

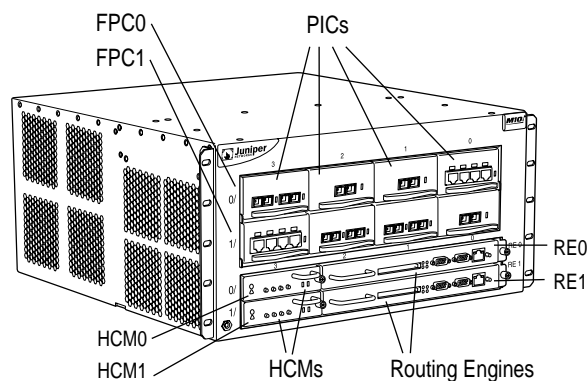
Chapter 3

M10i Internet Router Overview

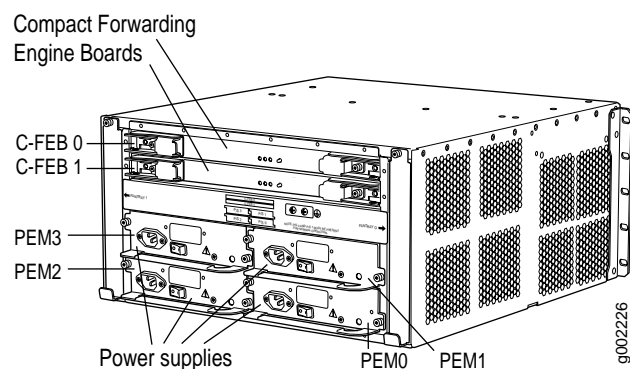
The M10i Internet router provides high-speed interfaces for medium and large networks and network applications, such as those supported by Internet service providers (ISPs). (See Figure 3.)

Figure 3: M10i Router

M10i router front



M10i router rear



The M10i router includes the router-specific Compact Forwarding Engine Board (CFEB) which performs route lookup, filtering, and switching on incoming data packets, then directs outbound packets to the appropriate Flexible PIC Concentrator (FPC) for transmission to the network. It can process 16 million packets per second (Mpps).

A High-Availability Chassis Manager (HCM) works with its companion Routing Engine to provide control and monitoring functions for router components. The HCM also displays alarm status and takes Physical Interface Cards (PICs) online and offline.

On the M10i router, built-in FPCs house the PICs that connect the router to network media. The router supports up to eight PICs, including ATM, Channelized, Gigabit Ethernet, IP Services, and SONET/SDH interfaces. For more information on PICs, see the *M10i Internet Router PIC Guide*.

Some PICs, such as Gigabit Ethernet PICs, accept small form-factor pluggable transceivers (SFPs), which are fiber-optic transceivers that can be removed from the PIC.

The M10i router provides a maximum aggregate throughput of 12.8 gigabits per second (Gbps). Control operations in the router are performed by the Routing Engine, which runs JUNOS software to handle routing protocols, traffic engineering, policy, policing, monitoring, and configuration management. Forwarding operations in the router are performed by the Packet Forwarding Engine.

M10i Router Components

Table 5 lists the major M10i router components and characteristics.

Table 5: M10i Router Major Hardware Components

Component	Quantity	Function	Redundant	Field-Replaceable	Offline Button
CFEB	1 or 2	Provides route lookup, filtering, and switching on incoming data packets; directs outbound packets to the appropriate FPC for transmission to the network	Yes	Hot-pluggable	Yes
Cooling system	2 fan trays (8 fans)	Cools router components	Yes	Hot-removable, hot-insertable	–
FPC	2	House the PICs that connect the router to network media	–	Built-in	–
HCM	2	Works with a companion Routing Engine to provide control and monitoring functions for router components; displays alarm status; takes PICs online and offline		Hot-pluggable	–
PIC	1–8	Provides interfaces to various network media; receives incoming packets from the network and transmits outgoing packets to the network, performing framing and line-speed signaling for their media type; encapsulates outgoing packets received from the FPCs before transmitting them.	–	Hot-removable, hot-insertable	Yes (On the HCM)
Power supply	1–4 AC or DC	Distributes needed voltages to components	Yes	Hot-removable, hot-insertable	Yes
SFP		Fiber-optic transceivers that connect to PICs	–	Hot-removable, hot-insertable	–
Routing Engine	1 or 2	Runs the JUNOS software; maintains the routing tables, manages the routing protocols used on the router; controls the router's interfaces, controls some chassis components, and provides the interface for system management and user access to the router	Yes	Hot-pluggable	Yes

Field-replaceable units (FRUs) are router components that can be replaced at the customer site. Replacing FRUs requires minimal router downtime. There are three types of FRUs:

Hot-removable and hot-insertable—You can remove and replace the component without powering down the router or interrupting the routing functions.

Hot-pluggable—You can remove the component without powering down the router, but routing functions are interrupted until the replacement is installed.

Requires router shutdown—You must power down the router before removing the component.

Monitoring M10i Router Components

See the following chapters for information about monitoring the M10i router components:

“Monitoring the Router Chassis” on page 107

“Monitoring the Routing Engine” on page 125

“Monitoring FPCs” on page 163

“Monitoring PICs” on page 183

“Monitoring the FIC” on page 443

“Monitoring the CFEs” on page 417

“Monitoring the HCM” on page 431

“Monitoring Power Supplies” on page 217

“Monitoring Redundant Power Supplies” on page 507

“Monitoring the Cooling System” on page 251

“Maintaining the Cable Management System, Cables, and Connectors” on page 275

