Fujitsu’s FLASHWAVE 4x70 Multi-Service Provisioning Platform (MSPP) series provides telecommunication carriers and service providers with a powerful solution to survive their fiercely competitive industry.

Integrating reliable and intelligent SDH functionality and efficient Ethernet aggregation and switching into a compact body, the FLASHWAVE 4x70 MSPP enables both traditional voice-based services and increasingly diverse data services to be delivered over a unified optical network.

Enriched with next-generation SDH functionality, the FLASHWAVE 4x70 MSPP allows carriers to not only simplify their network, but also to efficiently, flexibly, and dynamically use network bandwidth with a simple management procedure. In this way, the FLASHWAVE 4x70 MSPP helps to satisfy the growing end-user’s demand in an increasing variety of broadband services at a substantially reduced cost.

The FLASHWAVE 4470 is an STM-64 MSPP optimized for Metro Aggregation and Metro Core network applications.

Typical node configurations are:
- Dual STM-64 rings with dual STM-16 sub-rings and 24 x E3/DS3 lines
- Quad STM-16 ring with 168 x E1 lines
- Dual STM-64 rings with 8 x GE + 32 x FE (L2 switching), and 64 x FE (Transparent)

### Key Benefits
- High-capacity STM-64/STM-16-based platform to support dual STM-64, or up to quad STM-16 rings in a single node
- High-density and flexible subrack architecture with as many as 16 universal interface slots
- All-in-one-box solution to satisfy network and service demands from STM-64, STM-16, STM-4, STM-1, STM-1E, E3, DS3, and E1, to Fast Ethernet and Gigabit Ethernet
- Reliable network supported by traffic protection schemes such as 1+1 MSP, SNCP and 2-fiber MS-SPRing for SDH layer, as well as Rapid Spanning Tree Protocol (RSTP) for Ethernet layer
- Next-generation SDH functionality such as General Framing Protocol (GFP), Virtual Concatenations (VCAT), and Link Capacity Adjustment Scheme (LCAS) functions for dynamic bandwidth allocation, adjustments, and protection
- Non-blocking, large-capacity switching matrix that’s optimal for metro aggregation as well as core networks; 70G for high-order VC and 5G for low-order VC
- Small Form-factor Pluggable (SFP) interfaces to deliver optical rate and parameter flexibility on a per-port basis
- Common interface cards with FLASHWAVE 4270

### Ethernet Transport Features
- Data service applications such as EPL (Ethernet Private Line), EVPL (Ethernet Virtual Private Line), EPLAN (Ethernet Private LAN), and EVPLAN (Ethernet Virtual Private LAN)
- Layer 2 processing to reduce the bandwidth requirements, and therefore enable cost-effective data transport over the SDH infrastructure
- VLANs or double-tagged VLANs to enable 802.1p QoS/CoS, as well as segregation of traffic flows, and thereby increase security without sacrificing bandwidth efficiency or network flexibility
- Advanced Resilient Packet Ring (RPR) technology to provide high-reliable and efficient data transport with QoS control

### Management Features
- Speedy operation and maintenance through local craft terminal FLEXR L
- Network element and sub-network-based management system FLEXR C, supporting all FLASHWAVE 4x70 products, to enable seamless management of all SDH, PDH, and Ethernet layers

### High-Capacity Metro Core Solution

shaping tomorrow with you
Technical Specifications

Applications
✓ Terminal multiplexer
✓ Linear add-drop multiplexer
✓ Ring add-drop multiplexer
✓ Mini cross-connect

Traffic Interfaces
✓ STM-64 (L-64.2, S-64.2, SR-1)
✓ STM-16 (L-16.2, L-16.1, S-16.1, narrowband)
✓ STM-4 (V-4.2, L-4.2, L-4.1, S-4.1)
✓ STM-1 (V-1.2, L-1.2, L-1.1, S-1.1, electrical)
✓ E3/DS3
✓ E1 (75 ohms/120 ohms)
✓ GE (1000Base-T, GE-ZX, GE-E, GE-LX, GE-SX, transparent or L2 switching)
✓ FE (10/100Base-TX, transparent or L2 switching)
✓ Optical amplifier: Post-amp (13 dBm, 15 dBm, 18 dBm output), pre-amp (20 dB gain)

Cross-Connect
✓ HO capacity: 70 Gbps (448 x 448 VC-4)
✓ LO capacity: 5 Gbps (2016 x 2016 VC-12)
✓ Connection: Unidirectional, bidirectional, broadcast, drop and continue, loopback

Network Protection
✓ 1+1 MSP at STM-1, STM-4, STM-16, and STM-64
✓ 2-fiber MS-SPRing at STM-4, STM-16, and STM-64
✓ SNCP/I at VC-12, VC-3, VC-4, VC-4-4c and VC-4-16c

Hardware Protection
✓ STM-1E card: 1+1
✓ E3/DS3 card: 1+1
✓ Power and CC cards: 1+1

Mapping
✓ G.7041/Y.1303 GFP-F
✓ G.7042 LCAS: VC-12, VC-3, VC-4
✓ G.707 VCAT: VC-12, VC-3, VC-4

Synchronization
✓ Internal clock: G.813 Option 1, Optional Stratum 3 clock
✓ Timing Source: External clock (2 Mbps, 2 MHz), SDH line, E1
✓ Operation: Free-running, hold-over, locked-mode
✓ Priority and quality (SSM) synchronization algorithms

Ethernet Feature
✓ Layer 2 forwarding at wire-speed
✓ Layer 2 switching and aggregation
✓ 802.1Q VLAN and stackable VLAN
✓ 802.3x flow control
✓ MAC Address self-learning
✓ Layer 2 multicast (static provisioned or IGMP snooping)
✓ Rate-limiting per port and/or VLAN
✓ 802.1p QoS/CoS per port and/or VLAN
✓ 802.1w Rapid Spanning Tree Protocol (RSTP)
✓ 802.17 Resilient Packet Ring (RPR)

Power
✓ Input voltage: -48 VDC
✓ Power consumption: approx. 450 W

Mechanical Specifications
✓ Sub-rack size: 447W x 566H x 332D mm (not incl. projections)
✓ Installation: Standard ETSI rack

Environment
✓ Operating temperature: -5 to 45 ºC
✓ Start-up temperature: 0 to 45 ºC

Management
✓ Local provisioning and maintenance by FLEXR L local craft terminal
✓ Remote centralized management at both element and network level by FLEXR C Sub-Network Management (SNM)
✓ SNMPv2 standard MIB

Specifications are subject to change without notice. For the latest detailed information, please contact your nearest local Fujitsu representative.

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