

SPS-6, SPS-12

Multiprotocol FRAD/PAD Packet Switches



FEATURES

- Frame Relay/Packet Assembler/Disassembler (FRAD/PAD) and multiprotocol packet switches
- Allow legacy protocols, such as X.25 and Frame Relay to run over IP networks
- A dedicated backup channel over cellular GPRS networks
- Protocols supported: Frame Relay, X.25, IP, HDLC, SLIP, PPP, ML-PPP and asynchronous
- IP networking using:
 - RIP1, RIP2 and static routing
 - Standard IP encapsulation over Frame Relay (RFC 1490), or X.25 (RFC 1356) networks
- Standard bridging
- Built-in Telnet client/server to support terminal/server applications
- Managed via an ASCII terminal or RADview-PC/HPOV, RAD's SNMP-based network management system
- Optional built-in Ethernet for easy integration of LAN segments
- Transmit Frame Relay, X.25, PPP and ML-PPP over ISDN
- Flash memory for software upgrade

DESCRIPTION

- SPS-6 and SPS-12 are FRAD/PAD packet switches with six or twelve ports respectively. The units enable multiprotocol connection between the enterprise headquarters and remote branches.
- Both units retain the functionality of the SPS family of products. Additional features include:
 - Support for the Legacy over IP architecture
 - Asynchronous backup channel for GPRS packet streams.
- SPS-6 and SPS-12 provide access and switching to public or private Frame Relay networks, and consolidate asynchronous, HDLC, IP and X.25 protocols together over the Frame Relay network.

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FRAME RELAY

- As Frame Relay switches, the units can integrate DLCIs from several sources into a single port. SPS-6 and SPS-12 support BECN/FECN signaling for congestion avoidance.
- A unique funneling mechanism adjusts feeder throughput to CIR levels.
- For each DLCI, an optional backup Frame Relay link is available.
- The Frame Relay multicasting feature (complies with FRF-7), enables multicasting frames from one DLCI onto several DLCIs. The feature supports one-way, two-way and broadcast communication options.
- LMI and ANSI PVC management protocols are supported in compliance with ANSI T1.606, T1.618, T1.617 Annex D, and ITU Rec. Q.922, Annex A.
- SPS-6 and SPS-12 support CLLM management protocol and comply with ITU REC Q.933, Annex A.

X.25

- SPS-6 and SPS-12 allow both mandatory and additional ITU X.25 facilities to be used for X.25 applications.
- X.25-configured links support permanent virtual circuits (PVCs) and switched virtual circuits (SVCs). The link packet size is up to 4096 bytes.
- Dial-up X.25 links are established via a dial-up modem, controlled by a DTR signal or V.25 bis commands.
- X.25 multicasting is fully supported.

X.32

- The X.32 protocol can be used for establishing an X.25 dial-up link. This enables users to access an X.25 network remotely via a dial-up modem using X.32, or use the dial-up backup link over an X.25 or Frame Relay network.

ISDN

- PPP/FR/X.25 data can be transmitted over the ISDN media.
- The ISDN data rate is up to 128 kbps.

HDLC TRANSPARENT ACCESS

- Each port can be programmed to operate in transparent HDLC mode for connecting bridges, routers and other HDLC communication devices over X.25 or Frame Relay networks. The HDLC protocol is encapsulated over X.25 or Frame Relay, providing end-to-end transparent operation.

ASYNCHRONOUS ACCESS

- All asynchronous channels can act according to X.3, X.28 and X.29 profiles at traffic speeds of up to 115.2 kbps. Asynchronous traffic can be packetized directly over the Frame Relay network, or the X.25 network. All channels are configured and monitored by the management agent of SPS-6 and SPS-12.
- Each one of the SPS-6 and SPS-12 ports can be configured to SLIP or PPP modes, operating at data rates of up to 115.2 kbps.
- IP PAD facilities allow easy migration of terminal/server applications to an IP environment.

