

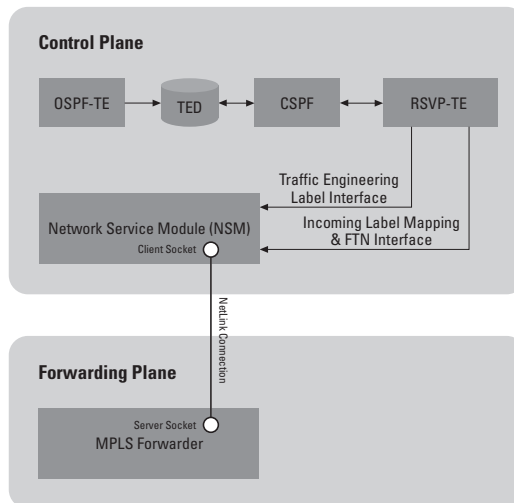
# RSVP-TE Module

SKU ZOS-RSVP-TE  
SKU ZOS-RSVP FRR (optional)  
SKU ZOS-DS-RSVPTE (optional)

## Overview

IP Infusion's ZebOS® Advanced Routing Suite (ARS) Resource Reservation Protocol-Traffic Engineering (RSVP-TE) Module is designed as a portable software module that provides signaling information for traffic engineering to a MPLS network. The RSVP-TE Module is implemented on top of the ZebOS Network Services Module (NSM) and takes advantages of the services provided by the NSM. The RSVP-TE protocol is used by a router, supporting MPLS as either a Label Edge Router (LER) or a Label Switch Router (LSR), to request specific quality of service (QoS) from the network for particular flows, as provisioned by a network operator.

The RSVP-TE Module communicates with the MPLS Forwarder through the ZebOS Network Services Module via MPLS client APIs to set up LSPs across the network. The RSVP-TE module supports explicit routing by incorporating a simple EXPLICIT\_ROUTE object into RSVP PATH messages. The explicitly routed path can be administratively specified or may be "learned of" by querying the Constraint-based Shortest Path First (CSPF) extension module (CSPF module is separately available). Refer to the CSPF and MPLS specsheets for more detailed information.



The ZebOS RSVP-TE Module supports optional DiffServ and DiffServ traffic engineering extensions. IP Infusion has implemented RFC 3270 as an extension to its ZebOS RSVP-TE Module to provide a flexible DiffServ over MPLS solution. This extension enables RSVP-TE to set up a DiffServ LSP using RSVP signaling. By combining DiffServ with MPLS Traffic Engineering, routing devices can simultaneously classify and prioritize traffic and achieve fine-grain optimization of transmission resources.

Additionally, the RSVP-TE Module supports an optional Fast Reroute Module. Fast Reroute is a mechanism that facilitates fast local repair of LSPs in case of link or node failures. It extends RSVP to request link or node protection by appending a Fast Reroute object in the Path message, which indicates to downstream LSRs that a locally generated backup LSP should be setup to backup this Protected LSP in case the downstream link or node fails. RSVP-TE uses refresh reduction to optimize RSVP-TE refresh updates.

The ZebOS RSVP-TE is pre-configured to support many popular operating systems. The ZebOS ARS modules are written in the ANSI C programming language.

## Features

- RSVP-TE Hellos—The RSVP Hello extension enables RSVP nodes to detect when a neighboring node is not reachable. The mechanism provides node-to-node failure detection.
- Explicit Route Object
- Record Route Object
- Loop detection
- Route Pinning
- Nexthop Caching
- Make-before-break
- Backup LSP
- Path Pre-emption & Priorities
- Ability to map IP flows onto LSPs based on destination address by using “map-route” command

## Benefits

- Stable, robust implementation of RSVP-TE
- Fully integrated with ZebOS NSM and IPv4 routing protocol modules
- Interoperability with popular MPLS switching platforms
- Can be used in both embedded equipment and on standard server platforms
- Delivers significant time-to-market advantage for customer
- Platform-independent implementation

## Requirements

SKU	PRODUCT NAME
ZOS-NSM	ZebOS Network Services Module
ZOS-MFE	ZebOS MPLS Forwarder (optional)
ZOS-OSPF	ZebOS OSPFv2 Module (optional for Fast Reroute functionality)
ZOS-OS-CSPF	ZebOS CSPF Module (optional for Fast Reroute functionality)

## Standards Support

STANDARD	FUNCTION
RFC 3209	Extensions to RSVP for LSP Tunnels
RFC 2205	Resource ReSerVation Protocol (RSVP)
RFC 2210	The Use of RSVP with IETF Integrated Services
RFC 2211	Specification of the Controlled-Load Network Element Service
RFC 2212	Specification of Guaranteed Quality of Service
draft-ietf-mpls-te-mib-09	Multi-Protocol Label Switching (MPLS) Traffic Engineering Management Information Base
RFC 2961	RSVP Refresh Overhead Reduction Extensions
Draft-ietf-mpls-rsvp-lsp-fastreroute-03	Fast Reroute Extensions to RSVP-TE for LSP Tunnels

## Supported Operating Systems

- Linux
- MontaVista Professional Edition
- NetBSD
- VxWorks® \*

All environments require an MPLS Forwarder. An MPLS Forwarder for Linux is available from IP Infusion.

\* Requires router alert option (RAO).

## Standard Deliverables

- Source Code (written in ANSI compliant C)
- Installation and Configuration Guide
- RSVP-TE Command References
- Developer Guides



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