



NetTech

*DSL Qualification
and Plant Conditioning
Solution*



Today's challenging environment for next-generation DSL services requires a streamlined conditioning and documentation solution for your outside copper network. Fluke Networks' NetTech platform provides an advanced, cost-effective tool that combines the industry-leading DaVaR NetDSL software with our proven CopperPro II hand-held tester. Qualify your plant quickly and with confidence utilizing NetTech's ability to orchestrate testing of individual pairs, automatically storing test results, and interfacing to your back-office database for a complete end-to-end plant qualification solution.



Streamlines Your Plant Qualification for

Is your copper loop network ready to deliver?

High-bandwidth protocols like ADSL2/2+ and VDSL push the capabilities of copper pairs to the limit. Studies show that 20 to 40 percent of existing copper networks can't support the level of performance required for high-speed services, such as video. Network problems that pose no problems for POTS turn into show-stoppers.

That means lost customers. Until those facilities are tested, conditioned, and documented for broadband, you can't deliver the service improvements you need to compete with cable and satellite operators.

One chance to win

Increased competition for subscribers means you have just one chance to win. If you can't deliver broadband – and worse, if your service quality doesn't cut it – you may lose that customer forever.

The solution? Pro-actively test, qualify, and document your facilities for high-performance broadband quickly and cost effectively with NetTech from Fluke Networks.

If you need to condition your plant, you'll have CopperPro II available as a stand-alone instrument within NetTech to pinpoint the trouble spots, correct the faults, and perform final conformance tests to reduce the potential for issues and extra dispatches.

The complete process

Accurate field testing is only half the story. You also need to effectively manage the process, analyze and review test results, and take action on the data. NetTech does more than store all pair test results. It generates detailed reports, exports data to text files and other file formats, and interfaces to Fluke Networks' DaVaR NetServer to help manage your entire testing program. NetTech also automatically updates your loop records database for use in management reports and sales programs.

Storing these reports gives your customer service and marketing teams stronger visibility into your subscriber base via the NetServer operational support system, highlighting marketing opportunities to customers with triple-play availability.

That means you, not your competitors, reach qualified customers first.

"NetTech provides a standard plant qualification process to ensure consistent and accurate results regardless of a Tech's experience. This enable's us to rapidly qualify our pairs for IPTV service."

