+07	4.46E+07	1204.4	0.016	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	51480.2	51403.9	51403.9	0	0	0	1206.54	860.958	IMT:52387.9
	3.3	0.001478	0.000001478	14731.6	51480.2	51383.7	51383.7	0	0	0	1236.19	849.381	IMT:52319.8
2D	3.1	0.001478	0.000001478	14731.6	51645.6	51521.3	51521.3	4.49E+07	4.48E+07	4.48E+07	1210.34	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	51645.6	51488.8	51488.8	0	0	0	1235.37	866.193	IMT:52520.8
	3.3	0.001478	0.000001478	14731.6	51645.6	51581.4	51581.4	0	0	0	1223.27	964.974	IMT:52589.4

TABLE A-87
P2MP 1+1 PROTECTION BEST EFFORT LINK DISJOINT, TRAFFIC C

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.001478	0.000001478	14731.6	68484.5	68448.6	68448.6	6.71E+07	6.71E+07	6.71E+07	2181.25	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	68484.5	68448.6	68448.6	0	0	0	2123.45	2373.98	IMT:69735.8
	3.3	0.001478	0.000001478	14731.6	68484.5	68416.4	68416.4	0	0	0	2171.86	2605.59	IMT:69719.5
2B	3.1	0.001478	0.000001478	14731.6	68739	68723	68723	6.75E+07	6.74E+07	6.74E+07	2102.41	0	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	68739	68723	68723	0	0	0	2127.47	2727.7	IMT:70002.1
	3.3	0.001478	0.000001478	14731.6	68739	68734.9	68734.9	0	0	0	2133.72	1622.78	IMT:70078
2C	3.1	0.001478	0.000001478	14731.6	68554.3	68494.4	68494.4	6.72E+07	6.72E+07	6.72E+07	2147.25	0.015	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	68554.3	68534.4	68534.4	0	0	0	2111.81	2704.1	IMT:69853.5
	3.3	0.001478	0.000001478	14731.6	68554.3	68514.3	68514.3	0	0	0	2114.58	2958.49	IMT:69833.4
2D	3.1	0.001478	0.000001478	14731.6	68944.5	68912.5	68912.5	6.77E+07	6.76E+07	6.76E+07	2111.93	0.015	IMT:14731.6
	3.2	0.001478	0.000001478	14731.6	68944.5	68912.5	68912.5	0	0	0	2165.55	2925.55	IMT:70271.6
	3.3	0.001478	0.000001478	14731.6	68944.5	68880.5	68880.5	0	0	0	2175.17	2964.49	IMT:70167.6

TABLE A-88
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC A

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00130516	1.30516E-06	12930.6	24982.1	24725.4	24725.4	1.44E+07	1.41E+07	1.41E+07	608.625	0.219	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	24982.1	24829.6	24829.6	0	0	0	664.172	41.172	IMT:25253.7
	3.3	0.00130516	1.30516E-06	12930.6	24982.1	24797.9	24797.9	0	0	0	607.171	29.937	IMT:25237.9
2B	3.1	0.00130516	1.30516E-06	12930.6	24918	24600.4	24600.4	1.43E+07	1.40E+07	1.40E+07	604.359	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	24918	24652.9	24652.9	0	0	0	610.11	27.594	IMT:25061
	3.3	0.00130516	1.30516E-06	12930.6	24918	24669	24669	0	0	0	600.891	29.688	IMT:25117.1
2C	3.1	0.00130516	1.30516E-06	12930.6	24813.2	24567.8	24567.8	1.41E+07	1.38E+07	1.38E+07	610.891	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	24813.2	24620.3	24620.3	0	0	0	600.062	28.719	IMT:24996.4
	3.3	0.00130516	1.30516E-06	12930.6	24813.2	24479.5	24479.5	0	0	0	605.557	27.987	IMT:24879.5
2D	3.1	0.00130516	1.30516E-06	12930.6	24953.2	24680.4	24680.4	1.42E+07	1.40E+07	1.40E+07	601.269	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	24953.2	24696.4	24696.4	0	0	0	606.718	28.469	IMT:25128.5
	3.3	0.00130516	1.30516E-06	12930.6	24953.2	24519.2	24519.2	0	0	0	608.446	29.33	IMT:24983.3

