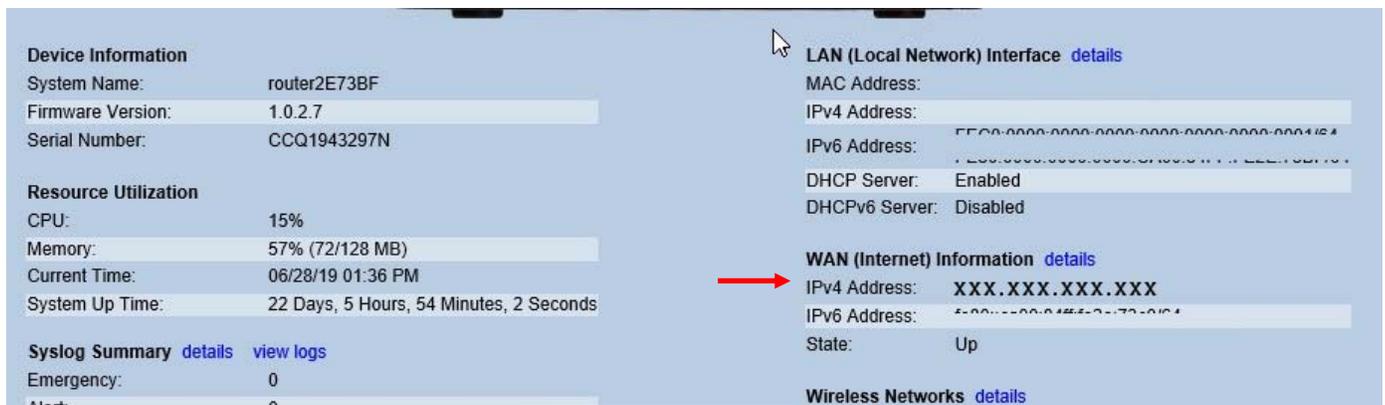


Guide to configuring a router to allow remote access to ENVIROMUX Enterprise Environment Monitoring Systems

The ENVIROMUX Enterprise Environment Monitoring System can be remotely accessed for easy monitoring and control from any location with internet access. In order for this to work, the ENVIROMUX must first be connected to a router that can be configured for port forwarding.

Note: Not all routers have the ability to configure port forwarding. If yours does not, the ENVIROMUX connected to your router will not be able to be remotely accessed.

1. You must first determine what IP address has been assigned to your Wide Area Network (WAN). You must log in to your router and locate this IP address. Alternatively if you have DDNS Service enabled either on your router or on E-xD, you can use the DDNS domain.



Status Page of a Typical Router

2. Next you must configure the port forwarding page of your router with the IP address(es) of the device(s) you want remote access to. The page requires 3 criteria to be applied for each method of access:

- **External Port #:** The port number used by you or your application from remote access point to initiate contact with the device. Each method of access will have a different External Port #.
- **Internal Port #:** The port the device uses to enable contact for the method of access (HTTP, HTTPS, E-MNG, SNMP, etc). This is configured in the Web Interface of the ENVIROMUX system. Refer to chart on next page for port numbers to assign.
- **IP Address:** The IP address assigned to the ENVIROMUX device inside your network.

Note: A number can be assigned to an External port number only once. No two External Port numbers can be the same.

Note: It is recommended that the External Port # assigned be the same as the Internal Port # assigned in order for features to perform properly. Some ENVIROMUX features are pre-configured to use specific port numbers to function.

The same Internal Port numbers can be assigned twice provided they are for different IP Addresses.

The following is an example of a configured port forwarding page:

Wireless-N VPN Firewall

Single Port Forwarding

Single Port Forwarding Rule Table

Application	External Port	Internal Port	Protocol	Interface	IP Address	Enable
HTTP	80	80	TCP	Both (Ethernet & 3G)	10.175.1.50	<input checked="" type="checkbox"/>
E-MNG	6000	6000	TCP & UDP	Both (Ethernet & 3G)	10.175.1.50	<input checked="" type="checkbox"/>
NTP	123	123	UDP	Both (Ethernet & 3G)		<input type="checkbox"/>
POP3	110	110	TCP	Both (Ethernet & 3G)		<input type="checkbox"/>
NNTP	119	119	TCP	Both (Ethernet & 3G)		<input type="checkbox"/>
SNMP	161	161	TCP & UDP	Both (Ethernet & 3G)	10.175.1.50	<input checked="" type="checkbox"/>
Cascading	5919	5919	TCP	Both (Ethernet & 3G)	10.175.1.150	<input checked="" type="checkbox"/>
HTTP2	8040	80	TCP	Both (Ethernet & 3G)	10.175.1.150	<input checked="" type="checkbox"/>
SSHE5D	8022	22	TCP	Both (Ethernet & 3G)	10.175.1.150	<input checked="" type="checkbox"/>
HTTPS	8443	443	TCP	Both (Ethernet & 3G)	10.175.1.150	<input checked="" type="checkbox"/>

In this example, the 10.175.1.50 is for an E-MICRO and the 10.175.1.150 is an E-5D.

