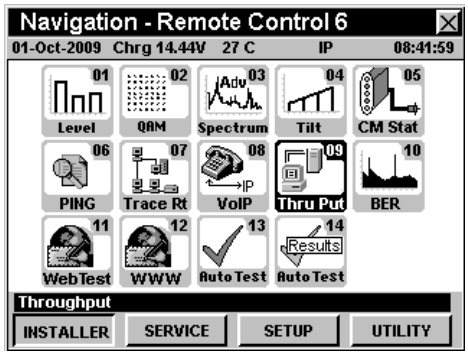
TRILITHIC **Application Note**

860 DSPi High Speed Throughput

High Speed Throughput



The 860 DSPi High Speed Throughput option allows the technician to test upstream data rates as high as 100 Mbps and downstream data rates as high as 152 Mbps. (Maximum data rates are only available with the DOCSIS 3.0 modem option.) This is a valuable tool for verifying provisioning as well as bandwidth availability at customer homes or at key test points in the system. The throughput test works with a server side application (ACTS – Advanced Communication Test System) that can be installed on any server in the system (even a Trilithic Data Manager (TDM) Server).[1]

ACTS now supports the following modes:

- PING reflector
- VoIP RTP Test (with and without UGS)
- Throughput TFTP Upstream and Downstream
- Throughput HTTP Upstream and Downstream
- Throughput UDP Upstream and Downstream

Increased Security

ACTS provides a secure method for testing throughput.

- No files are created or destroyed. All free HTTP and TFTP test server applications create files on the server or serve up files from the server, creating a security concern related to malicious virus attacks. The ACTS application simply uses chunks of random memory and never accesses the hard disk.
- Customizable Ports. Most free HTTP and TFTP test server applications use well known internet ports like Port 80 and Port 69 which expose the servers to standard virus attacks. The ACTS application allows the customer to choose the ports to make them less conspicuous to the common internet community. A side benefit of this is that this application can now be installed on a standard web service such as a web server or TDM server or even Cable Modem TFTP Server.

[1] Minimum Server Requirements: P4 class machine; Windows XP or Windows 2003 (Professional, or Server editions); 1 GB RAM; 100 MB hard drive space for installation; 10/100/1000 NIC

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1-800-344-2412 or 317-895-3600
support@trilithic.com or
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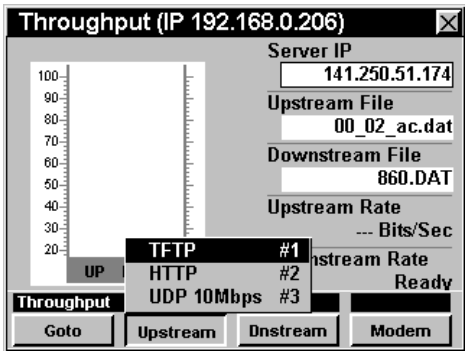
How Does My 860 DSPi Utilize High Speed Throughput?

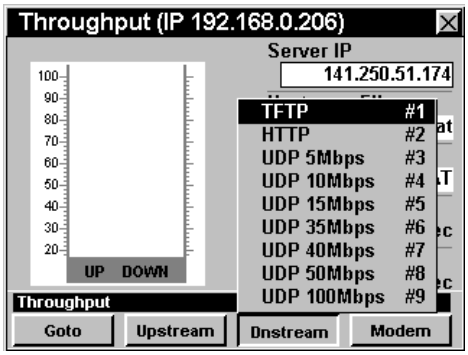
The 860 DSPi performs throughput tests using the Throughput Mode. The mode automatically adapts to user options and hardware installed as follows:

- If the 860 DSPi is equipped with a 10 Base-T NIC (CI-1, CI-2, or CI-3) then HTTP, TFTP, and UDP tests are available, but the maximum rate is restricted to 10 Mbps.
- If the 860 DSPi is equipped with a 100 Base-T NIC (CI-4 or CI-5) and DOCSIS 2.0 Modem then the maximum rate is 38 Mbps (50 Mbps EuroDOCSIS).
- If the 860 DSPi is equipped with a DOCSIS 3.0 Modem the maximum rate is 152 Mbps (200 Mbps EuroDOCSIS).

When using the ACTS application and upstream and downstream file names do not matter because it does not use files. These names only matter when you are using other web-based server applications.