TABLE A-89
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC B

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00130516	1.30516E-06	12930.6	51988.6	51884.3	51884.3	4.75E+07	4.74E+07	4.74E+07	1202.41	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	51988.6	51876.1	51876.1	0	0	0	1241.15	566.77	IMT:52860.1
	3.3	0.00130516	1.30516E-06	12930.6	51988.6	51924.3	51924.3	0	0	0	1220.22	567.011	IMT:52940.4
2B	3.1	0.00130516	1.30516E-06	12930.6	51992.5	51984.5	51984.5	4.75E+07	4.75E+07	4.75E+07	1284.97	0.016	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	51992.5	51984.5	51984.5	0	0	0	1249.77	563.203	IMT:52984.5
	3.3	0.00130516	1.30516E-06	12930.6	51992.5	51980.1	51980.1	0	0	0	1210.49	605.585	IMT:53076.1
2C	3.1	0.00130516	1.30516E-06	12930.6	51932.3	51860.1	51860.1	4.75E+07	4.74E+07	4.74E+07	1213.48	0.062	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	51932.3	51852.1	51852.1	0	0	0	1212.41	588.532	IMT:52884.1
	3.3	0.00130516	1.30516E-06	12930.6	51932.3	51900.1	51900.1	0	0	0	1245.71	1288.85	IMT:52908.1
2D	3.1	0.00130516	1.30516E-06	12930.6	52036.3	51980.6	51980.6	4.76E+07	4.75E+07	4.75E+07	1210.06	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	52036.3	51996.6	51996.6	0	0	0	1280.69	607	IMT:52988.6
	3.3	0.00130516	1.30516E-06	12930.6	52036.3	52032.5	52032.5	0	0	0	1247.23	620.312	IMT:53144.5

TABLE A-90
P2MP 1+1 PROTECTION BEST EFFORT LINK/NODE DISJOINT, TRAFFIC C

		Temperature		Cost				Penalty					
Subcase	Incremental	Initial	Final	Original	Initial	Final	Best	Initial	Final	Best	Time Used	IMT Time	Price After IMT
2A	3.1	0.00130516	1.30516E-06	12930.6	69241.4	69161.1	69161.1	7.03E+07	7.02E+07	7.02E+07	2115.44	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	69241.4	69157	69157	0	0	0	2132.09	1683.67	IMT:70508.1
	3.3	0.00130516	1.30516E-06	12930.6	69241.4	69213.3	69213.3	0	0	0	2129.06	1692.77	IMT:70660.3
2B	3.1	0.00130516	1.30516E-06	12930.6	69553.9	69533.5	69533.5	7.07E+07	7.07E+07	7.07E+07	2107.66	0	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	69553.9	69525.5	69525.5	0	0	0	2147.63	1921.13	IMT:70940.5
	3.3	0.00130516	1.30516E-06	12930.6	69553.9	69493.5	69493.5	0	0	0	2144.63	1754.03	IMT:70900.5
2C	3.1	0.00130516	1.30516E-06	12930.6	69293.7	69293.5	69293.7	7.03E+07	7.04E+07	7.03E+07	2100.34	0.031	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	69293.7	69285.5	69285.5	0	0	0	2134.39	1732.13	IMT:70668.6
	3.3	0.00130516	1.30516E-06	12930.6	69293.7	69293.5	69293.5	0	0	0	2108.42	1830.92	IMT:70612.6
2D	3.1	0.00130516	1.30516E-06	12930.6	69521.4	69513.6	69505.4	7.07E+07	7.07E+07	7.07E+07	2229.03	0.016	IMT:12930.7
	3.2	0.00130516	1.30516E-06	12930.6	69521.4	69505.6	69505.4	0	0	0	2110.8	1817.97	IMT:70976.4
	3.3	0.00130516	1.30516E-06	12930.6	69521.4	69456.9	69456.9	0	0	0	2177.99	1776.11	IMT:70848