High-Speed Services

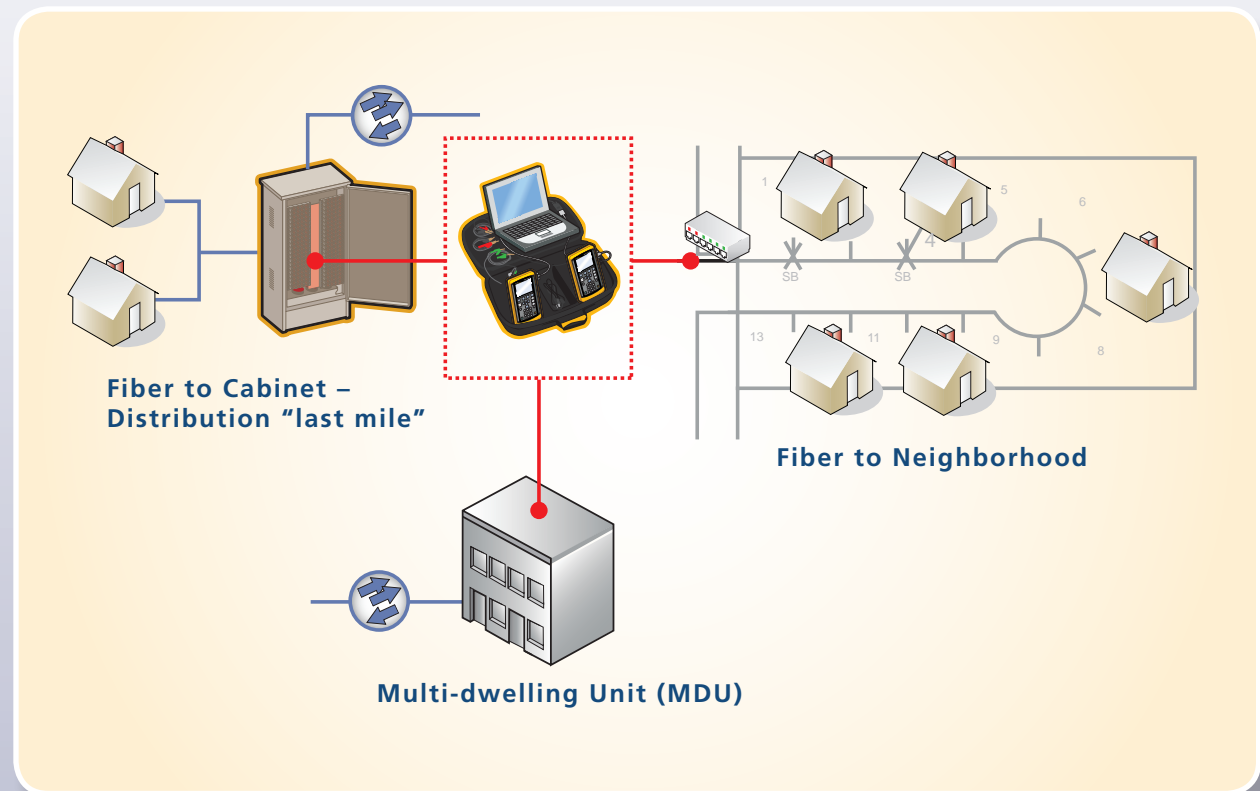
Save time, build confidence

NetTech saves your team time while taking the guess work out of testing, qualifying, and documenting your outside plant. ***Our system's ease-of-use delivers consistent results from technicians, regardless of their skill level.***

NetTech's versatility gets you results across different applications.

- **Plant qualification from the Main Distribution Frame (MDF) or cross-box** – Nail down your plant's precise capabilities as NetTech performs 12-step single-ended testing at MDF cables or cross-box to qualify pairs for high-speed DSL services. NetTech stores your results, which can be uploaded to your back-office system for sharp visibility using your operational support system.
- **Multi-dwelling unit** – Quickly and efficiently qualify DSL services in MDUs and support business goals of increasing the customer base for high-speed bandwidth to MDU customers.
- **Conformance testing** – Achieve stronger vision and reduce repeat dispatches to your copper plant as you perform final conformance testing and document the quality of plant before handing over the pairs for service.

Backed by Fluke Networks, training and support, NetTech helps improve the quality of your copper pairs, empowering your team to launch next-generation wideband services.



NetTech's versatility gets results across different applications, whether you are testing at the Main Distribution Frame, cross-box or a multi-dwelling unit.

"NetTech's ability to store results, integrate with DaVaR and NetDSL bulk qualification process, and back-office database interface provides us with a complete plant management processs."

NetTech features these bundle options:



Our system's ease-of-use delivers consistent results from technicians, regardless of their skill level.

NetTech Features

NetTech features include:

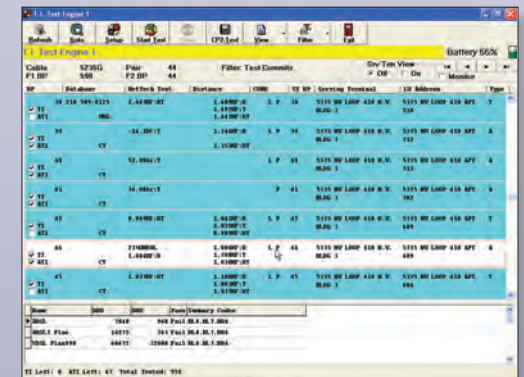
- **Detailed testing** – To let you qualify pairs for high-speed service with confidence, NetTech performs a detailed set of 12 electrical tests, such as balance, loop length, resistive faults, TDR for bridge tap detection, and wideband noise.
- **Automated analysis** – NetTech's automated results analysis engine determines pass/fail conditions with unparalleled precision and identifies impairments on the line.
- **Scalability** – NetTech saves you time and callbacks with its ability to control one or two CopperPro II units simultaneously.
- **Bandwidth estimation** – NetTech provides precise estimates of upstream and downstream bit rates for ADSL, ADSL2+ and VDSL service.
- **Results storage** – NetTech stores all your test results—up to 1,200 pairs per job—allowing you complete plant documentation at your finger tips.
- **Reports generation** – NetTech generates detailed test results reports for better visibility into your plant. And it exports these results to a variety of formats including PDF, HTML, and text file.
- **Server Interface** – NetTech can seamlessly interface with Fluke Network's DaVaR NetServer or even your own back-office server to let you upload test results back to a centralized management server.

Comprehensive test result management

NetTech is a powerful solution for performing detailed testing, automating analysis of test results, and storing test results.

