

Solutions for low-latency networks

When milliseconds are worth millions

As people rely more and more on communications networks to perform at the speed of light, tolerance for delay has diminished. Where once it was acceptable to experience lapses of several seconds, now there are many situations in which network delays of mere milliseconds have significant financial or service quality impact.

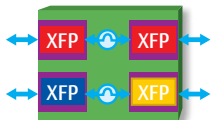
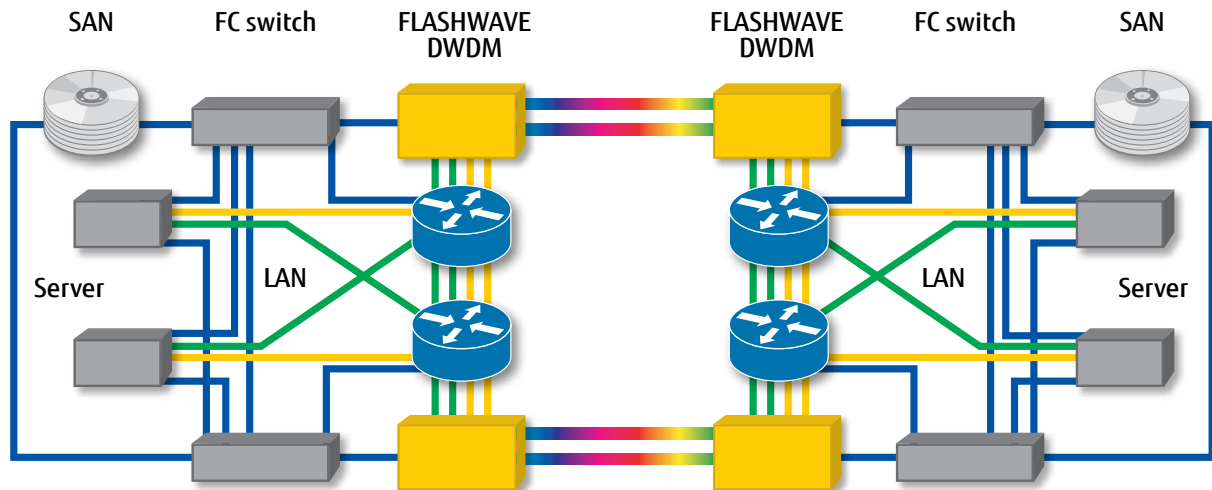
From real-time financial transactions to voice over IP to streaming video and extreme online gaming, minimizing every possible network delay has become essential to service provider competitiveness. In many of these business environments, tiny delays impose significant financial penalties, in some cases amounting to millions of dollars per year.

At Fujitsu, we not only understand the business context and technical challenges of identifying and correcting transmission delay and delay variability (known as latency and jitter), we have the know-how and the technology to reduce it to an appropriate minimum. With our end-to-end low-latency solutions, you get a comprehensive solution-based approach to ensure that transmission latency is minimized and jitter is eliminated.

Proven low-latency technology

Fujitsu is a longstanding innovator and market leader in optical networking and the company offers a number of platforms designed to provide low-latency. Engineered for high speeds, our low-latency transport systems are serving the needs of multinational financial institutions, including one major stock exchange and a highly latency-sensitive 1,000 km link between Chicago and New York. Our FLASHWAVE® 7420 WDM platform, for example, is among the lowest latency products on the market.

Storage-Area Network (SAN) solution



Dual 10 GbE transponder

- 3R module
- 10 ns pair latency
- Transparent to protocol or data rate

Maximum investment protection
with one card that supports all existing
and emerging protocols and data rates

- 8G FC
- 10 GbE
- 10G FCOE/DCB

Solutions engineered for speed

Sources of latency

- Proximity delay – how close are you to the fiber?
- Fiber delay – how long is the fiber?
- Equipment delay – how fast is your equipment?
- Network design – is this your optimal network design?

Fujitsu optical network equipment is renowned for its quality and reliability and, therefore, trusted to support all types of real time applications, including high-frequency and algorithmic trading. These same platforms are also certified for use, and operational in, thousands of SANs deployed worldwide by blue-chip suppliers. Fujitsu optical networking platforms achieve extremely low latency without compromising security, transparency, or critical performance monitoring and statistics-gathering functions.

More than just hardware—a comprehensive solution

Fujitsu low-latency solutions include professional services such as network optimization and fiber prequalification and testing. We combine our proven optical network knowledge and equipment with an in-depth understanding of key latency vulnerability points and a customer-first approach. We can monitor the network and consult closely with each customer to determine the best ways to address potential sources of latency. Then we use our extensive optical network design capabilities and expertise to develop and deploy an end-to-end solution that satisfies your network performance requirements.

As a result, our engineers can minimize latency based on the right mix of technology and a sound understanding of each individual network and applications. We focus on being your trusted business partner by providing comprehensive solutions to your business needs, and by building long-term strategic alliances with our customers. We also support your ongoing network operations through our Maintenance and Support Program (MSP) and Managed Network services.

