DataDefender

Network Packet Loss Protection

DataDefender is a high-performance Wide Area Network (WAN) appliance that transports IP streams across impaired links. Real world networks can restrict the flow of data with high latencies, unpredictable jitter, packet re-ordering, and packet loss. Systems that rely only on traditional network protocols like UDP or TCP can struggle to traverse the WAN in the face of these obstacles. DataDefender gives you detailed insight into the impairments your data is facing and provides multiple ways of neutralizing them, effectively boosting your network quality of service.

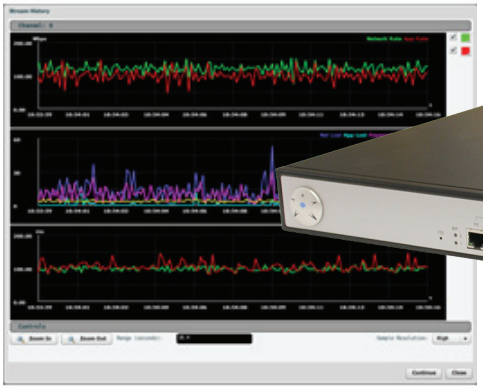
Understand Your Network

You can't improve your data flow unless you understand the network problems you need to solve. WANs are comprised of many independent systems, each introducing nondeterministic effects. It can be difficult to understand exactly how the behavior of the network is impacting your data flow. DataDefender solves this problem by giving you direct insight into your WAN through detailed analytics. DataDefender collects information from each packet passing through, measuring the link data rate, packet loss, re-ordering, and latency in real time with your data.

These measurements are displayed in live charts that include packet loss frequency, burst loss distribution, re-ordering profiles, and latency distributions. These statistics are also viewable on live history strip charts, allowing you to correlate data discrepancies with network events. Armed with this information, you can understand the impact WAN impairments are having on your data flow and determine which network protection strategies are needed to mitigate the issues.

Key Features

- Protects and accelerates real-time UDP and TCP flows from 1 Kbps to 10 Gbps
- Flexible protection strategies with configurable latency and overhead that can be tuned to any network
- Corrects packet loss, re-ordering, duplication and jitter
- Operates through high-latencies, jitter, and bandwidth limitation
- Dynamically adapts to changing network conditions
- Detailed analytics and history
- Built-in packet test source
- Optional file transfer module
- Deterministic end-to-end latency with 10 microsecond precision



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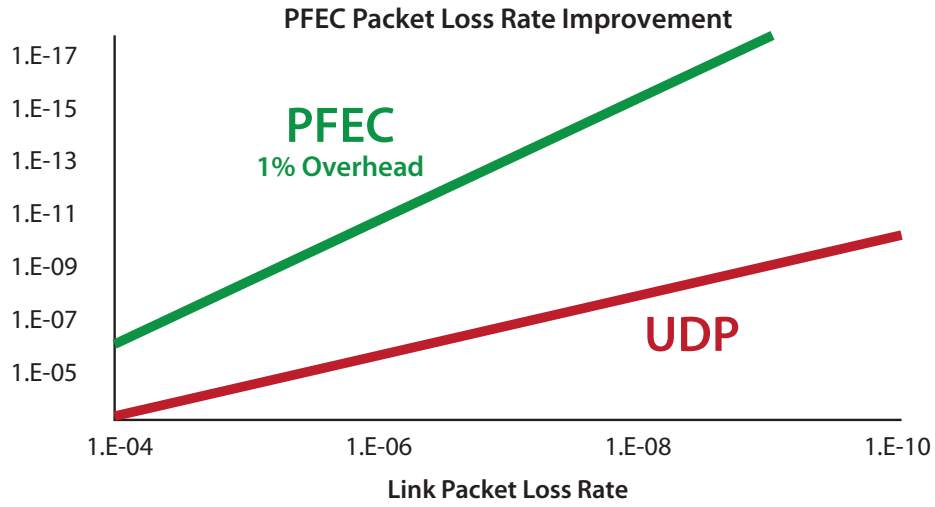
Improve Your Network

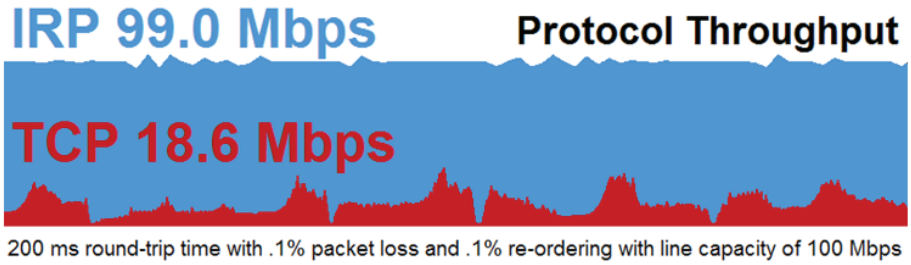
Unless you have a dedicated link with provisioned bandwidth and little to no other traffic, the unreliable nature of UDP makes it impractical for most data transport applications. While TCP can repair packet loss over a WAN, it greatly reduces throughput and incurs a high latency penalty. DataDefender provides two different high-performance protocols that overcome the limitations of both UDP and TCP, allowing your data to flow even over the most challenging networks.



Flexible Delivery Options

- DataDefender is available in a variety of form factors, including:
- Compact 1U network appliance
- Enterprise-class server with redundant power supplies, fans, hard drives, and network ports
- Virtual software application that can be installed on a blade, server farm, or cloud data center
- Integrated into other Kratos product offerings (e.g., modems, receivers, gateways, etc.)

Packet Forward Error Correction (PFEC) sends extra information with your data that allows missing packets to be reconstructed. It enables ultra-low latency data flows by correcting losses without using a backchannel for retransmission. Adding as little as 1% PFEC overhead can improve the quality of your network by several orders of magnitude.



Intelligent Retransmission Protocol (IRP) guarantees delivery by efficiently retransmitting dropped packets without violating bandwidth constraints. As opposed to TCP, IRP does not spend time searching for an optimal rate, nor does it interpret packet loss as a signal to slow down. The result is reliable network transport that is many times faster than TCP.

Packet loss isn't the only thing that can hamper your data flow, however. Re-ordering and duplication of packets can also wreak havoc on WAN transport. DataDefender provides a re-ordering window that corrects out-of-order and duplicated packets without introducing unwanted latency, regardless of rate.

In addition, DataDefender's deterministic end-to-end latency control eliminates the effect of latency jitter, another network impairment that can result in extremely bursty output that overwhelms end-devices. Deterministic latency allows you to treat the WAN as a long wire with constant, known latency, eliminating the effects of jitter.