Features include:

- User-definable test profiles with a selection of detailed electrical tests to perform along with results thresholds
- Powerful SQL database for management and storage of test results. NetTech stores up to 1,200 pairs per job with virtually unlimited numbers of separate jobs that can be stored on NetTech
- Real-time display of test results
- Real-time display of fault codes to identify discovered impairments
- Real-time display of precisely estimated upstream and downstream bit-rate for ADSL, ADSL2+ and VDSL service
- Displays back-office information associated with each pair, such as terminal location and customer location, if available



Unique TDR for automated bridge tap detection and location

NetTech features advanced TDR-based bridge tap detection algorithms to automatically pinpoint bridge taps on the pair. Bridge taps can significantly affect the performance of the line for higher speed services by reducing the overall strength of the signal.

- Automatic bridge tap detection takes the guess work out of manual checking, letting you achieve consistent results across different technician skill levels
- Automatically determines proper TDR pulse-widths from 25ns to 5000ns for best results
- Detects bridge taps up to 10,000 feet on 26awg (or equivalent) loops
- Unique bridge tap validation process provides single-ended testing to determine if the bridge tap is in the facility or on the customer's premise
- Precise double-ended testing further sectionalizes and isolates the location of the bridge tap

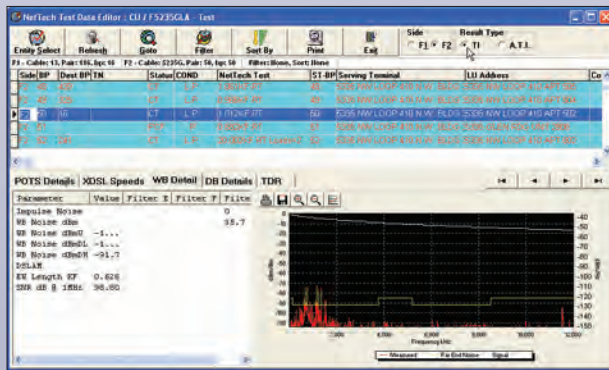


Figure 2 : Automatic bridge tap detection

Customizable test thresholds

NetTech gives you complete control of the testing parameters and profiles for maximum flexibility.

NetTech administrators:

- Define custom test profiles to determine which tests to perform
- Define pass/fail thresholds for more than 30 test result options
- Define TDR bridge tap sensitivity
- Define bit-rate prediction thresholds

NetTech's flexibility allows you to tailor the solution to meet your plant qualification needs.

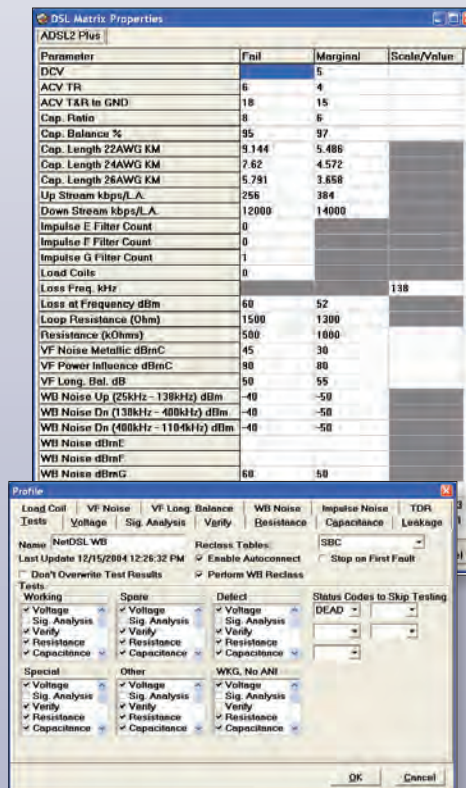


Figure 3 : User-configurable pass/fail threshold matrix

NetTech – Ordering guide

Part Number	Fluke Networks Item #	Description
NETTECH-1	3365193	NetTech Single Engine package – includes 1 CopperPro Series II VDSL unit, 1 rugged laptop, NetTech software license, carrying case
NETTECH-2	3365204	NetTech Dual Engine Package – includes 2 CopperPro Series II VDSL units, 1 rugged laptop, NetTech software license, carrying case
NETTECH-1-NL	3409202	NetTech Single Engine Package – includes 1 CopperPro Series II VDSL unit, NetTech software license, carrying case. customer provides laptop
NETTECH-2-NL	3409216	NetTech Dual Engine Package – includes 2 CopperPro Series II VDSL units, NetTech software license, carrying case. customer provides laptop

