Product Description

The Juniper Networks® DS3 and E3 PIMs provide the physical connection to DS3 or E3 network media types, receiving incoming packets from the network and transmitting outgoing packets to the network. Both DS3 and E3 PIMs are equipped with a dedicated network processor that forwards incoming data packets to the Routing Engine, and receives outgoing data packets from the Routing Engine. During this process, the PIM performs framing and line-speed signaling.

When installed in the Juniper Networks SSG500 line of services gateways running ScreenOS®, the dedicated network processor forwards traffic to the SSG520M or SSG550M CPU where traffic decisions are made based upon the security policy.

Features and Benefits

**DS3 and E3 PIMs provide the following benefits:**

- High-speed DS3 and E3 interfaces can support the WAN access needs of large regional or corporate sites.
- The integrated DSU eliminates the need to deploy a separate external device, saving valuable space and simplifying management.

**Features**

- Fully integrated DSU
- Onboard network processor
- Subrate and scrambling options with support for major DSU vendors
- Independent clock
- Loopback, bit error rate test (BERT), and far-end alarm and control (FEAC) diagnostics
Specifications

Product Specifications

Dimensions and Weight (W x H x D)
- 5.45 x 0.63 x 6.5 in (13.8 x 1.6 x 16.5 cm)

Network Interface Specifications
- High-Level Data Link Control (HDLC) features
  - Shared flag
  - Idle flag/fill (0x7e or all ones)
  - Counters: runts, giants, frame check sequence (fcs) error, abort error, align error
  - Maximum transmission unit (MTU): Normal (4500 bytes) or Jumbo (max 9192 bytes)
- Subrate and scrambling support for major DSU vendors:
  - DS3: Verilink, Kentrox, Digital Link, Larscom, Adtran
  - E3: Digital Link, Kentrox
- Interface connector: DSX3 interface with dual female 75-ohm BNC coaxial connectors (separate Rx/Tx)
- System timing: Internal, LoopData interface

Environmental
- Operating temperature: 0° to 40° C
- Storage temperature: -40° to 70° C
- Relative humidity: 5 to 90% noncondensing

Diagnostics

Loopbacks
- DS3: Local, remote, payload
- E3: Local, remote

Test Patterns (BERT)
- All ones
- All zeros
- Alternating ones and zeros (AA/55)
- PRBS 2°15-1 (as specified in ITU-T O.151)
- PRBS 2°20-1 (as specified in ITU-T O.153)
- QRSS 2°20-1 (as specified in ITU-T O.151)
- PRBS 2°23-1 (as specified in ITU-T O.151)
- PRBS 2°9-1
- PRBS 2°11-1
- PRBS 2°29-1
- PRBS 2°31-1

Note: E3 BERT support available in unframed mode only

Network Alarms
- DS3 alarms in conformance with the ANSI specification:
  - Loss of signal (LOS)
  - Out of frame (OOF)
  - Loss of frame (LOF)
  - Alarm indication signal (AIS)
  - Remote defect indication (RDI)
- E3 alarms in conformance with the ITU-T specification:
  - Loss of signal (LOS)
  - Out of frame (OOF) (for framed mode only)
  - Alarm indication signal (AIS)
  - Remote defect indication (RDI) (for framed mode only)
  - Phase-locked loop (PLL) alarm

Error Counters (DS3/E3)
- Line code violations (LCV)
- P-bit code violations (PCV)
- C-bit code violations (CCV)
- Line errored seconds (LES)
- P-bit errored seconds (PES)
- C-bit errored seconds (CES)
- Severely errored framing seconds (SEFS)
- P-bit severely errored seconds (PSES)
- C-bit severely errored seconds (CSES)
- Unavailable seconds (UAS)
- C-bit coding violations-far end (CCV-FE) [FEBE]
- C-bit errored seconds-far end (CES-FE)
- Unavailable seconds-far end (UAS-FE)
- Error Counters (E3 only):
  - Frame alignment error (FAE)
  - Bipolar coding violations (BCV)
  - Excessive zeros (EXZ)
  - Line code violations (LCV)
  - Line errored seconds (LES)
  - Severely errored framing seconds (SEFS)
  - Unavailable seconds (UAS)

LEDs
- PIM LEDs indicate port status with the following LED states:
<table>
<thead>
<tr>
<th>Color</th>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>On steadily</td>
<td>Online with no alarms or failures.</td>
</tr>
<tr>
<td>Red</td>
<td>On steadily</td>
<td>Active with a local alarm; router has detected a failure.</td>
</tr>
<tr>
<td>Yellow</td>
<td>On steadily</td>
<td>Remote RDI/yellow alarm</td>
</tr>
</tbody>
</table>
Management Capabilities

Telnet/Console/JWeb:
Remote and local configuration, monitoring, and troubleshooting

Standards and Compliance

Safety
- CAN/CSA-C22.2 No. 60950-1-03 - UL 60950-1 Safety of
  Information Technology Equipment
- EN 60950-1 Safety of Information Technology Equipment

EMC Emissions
- AS/NZS 3548 Class B
- EN55022 Class B
- FCC Part 15 Class B
- VCCI Class B

Immunity
- EN-61000-4-2 ESD
- EN-61000-4-3 Radiated Immunity
- EN-61000-4-4 EFT
- EN-61000-4-5 Surge
- EN-61000-4-6 Low Frequency Common Immunity

European Telecommunications Standardization Institute (ETSI)
- ETSI EN-300386-2 Telecommunication Network Equipment
  Electromagnetic Compatibility

DS3 Standards
- ANSI T1.102
- ANSI T1.107
- ANSI T1.404
- Telcordia GR-449-CORE
- ACCUNET TR54014 (Accunet T-45)

E3 Standards
- ITU-T G.751
- ITU-T G.703
- ITU-T G.823
- Telcordia GR-449-CORE

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services
and support, which are designed to accelerate, extend, and
optimize your high-performance network. Our services allow
you to bring revenue-generating capabilities online faster so
you can realize bigger productivity gains and faster rollouts of
new business models and ventures. At the same time, Juniper
Networks ensures operational excellence by optimizing your
network to maintain required levels of performance, reliability, and
availability. For more details, please visit www.juniper.net/us/en/
products-services/.

Ordering Information

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JX-IDS3-S</td>
<td>DS3 PIM</td>
</tr>
<tr>
<td>JX-IE3-S</td>
<td>E3 PIM</td>
</tr>
</tbody>
</table>

Juniper Networks Junos® Operating System Release
- The DS3 PIM is supported in Junos OS 7.0 or greater on the J
  Series Services Routers.
- The E3 PIM is supported in Junos OS 7.3 or greater on the J Series
  Services Routers.

Juniper Networks ScreenOS Software Release
- The DS3 PIM is supported in ScreenOS 5.1 on the SSG500 line.
- The E3 PIM is supported in ScreenOS 6.0 on the SSG500 line.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance
networking. Juniper offers a high-performance network
infrastructure that creates a responsive and trusted environment
for accelerating the deployment of services and applications
over a single network. This fuels high-performance businesses.
Additional information can be found at www.juniper.net.