Equipped with 10 Base-T



Equipped with 100 Base-T & DOCSIS 2.0

How Can I See if My 860 DSPi Supports High Speed Throughput?

The easiest method to see if your 860 DSPi supports High Speed Throughput is to go to the Information Menu on the Setup TAB. The High Speed Throughput feature is only available on units with a CI-4 or
CI-5. Examine the Net Option Information List; if you do not have a CI-4 or CI-5, the unit must be returned to the factory for an upgrade.

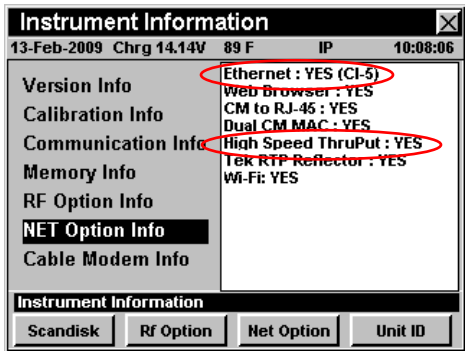


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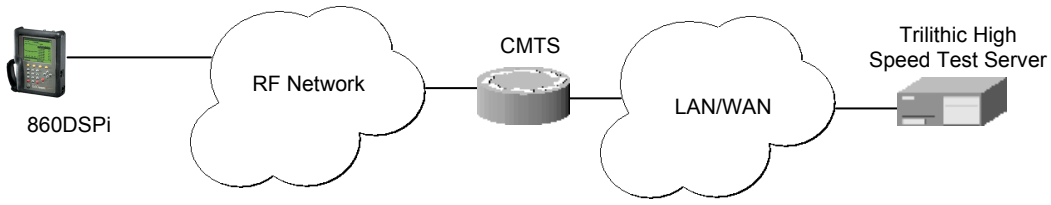
Diagram

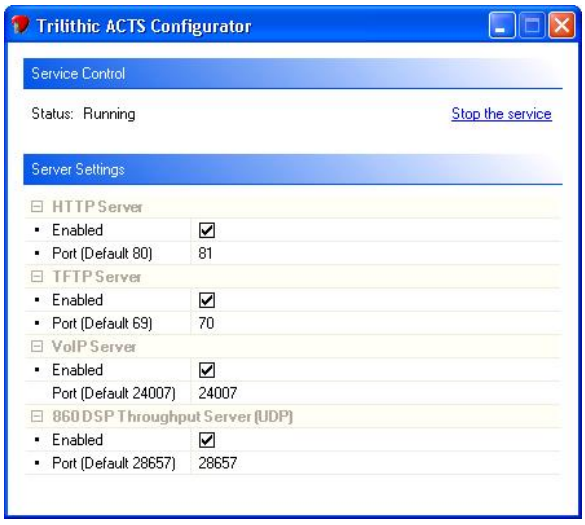
The following diagram shows a typical connection between an 860 DSPi and Trilithic's ACTS (Advanced Communication Test Server). Because this test uses a Trilithic proprietary protocol, ACTS is required. Because ACTS may need to send multiple high speed data streams simultaneously, best results will be achieved when installed on hardware with a high speed connection (1 Gbps recommended) to the CMTS.



How Do I Setup the Communication Test Server?

After you install ACTS, you must go to the Program Group on your desktop, look for Trilithic, and then Start the "ACTS Configurator" Program.

Set the ports as seen in the screenshot below, which are suggested in order to avoid any conflicts with existing services on the server. Press the Stop and Start button when complete. The status should say "Running". Press the 'x' button to exit the *Configurator* program. The ACTS Software is now running and configured.



