

Latency: When Time is Money

You hear a lot about latency and its impact on performance. This paper describes why ensuring your connections are provisioned on a low latency network is important and what you can do about it.



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Why is Low-Latency Important?

By definition, latency is the amount of time it takes a packet to travel end-to-end on a network. Simply put, latency equals time and virtually every major problem with network performance can be related to time. Any delay in signal or packet transmission can cause problems ranging from simple annoyance to significant loss of time and money for the end-user.

In optical networks there is a built-in limitation on packet speed – no signal can travel faster than 4.5 km/ μ s, which is the speed of light through a fiber medium. However, the more obstacles or delays placed in the way of a packet, such as network interfaces and signal conversions from optical to electrical and back (OEO), the greater the time delay or latency. This problem is then compounded by the total distance the packet has to travel, especially if it traverses multiple networks. The result can be garbled voice and video transmissions and degraded data as packet transmission timing becomes delayed and disrupted. For companies that rely upon VoIP for their business or process a high volume of transactions and database queries, this can have a serious impact upon their operations, customer satisfaction, and profits.

The Solution: A dedicated, end-to-end fiber optic-based network solution from RCN Metro

Most end-to-end network solutions employ a mixture of smaller copper and fiber-based networks, connected by a variety of interface and switching equipment, all provisioned by different vendors and carriers. As a result, it's very difficult – if not impossible – to calculate true network latency, limiting the boundaries to which SLAs can be enforced.

That's why RCN Metro provides the ideal solution – end-to-end, privately-owned fiber networks providing high-capacity transport services for a wide variety of corporations, financial institutions, and government agencies. The result? The lowest possible latency in the industry, with virtually no disruption of service and easily-scalable bandwidth availability.

We control the entire network, end-to-end, and provision it with best-in-breed network hardware for the fastest, most reliable transport service and lowest latency possible. And because we own the network and install our own optical fiber, routers and switches, we can provide accurate, dependable latency calculations backed by strong SLAs.

Customized optical networks to fit your needs.

Owning our own networks provides our customers other advantages, too. We can custom design a network solution to meet your specific needs – whether it's an enterprise-wide, WDM-based network or metro-to-metro SONET connectivity, dedicated or switched Ethernet, we offer the most flexible, comprehensive network services with the lowest possible latency.

As a major facilities-based service provider for the Northeast, Mid-Atlantic, and Chicago areas, we have more hubs in major cities than many of our competitors for the most direct path, minimizing latency by virtually eliminating back hauling.

Benefits

- End-to-end optical networking eliminates Optical to Electrical conversion delays, enabling the lowest possible latency
- Private network ownership ensures dedicated network capacity and high availability
- Diverse fiber routing throughout the core, distribution, aggregation, and access networks provides redundancy and eliminates single points of failure
- Average Mid-Atlantic metro-to-metro packet latency not greater than 7 ms
- Complete network ownership and end-to-end provisioning enables guaranteed latency calculations backed by rock-solid SLAs