

ENVIROMUX[®] Series

E-MNG-LC
 Environment Monitoring System
 Management Software

The screenshot displays the ENVIROMUX Micro Server Environment Monitoring System Management Software interface. On the left is a tree view showing the project structure. The main area contains several panels:

- E-MICRO E02: Temperature**: Shows a current temperature of 83.4°F with a range from -40.0°F to 200.0°F.
- E-MICRO P15: Temperature #1**: A line graph showing temperature over time from April 27 to 28.
- E-MICRO E02: Humidity #2**: Shows a current humidity of 43% with a range from 0% to 100%.
- E-MICRO E02: Dew Point #2**: Shows a current dew point of 15.2°C with a range from -40.0°C to 200.0°C.
- E-MICRO Units: E-MICRO P12: Summary**: A table summarizing internal, external, digital, and IP devices.
- Webcam Monitor: Field**: A live video feed of a field with a small white building.

Internal Sensors				
Connector	Type	Description	Value	Status
	Temperature	P12 Lower Level Temper	73.2 °F	
	Humidity	P12 Lower Level Humidity	48.1 %	
	Dew Point	P12 Lower Level Dew Point	52.4 °F	

External Sensors				
Connector	Type	Description	Value	Status
#1	Temperature	P12 Upper Level Temper	71.9 °F	
#2	Temperature	P12 Ventilation System T	73.8 °F	

Digital Inputs				
Connector	Type	Description	Value	Status
#1	Digital Input	P12 Digital input 1	Open	
#2	Digital Input	P12 Digital input 2	Open	

IP Devices				
#	Type	Description	Value	Status
#1	IP Device	E-160 Web Demo Unit	Responding	
#2	IP Device	E-50 Web Demo Unit	Responding	
#3	IP Device	E-20 Web Demo Unit	Responding	
#4	IP Device	E-MINI-LXO Web Demo Unit	Responding	

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CHANGES

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INTRODUCTION

The E-MNG-LC is intuitive graphical software that provides an easy-to-use, unified interface for both monitoring and configuring up to 3,000 E-MICRO-T(RHP) Micro Environment Monitoring Systems and E-1W(P) Environment Monitoring Systems with 1-Wire Sensor Interface (UNITS) and all connected sensors. The software is split into two parts, the Server (to actively poll all UNITS for status information and alerts) and Client (to communicate with the Server from any location to read statuses and make configuration changes).

A License Activation Key is required to use the software after the 30 day trial period. A License Activation Key supporting up to 3000 UNITS is available from <http://www.networktechinc.com/enviro-manage-software.html>

Features:

- Units may be monitored and configured individually or in a group.
- Display values and status for individual sensors or list of sensors.
- NTI will provide customer, without charge, copies of any appropriate updates/enhancements for 12 months. This software update service is optionally extendable every twelve months for 20% of the then current list price.
- Client/Server architecture
 - Server application actively polls all UNITS for status information as well as listens for alerts from all UNITS.
 - Client application communicates with the Server to read statuses and to deploy configuration changes.

Server and Client Requirements:

- Windows 2000/XP/Vista/7/8/10, Windows Server 2000/2003/2008/2012/2016/2019, Solaris, Linux, FreeBSD, and MAC OS 9/10.
- Requires Java Runtime Environment 1.8 or newer.
- Requires firmware version 3.2 or later in E-MICRO-T(RHP) and version 2.5 or later in E-1W(P) units.

Hardware Requirements:

Below minimum requirements assume CPU with physical cores (rather than virtual) and an OS similar to MS Windows or Linux with minimal usage from other user applications.

