1FINITY Ultra Optical System

The ideal balance of speed, reach & capacity – simplified

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The Fujitsu 1FINITY Ultra Optical System is a hyper-reliable optical transport platform designed for terabit networking in a 5G world where gigabit demands constantly grow and budgets constantly shrink. The 1FINITY Ultra Optical System offers higher speeds, greater capacity, and extended reach, and it dramatically simplifies deployment, integration, and operations. Open, easy to manage, and sustainable, the system delivers reliability and peace of mind, from a partner you can trust.
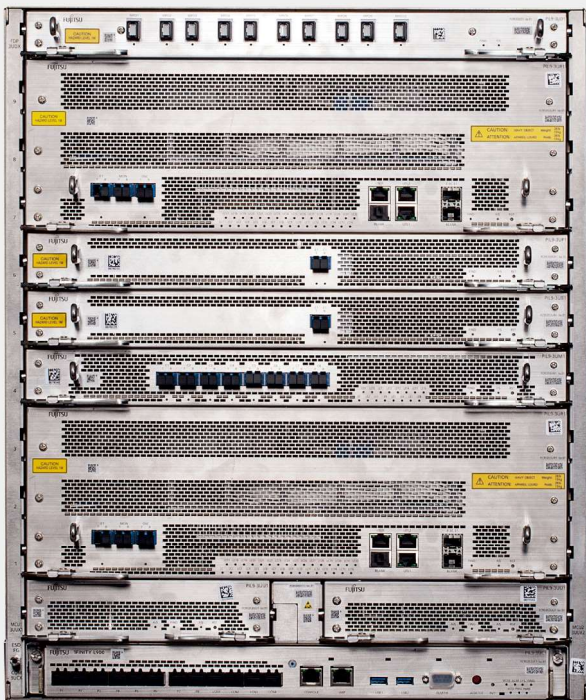
Solution components

1FINITY T900/T950 transponder

1.2 Tbps liquid-cooled transponder in 14.4 Tbps compact modular blade

1FINITY L900 Open Line System (OLS)

Industry's highest capacity OLS with 1.64 Pbps total throughput

With the 1FINITY™ Ultra Optical System, more is less. More wavelengths per fiber, more capacity or reach per wavelength — less effort to install, operate and maintain the network, and less power consumed per bit transported.

Extreme scale and performance

The 1FINITY Ultra Optical System delivers extreme scale and performance at greater capacity, over longer reach, and at lower cost per bit. This terabit-optimized networking platform reduces the risk of scaling with simplified deployment, integration, and AI/ML-enabled automation.

- Fujitsu has the world's leading transponder technology, achieving 1.2T now with upgrade to 1.6T later.
- 135 Gbaud-rate 5 nm transponder technology lowers power per bit by 39% compared to 100 Gbaud 7 nm (previous generation) technology
- 800G links span 40% longer than existing options due to GSNR improvement from 135 GBaud operation
- Allows a 400G wavelength to be transported up to 6000 km without regeneration.
- Open Line System (OLS) accommodates any line rate
- 40% longer reach or capacity gain with forward Raman amplification
- Supports continuous C+L service from Day 1 using half the node equipment versus current bolt-on approaches, achieving an 80% power reduction versus C-band only.

Three 1FINITY Ultra Optical System features enable greatly increased capacity and reach at significantly lower cost per bit transported.

- 135 GBaud, 1.2T liquid-cooled transponder
- Forward Raman amplifiers
- Continuous C+L band systems

Solution highlights

Extreme scale & performance

Improve network performance and scale, and cut cost per bit per km with terabit rates and up to 40% longer reach than previous transponder technology

Automated, optimized operations

Simplify system turn-up and end-to-end service delivery, and cut time to market from days to hours via advanced, AI/ML-enabled automation and applied analytics.

Enhanced sustainability

Reduce energy consumption, audible noise, and maintenance with advanced sustainable technologies

A partner you can trust

Maximize business value with an optical partner you can trust whose financial strength and global reach ensure you have the certified solutions and field expertise when and where you need them.

