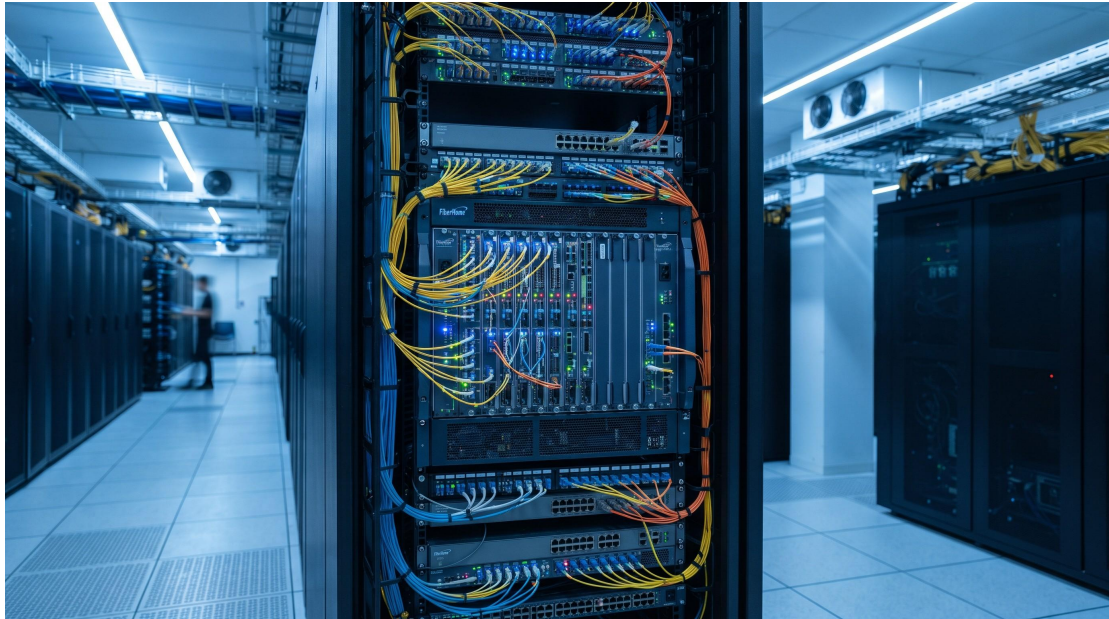


FiberHome FONST 5000 Series POTN Platform Specification & Architectural Whitepaper

PRODUCT IDENTIFICATION

The FiberHome FONST 5000 Series is a carrier-grade Packet Optical Transport Network (POTN) platform engineered for the 100G era and beyond, purpose-built to address the converging demands of IP core traffic, metro aggregation, and backbone transport. As a member of the broader FONST intelligent OTN family, the 5000 Series integrates large-capacity optical cross-connect fabric, multi-service packet switching, and agile ROADMs functionality into a unified chassis architecture. The platform is positioned at the intersection of optical transport and packet networking, delivering the statistical multiplexing efficiency required for Ethernet services while preserving the deterministic performance and protection schemes expected of traditional OTN infrastructure. This document serves as a definitive technical reference for network architects, pre-sales engineers, and procurement evaluators assessing the FONST 5000 Series for core, aggregation, and metro-critical deployments.



SYSTEM HARDWARE TOPOLOGY

The FONST 5000 Series employs a modular, multi-slot chassis design that accommodates a diverse array of service line cards, cross-connect fabrics, and optical supervisory units within a single managed entity. The hardware topology is centered on a high-capacity electrical cross-connect plane that supports centralized grooming of ODU0, ODU1, ODU2, ODU2e, ODU3, and ODU4 containers, enabling sub-wavelength traffic management and efficient bandwidth packing . The backplane architecture delivers full-mesh connectivity between service slots and the switching fabric, ensuring non-blocking or near-non-blocking performance under fully populated conditions. Optical layer components, including ROADM wavelength selective switches and amplifier cards, occupy dedicated slots to maintain strict segregation between the electrical grooming domain and the photonic transport domain. This

separation allows independent scaling of switching capacity and optical reach, a critical design principle for networks anticipating incremental capacity growth without chassis replacement.

DATA & CONTROL PLANE CAPABILITIES

The data plane of the FONST 5000 Series is defined by its dual nature: it operates simultaneously as an OTN transport system and a packet-aware switching platform. On the OTN side, the platform supports standard G.709 interfaces with full overhead processing, enabling interoperable wavelength services across multi-vendor optical domains . Electrical cross-connect capacity reaches 5.4 Tbit/s in centralized configurations, with support for single-wavelength transmultiplexing (TMUX) that aggregates lower-rate ODU signals into higher-rate wavelengths, maximizing fiber utilization . The packet switching subsystem introduces VLAN and MPLS Layer 2 functionality, permitting GE and 10GE client signals to be statistically multiplexed before mapping into ODU containers . This packet-aware grooming reduces the number of dedicated wavelengths required for bursty or underutilized Ethernet services, directly lowering transport cost per bit.