Server Configuration:

1 - 50 UNITS, 1- 5 clients:

Minimum requirements: Dual core CPU with 2 GB RAM 100 Mbps network

Recommended Configuration: Quad core CPU with 4 GB RAM 100 Mbps network

50 - 100 UNITS, 5 - 15 clients:

Minimum requirements: Quad core CPU, with 4 GB RAM 100 Mbps network

Recommended Configuration: 8 core

CPU with 8GB RAM 100 Mbps network

100 - 600 UNITS, 10 - 25 clients:

Minimum requirements: 8 core CPU with 8GB RAM 100 Mbps network

Recommended Configuration: 12 core

CPU with 16 GB RAM 1 Gbps network

600 - 1400 UNITS, 15 - 35 clients:

Minimum requirements: 12 core CPU with 16 GB RAM 1 Gbps network

Recommended Configuration: 20 core

CPU with 24 GB RAM 1 Gbps network

Client Configuration:

1 - 40 UNITS:

Minimum requirements: Dual core CPU with 2 GB RAM 100 Mbps network

Recommended Configuration: Quad core CPU with 4 GB RAM 100 Mbps network

40 - 100 UNITS:

Minimum requirements: Dual core CPU with 2 GB RAM 100 Mbps network

Recommended Configuration: Quad core CPU with 8 GB RAM 100 Mbps network

100 - 300 UNITS:

Minimum requirements: Quad core

CPU with 8 GB RAM 100 Mbps network

Recommended Configuration: 8 core

CPU with 16 GB RAM 1 Gbps network

600 - 1400 UNITS:

Minimum requirements: 8 core CPU with 16 GB RAM 1 Gbps network

Recommended Configuration: 10 core

CPU with 20 GB RAM 1 Gbps network

If installing over 1400 UNITS to manage from a single machine, contact NTI for custom setup.

MATERIALS

Materials supplied with this package:

NTI E-MNG-LC ENVIROMUX Management Software including:

- mng-lc-srvr-vx-x.zip file (for the management server) (vx-x = the version number)
- mng-lc-clnt-vx-x.zip file (for client PCs) (vx-x = the version number)
- Adobe pdf file of this manual

LIMITATIONS

- The Management Software:
 - cannot view logs
 - cannot simulate alerts
 - cannot change IP addresses of the UNITS
 - cannot save or restore individual UNIT configurations from within the management software
- The Server application is licensed to be applied to one CPU and will only work on the CPU with the Machine ID (MAC address) supplied at the time of license issue. To move the Server application to a different CPU, contact NTI to request an updated license.
- There is no limit to the number of Client applications that can be installed on CPUs to access the Server and connected UNITS.
- There is no limit to the number of Clients that can access the Server at a time
- Multiple Server applications can monitor UNITS at the same time with no ill effects.
- There is no limit in the program to the number of users that can be configured to use the Client to access the Server. The number of users configured will only be limited by the amount of memory in the server hosting the program.

INSTALLATION

The E-MNG-LC enables an administrator to manage multiple UNITS (up to 3,000) either from a central CPU acting as a server or from client CPUs. In order for a client CPU to manage UNITS, the client must have access to this server.

To install the Server software on a computer, unzip the `mng-lc-srvr-vx-x.zip` file received via email to a directory where the software will run. (vx-x will be the version number of the software.) **Make sure the directory has write privileges enabled. (i.e. the "C:\Program Files" directory has restricted access.)**

TIP: At this time, you might want to place a shortcut on the desktop to run the `emicromanagersrvr.jar` file. (In Windows, right-click the `.jar` file, click "Send To", click "Desktop (create shortcut)".)

Note: Ensure that the server firewall allows TCP ports 9000, and 9001 access. If a UNIT is behind a firewall, ensure UDP port 161 and 162 (SNMP) and TCP port 6000 is accessible.

Note: SNMP must be enabled in each ENVIROMUX Unit monitored for the E-MNG to receive and display sensor values.

The E-MNG-LC also enables any computer (with Java installed and with access to the Server) to additionally manage the ENVIROMUX units. The computer (Windows/Sun/Mac/Linux/etc) can access the Server via an Ethernet connection. These computers will be referred to as "clients" throughout this manual.

Note: The PC that accesses the Server can also be the computer that runs the Server, provided the Client software is installed in a different directory on that computer.

To install the Client software on a computer, unzip the `mng-lc-clnt-vx-x.zip` file received via email to a directory where the software will run. (vx-x will be the version number of the software.) **Make sure the directory has write privileges enabled. (i.e. the "C:\Program Files" directory has restricted access.)**

TIP: At this time, you might want to send a shortcut to the desktop to run the `emicromanager.jar` file. (In Windows, right-click the `.jar` file, click "Send To", click "Desktop (create shortcut)".)

