

## Manage and solve remote connection problems

### Measure connection quality for VoIP, streaming video, and IPTV performance

Identifying the cause of remote network problems is a time consuming and costly challenge for application service providers and support groups. Whether trying to resolve a connection problem for an existing customer or prequalifying a new customer for business growth, ensuring connections perform and identifying the cause, when there is a problem, is crucial to reducing support costs and growing a satisfied customer base.

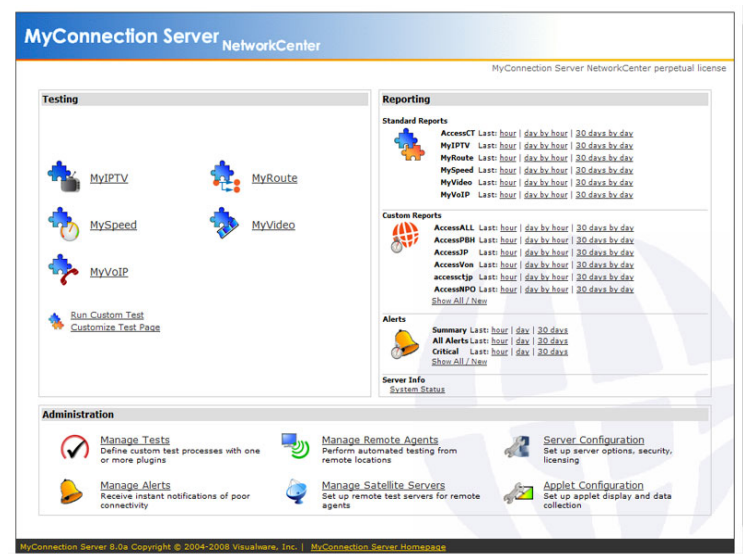
MyConnection Server is an application designed specifically to help organizations identify and resolve last mile customer connectivity problems quickly and with little demand for the customer to assist in the resolution process.

MyConnection Server broadband testing software enables you to quickly and easily measure the performance, capacity and quality of network connections for the bandwidth demanding and time critical applications that such as VoIP, video on demand, Video conferencing and IPTV. Uses for MyConnection Server include:

- Measure bandwidth performance
- Identify throughput problems originating in the last mile
- Network assessment testing
- Pre-qualification of customer networks for business services
- Benchmarking network deployments
- Identification of network routing problems, peering points and packet loss
- Resolution of customer connectivity problems with minimal involvement of the customer
- Fully automated 'self help' support solutions

The MyConnection Server is a framework architecture that is extensible, allowing the user to select the testing components that best fit businesses requirements. This approach provides a flexible means to easily modify and/or add components as business needs change and grow. MyConnection Server benefits include:

- **Remote Agents automate the testing process** to deliver an highly effective solution to resolve customer problems without consuming the customers time and resources.



- **Automation enables connection testing over longer periods** of time to quickly isolate last mile congestion or packet shaping interference
- **Test results are consolidated into a database** delivering a comprehensive profile to enable a fast resolution to high impact customer problems
- **Supports a web deployment model** to deliver an access 'anywhere', use 'everywhere' cost effective solution for global companies supporting enterprise networks
- Web enabled remote **Satellite Servers deliver an effective end-to-end network testing solution** anywhere within the enterprise without the cost of establishing and maintaining full server testing solutions.

## Network Testing Modes

MyConnection Server has three primary highly flexible testing modes that range from a 'self-help' testing portal to an automated testing process managed from the MCS management console. These deployment options are easily combined and changed on the fly, enabling the user to quickly adapt MCS connection tests to changes in businesses requirements and network environments.

