

Enable-IT 8955 PoE and Extended Ethernet DSLAM Installation Manual



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ABOUT THIS GUIDE

This guide provides all the information needed to install and use the Enable-IT 8955 PoE and LRE DSLAM. This guide is intended for use by technicians who are responsible for installing and setting up network equipment. Consequently, it is assumed that the installer has a basic working knowledge of LANs (Local Area Networks) and voice telecom wiring.

If the information in the release notes that are shipped with your product differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat

Reader Portable Document Format (PDF) or HTML on the Enable-IT World Wide Web site: http://www.ethernetextender.com/manuals/8955_Manual.pdf

INTRODUCING THE 8955 PoE AND LRE DSLAM

Congratulations on purchasing the Enable-IT's 8955 PoE and LRE DSLAM — the most unique high performance self powered broadband DSLAM in the marketplace today. The 870 CPE units deliver the highest throughput and simplest method to stretch your broadband solutions for in-building deployment in commercial office buildings, hotels, and multi-tenant residential units.

This chapter contains introductory information about The 8955 PoE and LRE DSLAM and how it can be used in your network. It covers the following topics:

- About the 8955 PoE and LRE DSLAM
- Key Benefits
- Summary of Features
- Typical Applications

About the 8955 PoE and LRE DSLAM

The 8955 PoE and LRE DSLAM solves the problem of high costs associated with stretching your backbone with traditional fiber or a series of hubs/repeaters. PoE – Power over Ethernet has never gone to these new distances either and provide a single solution for in room self-contained deliver of Dual Voice and 100Mbps Ethernet Data.

In many office buildings, preferred network access is a dedicated Ethernet line, however Ethernet over twisted pair wiring has its distance limitations of just 328 ft. In order to drive Ethernet signal further, one would have to add repeaters to each segment of 328ft twisted pair cabling; this is often insufficient and to costly in multi-story buildings. Power over Ethernet manufactures also have the same distance limitations. Fortunately, the Enable-IT 8955 Extended Ethernet DSLAM blows away these barriers and can push the reach of Ethernet to more than (7.5) seven and a half times the typical Ethernet distance over a 2-pair Telco wiring infrastructure or better. (RJ-45 Pins 1 & 2 = Voice line 1 and Data, Pins 3 & 6 = Voice line 2). We also deliver IEEE 802.3af PoE to power the 870 CPE unit internally. (RJ-45 Pins 4,5,7 & 8)

A simple design methodology would be to think of the 8955 extending a standard Ethernet line up to 2,500 (762m) and can also include a dual voice line simultaneously – this requires a minimum of (2) two pair wiring to deploy as we can combine like PoE pins 4 & 5 to run on 1 wire and 7 & 8 to run on another wire.

For a hotel deployment this means if you have an existing dual line phone, you would need one extra spare pair from 8955 DSLAM to the room wallplate.

To increase the durability and extended use of the product providing maximum future technology protection, 8955 PoE and LRE DSLAM meets the challenge of modern switched LANs and allows you to add features and capacity as your network expands. The Enable-IT 8955 PoE and LRE DSLAM has been tested to provide full duplex transport up to 90MB/s over CAT2, and up to 100MB/s over CAT5e cabling or better.

Unit Model	Wiring	Min Data Rate	Max. Distance
8955 / 870	(2) pair CAT 2 up to CAT6	100Mbps FD	2,500ft / 762m

Key Benefits

The following list identifies the 8955 PoE and LRE DSLAM key benefits.

- Unique one of a kind product that delivers superior throughput and distance over any competing technology.
- Broadband technology that delivers in-building 100Mbps FD Ethernet access with PoE over 2 pair of existing Category 2 up to Category 6 wiring up to 2,500', whether spare or actively in use for analog or digital voice. This means no new wiring is required.
- Provides one scalable infrastructure for Internet access, POTS, VoIP, video, and virtual private networking.
- Rapid installation 1u Rackmount with small low profile wallmount CPE units.
- CPE is a Low profile box with dual POTS line and Dual Ethernet LAN ports.