Be sure that Java Runtime Environment 1.8 or later is installed on the server and each client. This software can be downloaded from <http://java.com/en/download/manual.jsp>.

Licensing

After installing the server software and Java Runtime Environment (version 1.8 or later), the Server software can be opened by double-clicking on the `EmicroManagerSrvr.jar` file in the directory `mng-lc-srvr-vx-x.zip` was unzipped to. When you start the `EmicroManagerSrvr.jar` file the first time the End User License Agreement will be presented.

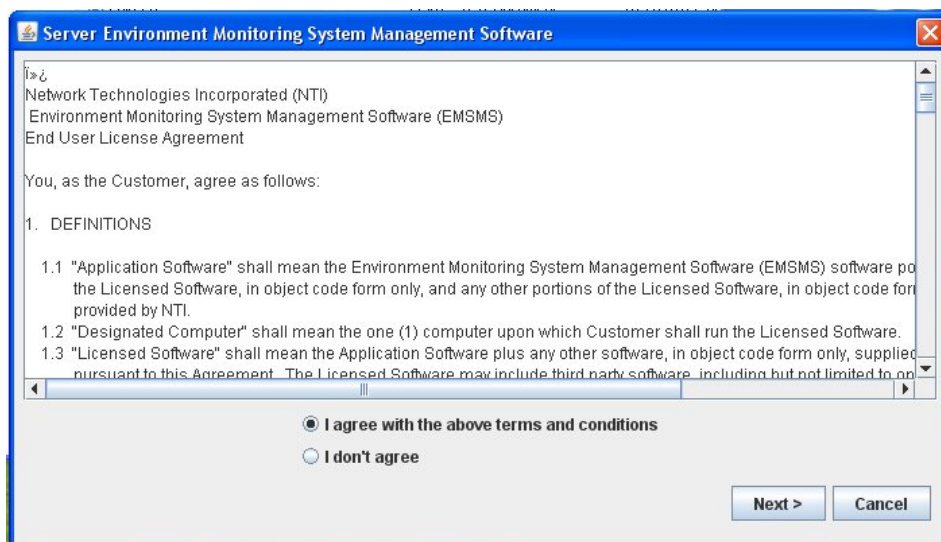


Figure 1- End User License Agreement

After reading the agreement, make sure “I agree with the above terms and conditions” has been selected and click on **Next**.

You will then be presented with a license installation screen.

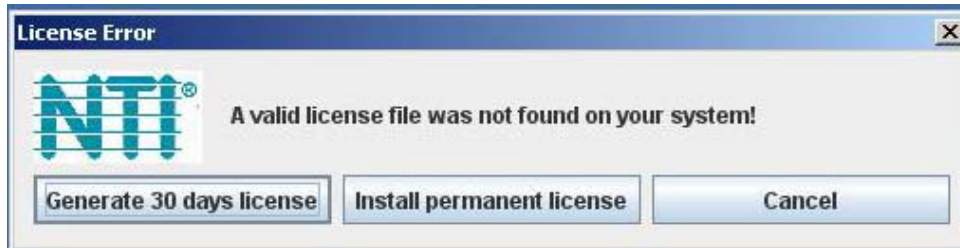


Figure 2- License Installation screen

If you have not yet purchased the E-MNG-LC and are evaluating it, a temporary license to use it in conjunction with up to 10 ENVIROMUX units for 30 days can be automatically generated. After 30 days, the software will not work unless a valid permanent license is installed, or another temporary license can be generated, but all configuration settings will be lost. Only the purchase and installation of a permanent license will avoid losing your configuration.

For now, click on “Generate 30 days license” to access the E-MNG-LC menu.

Note: See “Deactivate User Account Control” on page 6 before generating a temporary or activating a permanent license.

To install a permanent license, you must have purchased the software and submitted for a license activation key. Upon purchasing the software, you will receive a confirmation email that includes a product serial number for the software purchase. That number, combined with the Machine ID of the computer the Server software is on, will be required to apply for the License Activation Key.

