

## Product Overview

Cisco Systems®, through the development and launch of Cisco® MPLS Diagnostics Expert, demonstrates its continuing commitment to provide expanded operation, administration, and maintenance (OAM) capabilities to network managers and users.

Cisco MPLS Diagnostics Expert is a breakthrough application that substantially reduces the operational costs of managing a Multiprotocol Label Switching (MPLS) network environment.

*Cisco MPLS Diagnostics Expert reduces the time for diagnosing complex MPLS outages from hours to minutes. This dramatically improves the reliability and availability of the network, making the network a tool through which greater revenues can be generated and greater profitability can be realized.*

### Automated Diagnostics are 10 to 20 Times Faster than Manual Diagnostics

The Miercom independent testing report results summarized in Figure 1 show that using Cisco MPLS Diagnostic Expert dramatically and consistently reduces the time required to diagnose network problems. Results are 10 to 20 times faster than when an experienced MPLS engineer uses a manual process.

Cisco MPLS Diagnostics Expert is an automated, workflow-based network management application that diagnoses and troubleshoots problems in MPLS VPN deployments, significantly reducing mean time to repair (MTTR). The application is easy to install, easy to use, and is applicable to both service provider and enterprise “self-deployed” MPLS VPN network environments.

The application can be used to diagnose problems even when no physical fault alarm has been generated or detected, as is the case with many configurations or logical setup errors.

Cisco MPLS Diagnostics Expert uses the Internet Engineering Task Force (IETF)-standardized OAM capability embedded in Cisco IOS® Software. Cisco IOS Software supports problem-localization mechanisms such as Virtual Route Forwarding (VRF) ping and trace, and Label Switched Path (LSP) ping and trace.

The application’s unique and differentiated value comes from capturing the expert knowledge from experienced Cisco MPLS technical support engineers and developing a reliable and easy-to-use automated workflow application. Cisco MPLS Diagnostics Expert significantly reduces MTTR to help customers minimize their operating expenses and maximize their network performance.

Figure 1 Process Comparison

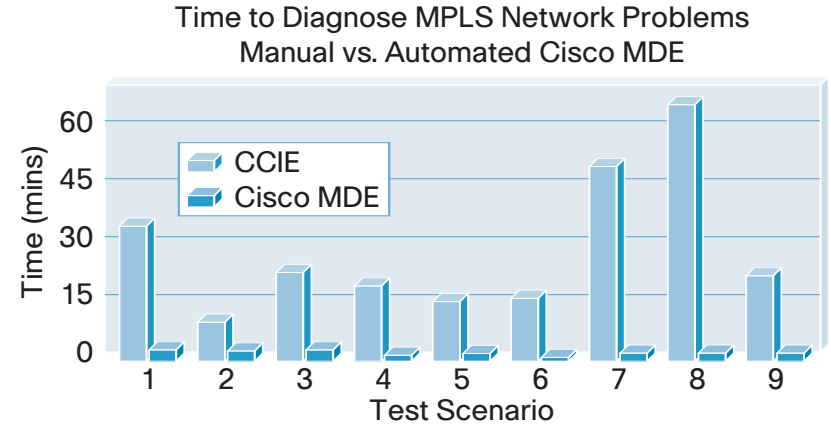


Figure 2 Input Screen

**MPLS VPN Connectivity Verification Configuration**

Local Site: Customer Device - CE - PE - Remote Site: PE - CE - Customer Device

**Local Site**

PE Device Name: 7206-4 [Select]

PE Access Circuit Interface: FastEthernet3/1 [Select]

CE Access Circuit Interface IP Address: 192.169.1.158  Do not ping

Customer Device IP Address: [ ]

**Remote Site**

PE Device Name: 10008-1 [Select]

PE Access Circuit Interface: GigabitEthernet2/0/0 [Select]

CE Access Circuit Interface IP Address: 192.169.1.94  Do not ping

Customer Device IP Address: [ ]

[Populate from VPN] [OK] [Clear]

## Benefits

### Faster Problem Diagnosis

Service providers typically take 2 to 4 hours to diagnose MPLS VPN outages. Cisco MPLS Diagnostics Expert reduces this time to minutes. Problems are solved much more quickly, with fewer troubleshooting personnel, increasing customer satisfaction and lowering operational costs.