Powerful report generation

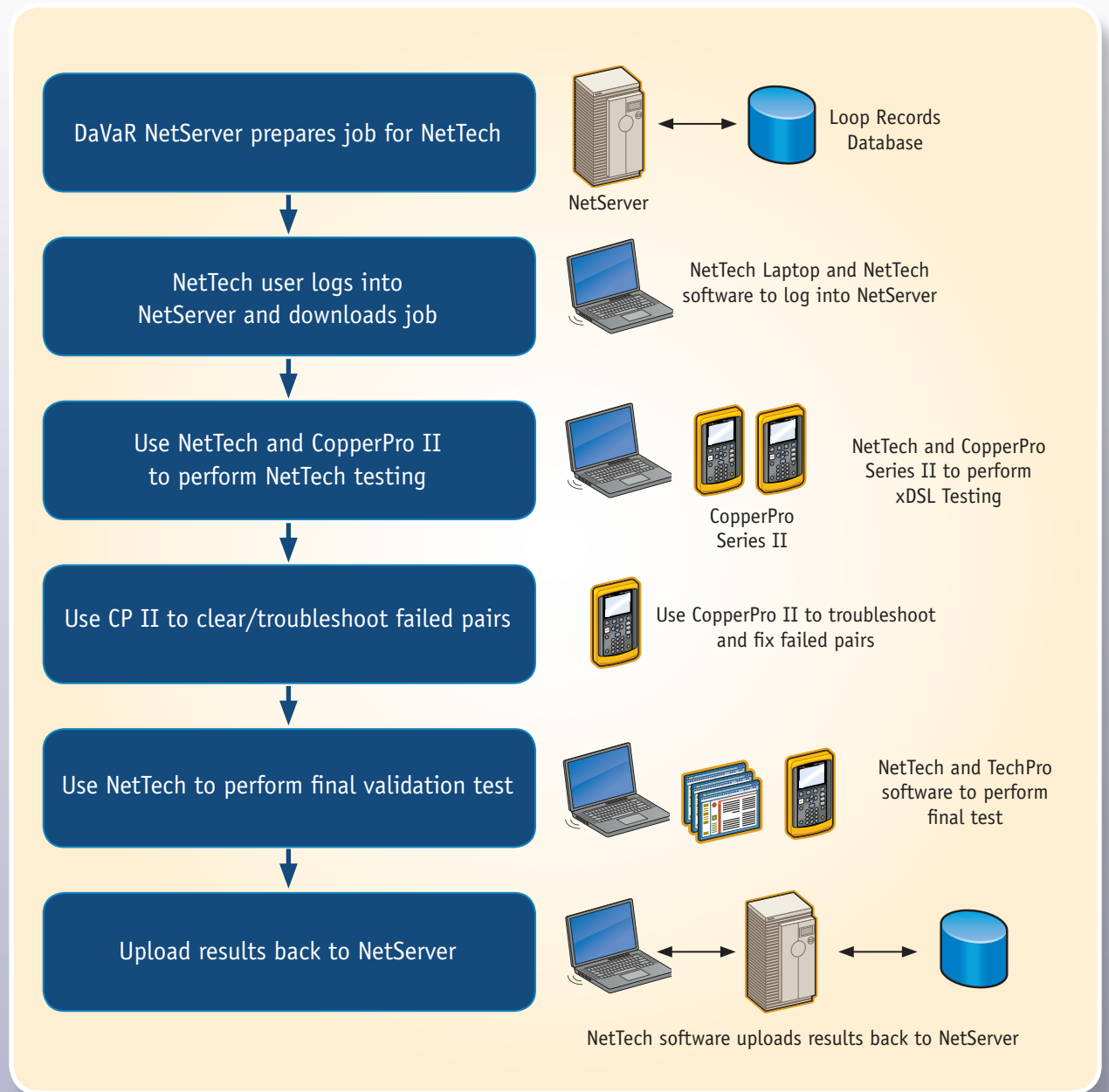
NetTech provides detailed test results reports for each pair tested, allowing documentation of work by technicians or contractors. The results are exportable to several document formats, including PDF, Excel, and Word for easy processing.

Optional back-office Integration

NetTech interfaces to back-office database systems, such as Fluke Network's DaVaR NetServer for long-term storage and easy evaluation at the home office.

NetTech automatically connects to the DaVaR NetServer Management system to store all test results for multiple NetTech units. It also automatically updates your loop records and related systems.

