The TS7700 supports the IP flow control frames so that the network paces the level at which the TS7700 attempts to drive the network. The preferred performance is achieved when the TS7700 can match the capabilities of the underlying grid network, which results in fewer dropped packets.

> **Remember:** Packets are lost when the grid network capabilities are below TS7700 capabilities. This loss causes TCP to stop, resync, and resend data, which results in a less efficient use of the network. Flow control helps to reduce this behavior. Clusters of 1 Gb and 10 Gb can be within the same grid, but compatible network hardware must be used to convert the signals because 10 Gb cannot negotiate down to 1 Gb.
>
> It is advised to enable flow control in both directions to avoid grid link performance issues.

To maximize throughput, ensure that the underlying grid network meets the following requirements:

► Sufficient bandwidth exists to account for all network traffic that is expected to be driven through the system to eliminate network contention.

► The flow control between the TS7700 clusters and the switches is supported, which enables the switch to pace the TS7700 to the WAN capability. Flow control between the switches is also a potential factor to ensure that the switches can pace their rates to one another. The performance of the switch should handle the data rates that are expected from all of the network traffic.

Latency can be defined as *the time interval elapsed between a stimulus and a response*. In the network world, latency can be understood as how much time it takes for a data package to travel from one point to another in a network infrastructure. This delay is introduced by some factors, such as the electronic circuitry used in processing the data signals, or plainly by the universal physics constant, the speed of light. Considering the current speed of data processing, this element is the most important element for an extended distance topology.

In short, latency between the sites is the primary factor. However, packet loss because of bit error rates or insufficient network capabilities can cause TCP to resend data, which multiplies the effect of the latency.

The TS7700 uses clients LAN/WAN to replicate virtual volumes, access virtual volumes remotely, and run cross-site messaging. The LAN/WAN must have adequate bandwidth to deliver the throughput necessary for your data storage requirements.

The cross-site grid network is 1 GbE with copper (RJ-45) or SW fiber (single-ported or dual-ported) links. For copper networks, CAT5E or CAT6 Ethernet cabling can be used, but CAT6 cabling is preferable to achieve the highest throughput. Alternatively, two or four 10-Gb LW fiber Ethernet links can be provided.

> **Important:** To avoid any network conflicts, the following subnets must *not* be used for LAN/WAN IP addresses, for MI primary, secondary, or virtual IP addresses:
>
> ► `192.168.251.`*`xxx`*
> ► `192.168.250.`*`xxx`*
> ► `172.31.1.`*`xxx`*