Summary of Features

The Enable-8955 PoE and LRE DSLAM has the following hardware features:

- Extended Ethernet line over existing CAT 2 up to CAT5e / CAT6 wiring
- Uses RJ-45 Interlink port for transport (Dual voice, PoE and 100Mbps data)
- Rapid Telco style installation – no programming required on CPE units
- Supports digital VoD channels
- Drives Ethernet 100 Mbps full-duplex service delivery with dual voice up to 2,500ft or 762m to self-powered (PoE) 870 CPE unit.
- Network Equipment independence – Transparent to protocols/applications/MAC
- Maintains lifeline POTS dual telephone in one RJ-11 jack.

Specifications:

Power Indicator LED
100Mbps Link status/Activity LED's
System Status LED

Dimensions:

Height: 1.75" (44.45mm)
Depth: 8.00" (203mm)
Width: 17.50" (444.5mm)

Interfaces

(1) 110 – 240VC power input
(8) RJ-11 Dual telephone line IN
(8) RJ-45 Interlink ports
(1) Gigabit Ethernet uplink
(1) Mini-GBIC fiber module port

Functionality:

Data Rates 100Mbps Full Duplex
Full Duplex/Half Duplex status/Collisions
Protocol independent

Interlink port pins:

Pins 1 & 2 – Voice line 1 and Data
Pins 3 & 6 – Voice line 2(optional)
Pins 4 & 5 – PoE positive power
Pins 7 & 8 – PoE negative power

Dual Telephone Line IN pins:

Pins 2 & 3 – Voice line 1
Pins 1 & 4 – Voice line 2

Environment

Operating temp: -20° to 70°C/-4° - 160°F
Storage temp: -25° to 70°C/-13° - 160°F
Humidity 5% to 95%, non-condensing

Typical Applications

Enable-IT 8955 PoE and LRE DSLAM Units are usually installed into telephone wiring infrastructures where extension of backbone services is required and expensive fiber options are prohibitive. The 8955 PoE and LRE DSLAM Units allow a standard Ethernet segment to be deployed quickly over existing 2, 3 or 4 pair Telco Copper Wiring in combination with existing POTS voice signals. On the RJ-45 Interlink ports pins (1 & 2) are used for transport for both voice and data. The pins (3 & 6) are used for Voice line 2 and the remaining pins (4, 5, 7 & 8) are for IEEE 802.3af PoE to power the 870 CPE unit internally. If 2 or 3-pair cabling is used we combine like PoE pins 4 & 5 to run on 1 wire and 7 & 8 to run on another wire.

Installers have the convenience of a 100Mbps LAN Ethernet unit for peace of mind connectivity and no device maintenance. Rapid installation allows for minimal interruption and the Broadband technology allows for investment protection up to 10 years with no firmware or replacement issues. Bandwidth can be scaled according to the Broadband Access Provider needs.

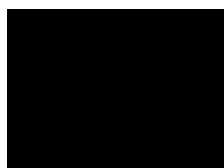
The Enable-8955 PoE and LRE DSLAM is suited for the following key environments:

- **Commercial Buildings (Multi-Tenant Units)**
- **Business Parks (Multi-Tenant Units)**
- **Apartments (Multi-Residential Units)**
- **Hotels (Multi-Hospitality Units)**
- **Business Suites (Multi-Hospitality Units)**
- **School Campuses (University, K-12)**
- **College Housing (Multi-Residential Units)**
- **Mining Operations – Quarries, Mine shafts**
- **Nautical Infrastructure – Cruise ships, Marinas, dive operations, subs**
- **Video Surveillance/Security**
- **WiFi Deployment – ISP's, RV Parks, Construction sites**
- **Manufacturing – Foundries, pharmaceutical, aerospace, automotive, petroleum, concrete plants, etc.**
- **Retail POS – Department stores, Bars, restaurants, retail spaces**
- **Government – Naval ships, FEMA, Housing, USGS, National Parks, Forestry, Research stations, NASA, utilities, etc.**
- **Education – outdoor camps, college campuses**
- **Healthcare – Hospitals, elder care, outpatient facilities**
- **Entertainment – Movie theaters, home entertainment, fairs, outdoor venues**

INSTALLING THE 8955 PoE AND LRE DSLAM

The Enable-IT 8955 PoE and LRE DSLAMs have a distance restriction of 2,500ft or 762m over 2-pair of Category 2 up to Category 5e / CAT6 wiring from concentrator to 870 CPE unit. **The wiring interlink between the 8955 and each 870 must be carefully planned as the PoE pins must be mapped all the way through end to end without flipping the polarity of the signal or creating a short. Failure to do so may damage the equipment.** Therefore quick, simple site surveys and installation planning are highly recommended.