- **End-User Initiated Browser Testing** provides end-users a quick and easy means to test their connection to your MCS server, results are displayed to the end-user and logged to the MCS database for review by support technicians. This solution provides an ideal foundation for a self-help portal strategy.
- **Automated Network Testing** enables support technicians to manage the testing process to quickly resolve a customer problem, or perform long-term continuous testing to build a baseline and monitor connection performance. Web-delivered Remote Agents and Satellite Servers enable connection testing between two remote systems to test specific network paths.
- **AccessCT™ Appliance Network Testing** enhances the standard automated remote testing through the provision of a small test appliance that integrates the active testing process with an integrated TCP stack to deliver passive monitoring and error analysis. The AccessCT platform provides a cost effective solution that does not entail the use of a PC platform and enables support engineers to analyze the testing process to identify the network errors on the WAN or LAN in addition to the performance issues. Errors identified cover Corruption, data loss, duplicates and data order.


*We use the MyConnection Server to measure the call quality and take action in case there are quality issues. MyConnection Server allows e-fon to handle those incidents very efficiently and it is less time consuming to find the problem.*

Stefan Meier,  
CEO, e-fon

## Network Testing Modules

The MyConnection Server framework includes several key network testing modules to perform specialized measurement and analysis of today's web-delivered applications.

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 **MySpeed® – Bandwidth capacity, throughput, speed testing with connection quality analysis and end to end route performance**

- **Socket-to-socket testing**  
Unlike most speed testers, MCS MySpeed performs both socket-to-socket and HTTP modes. Socket-to-socket testing provides the most accurate speed tests available, particularly on high speed networks of 100Mbit or more.
- **TCP data flow analysis**  
Broadband speeds can be degraded due to excessive TCP pause, or the amount of time spent between receiving data blocks. This helps determine the cause of slow connections as it defines how much time is spent actually transmitting data versus being idle waiting for data to arrive.
- **Connection quality reporting**  
The MySpeed QOS metric represents the consistency of download capacity, a key factor affecting web application delivery, especially for time-sensitive applications such as VoIP and video-over-IP.
- **Key performance metrics provide valuable insight into connection performance** include Max Attainable Speed, Round Trip Time, TCP Forced Idle, and Max Route Speed (or end-to-end route speed).

 **MyVoIP™ – Digital phone service Voice-over-IP quality testing and analysis**

- **Customize VoIP simulation test, test load capacity**  
Select a codec to use for the VoIP simulation to conform to a VoIP provider's environment, or test the performance using multiple VoIP lines.
- **Measures UDP jitter**  
Jitter occurs when data packets do not arrive at the destination in the same order they were sent. MyVoIP simulates voice traffic over a UDP connection and measures the amount of jitter occurring, and reports the associated level of voice call quality.
- **Measures packet loss**  
When data packets are lost or discarded it negatively impacts voice call quality. MyVoIP measures the amount of lost and discarded packets and reports the associated level of sound quality.
- **Reports the number of supported VoIP lines**  
MyVoIP measures the bandwidth capacity of a connection and reports the number VoIP lines the connection can support.
- **Reports the Mean Opinion Score (MOS)**  
MOS is a numeric measure of the sound quality of a communication connection.

 **MyRoute™ – Network route performance testing and analysis**

- **Graphical View of Traceroute, Ping, Reverse DNS Connectivity Analysis.** Results from several essential network diagnostic tools are integrated into an overall connectivity report, providing a

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graphical view of connection performance report including **packet loss** and **latency** for each network hop. Drill-down detail is easily visible with a mouse over any network hop.

- **OmniPath™ discovers all paths to a network destination, reports the performance for each individual route.** The common use of load-balancers creates multiple paths that data packets may travel between the source and destination. OmniPath discovers the various paths, enables you to easily see which routes are the fastest/slowest, have the highest/lowest packet loss, or have the highest probability.
- **IP Location Reporting.** The physical geographical locations of network servers and routers is key information for understanding routing problems, viewing the actual route path on global map provides an instant picture of routing efficiency and distances.
- **Network Provider Reporting.** See the contact information for the company providing Internet access for each hop of a network route, so you can easily report network problems.