Automated, optimized operations

The ongoing trend towards open network ecosystems and multivendor, multilayer network architectures has brought network automation into the spotlight. Maintaining a live optical network used to be a full-time job dominated by time-intensive, manual procedures. Now, automation using AI/ML can perform many of these tasks in a safe and reliable way, decreasing the possibility of human error and increasing reliability, cutting costs, shrinking the carbon footprint, and optimizing performance.

- Simplified fiber architecture reduces nodal cabling up to 92% and turn-up time from days to hours
- Automated L900 series OLS turn-up using a suite of fiber integrity and characterization tools
- Pseudowave technology offers end-to-end optimized wavelength operation and maximizes overall network capacity and reach prior to installing a transponder.
- Smart cabling reduces inter-chassis nodal interconnect fault localization from days to seconds
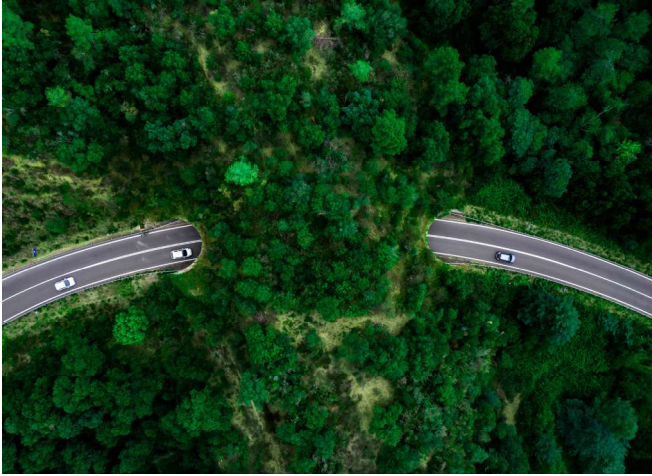
- Higher spectral efficiency at up to 150 GHz reduces or eliminates choke points and fragmentation.
- Virtualization, orchestration, and intelligent automation enable virtual topology maps, service chaining, and traffic engineering
- Zero-touch provisioning via the Virtuora NC Solution.
- Real-time dynamic optical reach validation using the Virtuora NC Solution.

Three 1FINITY Ultra Optical System features provide increased automation:

- Smart fiber cabling automatically verifies and validates ROADM cabling
- Automated system turn-up including fiber characterization
- Automated end-to-end channel optimization without the use of transponders

Sustainability features that reduce carbon footprint

Service providers are under growing pressure to make more sustainable choices in every aspect of their business. We provide a sustainable approach to extreme scale and performance; decreasing the carbon footprint means innovating sustainable approaches across the network and its operations.

Sustainability is built-in to Fujitsu's stated purpose, which is to make the world more sustainable by building trust in society through innovation. We are committed to ambitious carbon-footprint reduction targets as outlined in the United Nations' Sustainable Development Goals. Fujitsu has been included in the Dow Jones Sustainability World Index for several consecutive years.

- 39% less power consumption using the 1FINITY T900 series compact modular transponder blade at 14.4T capacity versus current 12.8T systems
- 2× the cooling capacity with liquid cooling versus conventional air-cooled systems, extending equipment life cycle and maintenance intervals
- 50% less audible noise through reduced fan speed

Trusted optical and supply-chain partner

With 40+ years of experience in optical networking, Fujitsu has remained at the forefront of optical networking technology and served the needs of network operators of all types and sizes. As one of the world's largest ICT corporations, we are a stable global organization with over $34B in total revenue. These strengths, combined with our secure, resilient supply chain and fulfillment operations, high-quality vendor and partner ecosystem, and state-or-the-art laboratory, testing, and certification capabilities, make us a partner you can trust for building critical communications infrastructure.

For more information, visit the 1FINITY Ultra Optical System webpage at
bit.ly/3RVmLVm

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