8955 Cabling Pinouts



8955 RJ-45	Signal	870 RJ-45	Wire Pair
1	Data Tx+ Voice line 1	1	Pair 1
2	Data Tx- Voice line 1	2	Pair 1
3	Voice line 2	3	Pair 2
4	PoE +	4	Pair 3
5	PoE +	5	Pair 4 optional
6	Voice line 2	6	Pair 2
7	PoE -	7	Pair 3
8	PoE -	8	Pair 4 optional

Connecting the 8955 to your wiring requires industry standard RJ-45 connections for each Interlink port and RJ-11 connections to add voice lines. If using existing structured telephone wiring, build your Interconnect connections using either 3-pair or 4-pair wire into RJ-45 plugs following the guide above. Straight through Ethernet cabling from 8955 to 870 CPE is the other option. For 8955 Interconnect wiring you will need to crimp a RJ-45 Male Head to each end of the wire run per 8955 Interlink port - using the minimum following RJ-45 pins (1, 2, 4 & 7) straight through end to end. This will deliver 1 Voice line and Ethernet Data. If you desire to use the second voice line, you need to add Pair 3 to RJ-45 pins (3 & 6) on each end straight through on another pair of wire. For best PoE performance and distance use Pair 4 wiring to RJ-45 pins (5 & 8) end to end.

Voice lines can be input directly into the RJ-11 dual voice ports – crimp an RJ-11 male head using standard pins 2 & 3 – voice Line 1 and 1 & 4 – voice Line 2.



8955 DSLAM

2-Pair up to 4-pair (RJ-45 terminated ends)



870 CPE

This chapter describes the recommended installation process for the Enable-IT 8955 PoE and LRE DSLAM. It covers the following topics:

- Site Plan – Installation Design Considerations
- Unpacking the Enable-IT 8955 PoE and LRE DSLAMs
- Perform an out of the box Test
- Performing the On-Site Installation

Site Plan - Installation Design Considerations

The planning process should involve a site walkthrough and discovery survey. Electrical Cable measurement tools are the most reliable method to determine the longest run of hidden wiring. Estimate the best locations to position the Broadband Concentrators to adequately reach desired connectivity on each floor. Document your findings to use in designing a network topology to support the Ethernet Switches and backbone connectivity. Key points to remember in the Site Survey.

- Total distance limitation of 2,500ft or 762m from end to end.
- 2 Pair wiring up to 4-pair Cat5e .30 Gage or better cabling is required for the 8955 Interlink transmission.

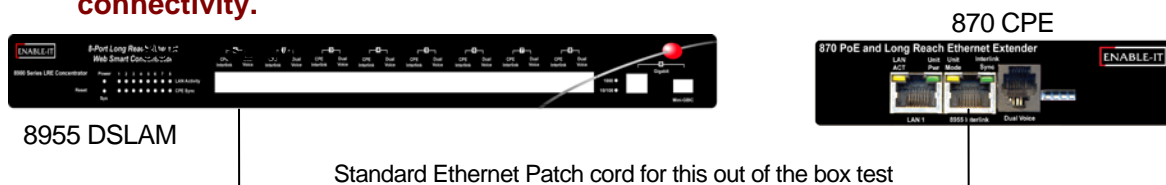
Unpacking the Enable-IT 8955 PoE and LRE DSLAM

Carefully remove the Enable-IT 8955 PoE and LRE DSLAMs all packing materials from the box. Verify that the items listed below are present. Make sure that the equipment supplied matches what you ordered. If any items are missing or damaged, please contact Enable-IT or your distributor for assistance.

