

Performance

This White Paper describes which network parameters have influence on the quality of Netviewer sessions and how the performance may be enhanced.

Each client-server-connection (moderator and participant) must be regarded separately as the factors influencing the performance differ from client to client. Each connection works independently from each other concerning the performance relevant factors.

Network latency

The network latency is the most important parameter influencing the quality of a Netviewer session. The latency of a connection is measured in RTT (round trip time – the time a data packet needs to get to the recipient and back).

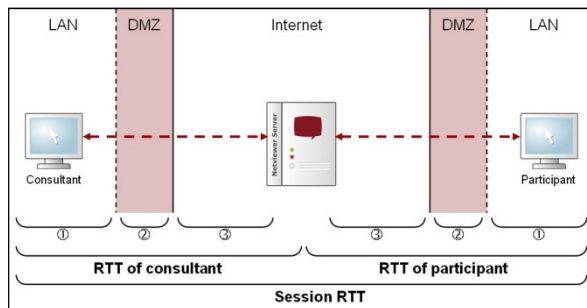


Figure 1

The RTT of a Netviewer connection consists of different parts (see figure 1).

The first part ① is the latency of the local area network (LAN) which is normally very low. The network devices used in a LAN are usually highly performant, and there are no bottle necks such as proxy servers or firewalls which have to be passed. Generally, the latency of the local network depends on the number of running client connections, the current network traffic, used network components and other factors such as the packet loss.

The next part ② is the DMZ (Demilitarized Zone) in which proxy servers and firewalls analyze, authorize and scan the incoming and outgoing network traffic. These time consuming mechanisms raise the latency depending on the

network traffic, complexity of the tasks and the network protocol. The DMZ has a significant influence on the latency of a Netviewer connection.

The last part of the RTT is the network between the DMZ and the Netviewer Server ③.

To optimize the latency and therewith the RTT of a Netviewer connection the used protocol is an important factor. The HTTP and HTTPS protocol is normally restricted by firewalls and proxy servers. Besides, the protocol overhead of HTTP reduces the transfer rate and also raises the RTT. Enabling the Netviewer clients to connect to the Netviewer communication servers by using the outgoing port 2000 or 443 through TCP will optimize the performance of the connection. To avoid the latency caused by firewalls or proxy servers in the DMZ, the clients should be allowed to connect to the servers directly on these ports.

The following table shows the relation between RTT, port and session quality:

quality class	RTT	port & protocol
A	1-200 ms	TCP 2000, 443 (http post 80)
B	201-500 ms	TCP 2000, 443, http post (get) 80
C	501-1200 ms	http post, get 80 (TCP 2000, 443)
D	> 1200 ms	http post, get 80

A good RTT between Netviewer client and server ranges between 1 and 200ms (A quality). Normally these times are only procurable by using the TCP protocol. RTTs from 201ms up to 500ms are mostly achieved by TCP or fast HTTP post connections (B quality). Sessions with 501 to 1200ms (C quality) are sessions in a more complex IT infrastructure using the HTTP post or HTTP get protocol to connect to the Netviewer server. Times above 1200ms mostly use the HTTP get protocol and lead to a bad session quality and should be improved (D quality) to ensure stable and fast Netviewer sessions.

Available bandwidth

Bandwidth is another relevant factor to a Netviewer connection. The minimum requirement for a working session is a connection of synchronous 40 kb/sec to the server. We recommend a connection of synchronous 600 kb/sec. The more bandwidth is available for the session, the faster screen changes and files will be transferred. The required bandwidth varies during the whole session because it depends on the amount of changes on the screen, functions in use (VoIP, Video, File transfer) and the screen resolution. As the Netviewer clients only transfer the screen if there are any changes, the idle traffic is very low.

The main direction of data transfer is from the shower to the watcher side. The watcher therefore needs a sufficient download bandwidth, on shower side the upload bandwidth is the determining factor.

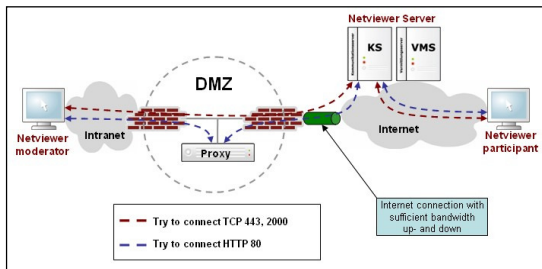


Figure 2

Hiding the desktop wallpaper and unneeded applications through the Application selection helps to minimize the bandwidth needs, because no needless information has to be transferred to the watcher side.

More details about the required bandwidth can be found in the white paper "Bandwidth Use".

Protocol and proxy switching

During the session setup the Netviewer clients automatically try to find the most performant protocol to connect to the Netviewer communication server. The clients search a connection to the Internet either through a proxy server or without, and try several ports and protocols.

The sequence of proxy servers and ports is shown in figure 3. The clients first try to connect through the more performant TCP ports. Then

they try the HTTP ports. If no open outgoing port can be detected, the client terminates with an error message.

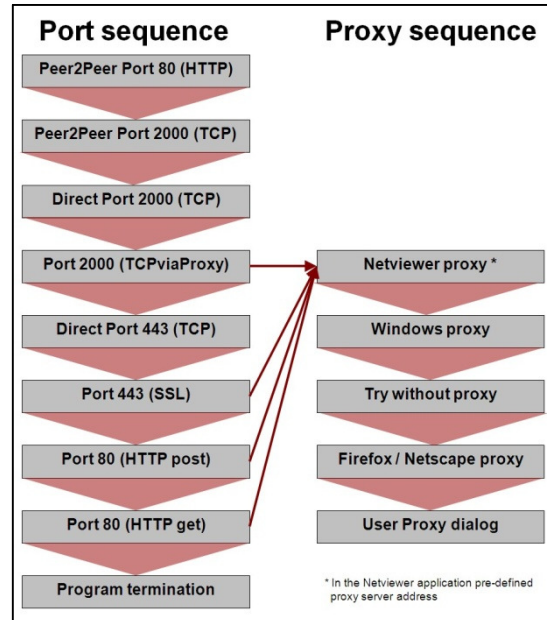


Figure 3

Summary

The main factors that influence the quality of a Netviewer session are the latency and the available bandwidth of the Internet connection. To optimize the latency the Netviewer clients should be able to connect directly to the Netviewer communication servers on TCP port 2000 or 443. Using as less proxies and firewalls as possible will improve the performance as well.

The bandwidth of a connection is mostly a constant factor. But by using the different functions after each other, such as screen transfer and file transfer, helps saving traffic and therefore improves the quality of the session. Also functions like the Netviewer compression, hiding unneeded applications with the Application selection and disabling desktop wallpapers helps improving the performance on small band internet connections.

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Reference to Server- and Client Version: G3 & G3.1

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