The application enhances efficiency of first-level support, help desks, network operations centers (NOCs), network engineering, and service-provisioning operations through:

- Reduced turnaround time for troubleshooting and correcting customer network problems
- Ability to diagnose the cause of alarms and trouble
- Improved accuracy of provisioning and reconfigurations

## Features

Cisco MPLS Diagnostics Expert features an easy-to-use graphical user interface (GUI) that presents a simple input screen requiring only six pieces of information (Figure 2). For each VPN endpoint, all you need is the following:

- Provider Edge (PE) Device Name
- Provider Edge Access Circuit Interface
- Customer Edge (CE) Access Circuit Interface IP address

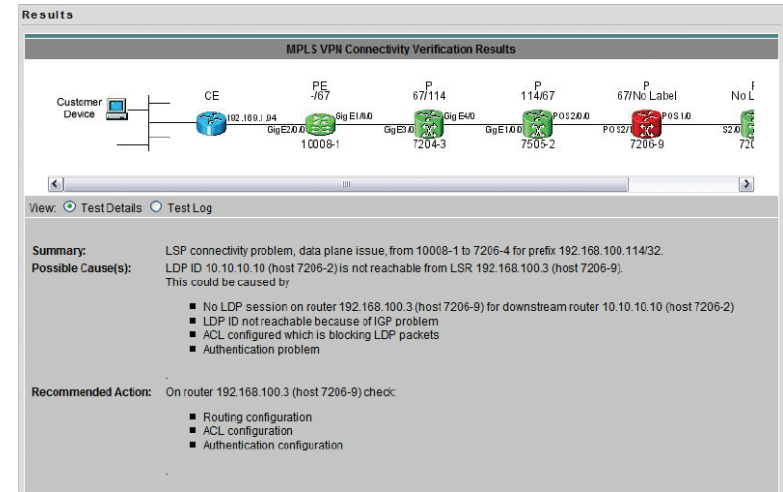
The application produces a results screen (Figure 3) that graphically illustrates the problem location. It also summarizes the nature of the problem and how it can be fixed. It provides all troubleshooting step details, including all Cisco IOS Software command-line interactions.

Cisco MPLS Diagnostics Expert can diagnose more than 95 failure scenarios, evenly distributed over attachment circuit, edge, and core. The failure scenarios range from simple configuration problems, such as no MPLS or Cisco Express Forwarding configured on an interface, to advanced scenarios such as mismatch between route processor and line card forwarding information base (FIB).

The system distinguishes between clearly diagnosable failures and issues that may cause a failure, but cannot be deterministically diagnosed. The latter are reported as observations. These may include issues such as blocking of propagation of Label Distribution Protocol (LDP) messages by access control lists.

Cisco MPLS Diagnostics Expert can diagnose problems related to maximum transfer unit (MTU) size. It will find and report any discrepancies along the path between a specified pair of endpoints.

Figure 3 Results Screen



The application can visualize the LSP between two endpoints. The visualization includes network element names, physical and logical interface names, as well as the label swapping and popping along the path.

When Cisco MPLS Diagnostics Expert completes its diagnosis, it creates a detailed test log. The log is exportable in ASCII format, so users can cut and paste the log into a trouble-ticketing system.

The software application runs on a Solaris server and employs a browser-based user interface. It is part of the suite of Cisco MPLS VPN management applications. Cisco MPLS Diagnostics Expert can be independently deployed, and is complemented by the provisioning applications of the Cisco IP Solution Center 4.1 product family.

## For More Information

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The Miercom report is available at:

[http://www.cisco.com/application/pdf/en/us/guest/products/ps6605/c1244/cdcont\\_0900aecd8039ae84.pdf](http://www.cisco.com/application/pdf/en/us/guest/products/ps6605/c1244/cdcont_0900aecd8039ae84.pdf).