- (1) The Enable-IT 8955 DSLAM
 - Country Specific AC Power cord
 - Rackmount dog ears
- (1) Enable-IT 8955 PoE and LRE DSLAM Installation Manual (this manual)

Perform an out of the box Test

We highly recommend a quick test to ensure the working order of your 8955 concentrator and 870 CPE units. To do this, please use one of the Ethernet patch cords provided in the 870 CPE kit and attach to a 8955 Interlink port and the Interlink port of an 870 CPE unit. Power up the 8955 DSLAM. After a few seconds you should see a solid Green Interlink Sync LED on the 870 CPE unit and the active port on the 8955. This confirms basic proper operation of the units. Next for a more detailed test and to confirm your LAN Equipment works with the 870, connect your Ethernet LAN and remote device to the 870 LAN ports and test connectivity.



LED indicators will provide visual operational status of the 8955 and 870 CPE units.

8955 LEDs

Power

- Solid Green LED indicates the concentrator is receiving power.

Sys

- Solid Orange LED indicates the concentrator operating normally.

CPE Sync

- Solid Orange LED indicates the port has synched with the remote 870.

- Blinking Orange LED indicates the port is trying to sync with an 870.

LAN Act

- Blinking Green LED indicates the presence of LAN traffic from the remote 870 CPE.

870 LEDs

- Interlink Sync** - Solid Green LED indicates the 870 has synched with the 8955.
- Unit Pwr** - Solid Green LED indicates that 870 CPE is receiving 5v power.
- Unit Mode** - Solid Yellow LED on 870 CPE unit only
- LAN ACT** - Yellow LED – Lit solid indicates the presence of local LAN
– Blinking indicates the presence of local LAN traffic

Setup and Configuring the Enable-IT 8955 PoE and LRE DSLAM

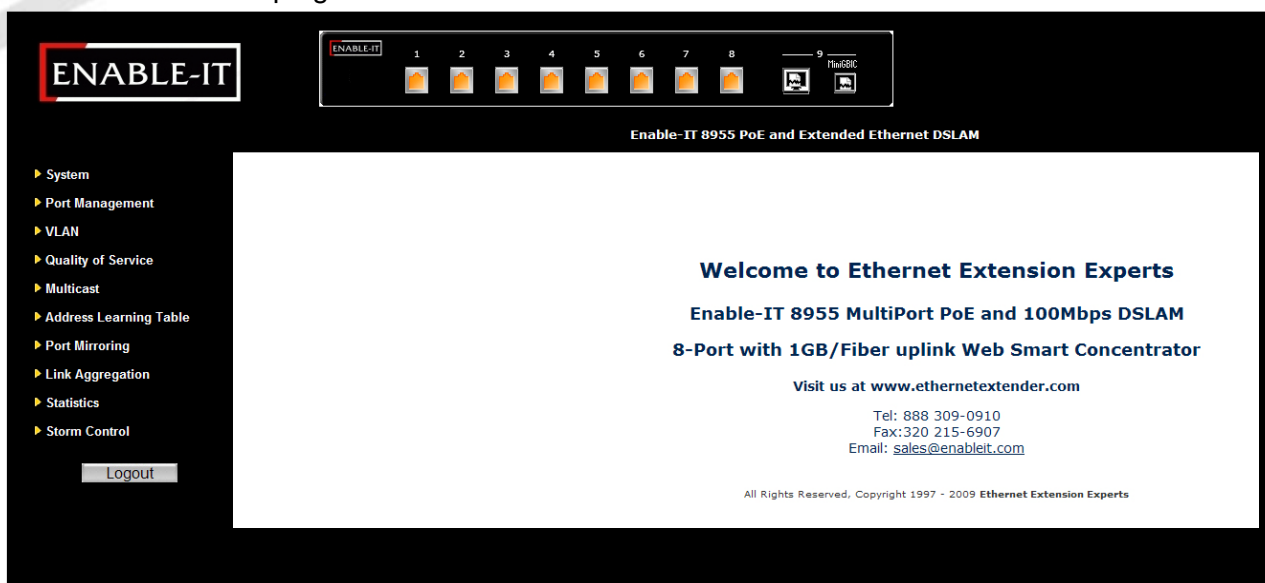
The Enable-IT 8955 PoE and LRE DSLAM provides a built in web browser interface to configure and manage the switch to provide a more custom installation for your network. You can access and manage the 8955 through a remote host with a java enabled web browser such as Microsoft Internet Explorer, Netscape Navigator, Mozilla Firefox, Apple Safari, or Opera. It is recommended to use the latest versions of these listed web browsers with a JAVA runtime plug-in installed.