### **MyCapacity™ – Bandwidth capacity, max throughput, UDP speed testing with variable testing payload**

- **UDP Capacity Testing Measures Download and Upload Max Throughput to your Server**  
By testing multiple data and packet rates over a UDP connection, MyCapacity determines the max amount of data/packets that can fit in a connection pipe before packet loss results.
- **Customizable Testing Payload**  
Change packet size and packet rate ratios to compare results with different data/packet payloads, see how different payloads adversely affect throughput and quality, quickly prequalify connection capacities, identify router packet limitations and determine which packet size and rate ratios deliver the most efficient service.
- **QOS Reporting**  
The MyCapacity QOS metric represents the consistency of download capacity, a key factor affecting web application delivery, especially for time-sensitive applications such as VoIP and video-over-IP.



### **MyVideo™ – Network real-time streaming video performance and quality testing**

- **MCS MyVideo** accurately tests TCP socket-to-socket connections for **jitter**, the key performance measurement affecting real-time streaming video applications. MyVideo accurately measures and identifies the TCP delays that cause the jitter and clearly shows the impact to the data flow and resulting jitter over time.
- **Measures jitter and packet loss**  
As most video is transmitted via the TCP protocol packet loss rarely occurs, but jitter is a very important metric for streaming video quality. If a packet is dropped, the TCP stack will re-transmit it resulting in zero packet loss, but causing a jitter spike. If packet loss does occur it is almost certainly due to the connection literally not being fast enough to accept the incoming packet rate.

- **Customize video simulation test**  
Set the video test to conform to your or your Video provider's environment, choose the size of audio and video packets, the number of packets to send, and the test duration.
- **Reports supported levels of video and audio**  
Connections can have good audio quality but poor video quality. MyVideo reports the supported quality levels for each.

## MyIPTV™ – Network real-time IPTV performance and quality testing

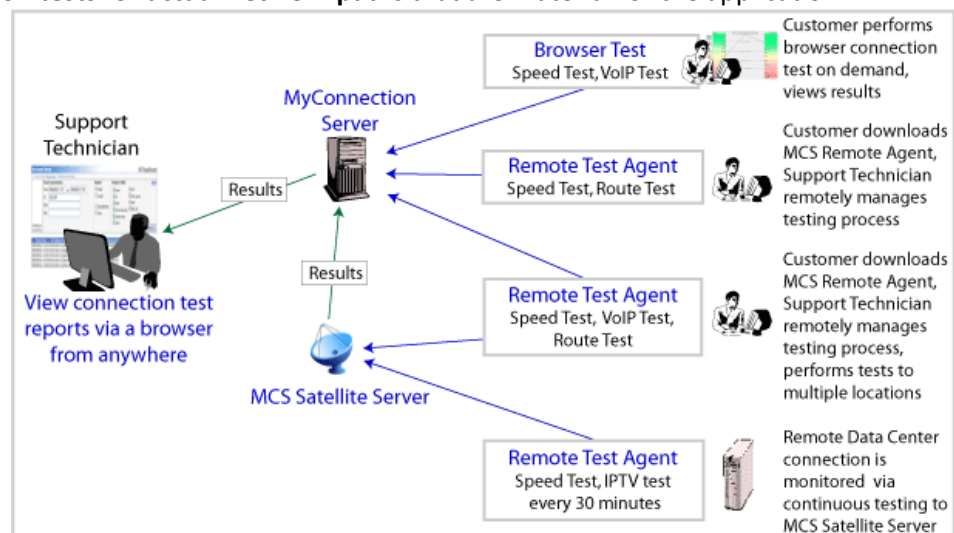
- **Simulates IPTV traffic using RTCP (Real Time Control Protocol) and RTP (Real Time Protocol) over a UDP connection and analyzes the data streams for multi-media performance.**
- **Measures quality for Video/HDTV and left and right audio channels**  
Multi-media applications such as IPTV and video conferencing encompass multiple data streams which may perform at different quality levels. MyIPTV independently measures Video/HDTV and the left/right audio channels and reports the quality levels for each.
- **Customize IPTV simulation test**  
Select a codec and quality level to use for the IPTV simulation to conform to your or your IPTV provider's environment.

