

Remote Desktop Product Performance Benchmark

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Revision History

Rev	Revision History	Date
Edition 1	Initial version.	11 September 2020

Reference List

Ref #	Document	Author	Date
1	Remote Desktop Software Benchmark	AnyDesk Software GmbH	n.d.

Executive Summary

During September 2020 PassMark Software conducted performance testing on twelve remote desktop products. This report presents the results of this product benchmark testing.

Testing included the following four performance metrics:

- Frame Rate
- Latency
- Bandwidth
- Frame Size

Testing was performed between two Windows 10 machines on a local area network with 1Gbit/s networking. AnyDesk was found to have the highest frame rate and lowest latency of all the products tests. While at the same time using significantly lower bandwidth than the average remote desktop product.

Overall Score

PassMark Software assigned every product a score depending on its ranking in each metric compared to other products in the same category.

In the following table the highest possible score attainable is 48 in a hypothetical situation where a product has attained first place in all 4 metrics. Remote desktop products have been ranked by their overall scores:

Product Name	Overall Score
AnyDesk	40
Windows Remote Assistance	35
TeamViewer	33
Splashtop	32
RemotePC	31
GoToMyPC	23
Zoom	23
VNC Connect	22
LogMeIn Rescue	20
Microsoft Teams	19
ConnectWise Control	17
ManageEngine Remote Access Plus	11

Products List

The remote software names and versions of the 12 products tested are as follows:

Manufacturer	Product Name	Version
AnyDesk Software GmbH	AnyDesk	6.0.7
TeamViewer AG	TeamViewer	15.9.4
Splashtop Inc.	Splashtop	3.4.0.1
LogMeIn, Inc.	LogMeIn Rescue	7.12.3359
LogMeIn, Inc.	GoToMyPC	11.1.2921
Microsoft Corporation	Windows Remote Assistance	N/A
RealVNC Limited	VNC Connect	6.20.529
ConnectWise, LLC.	ConnectWise Control	20.9.799.7542
ZOHO Corp.	ManageEngine Remote Access Plus	9.0.0
IDrive Inc.	RemotePC	7.6.32
Zoom Video Communications, Inc.	Zoom	5.2.2
Microsoft Corporation	Microsoft Teams	1.3.00.21759

Performance Metrics

Test metrics [metrics](#) selected by AnyDesk Software GmbH were used for the test but testing was conducted independently. These metrics provide a method to test the remote desktop products responsiveness, latency and bandwidth requirements. Products with low latency and low bandwidth requirements will be able to perform better and remain usable in marginal network conditions.

The test methods can be replicated by third parties using the same environment to obtain similar benchmark results.

Benchmark 1 – Frame Rate

Test Link: <http://anydesk.com/benchmark/framerate.html>

This metric measures the framerate transmitted by the remote desktop software. The website in the above link was used to perform the test, and the framerate was adjusted manually until the four arms appear on the screen forming a cross and stand still.

Benchmark 2 – Latency

Test Link: <https://anydesk.com/benchmark/latency.html>

The latency was measured by placing the two monitors of the testing machines side-by-side and using a high-quality digital camera to take the images of the millisecond counter shown on the above website. The difference between the two counters was calculated and considered as the latency value.

A total of ten photos were taken each test run and the average value was obtained from the ten samples.

Benchmark 3 – Bandwidth

Test Link: <https://anydesk.com/benchmark/bandwidth.html>

The above website displays a moving globe image with 60 FPS. While this image was displayed on the screen during the remote desktop connection, the total network bytes transmitted in one minute duration were measured using [Process Hacker](#) V2.39.124 tool.

Benchmark 4 – Frame Size

The frame size was calculated using the data collected from the benchmark 1 and 3 using the formula:

$$\text{Frame Size} = \text{Bandwidth} / \text{Frame Rate} * 60 \text{ seconds}$$