On the control plane, the FONST 5000 Series supports ASON/GMPLS functionality for automatic resource discovery, end-to-end service provisioning,

and differentiated restoration classes . The platform also integrates IEEE 1588v2 precision time and frequency synchronization, a mandatory capability for mobile backhaul and latency-sensitive enterprise applications that demand phase-aligned delivery across packet and optical domains .

COMPONENT BREAKDOWN

The FONST 5000 Series chassis accommodates several functional card families. Optical transponder cards provide client-side interfacing for STM-1 through STM-256, GE through 100GE, OTU1 through OTU4, and Fibre Channel SAN rates, with pluggable optics supporting SFP, XFP, and SFP+ form factors . Muxponder and TMUX cards aggregate lower-rate client signals into higher-rate line-side wavelengths, improving spectral efficiency for legacy TDM and low-speed Ethernet traffic. The optical layer card set includes ROADM wavelength selective switch modules supporting 3 to 20 dimensions per node, erbium-doped fiber amplifiers, and distributed Raman amplification units for extended span reach . The electrical cross-connect fabric card performs centralized ODU switching and represents the single most critical resource for grooming flexibility. Redundant system control and management units provide 1+1 protection for the control plane, while power supply and fan trays are similarly equipped with hot-swappable redundant modules .

OPERATIONAL SPECS MATRIX

The FONST 5000 Series is engineered for continuous operation in carrier central office environments. The platform supports mixed transmission of 10G, 40G, and 100G signals on the same optical line system, with a smooth upgrade path from 48 to 96 wavelengths in the C-band . Maximum C-band capacity reaches 9.6 Tbit/s using 100G wavelengths, while the N10 variant delivers 12 Tbit/s of switching capacity per rack for high-density metro and backbone nodes . Protection schemes span optical layer OCh 1+1 and m:n, electrical layer ODUk 1+1 and ring protection, and equipment-level redundancy for power, control, and cross-connect resources . Maintenance capabilities include integrated alarm and performance monitoring (IAMS), automatic optical power equalization, single-card auto-discovery, and embedded OTN overhead monitoring via OSC and ESC channels .

TECHNICAL SPECIFICATIONS

Parameter	Specification
Form Factor	Modular chassis; FONST 5000 standard: 64 slots; N10 variant: high-density integrated chassis
Switching Capacity	5.4 Tbit/s electrical cross-connect

	(ODU0/1/2/2e/3/4); N10: 12 Tbit/s per rack
Line Rate Support	10 Gbit/s, 40 Gbit/s, 100 Gbit/s per wavelength; mixed transmission supported
Max C-Band Capacity	9.6 Tbit/s (96 × 100G) standard; 48-wave to 96-wave smooth upgrade
Client Interfaces	STM-1/4/16/64/256; GE/10GE/40GE/100GE; OTU1/2/3/4; FC (SAN)
ROADM Dimensions	3 to 20 dimensions per node
Packet Switching	VLAN and MPLS Layer 2 switching for GE/10GE statistical multiplexing
Synchronization	IEEE 1588v2 precision time and frequency
Protection Schemes	OCh 1+1 / m:n; ODUk 1+1 / m:n / ring; equipment-level 1+1 for power, control, cross-connect
Power Supply	Dual redundant AC/DC, hot-swappable, 1+1
Typical Power Consumption	FONST 5000: approximately 4000W (fully populated)

Operating Temperature	Long-term: 0 °C to 50 °C; short-term: -10°C to 55°C
Management Interfaces	NETCONF/YANG, SNMP; IAMS integrated maintenance system

REGULATORY COMPLIANCE

The FONST 5000 Series conforms to the principal international standards governing optical transport and network equipment safety. Optical interfaces comply with ITU-T G.709 for OTN framing and overhead, G.692 and G.694.1 for DWDM grid spacing, and G.652/G.655 for single-mode fiber compatibility . Equipment safety is certified to EN 60950-1, IEC 60950-1, and UL 60950-1, ensuring compliance with European, international, and North American electrical safety regimes . Electromagnetic compatibility and environmental robustness follow IEC 61587, IEC 60917, and IEC 60297 mechanical and climatic standards . These certifications enable unrestricted deployment across Tier 1 carrier networks, government telecommunication infrastructure, and enterprise core sites subject to multi-jurisdictional regulatory oversight.

