



Routing Information Protocol (RIP)

EION Open IP Environment Routing Information Protocol (RIP) is a portable software module that fully implements RFC 2453 to generate best routes through a network.

Overview

EION Open IP Environment is a portable real-time software suite that IP-enables new and traditional network elements providing high performance interoperability across multiple platforms and products. Open IP Environment is based on a single, open, modular and scalable framework that allows system integrators and developers to incorporate services such as routing, Quality of Service (QoS), security, IP accounting and policy management into any type of device. Open IP Environment is platform and real-time operating system (RTOS) independent and can work on any type of device ranging from high end optical core switches to personal digital assistants (PDAs).

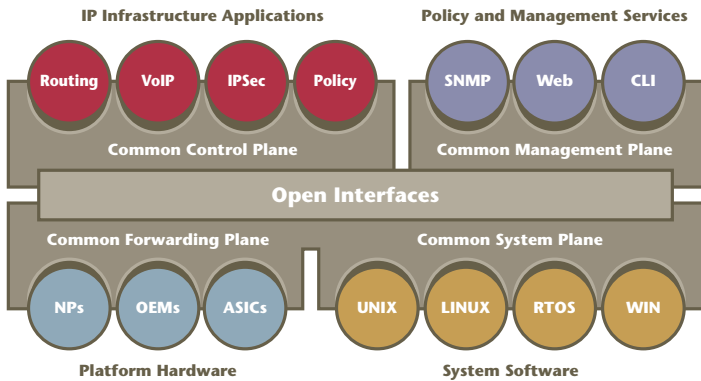
Open IP Environment RIP module resides within the Common Control Plane to deliver high performance and interoperable routing. This plane supports the Open IP Environment Internet Protocol (IP) infrastructure and enables a mix and match approach for adding support for networking protocols and/or services. The Common Control Plane holds together the routing protocol applications (RPAs) that deliver network functionality while also providing interchangeable access for all IP-based modules such as BGP, IPv4, IS-IS and OSPF.

Framework Overview

EION Open IP Environment framework consists of four planes: Common Control Plane, Common System Plane, Common Forwarding Plane and Common Management Plane. Each of these planes contains a set of components that are built to use well-defined interfaces.

RIP Overview

EION Open IP Environment RIP module fully implements RFC 2453. RIP exchanges information with adjacent routers required to compute “best” routes through the network. This information is stored in a routing table from which the Route Table Manager (RTM) propagates “best” routes to the forwarding engine.



RIP is a distance vector protocol based on the Bellman-Ford algorithm for determining the shortest path between two points in a network. Its applicability is limited to networks whose longest path is 15 hops. Open IP Environment RIP module uses two types of messages: Request and Response. Requests ask for all or a part of the routing table. Requests are usually sent by routers, which have recently come online and are seeking to fill their routing table. A Response message can be received for one of the following reasons: response to a specific query, regular updates (unsolicited response) and triggered updates caused by a route change.

Open IP Environment RIP operates as a client of User Datagram Protocol (UDP).

RIP Interactions

The modularity and portability of the Open IP Environment RIP module permits interaction with third party Routing Protocol Applications (RPAs) through well-defined application programming interfaces (APIs).

However, the Open IP Environment RIP module delivers real time to market advantages when used together with other Open IP Environment modules, such as the

Routing Table Manager (RTM) and IPv4. This environment provides seamless integration with the Open IP Environment Forwarding Engine or a third-party forwarding engine.

When used within the Open IP Environment, the RIP module portability is greatly enhanced because it utilizes operating system independent Common System Plane functions such as timers, message queues, memory manager and thread manager libraries.

For more details about other Open IP Environment modules and planes, please refer to the relevant product briefs.

RIP Features

EION Open IP Environment RIP module demonstrates the following key features:

- Implements split horizon with poisoned reverse
- Delivers triggered updates
- Features RIP version 2 Protocol Applicability Statement
- Provides full MIB support
- Delivers numerous optimizations to enhance system scalability

For a complete list of Open IP Environment RIP RFC support, please refer to the last page of this product brief.

RIP Management Support

EION Open IP Environment RIP module fully supports the comprehensive Management Information Base (MIB) defined in RFC 1724. All objects are defined in a high-level description file to provide ease of integration with an Open IP Environment or third party SNMP agent.

In addition, RIP implements management via EION Command Line Interface (CLI). EION CLI is packaged with industry standard commands, which can be easily integrated into the customer's specific device. Please refer to the EION Command Line Interface Product Brief for more information.

RIP Module Implementation

EION Open IP Environment RIP module is implemented in the “C” programming language and runs as a single thread. The module has been configured to periodically relinquish control. This permits utilization of the CPU for other activities in the system.

Through the publication of APIs, the Open IP Environment RIP module has been designed for ease of portability and modularity. Open IP Environment provides an architecture to allow you to implement RIP within the Open IP Environment framework, or alternatively to adapt the RIP module to your specific environment.

Ease of Portability

EION Open IP Environment provides a set of interoperable modules that are available for use in both established and “greenfield” products. The customer has the choice to pick and choose Open IP Environment modules to incorporate into the customer’s established products, preserving the investment in prior development. The customer also has the option to use modules within the Open IP Environment framework to develop a new software base to address going-forward opportunities. It is also possible to compile the software for a variety of target processors. Therefore, protocol composition can be statically changed by modifying the configuration to suit your needs.

Established products typically have a well-developed architecture and an existing suite of applications, and these products will be looking to Open IP Environment for additional capabilities. The portable and modular Open IP Environment components can be integrated into an existing execution environment to work within an existing code base, with minimal modifications to the customer’s environment.

Greenfield products typically require a full suite of applications plus the Open IP Environment framework to provide an appropriate execution environment. The Open IP Environment framework and modules are well-positioned to address such greenfield opportunities.

Benefits

In a market that demands ever-increasing IP support, it is difficult to maintain sufficient in-house expertise in every area. EION Open IP Environment framework and RIP module solve this problem by:

- Allowing OEMs to focus on their real value added solutions, not underlying infrastructure
- Reducing the length of time to market via ease of integration of key components such as RIP
- Enabling the freedom to choose among different software and hardware platforms
- Enabling ease of portability to traditional and new network enabled devices
- Enabling accelerated development of highly customized IP-enabled products via well documented APIs
- Enabling a pick and choose approach to Open IP Environment modules via a flexible open framework addressing various devices and applications from PDAs to carrier grade optical switches
- Delivering components of the framework that are scalable, modular, and portable that consistently demonstrate high performance attributes
- Delivering standards-based interfaces and common programming languages such as C, C++ and Java to developers, enhancing overall productivity with a small learning curve.
- Delivering configured and managed modules that use one or several of the following management capabilities:
 - EION Command Line Interface
 - Simple Network Management Protocol (SNMP)
 - Web-based management.

EION Open IP Environment RIP Feature Summary

RFC and Draft Support

- RFC 1722 RIP Version 2 Protocol Applicability Statement
- RFC 1724 RIP Version 2 MIB Extension
- RFC 2453 RIP Version 2

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