Detecting and correcting tiny delays—the whole-network approach

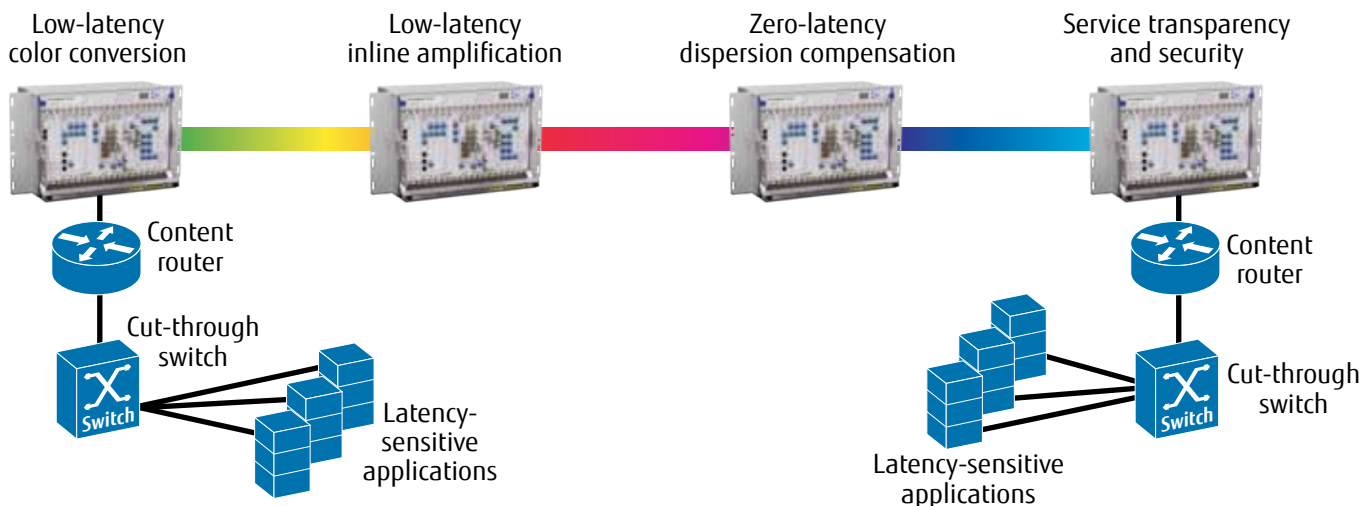
There's an element of detective work in tracking down and verifying factors that inhibit speed in a network. Some of these factors are unrelated to the actual network equipment. The quality, condition and configuration of fiber plant, in addition to the design and topology of a network, are examples of this. Targeted methods of dispersion compensation, color conversion and amplification are other potential remedies, as are improvements to the physical transmission medium.

At Fujitsu, we take a methodical, whole-network approach, with the goal of achieving speed without adversely affecting other business essentials such as availability, economy and operational simplicity. Trust our expertise and experience to cut the impact of time on your network and help keep you ahead of the pack.

Latency-sensitive applications

- Storage-area networks
- Data centers
- High-frequency trading
- High-performance computing
- High-volume transaction systems
- Streaming video/video on-demand
- Online/MMOG gaming
- Cloud computing

End-to-end low-latency advantage



Fujitsu professional services

Solutions for optimal network performance

The Fujitsu Professional Services organization delivers flexible, powerful end-to-end service solutions that support optimal network performance. Our planning, design and management services serve a wide variety of customer and network needs, projects, and situations; Fujitsu services solutions can be specifically targeted to latency monitoring and optimization.

While the importance of proper design cannot be underestimated, the successful installation of a low-latency network requires specialized knowledge and experience. Our highly trained field engineering staff provides pre-commissioning services such as fiber pre-qualification, installation, and testing. Fujitsu field engineers combine years of experience with a wealth of technical knowledge.

Along with traditional installation and pre-commissioning services, Fujitsu can pre-configure equipment racks before they ship to the field. Disparate types of equipment can be incorporated into racks along with the DWDM equipment.

For areas where fiber is not easily accessed, Fujitsu will help identify and qualify available fiber through partnerships with fiber providers.

After a successful installation, maintaining the optimum performance of the network requires monitoring. Fujitsu provides real-time performance monitoring through Network Operations Center for the low-latency network.

Professional services for low-latency networks

Fujitsu professional services enable you to achieve the lowest possible latency and keep it low. Our Maintenance and Support Program provides flexible options to fit specific customer needs.

- Network design and optimization
- Network performance monitoring
- Preconfigured racks and cabinets
- Program management
- Fiber pre-qualification
- Engineering, furnishing, installation and testing (EFI&T)
- Operations, administration and management
- Network Operations Center

Optical networking platforms for low-latency applications

- FLASHWAVE 7120 Micro Packet Optical Networking Platform
- FLASHWAVE 7420 Metro/Enterprise WDM Platform
- FLASHWAVE 7500 Metro/Regional Multiservice ROADM Platform
- FLASHWAVE 9500 Packet Optical Networking Platform

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Features and specifications subject to change without notice.