APPLICATIONS

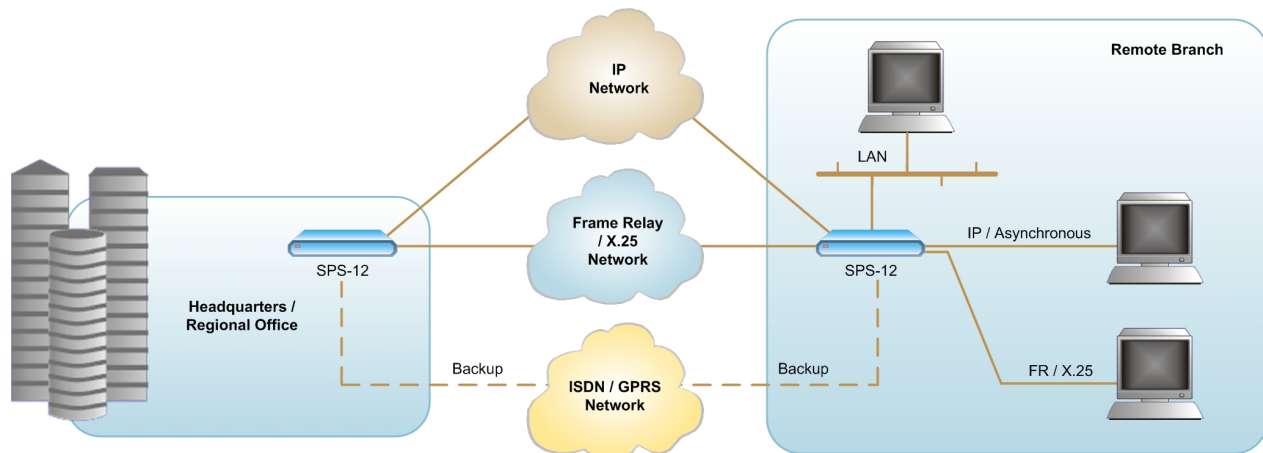


Figure 1. Remote Branch Connection with ISDN/GPRS Backup Channel

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IP ROUTING

- IP datagrams can be routed over Ethernet, PPP or SLIP links and over Frame Relay networks (according to RFC 1490) or over an X.25 network (according to RFC 1356).
- SPS-6 and SPS-12 support RIP1, RIP2 and triggered acknowledgment RIP messages (according to RFC 1058, 1723 and 1724). The RIP support enables easy IP connection while minimizing IP user configuration. The triggered RIP reduces the overhead associated with the RIP mechanism, by minimizing the number of periodic messages sent.
- Static IP routing is supported. IP packets are routed to destination via SLIP, PPP, LAN (Ethernet), X.25 or Frame Relay link, according to the IP address.

ETHERNET

- The Ethernet interface enables bridging and/or routing of LAN packets over a Frame Relay network (according to RFC 1490) and over an X.25 network (according to RFC 1356).

MANAGEMENT CAPABILITIES

- SPS-6 and SPS-12 contain an SNMP agent, which enables remote configuration, collection of statistics/status reports, and diagnostics. The management agent can be programmed to periodically send statistics and status reports to a maximum of five management stations.
- A management station can be connected directly to SPS-6 and SPS-12 using LAN, PPP or SLIP.
- Configuration, monitoring and controlling of all network resources can be performed via an ASCII terminal or by using RADview-PC/UNIX, RAD's SNMP-based management system.
- SPS-6 and SPS-12 SNMP agents support private and standard MIBs, including MIB II with RFC 1213, RFC 1381 and RFC 1382 for X.25, and RFC 1315 for Frame Relay.

BACKUP

- Enhanced backup facilities include PSTN/ISDN/GPRS support.
- Frame Relay, X.25 and PPP traffic can be transmitted over the ISDN media.
- The main facility links are automatically restored after a network recovery.

SPECIFICATIONS

COMMUNICATIONS

- **Number of Ports**
 - SPS-6: 6
 - SPS-12: 12
- **Data Rate**
2 Mbps aggregation on every three associated ports (115.2 kbps for asynchronous)
- **Throughput**
Up to 450 packets per second for X.25 or Frame Relay
- **Interfaces**
V.24, V.35, X.21, RS-530, IBE, UTP and DDS on port 1, port 7 (SPS-12 only)
- **Connectors**
Port 1 (DTE or DCE), port 7 (SPS-12 only):
 - V.24: 25-pin D-type, female
 - V.35: 34-pin D-type, female
 - X.21: 15-pin D-type, female
 - RS-530: 25-pin D-type, female
 - DDS: RJ-48, socket (DTE)
 - IBE: 'S' interface, RJ-45
 - UTP: 10BaseT, RJ-45 (DTE)

All other ports (DTE or DCE):

- V.24: 25-pin D-type, female
- V.35: 34-pin D-type, female
- X.21: 15-pin D-type, female
- RS-530: 25-pin D-type, female

Note: An adapter cable is provided for all V.35 and X.21 interfaces.

