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Meeting the Challenge of Rapid Growth in Wireless Backhaul Traffic

The exploding popularity of over-the-top (OTT) applications consumed via mobile devices has fueled tremendous demand for wireless bandwidth. As a result, Ethernet-based wireless backhaul networks are feeling the pinch.

A new product that's purpose-built for high-capacity Ethernet switching is the disaggregated 1FINITY™ S100 Switch from Fujitsu. The S100 offers clear value and a pay-as-you-grow approach to service providers battling issues of wireless backhaul capacity. Using the S100, providers can adopt new technology that provides 100G aggregation.

The Wireless Backhaul Challenge

The challenge of wireless backhaul is efficiently and economically transporting Ethernet traffic from cell sites to a mobile switching center (MSC). Currently, carriers aggregate cell site traffic onto a 10G DWDM ring for delivery to an MSC. Large volumes of traffic are exhausting lambdas on the DWDM fibers and require a large number of 10 GbE handoffs to the MSC. An effective solution to this issue is aggregating transport network traffic onto 100 GbE rings, as a single 100 GbE handoff is more economical that several 10 GbE handoffs. The use of 100 GbE rings reduces the number of lambdas used and the number of handoffs.

The Fujitsu Solution

Fujitsu offers multiple switching configurations that increase the capacity of point-to-point wireless backhaul networks.

At cell sites, edge devices like the FLASHWAVE® CDS aggregate traffic onto Gigabit Ethernet or 10 GbE rings. Dual attached rings are commonly used to increase resiliency. If fiber constraint is an issue, CWDM fibers can be used in place of DWDM.

The 1FINITY S100 Switch increases efficiency by performing 10 GbE to 100 GbE aggregation. To reduce fiber counts, switching systems usually are deployed with DWDM transport systems. The combination of an S100 and a DWDM optical transport device like the FLASHWAVE 9500 can efficiently transport 10 GbE and 100 GbE services on 100G optical lambdas. To provide 200G transport, the S100 can be teamed with a FLASHWAVE 9500 and a 1FINITY T200 blade.
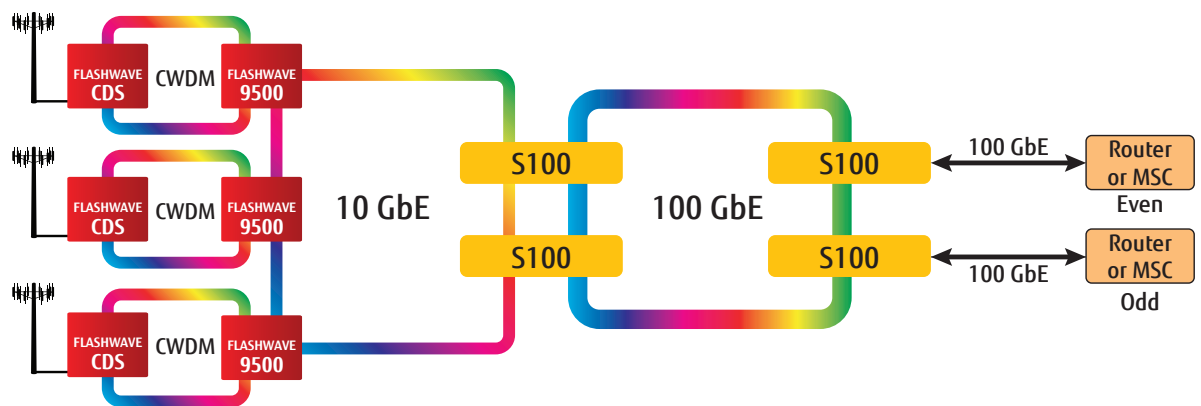

Figure 1: 1FINITY S100 Switch efficiently and economically accommodates wireless backhaul.

Managing Rapidly Growing Wireless Backhaul Traffic

Benefits

The modular S100 is a blade that has a low initial cost. Traditional solutions consisting of a shelf and associated commons can be significantly more costly. Users who choose modular, disaggregated blades can right-size their initial investments and expand capacity on a pay-as-you-grow basis. Networks can be scaled efficiently with the addition of 1RU blades at the time they're needed.

Less is more when it comes to space and power. The compact S100 blade is smaller than shelf-based solutions, and it allows full use of rack space in 1RU increments. The switch contains low-power, next-generation chips. Higher density minimizes recurring rack space rent, and low power dissipation minimizes energy use and potential power fees.

Performing 10 GbE to 100 GbE aggregation, the S100 reduces handoffs and minimizes the need for ports, slots, and fibers. These savings are reflected in lower capital and operating expenses.

The S100 switch provides E-Line services with sub-50 millisecond ITU-T G.8031 service protection and link aggregation for facility protection. Additionally, ITU-T Y.1731 support provides a full suite of rich OA&M features including per-service performance metrics.

Summary

Service providers who face the wireless backhaul challenge of exhausted fiber and excessive 10 GbE handoffs to MSCs now have alternatives to large, expensive switching products. The 1FINITY S100 Switch delivers dense 10 GbE to 100 GbE aggregation. The modular 1RU blade has a low initial cost and provides pay-as-you-grow flexibility to help reduce capital and operating expenses.

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