- **Reliable 10G Transport**
- **Flexible Architecture**
- **Subtending Rings**
- **Integrated DWDM**

Reliable OC-192 SONET Transport

FLASH-192® is a field-proven solution for Interoffice (IOF) and long haul OC-192 transport networks. Both local and interexchange carriers deploy the FLASH-192 for transport applications requiring flexible network architectures, multiple tributary options and 10 gigabit capacity. In-service migration capabilities allow you to change network configurations as traffic demands change – without interrupting existing revenue-generating services.

Flexible Architecture Provides Network Adaptability

Carriers require versatile optical networking equipment. FLASH-192 allows you to establish many different topologies to support network demands. FLASH-192 provides:

- Survivable SONET 10 gigabit architectures:
  - Point-to-point: terminal (1+1, 0:2) or a cost-effective regenerator
  - Unidirectional Path Switched Ring (UPSR)
  - Two-fiber Bidirectional Line Switched Ring (2F-BLSR)
  - Four-fiber Bidirectional Line Switched Ring (4F-BLSR)
  - In-service upgrades
- Variety of tributary interfaces:
  - OC-3/3c, OC-12/12c and OC-48/48c
  - Mix and match interfaces to support various bandwidth requirements

Subtending Rings Reduce Network Costs

Reducing network cost is a priority for all carriers. FLASH-192 allows you to lower your network cost with its subtending (integrated) ring capabilities. Reduce equipment by subtending OC-48 and OC-12 UPSRs directly from the FLASH-192. This capability can replace an entire network element with a pair of cards in the FLASH-192 to significantly reduce network costs associated with equipment, space and power.

System Configuration Adaptability

FLASH-192 features a straightforward shelf design with an OC-192 transport shelf including optional routing and optical tributary shelves. The transport shelf directly accommodates four protected OC-48 tributaries in just one-half of a seven-foot rack. The routing shelf provides a non-blocking 768 by 768 STS-1 switching matrix supporting any-port-to-any-port connectivity, including low-speed hairpinning. The optical tributary shelf allows you to mix-and-match OC-3, OC-12 and OC-48 tributaries in one-quarter of a rack.

Reduce DWDM Costs with Tunable Transmitters

FLASH-192 reduces your costs with software tunable narrowband transmitters for direct connections to Dense Wavelength Division Multiplexing (DWDM) equipment, eliminating the need for transponders. You can set each transmitter to one of four ITU-compliant wavelengths at 100 GHz spacing to maximize your investment by eliminating the need for transponders and reducing your spares cost. Fewer spares also simplify the ordering, tracking and inventory process.

Maximize DWDM Channel Capacity

Use FLASH-192 as a 0:2 muxponder front-end to pack four OC-48 interfaces into one OC-192-based narrowband DWDM channel. By using a DWDM system such as our FLASHWAVE® 7700 (formerly FLASHWAVE OADX), you can transport 10 gigabit capacity on a single wavelength—fully utilizing each wavelength and preventing the use of a single wavelength for only 2.5 gigabits worth of bandwidth.

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THE POSSIBILITIES ARE INFINITE

Features and Specifications

Architectures
- Point-to-point: terminal (1+1, 0:2) or regenerator
- Unidirectional Path Switched Ring (UPSR)
- Two-fiber Bidirectional Line Switched Ring (2F-BLSR)
- Four-fiber Bidirectional Line Switched Ring (4F-BLSR)
- Optical hubs for multiple subtending ring support

Interfaces
- FLASH-192 transport shelf:
  - Two OC-192 high-speed interfaces
  - Four protected OC-48/48c tributary interfaces
- Optional FLASH-192 routing shelf:
  - 768 x 768 STS-1 TSA
  - Non-blocking any-port-to-any-port connectivity
- Optional FLASH-192 optical tributary shelf (up to 4 shelves):
  - 16 protected OC-3/3c tributary interfaces
  - Eight protected OC-12/12c tributary interfaces
  - Two protected OC-48/48c tributary interfaces
- Optional FLASHWAVE® 4300 or FLASHWAVE 4500 as a tributary shelf (up to 4 shelves) with interfaces for:
  - Gigabit Ethernet
  - 100Base-T Ethernet
  - DS1
  - DS3/EC1
  - OC-3/3c
  - OC-12/12c

Synchronization
- On-board Stratum 3 timing source
- Synchronization status messaging
- DS1 BITS primary and secondary clock output/input

Optical Fiber Support
- Cable: SMF, DSF and NZ-DSF
- Connectors: FC, ST and SC

Typical Optical Span Lengths
- SMF cable, DSF cable
  - 40 km (with pre-amp) 56 km (with pre-amp)
  - 153 km (with post and pre-amps) 122 km (with post and pre-amps)

Operations
- TL1 protocol over X.25, OSI/X.25, OSI/LCN or IP/LCN
- Software download and remote memory backup
- FLEXR® GT craft interface and NETSMART™ 1500 network management support

Power Consumption
- Transport shelf: 800 W (fully equipped and protected 1+1 LTE)
- Optical tributary shelf: 600 W (fully equipped and protected)
- Routing shelf: 600 W (fully equipped and protected)

Operating Environment
- Temperature   0° to 50°C (32° to 122°F)
- Humidity   5% to 95% (Non-condensing)

Physical Characteristics

	(HxWxD)
Transport shelf	31.5 x 22.75 x 12"
Optical tributary shelf	7.5 x 22.75 x 12"
Routing shelf (without fiber management panel)	21 x 22.75 x 12"
Routing shelf (with fiber management panel)	28 x 22.75 x 12"

Features and Specifications subject to change without notice.