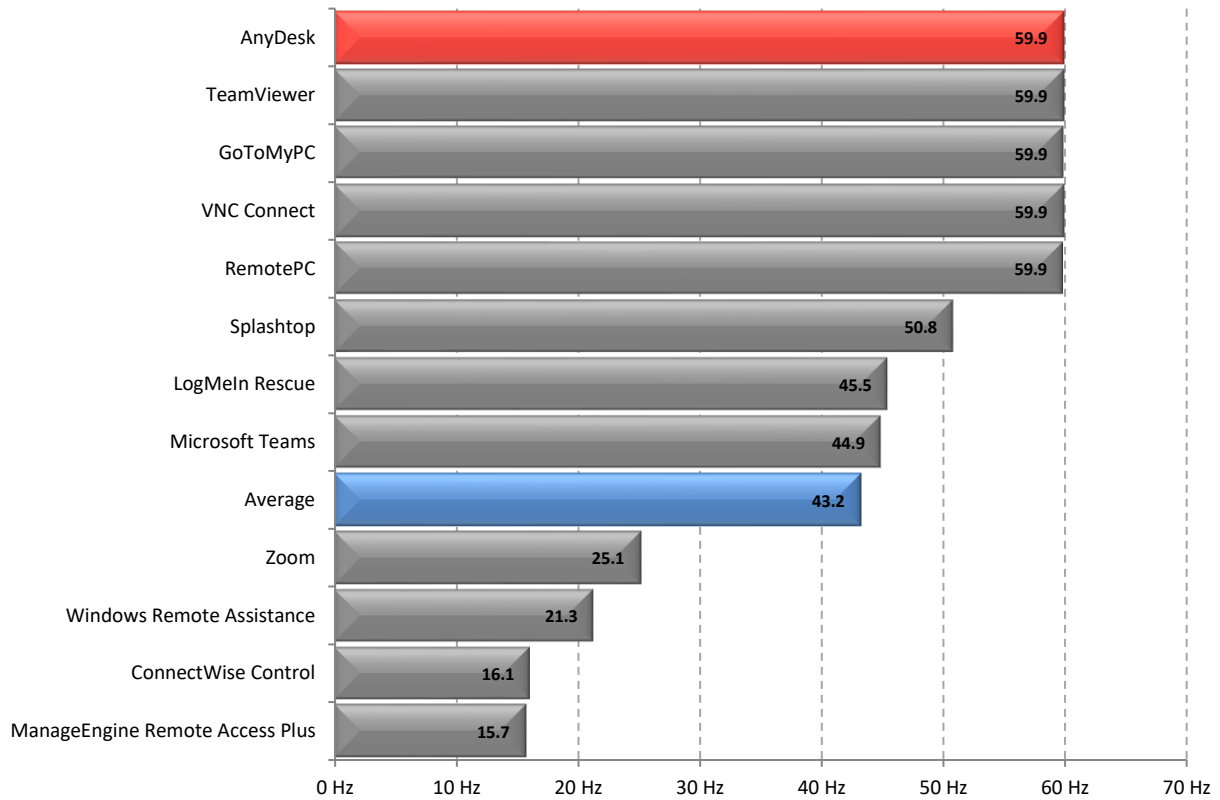
The metric indicates the average compressed frame size transmitted over the network.

For all of the tests of all products, the default quality settings were configured, and the full screen mode was enabled. After running all of the three tests, both machines were rebooted to remove any possible side effects (e.g. caching), and the tests were repeated for five times.

