

## Make RDP sessions clearer, more efficient with Silver Peak

The Microsoft Remote Desktop Protocol (RDP) provides remote display and input capabilities for Windows-based applications running on a server. For the output path, a proprietary video driver on the server directs the display output to the remote client using the RDP protocol. The client renders the data and interprets the packets into corresponding Microsoft Windows graphics device interface (GDI) API calls. For the input path, client mouse and keyboard events are redirected from the client to the server where RDP uses its own on-screen keyboard and mouse driver to receive these keyboard and mouse events.

With RDP 8.0, Microsoft updated and included the RDP protocol in its RemoteFX set of technologies. The protocol now supports UDP for transferring interactive data – such as graphics, audio, video, and touch commands – and forward error correction (FEC) for compensating for packet loss. Previous versions only ran over TCP, which RDP 8.0 still uses for initial connectivity and non-interactive traffic. While running over UDP, security is provided by Datagram Transport Layer Security (DTLS), the equivalent of SSL for TCP.

Despite the changes, though, RDP still faces significant challenges when operating across the WAN (wide area network). Bandwidth is wasted as extraneous data is sent across the WAN. This is especially important for “fat” operations, such as file transfers and printing, that consume significant bandwidth. Latency will pose a problem for the part of RDP that runs over TCP, limiting throughput. While the consistency of the RDP experience will be improved by Microsoft’s addition of FEC, out-of-order packets, a major problem for Internet VPNs and MPLS, will still pose a problem. Finally, outages within the service provider network or Internet will lead to costly downtime at the site relying on RDP sessions.

### Silver Peak Accelerates RDP

Silver Peak enables RDP to perform as well across the WAN as on the LAN. Silver Peak’s byte-level, deduplication and compression algorithms reduce RDP data on the WAN for both RDP over TCP or UDP. Latency problems are overcome by optimizing TCP and selecting the shortest path across the WAN. Network congestion is eliminated or reduced with Forward Error Correction (FEC) and Packet Order Correction (POC). Availability is improved with Silver Peak’s Dynamic Path Control (DPC).

### Performance Results

Customer testing shows RDP data can be reduced by 30 percent and packet loss can be eliminated entirely or significantly mitigated, improving the user experience. (see Figure 1). All results were gathered with Silver Peak software out-of-the box without any protocol adjustments or special add-ons. Silver Peak strongly encourages organizations to test RDP performance themselves as numerous factors may impact individual results.



Figure 1: Users reported a significantly improved RDP experience largely due to Silver Peak’s packet loss and out-of-order packet correction technologies.

### Summary

- Significantly improved user experience with RDP
- Eliminated up to 83 percent of packet loss, which disrupted the RDP session
- 30 percent data reduction across the RDP session

### Testing Details

Testing results for RDP were compiled from two customers – a logistics company and an educational organization.

The logistics company measured RDP performance over a 2 Mbps connection with 250ms of latency and four percent packet loss. The user experience, deduplication ratios and packet loss rates were measured.

The educational organization examined RDP over a 100 Mbps connection into their headquarters, an ADSL connection into their remote office (3.5 Mbps down / 512 Kbps up) and 14ms of latency. Packet loss reached six percent.

### Architectural Benefits

- 50 percent lower TCO
- 20 minutes to download and deploy
- No forced upgrades
- Improve every application
- Minimize support costs
- Eliminate import and duties charges
- Minimize purchase expenses
- Go virtual when ready

## Silver Peak Features

Silver Peak addresses the major performance challenges facing RDP across the WAN without adding hardware, software tuning, or application-specific plug-ins:

**Bandwidth** – Silver Peak data deduplication conserves bandwidth consumed RDP by eliminating redundant data from the WAN. The first time data is sent from the WAN, it is fingerprinted and compressed by Silver Peak. Subsequent requests are fulfilled from the local Silver Peak instance.

**Latency** – Silver Peak mitigates latency, making RDP more efficient over distance. TCP Acceleration includes window scaling, selective acknowledgements, and HighSpeed TCP. CIFS Acceleration indirectly improves RDP sessions by streamlining other applications sharing the WAN. Specific CIFS optimization techniques include CIFS read-ahead, CIFS write-behind, and CIFS metadata optimizations. Packet coalescing re-packages smaller packets into a larger

one and Dynamic Path Control selects the fastest path to a remote location.

**Congestion** – Silver Peak makes RDP more predictable across congested WANs. Applications can be directed down the least-congested path. Lost or out-of-order packets are recovered and resequenced in real time, avoiding retransmission delays. Traffic shaping and QoS mechanisms ensure RDP sessions receive the necessary bandwidth.

**Secure** – Silver Peak establishes an IPsec virtual private network (VPN) between locations, securing all data with AES-256, the enterprise standard for data encryption. Data-at-rest is also encrypted with AES. Silver Peak also supports SSL/TLS end-to-end encryption. Access to Silver Peak software is protected with TACACS+ and RADIUS.

Silver Peak does all of this to any scale, improving application performance from small offices to large data centers, making Silver Peak the most scalable data acceleration platform in the industry.

## Deployment Benefits

### Lower IT Costs

Use RDP to consolidate applications and reduce costs.

### Improve Productivity

Enable users to work with RDP desktops more effectively, even over congested networks.

### Lower Bandwidth Charges

Eliminate redundant RDP data from the WAN, dramatically reducing recurring bandwidth charges.

## For More Information

Visit [www.Silver-Peak.com](http://www.Silver-Peak.com) and

Learn about the [Silver Peak difference](#) when running thin clients.

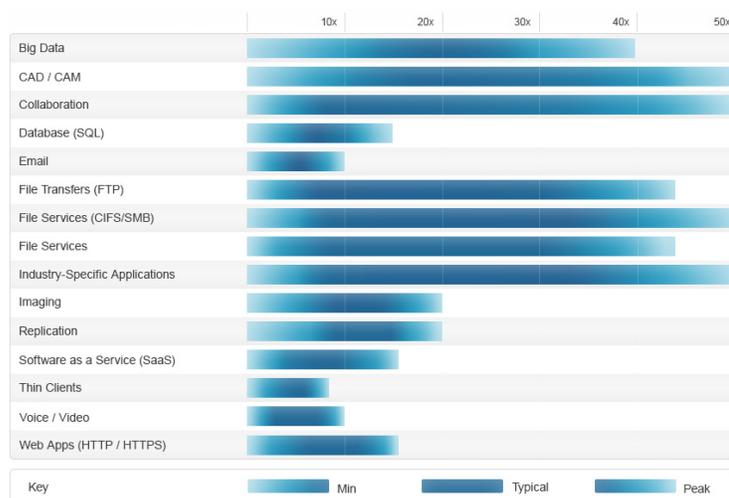
Read why [AutoDesk](#), [ASA](#) and others selected Silver Peak WAN optimization.

Watch the [director of global infrastructure at Accelrys](#) explain how Silver Peak improved his virtual desktop deployment.

Calculate your theoretical benefit with Silver Peak software using our [throughput calculator](#).

Test the Silver Peak software [for free](#). It takes about 20 minutes to download and deploy.

## Silver Peak Optimizes Any Enterprise Application



Silver Peak optimizes every application. Actual performance will vary based on many factors.