

ACHIEVING OPEX REDUCTION

with Packet Optical Networking Platforms



Overview

The telecoms market is experiencing high growth in both business and residential Ethernet services. These IP-based triple-play services and applications, in both the fixed and wireless domains, are driving bandwidth demands in the optical transport network. Additionally, there is still a large amount of legacy circuit-switched traffic in the network. Consequently, the next-generation optical transport infrastructure must be sufficiently flexible, efficient and scalable to fulfil these demands.

The Challenge

In addition to the growing bandwidth requirement, operators are faced with price erosion, escalating customer retention costs and customer churn. Against this background, the concept of maintaining several networks to support both legacy and new data services is operationally inefficient. These factors place additional emphasis on reducing operational expenses to remain competitive. The answer lies in the deployment of a reliable and agile multi-protocol optical network that is capable of adapting to dynamic bandwidth requirements, yet remaining simple to manage and able to deliver any type of service.

The Solution

Fujitsu's FLASHWAVE® 9500 Packet Optical Networking Platform meets and surpasses these challenges, by integrating three technologies in a single solution:

- Synchronous Digital Hierarchy (SDH) for support of legacy Time Division Multiplex (TDM) and Ethernet-over-SDH (EoS) services
- Connection-Oriented Ethernet (COE) for delivery of Ethernet Private Line (EPL) services with carrier-class characteristics
- Reconfigurable Optical Add-Drop Multiplexer (ROADM) for an efficient, scalable and agile photonic layer with automated operations

These capabilities are linked together via a simplified network planning process – adaptable to dynamic traffic patterns, and enabled via automated implementation and reconfiguration capabilities. The FLASHWAVE 9500 minimises the risks of network deployment, the operational costs, and unforeseen capital expenditure. It also ensures a future-proof network. Additionally, ROADMs facilitate rapid service deployment at the photonic layer, thereby reducing the time-to-market for new services and enabling faster revenue realisation.

The Benefits

One of Fujitsu's customers is deploying the FLASHWAVE 9500 to derive a number of significant benefits:

Network Consolidation

The FLASHWAVE 9500's high-capacity universal switch fabric and high port densities facilitate the consolidation of traffic from multiple existing systems onto a single platform. This results in up to fivefold savings in operational expenses, encompassing elements such as floor space, power, cooling, spares, cables, fibre overlay, training and other associated costs.

Integrated Aggregation and Transport

The integrated SDH, Packet and ROADM technology eliminates the need for subtended SDH and intermediate switching/routing elements. This generates an average of 50% hub site cost savings, while also enabling a scalable carrier-class infrastructure, which supports Native Ethernet, EoS and SDH services along with residential video and broadband – provisioned and managed from a single network management platform.

Simplified Processes

The introduction of automation at the photonic layer simplifies labour-intensive tasks such as link turn-ups and channel upgrades. For example, integrated optical channel power monitors and variable optical attenuators facilitate in-situ remote link commissioning and power balancing for new links. As a further benefit, it enables remote channel upgrades, removing the need for physical intervention at intermediate sites.

Scalable and Future-proof

Traditional Fixed OADM (FOADM) systems require accurate, long-term traffic forecasts. Accommodating changing traffic patterns in FOADMs is disruptive, and unplanned upgrades usually results in additional capital expenditure. In contrast, ROADMs enable bandwidth on demand at the photonic layer, accommodating changing traffic patterns with minimal impact. Additionally, the FLASHWAVE 9500 offers the option of deploying either native TDM or Ethernet, or an arbitrary mix of the two, solving the question of which technology to deploy in order to support both existing TDM and emerging IP-based services and applications.

Operations, Administration and Maintenance

The FLASHWAVE 9500 platform is supported by a suite of network management tools. The tools support full Fault, Configuration, Accounting, Performance and Security (FCAPS) management functionality, with Tier One Carrier Grade performance and availability. Advanced ROADM automation features are supported, including remote power monitoring and optimisation.

The NETSMART 2000 optical network planning tool supports the ROADM functionality on the FLASHWAVE 9500 platform. It greatly simplifies the network planning process via a user-friendly Graphical User Interface (GUI). The outcome of the planning process is presented as a report, comprising rack layouts, material lists and cabling plans, plus optical performance analysis and network topology. The NETSMART 2000 can be used to plan both new and existing networks, bridging the gap between planning and operations.

Fujitsu's Optical Networking Expertise

The accelerating demand for high-bandwidth, high-quality multimedia packet-based services demands a new breed of optical transport infrastructure. Operators are under constant pressure to deliver affordable high quality of service, to respond to unpredictable demand, and to minimise costs and provisioning time.

Fujitsu understands the changing landscape of the communications industry and has been involved in every major development over the past 20 years. In anticipation of the future requirements of telecoms networks, we've built on our lengthy experience – and profound understanding of our customers' needs – to develop a future-proof solution for the evolving transport network.

Key Network Benefits

- **Reduces** equipment space fivefold to tenfold
- **Delivers** private-line equivalent Quality of Service (QoS) for Native Ethernet
- **Consolidates** ROADM/SDH/Ethernet transport networks
- **Improves** and extends today's optical network
- **Supports** TDM and Ethernet transport from a single future-proof infrastructure
- **Controls** network ownership costs with simplified automated operations and adaptability to changing bandwidth demands

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