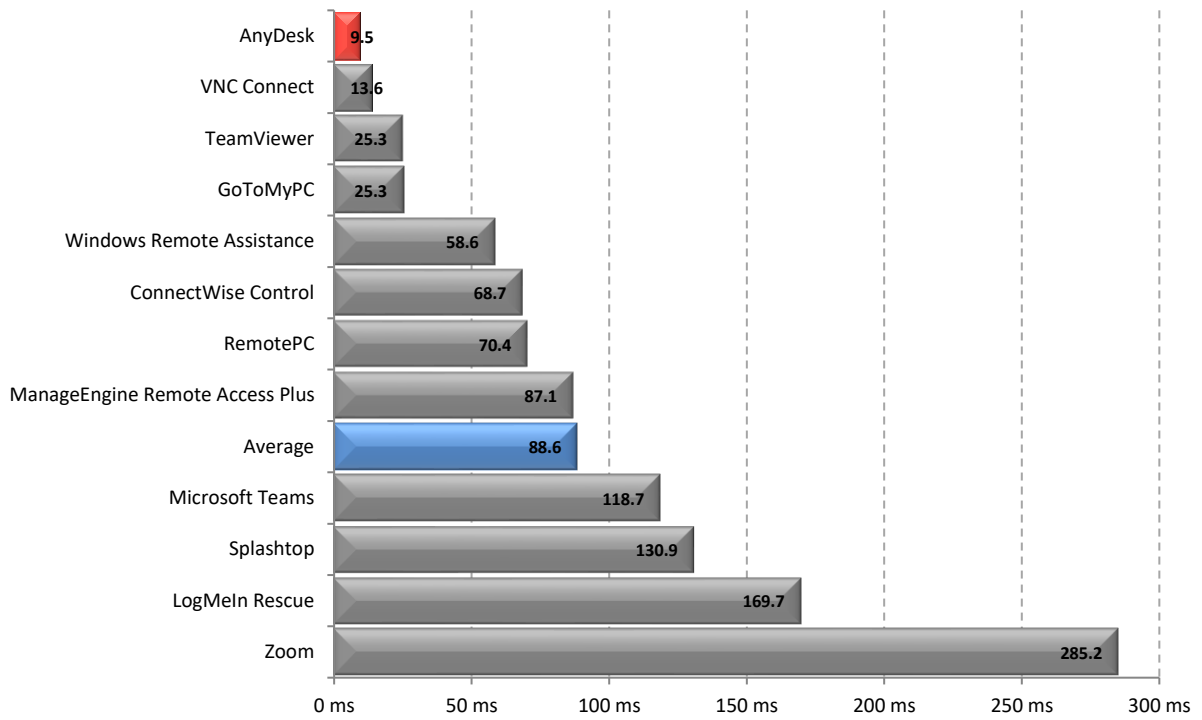
Test Results

In the following charts, we have highlighted the results we obtained for AnyDesk in red and the average for blue.