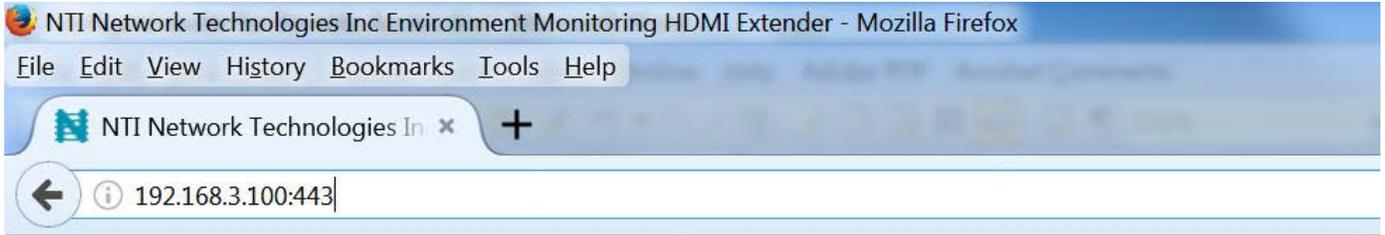
- The Application field for each line is for your personal reference only and is not used by the router.
- The Protocol should be set as in table below
- The Interface should be set to the default.
- If you have a method of enabling/disabling each listing, as shown above, be sure to enable the connection method.

The ports used by the ENVIROMUX for user access ("Internal Port" numbers to assign) are as follows:

Protocol	Port #	Access Method (Application)	Purpose
TCP	80	HTTP	Web interface, IP Sensor, REST API for E-xD, E-Micro
TCP	443	HTTPS	Secure Web Access for above on E-xD
TCP	22	SSH	Control through SSH Port
TCP	23	Telnet	Control using Telnet
UDP	161	SNMP (sensor data)	E-MNG Sensor Polling for E-xD, E-Micro
TCP	5919	Cascading via Ethernet	Ethernet cascading for E-xD
TCP	6000	Management Software	E-MNG Configuration access to E-xD, E-Micro
TCP	6001	SMS Relay	SMS Relay for E-xD devices

Note: If the features are not configured and enabled in the ENVIROMUX, they won't be usable to access to the ENVIROMUX remotely.

3. With your router properly configured, when you enter the IP address of your WAN followed by a colon and the port number assigned to the Application method in the URL bar of the browser software, you should automatically initiate a connection to the ENVIROMUX and be prompted for a username and password for the connection selected.



Initiating secure connection to ENVIROMUX at port 443

E-MNG Tip

Notice that, in the port forwarding example on page 2, external ports 6000 and 161 have been assigned for an E-Micro on 10.175.1.50. This is so that the E-MNG Management software can poll the E-Micro device remotely. When configuring the E-MNG software to manage an ENVIROMUX, only the IP address of the router needs to be entered. The Management Software will automatically use ports 6000 and 161 for communication with the ENVIROMUX.

Note: If more than one ENVIROMUX System is connected to a router, only one of them will be accessible via the Management Software, because only one of them can be assigned to external ports 6000 and 161 in the port forwarding table.

The screenshot shows the "ENVIROMUX-SEMS-16 Manager (Server)" application window. It features a menu bar with "File", "Users", and "Help". Below the menu is a table with three columns: "Unit Name", "IP Address", and "Status". The table contains the following data:

Unit Name	IP Address	Status
E-SEMS DP LTTU	192.168.1.101	Normal
Screen Room Test Unit	192.168.3.209	Normal
E-SEMS Tech Bench LTTU	192.168.3.80	Normal
E-SEMS IPMI Rack LTTU	192.168.1.100	Normal
E-SEMS Rev B DP LTTU	192.168.1.102	Normal
ENVIROMUX-SEMS-16	98.17.207.195	Normal
Not Responding	192.168.3.101	Sensor disconnected

At the bottom of the window, there is a status bar that reads "Idle..."

List of Managed IP Addresses in an E-MNG Server