Note: It can take up to 3 business days after submitting your License Request Form to receive your License Activation Key.

Get Machine ID

With the Server software main menu now open, select “Help” and “Install License”.

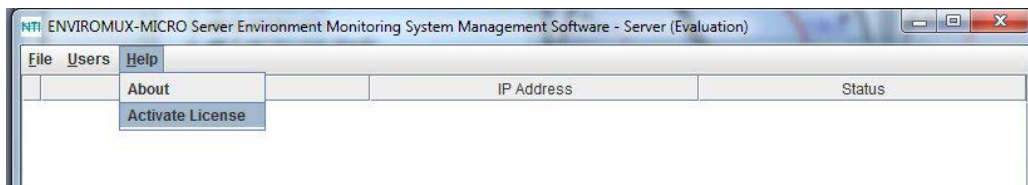


Figure 3- Server software-Install License tab

The following image will open:

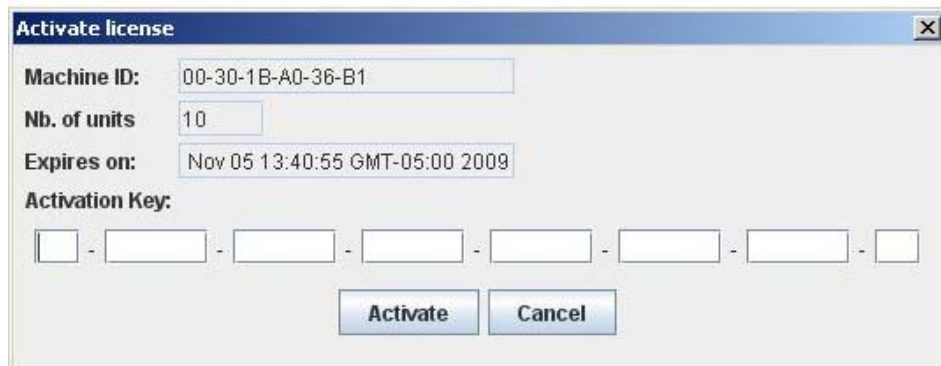


Figure 4- License Activation screen

The “Machine ID” of the computer is in the first line of the image (example above). Write this down exactly as shown and enter it on the Registration and License Request Form found at <http://www.networktechinc.com/license-request-env.html>.

ENVIROMUX Management Software License Request Form

Complete and submit this form to request a license activation key for your ENVIROMUX Environment Monitoring System Management Software. Once it has been processed, you will receive the license activation key within 3 business days.

Note: All Fields Are Required

End User Information

First Name:
Last Name:
Company:
Address:

City:
State/Province:
Postal/Zip Code:
Country:
Phone:
Email:
Confirm Email:

You will receive a key at the above email address.

ENVIROMUX Management Software Information

ENVIROMUX Software Serial Number: [How Do I Find?](#)
Machine ID: [How Do I Find?](#)
ENVIROMUX Software Edition:
ENVIROMUX Software Version: 2.4

Comments

End User License Agreement

evaluating the Licensed Software. You may copy the Licensed Software into machine readable form for backup purposes in support of your use of the Licensed Software on the Designated Computer, limited to one copy. You may not reverse compile or disassemble the software. The Customer shall not modify or adapt the Licensed Software in any way. The Licensed Software, comprising proprietary trade secret information of NTI and/or its licensors, shall be held in confidence by you and protected from disclosure to third parties. No title to the intellectual property is transferred. You must reproduce and include

I Agree to the End User License Agreement
 I Do Not Agree

I certify that I am responsible for managing the use of the ENVIROMUX Management Software at this disclosed location and on the system identified on this form. I understand that permanent keys, once issued, cannot be returned, rescinded, or RMA'd. I understand that NTI will provide, without charge, copies of any appropriate software updates/enhancements for 12 months, and that the software update service is optionally extendable every twelve months for 20% of list price.

Talk to a live agent

Phone available
 8am-6pm EST

Figure 5- Registration and License Request Form

Install Permanent License

Within 3 business days, you will receive an email that includes a **License Activation Key**. Enter the key with the characters exactly as they are in the body of the email in the block provided in the "Activate License" screen (Figure 4).