## Automated Network Testing

MCS shared network management services deliver the ability to automate network testing from remote locations. This provides a vital toolset to perform **network assessment and pre-qualification testing**, and quickly **identify and resolve last mile connectivity problems** that affect the customer. This approach provides a framework that improves service by proactively identifying connection failures experienced by remote customers, partners or remote offices and data centers.

The combination of Remote Test Agents and Satellite Servers significantly extends the testing capabilities of MCS, enabling pre- and post-sales support groups to easily **perform comprehensive and accurate connection tests for actual network paths** that are material for the application delivery directly to the user.

**Remote Test Agents** can easily be deployed, via the browser, to any remote customer desktop. This provides an adaptable interactive framework for troubleshooting of connection problems



on an enterprise scale if required. The browser delivery model is flexible and usable allowing more permanent remote locations, such as application specific datacenters or offices, to continuously test and monitor connection quality and performance. **Satellite Servers** further extend this architecture such that the measurement between any two network points, to accurately align with the application delivery, is easily accomplished.

## Remote Agents

Remote Test Agents are software agents that are created, published and managed from the MCS control panel. There are two types of Remote Agents which can be created for ongoing testing and monitoring, or on-demand testing, typically used to troubleshoot a connection problem during a support call.

Long-term Automated Testing	Short-term Automated Testing
<ul style="list-style-type: none"> <li>• Installs as a service, starts automatically on a system reboot</li> <li>• Runs in the background with no open windows on the target system</li> <li>• Ideal for on-going testing to build and maintain a baseline of connection performance over time</li> <li>• Can be combined with AlertAdvisor to receive instant notifications of poor performing connections, view historical alerts</li> </ul>	<ul style="list-style-type: none"> <li>• Has a 'zero footprint' that leaves no residual files or executables on the target system</li> <li>• Provides a visible window on the remote target system for better user acceptance, allows the remote customer to be in control if required</li> <li>• Remains active only while Remote Agent window is open on the target system, nothing is hidden</li> <li>• Effective solution for small and large support groups focused on troubleshooting customer connection problems</li> </ul>

Remote Agents provide a cost effective means to measure and report remote connection performance, avoiding costly truck rolls and on-site visits.

- **Interactively manage the testing process from the browser-based MCS Control Panel**, change/combine test types (i.e., bandwidth speed, VoIP quality, network route), testing interval, number of tests to perform, target servers, remove Remote Agents, and more
- **Deploy Remote Agents to remote data centers, partner sites, customer locations** to easily perform on-demand or continuous testing from remote locations to the MCS server or Satellite Servers
- **Create, re-deploy and move** Remote Agents to new locations as needed

## Satellite Servers

Satellite Servers add significant power and flexibility to MCS as they simplify the problem of testing between two remote locations. Satellite Servers act as target testing servers for Remote Test Agents, providing a quick and easy means to perform on-going or ad-hoc testing from one

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remote location to another remote location, with test results immediately visible to the MCS Support Technician anywhere in the world.

- **Create and manage** satellite servers from the browser-based MCS Control Panel
- Use Satellite Servers to establish additional connection testing points at the application edge to **accurately test actual application network paths**
- **Create, re-deploy and move** Satellite Servers to new locations as needed

## AlertAdvisor

AlertAdvisor provides instant notification of connections that violate critical application thresholds. Set threshold values on key performance metrics, receive an email whenever a connection performs below critical application service levels.

