

Riding the Next Generation in Multiservice Transport

The FLASHWAVE® 4500 platform provides a quantum leap in network efficiency by delivering a carrier-class, multiservice optical transport solution for metro interoffice/core applications, as well as large business access applications.

The FLASHWAVE 4500 platform not only offers an extremely cost and space effective solution for all traditional SONET Add/Drop Multiplexer (ADM) applications but also supports advanced functionality such as native Ethernet, digital video transport and mini-DCS functions. By deploying the FLASHWAVE 4500 platform, you will realize CAPEX reductions in equipment consolidation and OPEX savings in simplified operation. The FLASHWAVE 4500 platform is a compact, single-shelf architecture that gives you:

- Multiple OC-192s with direct DS3 and DS1 electrical drop
- Two complete OC-48s with 100% protected DS3 or OC-3 drop in a single shelf
- Up to full wire speed native Fast Ethernet, Gigabit Ethernet and DVB-ASI
- 20 flexible interface slots—the industry's highest amount available—for maximum service versatility
- 40 Section Data Communications Channels (SDCCs) enabling true subtending ring support with essential Operation, Administration, Maintenance and Provisioning (OAM&P)
- 1344 x 1344 non-blocking STS-1 and 1344 x 1344 VT1.5 grooming and cross-connect capability
- Full complement of optics with standards compliant short reach, intermediate reach, long reach and tunable, narrowband units
- Complete suite of Performance Monitoring (PM) capabilities including Intermediate Path Performance Monitoring (IPPM) and Pointer Justification Counts (PJC)

Realize Savings and Benefits Now

The FLASHWAVE 4500 platform solves major business and network problems by reducing transport costs and power requirements, conserving valuable space and simplifying network management.

The FLASHWAVE 4500 platform integrates multiple transport and grooming elements into one shelf, replacing network elements with low power interface cards—and speeding introduction into the network.

The largest number of flexible service slots in the industry and a centralized, non-blocking STS architecture allow you to serve numerous terminal, linear and ring architectures, while integrating Dense Wavelength Division Multiplexing (DWDM) and the Local Area Network (LAN) into the metropolitan transport network. You will realize immediate CAPEX and OPEX savings benefits without sacrificing reliability and performance.

Future-Proof your Network with a Proven Solution

The FLASHWAVE 4500 platform grows to match the expansion of your transport technologies—including SONET, DWDM, LAN and video technologies. Adding new and future services does not negate current investments or require you to replace common equipment or add new shelves. With its proven carrier-class technology, the FLASHWAVE 4500 platform provides the flexible foundation needed for today's and tomorrow's complex optical networks. As the globalization of networks proliferates, the FLASHWAVE 4500 platform also supports the seamless transport of SDH signals through any SONET infrastructure.

Interoperability for Network Optimization

The FLASHWAVE 4500 system plays a key role in core, IOF, metro and business access deployments, while providing an economical link to long-haul transport networks. The FLASHWAVE 4500 platform interoperates with other standards-based equipment including the Fujitsu FLM SONET and SDH transport solutions, the FLASHWAVE 4000 series of next-generation, multiservice platforms and the FLASHWAVE 7000 series of highly scalable WDM solutions.

Complemented by NETSMART® 1500 or FLEXR® GT software with full Telcordia™ OSMINE compliance and support for OAM&P, the FLASHWAVE 4500 platform gives you everything you need to build next-generation optical networks.



