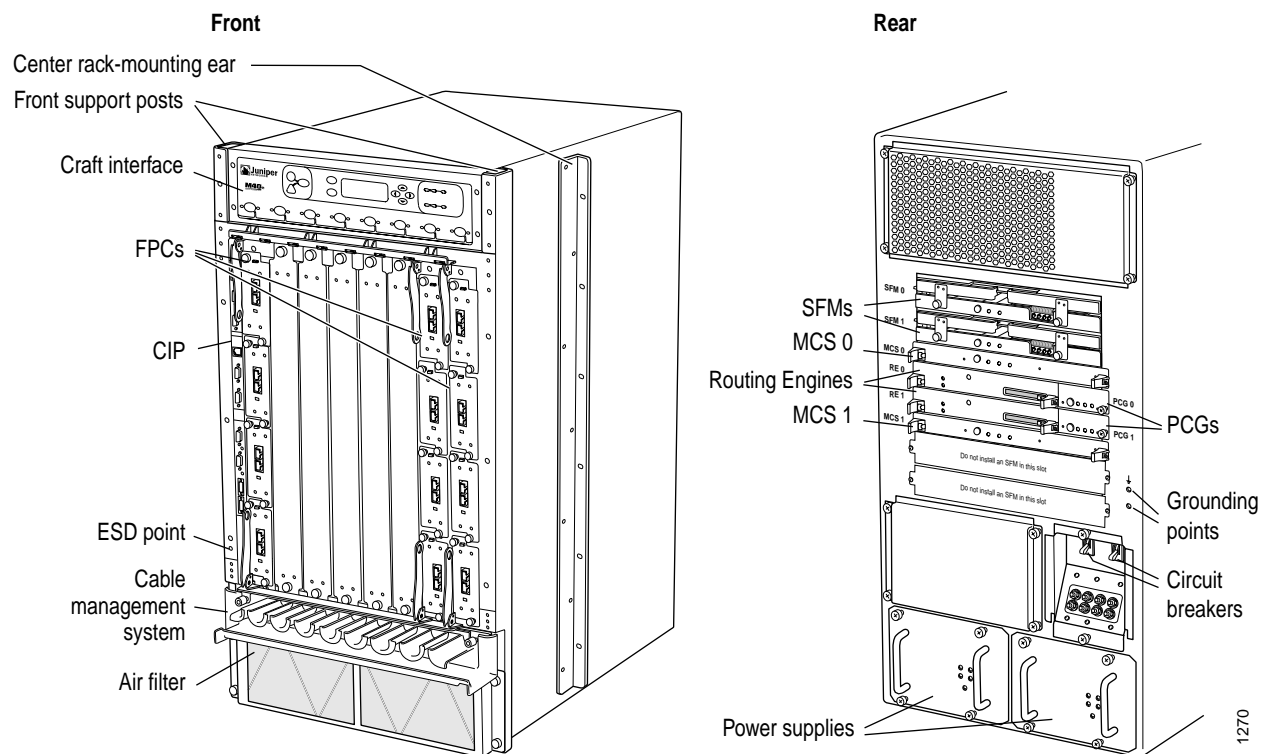


Chapter 6

M40e Internet Router Overview

The M40e Internet router provides a dense, highly redundant platform primarily for dedicated access aggregation at the edge as well as for mid-size core IP networks. The M40e router supports the JUNOS software which provides router configuration and monitoring. (See Figure 6.)

Figure 6: M40e Router



The M40e router shares the same chassis and many of the same components as the M160 Internet router. It accepts both AC and DC power supplies. The M40e router can have up to two Switching and Forwarding Modules (SFMs). The SFMs contain the Internet Processor II application-specific integrated circuit (ASIC) and two Distributed Buffer Manager ASICs, and make forwarding decisions, distribute packets throughout memory, and forward notification of outgoing packets.

The M40e router includes the host module that constructs routing tables, performs system management functions, and generates the SONET/SDH clock signal for SONET/SDH interfaces. The host module contains the Routing Engine and the Miscellaneous Control Subsystem (MCS). The Routing Engine manages routing protocols and maintains the routing tables. For a host module to function, both of these components must be installed and operational.

The M40e router houses three types of Flexible PIC Concentrators (FPCs): one to accommodate M20 and M40 Physical Interface Cards (PICs), and two to accommodate hot-swappable M160 router PICs. The Type 1 FPCs for the M40e and M160 routers are interchangeable.

PICs are available in supported media types, including Asynchronous Transfer Mode (ATM), Channelized DS3, E1, E3, T1, Ethernet, SONET/SDH, and IP services. For more information about supported PICs and FPCs for each M-series router type, see the appropriate PIC installation guide.

The M40e router Internet Processor II ASIC forwards packets at a throughput rate of up to 40 Gigabits (Gbps). The ASIC technology provides such packet processing as rate limiting, filtering, and IP services sampling.

M40e Router Major Hardware Components

Table 8 lists the major M40e router components and characteristics.

Table 8: M40e Router Major Hardware Components

Component	Quantity	Function	Redundant	Field-Replaceable	Offline Button
Connector Interface Panel (CIP)	1	Provides ports for external management and alarm relay devices	–	Requires router shutdown	–
Cooling system	3 impellers, 1 fan tray	Cools router components	Yes	Hot-removable, hot-insertable	–
Craft interface	1	Displays status information	–	Hot-removable, hot-insertable	–
FPC	1–8	Connects PICs to other components and houses shared memory	–	Hot-removable, hot-insertable	Yes
Host module	1–2	Handles routing protocols and maintains routing tables	Yes	Hot-pluggable	–
MCS	1–2	Provides system control and monitoring	Yes	Hot-pluggable	Yes
PFE Clock Generator (PCG)	2	Provides a 125-MHz system clock	Yes	Hot-pluggable	Yes
PIC	1–4 per FPC	Provides interfaces to various network media	–	Hot-removable, hot-insertable	Yes
Power supply (AC or DC)	2	Distributes power to components	Yes	Hot-removable, hot-insertable	–
Routing Engine	1–2	Manages routing protocols and maintains routing tables	Yes	Hot-pluggable	–
SFM	1–2	Provides packet switching, packet forwarding, and route lookup	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 M40e Router Components

See the following chapters for information about monitoring the M40e router components:

“Monitoring the Router Chassis” on page 107

“Monitoring the Routing Engine” on page 125

“Monitoring Redundant Routing Engines” on page 491

“Monitoring FPCs” on page 163

“Monitoring PICs” on page 183

“Monitoring the Craft Interface” on page 197

“Monitoring Power Supplies” on page 217

“Monitoring Redundant Power Supplies” on page 507

“Monitoring the Cooling System” on page 251

“Monitoring Redundant Cooling System Components” on page 523

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

“Monitoring the Host Module” on page 341

“Monitoring the SFMs” on page 347

“Monitoring Redundant SFMs” on page 577

“Monitoring the MCS” on page 359

“Monitoring Redundant MCSs” on page 567

“Monitoring the PCG” on page 369

“Monitoring Redundant PCGs” on page 595

“Monitoring the CIP” on page 381