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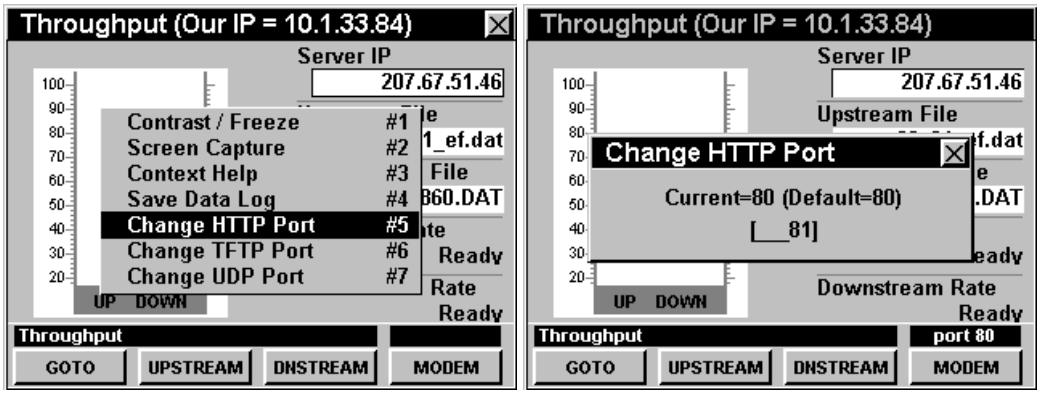
If you are using Windows Firewall (or any other software firewall on your server), you need to allow the appropriate TCP/UDP ports.

- For the TFTP test, allow TCP port 70.
- For the HTTP test, allow TCP port 81.
- For the 860 DSP ThruTest, allow UDP port 28657.
- For the VoIP RTP test, allow TCP port 24007.

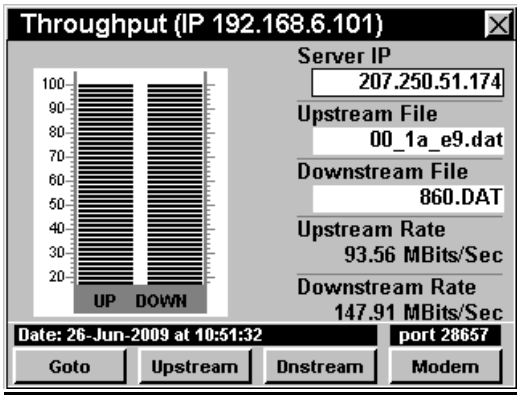
How Do I Use the High Speed Throughput Menu?

Once in the ThruPut Mode, set your 860 DSPi Ports to match the server configuration. To set the ports:

- Press the **Fn** key and choose *Change HTTP port*, enter **81**, and then press the **Ent** key.
- Press the **Fn** key and choose *Change TFTP port*, enter **70**, and then press the **Ent** key.
- Press the **Fn** key and choose *Change UDP port*, enter **28657**, and then press the **Ent** key.



Run some Upstream and Downstream Tests, an example of a throughput test using a DOCSIS 3.0 modem is shown below.



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Maximum Speeds Supported?

The following throughput examples are from an 860 DSPi equipped with the latest network card, Wi-Fi adapter, and DOCSIS 3.0 modem communicating with the latest version of Trilithic's ACTS server software. Depending on your network configuration, network loading, CMTS upstream channel width, and server location; your results may be different. These numbers are close to the maximum numbers reported by the instrument.

Connection Type	UPSTREAM			
	TFTP	HTTP	UDP 10Mbps	UDP 100Mbps
RJ-45	5.50	7.43	9.62	N/A
DOCSIS 2.0 Cable Modem	1.64	7.43	8.51	N/A
DOCSIS 3.0 Cable Modem	1.65	7.43	8.51	93.56
Wi-Fi with Router in DMZ Mode	2.40	5.47	7.37	N/A

Connection Type	DOWNSTREAM								
	TFTP	HTTP	UDP 5Mbps	UDP 10Mbps	UDP 15Mbps	UDP 30Mbps	UDP 40Mbps	UDP 100Mbps	UDP 150Mbps
RJ-45	4.99 Mbps	4.96 Mbps	4.98 Mbps	9.96 Mbps	14.91 Mbps	29.83 Mbps	39.77 Mbps	96.93 Mbps	N/A
DOCSIS 2.0 Cable Modem	2.37 Mbps	3.56 Mbps	4.97 Mbps	9.90 Mbps	14.91 Mbps	29.82 Mbps	35.26 Mbps	N/A	N/A
DOCSIS 3.0 Cable Modem	2.37 Mbps	3.56 Mbps	4.97 Mbps	9.90 Mbps	14.89 Mbps	29.82 Mbps	29.60 Mbps	99.50 Mbps	146.83 Mbps
Wi-Fi with Router in DMZ Mode	2.47 Mbps	4.97 Mbps	4.97 Mbps	8.84 Mbps	N/A	N/A	N/A	N/A	N/A

WorkBench Support?

WorkBench can completely support the configuration of this mode as well as its use in a Macro Test Steps.

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