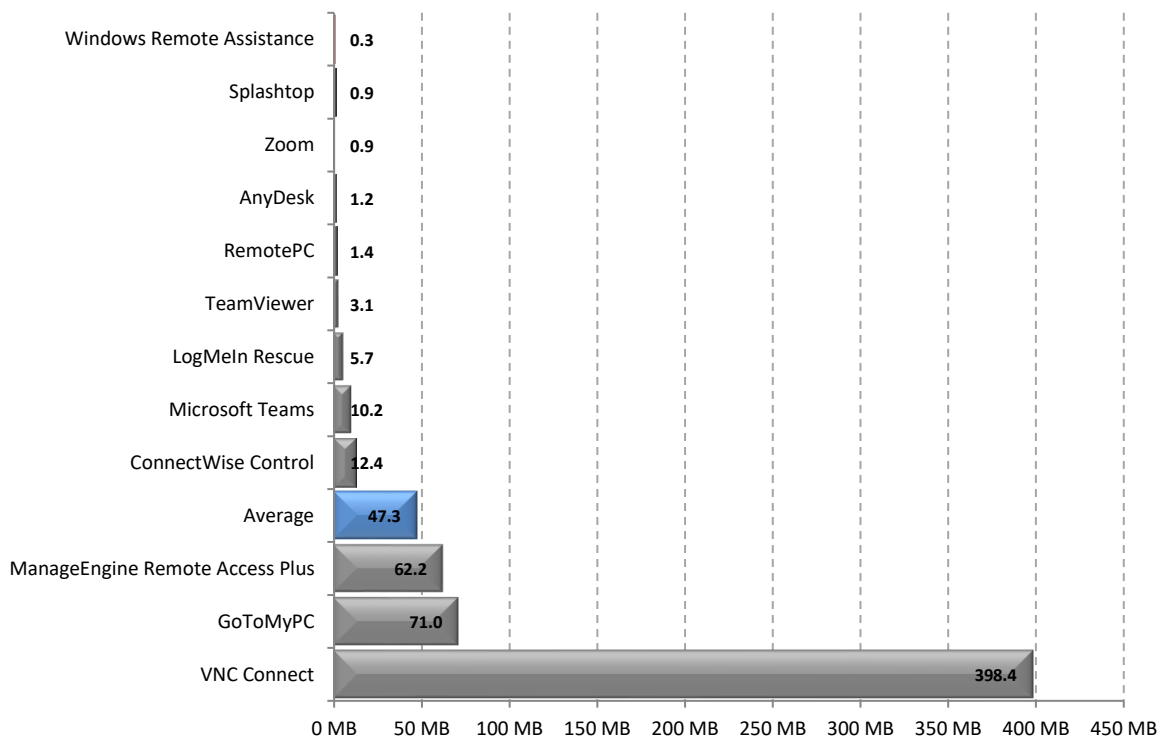
Benchmark 1 – Frame Rate



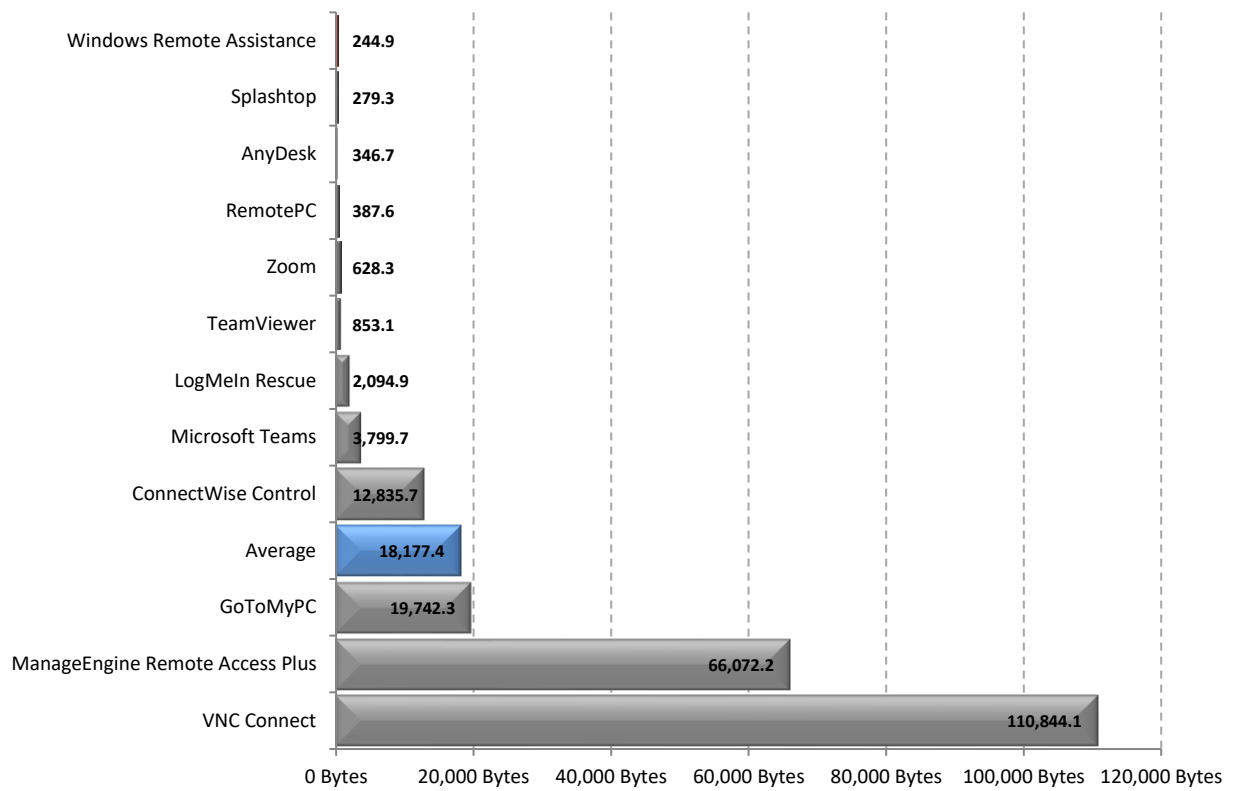
Benchmark 2 – Latency



Benchmark 3 – Bandwidth



Benchmark 4 – Frame Size



Testing Environment

Testing Machines Specifications

The machine for remote access from:

Component	Description
Operating System:	Windows 10 Pro Version 2004
Motherboard:	ASRock Fatal1ty Z170 Gaming K6
CPU:	Intel Core i7-6700K @ 4.00GHz
RAM:	2x8GB DDR4
Video Card:	NVIDIA GeForce GTX 960
Hard Drive:	Samsung 950 Pro M.2 NVMe 256GB
Monitor:	Dell UltraSharp U2412M
Display Setting:	1920 x 1200 at 59 Hz
Network:	1 Gbps (Gigabit Ethernet cable)

The machine for remote access to:

Component	Description
Operating System:	Windows 10 Pro Version 2004
Motherboard:	Foxconn 2ABF 3.10
CPU:	Intel Core i5-4460 CPU @ 3.20 GHz
RAM:	8GB DDR3
Video Card:	NVIDIA GeForce GT 705
Hard Drive:	Kingston HyperX SSD 240GB
Monitor:	Dell UltraSharp U2412M
Display Setting:	1920 x 1200 at 59 Hz
Network:	1 Gbps (Gigabit Ethernet cable)

Other Tools

- Google Chrome V85.0.4183.83
- Process Hacker V2.39.124

Disclaimer and Disclosure

Disclaimer of Liability

While every effort has been made to ensure that the information presented in this report is accurate, PassMark Software Pty Ltd assumes no responsibility for errors, omissions, or out-of-date information and shall not be liable in any manner whatsoever for direct, indirect, incidental, consequential, or punitive damages resulting from the availability of, use of, access of, or inability to use this information.

Disclosure

AnyDesk Software GmbH funded the production of this report, selected the test metrics and list of products to be included in this report, and supplied the websites used for the tests.

Trademarks

All trademarks are the property of their respective owners.

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