- **View real-time alert status** anytime, anywhere with real-time browser-based reports
- **Define Alert levels** with Warning, Information, or Critical status
- **View past alerts** summarized by Last Hour, Last Day, Last 30 Days

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## MCS AccessCT™ Network Test Appliance



**AccessCT – Turn-key appliance automates connection testing from remote customer sites and data centers, simply plug the device in the remote network and go!**

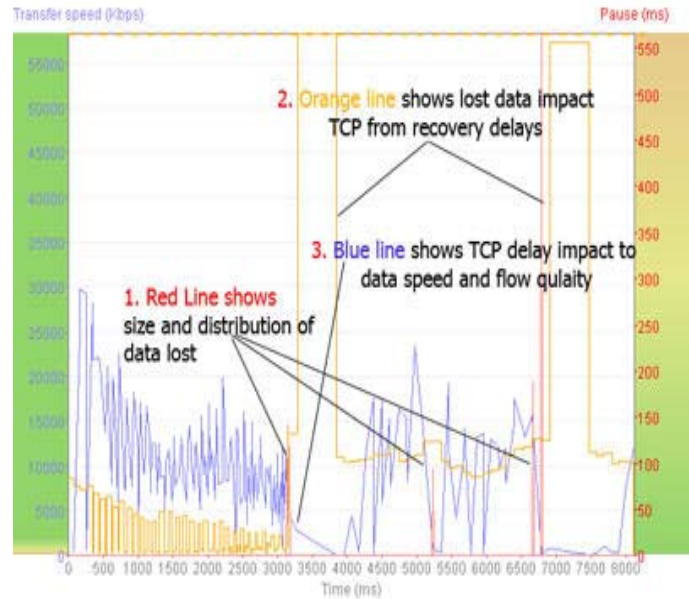
AccessCT is a small (3"x4") fully automated appliance that supports active testing as well as passive monitoring, which enables the AccessCT appliance to analyze the test traffic during the connection test process.

The AccessCT solution is unique as it is fully integrated to its own TCP stack which provides visibility to a wide range of valuable network performance measures. By combining integrated TCP analysis within the test process, the AccessCT device delivers detailed reporting of connection test results such as the throughput, speed and quality of the connection in addition to:

- **Dropped data** on the WAN route, in packets as well as bytes
- **Lost data due to buffer overrun** situations caused by network delays resulting from dropped packets
- **Duplicate re-transmitted data** caused by traffic delays as a result of dropped packets
- **Out-of-order data** caused by lost data recovery
- **Partial data** packets as a result of data recovery requests

Integration with a functional TCP stack enables AccessCT to detect local network (LAN) problems that may affect WAN performance such as CRC errors and frame errors. As an example, the graph on the right is of a typical connection that clearly shows the impact of lost data on the quality and throughput of a connection being tested.

An integrated route testing engine analyzes the route(s) between the origin and destination(s) to help identify and resolve connection problems. The AccessCT traceroute testing engine, if configured, can also be used seamlessly from MyConnection Server online users. This provides the benefit of being able to test connections from multiple points of presence (POPs), this flexibility also allows engineers in the support office to work directly with engineers using AccessCT devices in the field.



## Requirements

**Server System Hardware:** 3 GHz CPU, 80 Mb free disk, 2-4 Gb memory, 100Mbit+

**Remote System Hardware (for Remote Agents or Satellite Servers):** 2 GHz CPU, 1 Gb RAM

**Operating Systems:** any of the following --

**Windows 2000/XP/2003/Vista/2008**

**Linux kernel 2.2.5 and above, RedHat 8 and above, and most other popular Linux distributions** - Intel (x86) architecture only

**Sun Solaris 2.5 and above** - SPARC or Intel (x86) architecture

**32-bit or 64-bit MCS** runs as 32-bit or 64-bit (depending on the Java JRE installed)

**Java Requirements:** Sun Java JRE v1.5\_11 or later

*For information on how MyConnection Server can help you measure and assess connection performance, please see [www.myconnectionserver.com](http://www.myconnectionserver.com).*



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