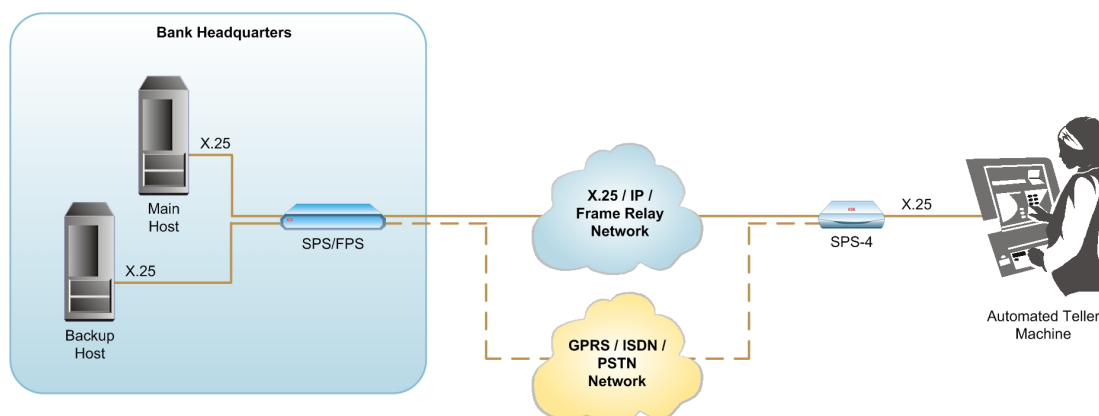


Figure 2. X.25 Traffic over an IP Network

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- **Protocols**
 - Compatibility: X.25, Frame Relay, HDLC, STM, asynchronous, IP, PPP, ML-PPP
 - X.25: complies with 1988 ITU X.25 LAP-B
 - Frame Relay: supports CLLM, LMI, and ANSI PVC management protocols; complies with ANSI T1.606, T1.617 Annex D, T1.618, ITU Rec. Q.922 Annex A, and Q.933 Annex A

Note: Each port is user-selectable.

CONTROL PORT

- **Data Rate**
75 bps to 38.4 kbps
- **Interface**
V.24 (RS-232)
- **Connector**
RJ-45
- **Flow Control**
XON/XOFF, CTS/RTS
- **Command Modes**
X.28, X.29

GENERAL

- **Indicators**
 - PWR (green)
On: the unit is powered
 - ERR (red)
On: failure in operation is detected
 - OVF (red)
On: overflow is detected
 - SYNC (green)
On: synchronization in the protocol layer has been achieved
 - ACTIV (yellow)
On: data is transmitted on the line
- **Power**
AC: 100–230 VAC (±10 %)
50–60 Hz
DC: 24 or 48 VDC
- **Power Consumption**
20W max

- **Physical**
Height: 44.0 mm (1.7 in)
Width: 432.0 mm (17.0 in)
Depth: 298.0 mm (11.7 in)
Weight:
▪ SPS-6: 2.0 kg (4.4 lb)
▪ SPS-12: 2.5 kg (5.5 lb)
- **Environment**
Temperature: 0–50°C/32–122°F
Humidity: Up to 90%, non-condensing

ORDERING

SPS-6/*/\$
6-port multiprotocol FRAD/PAD packet switch

SPS-12/*/\$
12-port multiprotocol FRAD/PAD packet switch

* Specify optional DC power supply:
24 for 24 VDC
48 for 48 VDC

\$ Specify special interface type:
UTP for 10BaseT Ethernet interface
BNC for 10Base2 interface
IBE for ISDN BRI 'S' interface
IBU for ISDN BRI 'U' interface
DDS for integral DDS interface

Note: By default, special interfaces are not included.

SPS-M/#
SPS interface module

Specify interface type:
V24 for V.24/RS-232 interface
V35 for V.35 interface
V36 for V.36/RS-449 interface
X21 for X.21 interface
530 for RS-530 interface

Note: All X.21, V.35 and V.36 interfaces include an adapter cable (see Supplied Accessories).

SUPPLIED ACCESSORIES

Power cable

CBL-RJ45/D9/F/STR
Adapter cable for converting RJ-45 control to DB-9 control

CBL-8H/F
Adapter cable for V.35 (if V.35 interface is ordered)

CBL-530/499/F
Adapter cable for V.36 (if V.36 interface is ordered)

CBL-530T/21C/F
Adapter cable for X.21 (if X.21 interface is ordered)



data communications

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