To initially access the web management interface your host system must be on the same local IP subnet as the default settings for the Enable-IT 8955 concentrator. The 8955 is set to the following IP addressing: 192.168.0.100
255.255.255.0 subnet mask

Using your host web browser enter the URL <http://192.168.0.100> You should see a separate login popup window. The default username is “admin” the default password is “admin”.

Enable-IT 8955 Web Management Menu

After a successful login the following Web Management Menu will appear. If you do not see the active JAVA image of the 8955 concentrator in the top header you will need to activate the JAVA plug-in.



A recommended first task is to change the default password. Select the System menu from the main menu list on the left. Select Password Setting and using lowercase only – change the default password. Click Save to finish. If you forget your password you can reset the 8955 concentrator by pressing the recessed reset button on the left front panel.

Press and hold for 10 seconds – the 8955 will reboot and reset the default IP address and default login information.

For customizing the IP addressing information to better fit your network requirements you can select the IP Configuration menu (Under the System menu). DHCP addressing is enabled by default.

Other submenus will allow you to access options such as configuring VLANs, QoS, bandwidth shaping and port configurations. Port configurations are currently set for optimal performance and should not be changed.

Performing the On-Site Installation

After removing the Enable-IT 8955 PoE and LRE DSLAM from the box and performing the out of the box testing all that remains for installing the unit on-site is to mount the concentrator, build the interconnect wiring, add voice lines if needed and attach the LAN device cabling with the provided Ethernet Patch cords.

❶ Mounting the Enable-IT 8955 PoE and LRE DSLAMs

The Enable-IT 8955 PoE and LRE DSLAMs can rackmounted or stacked. Choose a location where the maximum distance does not exceed 2,500ft or 762m total between the 8955 and the furthest 870 CPE devices to be connected.

❷ Building the 8955 Interlink wiring

The most important aspect of the install is the correct wiring of the Interlink cabling. Connecting the 8955 to your wiring requires industry standard RJ-45 connections for each Interlink port and RJ-11 connections to add voice lines. If using existing structured telephone wiring, build your Interconnect connections using either 3-pair or 4-pair wire into RJ-45 plugs following the guide above. Straight through Ethernet cabling from 8955 to 870 CPE is the other option. For 8955 Interconnect wiring you will need to crimp a RJ-45 Male Head to each end of the wire run per 8955 Interlink port - using the minimum following RJ-45 pins (1, 2, 4 & 7) straight through end to end. This will deliver 1 Voice line and Ethernet Data. If you desire to use the second voice line, you need to add Pair 3 to RJ-45 pins (3 & 6) on each end straight through on another pair of wire. For best PoE performance and distance use Pair 4 wiring to RJ-45 pins (5 & 8) end to end.

Voice lines can be input directly into the RJ-11 dual voice ports – crimp an RJ-11 male head using standard pins 2 & 3 – voice Line 1 and 1 & 4 – voice Line 2.

③ Remote end 870 CPE unit wiring.

For Dual phone use a standard RJ-11/12 telephone jack does not contain enough pins to support the 3-pair or 4-pair wiring and will need to be replaced with a RJ-45 wallplate. For single phone line use, the 870 CPE can be connected to any standard telephone wallplate by using a modified telephone patch cord (RJ-11 to RJ-45). You can build one easily if needed by using a dual line telephone patch cable. Cut off the head for the telephone side and crimp on a blank RJ-45 male plug using the line 1 pins from the phone jack to RJ-45 Pins 1 & 2 and the phone jack line 2 pins to the RJ-45 Pins 4 & 7.