- Single Shelf DS1 to OC-192
- Non-blocking STS/VT Grooming
- Survivable Ethernet and Digital Video
- Integrated DWDM

Features and Specifications

Architectures

- Terminal
- Linear ADM (1+1)
- Unidirectional Path Switched Ring (UPSR)
- Two Fiber-Bidirectional Line Switched Ring (2F-BLSR)
- Four Fiber-Bidirectional Line Switched Ring (4F-BLSR)
- Dedicated Path Protected Mesh (DPPM)

Interfaces

- DS1 64-pin AMP CHAMP connectors
- DS3/EC1 BNC connectors
- OC-3/STM-1 SC for dual unit; LC for quad unit
1310 nm wideband
- OC-12/STM-4 LC, FC, SC or ST for single unit;
LC for quad unit
1310 nm wideband
- OC-48/STM-16 LC, FC, SC or ST connectors
1310 nm wideband
1550 nm tunable narrowband
(4λ @ 50 GHz)
- OC-192/STM-64 LC, FC, SC or ST connectors
1550 nm wideband
1550 nm tunable narrowband
(4λ @ 100 GHz)
- Ethernet 10/100Base-T RJ-45 connectors
- Gigabit Ethernet SC connectors
- DVB-ASI BNC connectors

Switching

- Flexible, non-blocking STS grooming
- 864 x 864 or 1344 x 1344 STS-1
- Optional 1344 x 1344 VT1.5

Maximum Number of Service Interfaces

	Ports/ Card	Unprotected Ports/Shelf	Protected Ports/Shelf
• DS1	28	84	84
• DS3/EC1	8	96	96
• OC-3/3c/STM-1	4	80	40
• OC-12/12c/STM-4	4	80	40
• OC-48/48c/STM-16	1	20	10
• OC-192/192c/STM-64	1	4	2
• Ethernet 10/100Base-T	8	80	-
• Gigabit Ethernet	2	40	-
• DVB-ASI	8	48	-

Protection

- DS1 1+1 or unprotected
- DS3/EC1 1:n (n=1 to 6) or unprotected
- OC-3/STM-1 1+1, UPSR, DPPM or unprotected
- OC-12/STM-4 1+1, UPSR, DPPM or unprotected
- OC-48/STM-16 1+1, UPSR, 2F-BLSR, DPPM
or unprotected
- OC-192/STM-64 1+1, UPSR, 2F-BLSR, 4F-BLSR, DPPM
or unprotected
- Ethernet Unprotected
- DVB-ASI Unprotected
- Switch matrices 1+1
- Synchronization 1+1

Synchronization

- Internal Stratum 3 timing source
- Synchronization Status Messaging (SSM)
- DS1 Building Integrated Timing Supply (BITS) primary
and secondary clock output/input
- Line timing

Operations

- TL1 protocol over X.25, OSI/LCN or IP/LCN
- TCP/IP and X.25 gateway functionality
- Software download and remote memory
backup/restore
- FLEXR GT craft interface and NETSMART 1500 element
management support
- Interoperable with all Fujitsu transmission products
- Telcordia OSMINE compliant
- DS1 and DS3 Test Access
- 40 data communications channels
- Full suite of in-service upgrades

Power Consumption/Heat Dissipation

- Power Consumption 400 W/1364 BTU

Operating Environment

- Temperature 0 to 50° C (32° to 122° F)
- Humidity 5 to 95% (non-condensing)
- NEBS Level 3 compliant

Physical Characteristics

- Dimensions 22.8 x 21.5 x 12" (HxWxD)
578 x 546 x 305 mm
- Weight (fully loaded) 134 lbs. (61 kg.)
- Power Input -48 V DC (A and B)

Features and Specifications subject to change without notice.

Fujitsu Network Communications Inc.

2801 Telecom Parkway, Richardson, TX 75082

Tel: 800.777.FAST Fax: 972.479.6900

www.fnc.fujitsu.com

© Copyright 2003 Fujitsu Network Communications Inc. All Rights Reserved.
FLEXR®, NETSMART®, FLASHWAVE® and FLASHWAVE (and design)™ are trademarks
of Fujitsu Network Communications Inc. (USA). FUJITSU (and design)® and
THE POSSIBILITIES ARE INFINITE™ are trademarks of Fujitsu Limited.
All other trademarks are the property of their respective owners.

FLASHWAVE4500/DS/5.0/06.03/CM