- Allows comprehensive results management, reporting, and analysis for informed decision-making about your plant
- Allows customer care and marketing groups to effectively market the correct service to customers identified as qualified for high speed service



Testing Features	NetTech Features
Test Measurements (CopperPro II Test Measurement)	
AC Voltage Measurement	0 to $\pm 250\text{Vrms}$; $\pm 0.1\text{V}$
DC Voltage Measurement	0 to $\pm 300\text{VDC}$; $\pm 1\text{V}$
Distance Measurement	0 to 80 Kft ; $\pm 1\%$ to 5%
Resistance	0 to 100 Meg Ohm ; $\pm 1\%$ to $\pm 5\%$ per resistive fault
Leakage Testing	Yes: 2Kilo Ohms to 999 Meg Ohms
VF Loss	Yes: -40 to +10 dBrn
VF Metallic Noise	Yes: 0 to 100 dBrn
VF Power Influence	Yes: 40 to 120 dBrn
VF Long. Balance	Yes: 200 to 2500 Hz
Special Circuit Detection	Yes: Voltage and wideband noise mask
Wideband Noise (Impulse, Metallic)	Yes: 0 to 1.1Mhz; 17 Mhz measures DMT ADSL frequency bins 0 to -140 dbrn
Wideband Loss Single End	Yes: 138Khz to 17Mhz ; ADSL and VDSL bin spacing
TDR	Yes
Bridge Tap Detection and location	Yes
Signature Recognition	Yes: Wideband signature analysis to detect special services energy
Quick Load-Coil Detection	Yes: Detection of one or more H88 or D66 Loads. Up to six loads
Number Verification	Yes: via DaVaR SmartPro and supports variable telephone number format
Double Ended Testing	Yes: Requires Fluke Networks TN2100 terminator
Software Features	
Software Version	NetTech v2 Qualification Software for xDSL Plant Qualification Controls single or dual CopperPro II test instruments.
Results Storage	Yes: Up to 1,200 pairs per job. Almost unlimited number of jobs can be stored (up to capacity of laptop hard drive and memory)
DSL Qualification Analysis	Yes: Single-ended analysis of wideband and TDR data to determine estimated upstream and downstream ADSL, ADSL2, ADSL2+, VDSL bandwidth
Back-Office Interface	Yes: (Requires DaVaR NetServer or custom API)
Real Time Test Result Display	Yes: Displays real-time results and classification of test results
Customer configurable Reclass	Yes: Wideband reclass tables editing is via easy-to-use interface and stored in relational database for maximum data integrity
Real Time Test Results Editor	Yes: Test Results Editor can be used while background testing occurs to improve productivity.
Relational Database	Yes: True relational database system ensures data integrity.
User definable test profiles	Yes: User-definable test options and test profiles
Export Reports	Yes: Formats supported includes PDF, Excel, Comma-separated, Tab-separated, and text file.
Physical Specifications	
Package weight	12 lbs w/ Dual CopperPro II test unit, rugged laptop, and carrying case
Battery	6-8 hours life for CopperPro II (without PC)
Ruggedized Laptop	Yes; optional rugged laptop with touch-screen.

Training and implementation services: flexible turnkey solutions

Fluke Networks' NetTech and OSP management programs can be tailored in a variety of ways to deliver the best match for your business requirements. We can meet your needs for xDSL deployment strategy, outside plant refurbishment, or a total outside plant management program. Working with your outside plant team, we will design a custom program to reach your specific objectives. From design, implementation and management, to staffing an entire program, we can help. Fluke Networks can provide any combination of the following:

Consultations – Our team will help you determine program objectives and best implementation method within your organization.

On-site training – The effectiveness of your program relies on many parts of your organization. Fluke Networks ensures that all groups involved, from field technicians to managers, are properly trained on the DaVaR, NetDSL, and NetTech processes.

Program management – Fluke Networks is committed to overseeing the implementation and continued success of your program. Our team of experts will work with you to develop proper methods and operating procedures to ensure you get the maximum performance and achieve your objectives for the program.

NetServer and report customization – Since many loop record databases are unique, Fluke Networks can develop a custom back-office interface to match your database and customize web-based management reports to meet your specific needs.

Fluke Networks' Gold Support

Sign up for our Gold Support plan and enjoy privileges that protect and add value to your equipment. Privileges include unlimited 24x7 technical assistance and an exchange unit at no cost in the event something happens to your unit. Support also includes unlimited access to the knowledgebase, product discounts and "members only" promotions. See www.flukenetworks.com/goldsupport for details.

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Fluke Networks operates in more than 50 countries worldwide. To find your local office contact details, call 1-800-283-5853 or go to www.flukenetworks.com/contact.

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