Attach your remote LAN device to the 870 CPE unit LAN port with Ethernet patch cord provided. Attach the power adapter to the 870 CPE unit.

If you plan on using voice service as well, insert your telephone to the 870 Dual Voice RJ-11 port. Your equipment should now be powered up and functioning. The following LED indicators will provide visual operational status of the 870 CPE units.

Interlink Sync - Solid Green LED indicates the 870 has synched with the 8955.
Unit Pwr - Solid Green LED indicates that 870 CPE is receiving 5v power.
Unit Mode - Solid Yellow LED on 870 CPE unit only
LAN ACT - Yellow LED – Lit solid indicates the presence of local LAN
– Blinking indicates the presence of local LAN traffic

④ For troubleshooting, first examine the backbone wiring pair and make sure you have solid connections. The Interlink Sync LED will be lit on each 870 unit to show proper connection and pairing. If the Interlink Sync LED Link is flashing –

- 1) Make sure your wiring pairs is straight through and not flipped at any Telco punch down block. Open the telephone wallpate and make sure you have solid connections and no loose wires or bridged connections.
- 2) Check for a firm connection of the RJ-45 connections in the 870 CPE unit, power is applied to the 870 CPE unit.
- 3) If your installation has performance issues not resolved by the first two steps, you can change the 870 DIP Switch (2 & 4) to the ON position.

Technical Support

Enable-IT OEM Technical Support is available directly to customers and distributors. All support requests are processed through the online support portal. This allows us to provide assigned support ticket numbers in order to bring closure to any technical issues.

Online Technical Services

The Enable-IT Support Portal is available 24/7. No password or user account is necessary. Please use this support website as your first source for help as it contains an on line knowledge base of articles, documentation, FAQ's and other problem-solving resources. This web-based support resource provides the quickest solution to the most common technical support issues.

<http://www.ethernetextender.com/help/tech-support/index.php>

Returning Products for Warranty Repair

Enable-IT, Inc. warrants to the original purchaser of the Product ("you" or the "End User") that, for the three (3) year period commencing on the date the Product was purchased (the "Warranty Period"), the Product will be substantially free from defects in materials and workmanship under normal use and conditions. Electrical damage is not an item that is covered under this warranty or extended warranties. Optional two (2) year and three (3) year warranties are available to extend this coverage if purchased during the first year of coverage.

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Please ship Authorized RMAs to:

Enable-IT Processing Facility
16600 Harbor Blvd, Ste G
Fountain Valley, CA 92708

Returning Products for Refund

30-Day refund applies to single kit Ethernet Extenders only and is subject to a 25% Restocking Fee. Shipments without valid / authorized RMA number or sent to our corporate Las Vegas Address can be refused and or billed for additional shipping.

ENABLE-IT LIMITED WARRANTY

Enable-IT warrants the Enable-IT 8955 PoE and LRE DSLAMs solely pursuant to the following terms and conditions.

1. PRODUCT WARRANTY

a. Express Warranty Enable-IT warrants to the original purchaser of the Product ("you" or the "End User") that, for the three (3) year period commencing on the date the Product was purchased (the "Warranty Period"), the Product will be substantially free from defects in materials and workmanship under normal use and conditions. This warranty does not apply to Products which are resold as used, repaired or reconditioned or consumables (such as batteries) supplied with the Product. Enable-IT does not make any warranty with respect to any third party product, software or accessory supplied with or used in connection with the Product and such third party products, software and accessories, if any, are provided "AS IS." Warranty claims related to such third party products, software and accessories must be made to the applicable third party manufacturer.

b. Remedies for Breach of Warranty In the event of a breach of the foregoing warranty, Enable-IT will, in its sole discretion and at its cost and subject to the terms of the following paragraph, repair the non-conforming Product, replace the non-conforming Product with a new or reconditioned Product or refund of the purchase price for the Product. Any new or reconditioned Product provided pursuant to this paragraph is warranted as provided herein for the remainder of the original Warranty Period. THE REMEDY SET FORTH IN THIS PARAGRAPH SHALL BE THE END USER'S SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THE FOREGOING WARRANTY.

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