With a proper entry of the License Activation Key, click on **Activate**. The E-MNG-LC software should now be ready to use.

NOTE: The Server application is licensed to be applied to one CPU and will only work on the CPU with the Machine ID supplied at the time of license issue. To move the Server application to a different CPU, contact NTI to request an updated license.

From the Command Line

If the Server software is unzipped to a CPU that operates strictly from the command line, then the following commands will provide access to the Server in that environment :

From the directory the Server software has been extracted to type:

```
C:\E-MNG-LC>java -jar EmicroManagerSrvr.jar root nti -config
```

You will be prompted to accept the terms and conditions, type **y** and press <Enter>:

```
Do you agree with above terms and conditions? (y or n): y
A valid license key was not found on your system!
```

```
Select an option:
  Generate 30 days license    <1>
  Install permanent license  <2>
  Cancel                     <3>
> 1
```

The software will check for a license key.

- If you already have one, enter <2> to be prompted to enter it and simply copy and paste the key from the email message it was received on, or carefully type the key in.
- If you don't have a license key, enter <1> to generate a temporary 30 day license.

Note: The terms and conditions will only be displayed until a temporary license is generated or a permanent license is installed. After that, only the license status and command prompt (below) will follow the initial command to open the program.

Once the license is entered, the command prompt will be ready to receive control commands to configure the server. To see a list of commands the server will accept, type <help>.

```
C:\E-MNG-LC>java -jar EmicroManagerSrvr.jar root nti -config
Nb of allowed Enviromux units: 10
Expires on: Sat Dec 29 16:57:10 EST 2012
Type 'help' to view available commands
>
```

For more on server management from the command line and a list of commands, see page 12.

Start the Server, Configuration is Done

To start the ENVIRMUX-MNG-LC server without going into the configuration mode, type the following at the command prompt:

```
C:\E-MNG-LC>java -jar EmicroManagerSrvr.jar root nti -nogui
```

Note: If you have changed the root user password, substitute the new password for "nti" in the string above.

To stop the server, terminate the program using a command appropriate for your operating system (<Ctrl+c> for DOS, <kill> for Linux, etc).

SERVER MANAGEMENT

Manage From the GUI (Graphical User Interface)

Immediately after installing the license, and any time hereafter that you double-click on the `emicromanagersrvr.jar` file, the server management software will open to the login screen. The administrator is named “root”, and the root user will be prompted for a password.

The default password is “nti”.

Only the “root” user can access the “Server” side of the management software.

Note: *If the root user password has been changed and this installation is an update (rather than a new installation), the previous root password will not be changed with the updated software installation.*

To reset a forgotten password back to "nti", see page 37)

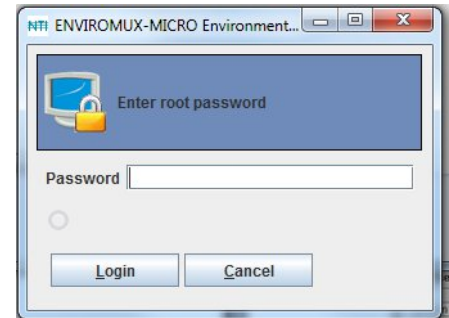


Figure 6- Login to server

The software will open to an empty list that will contain all connected UNITS to be monitored by the E-MNG-LC. UNITS are easily added using IP address, or DNS name (if so configured).

Note: *The server will offer to update the root password of any UNIT that has a root password other than “nti”. Otherwise, these units will require a separate login when the server software is started.*

Add UNITS to Monitor

To add a UNIT, click on the “File” menu and select “Add Unit”. A window will open as shown below.

Enter the IP address for the UNIT or the DNS name (if applicable) and press “Add”. If the IP address is valid, the UNIT will appear in the server list. If not, the message “cannot find unit” will be displayed below the “Add” and “Done” buttons. When finished adding UNITS, click the “Done” button to close the window.

TIP: *If you don’t know the IP addresses of the UNITS to be monitored, you can use the included NTI Discovery Tool (page 9) to identify them (provided they are all connected to the same LAN).*

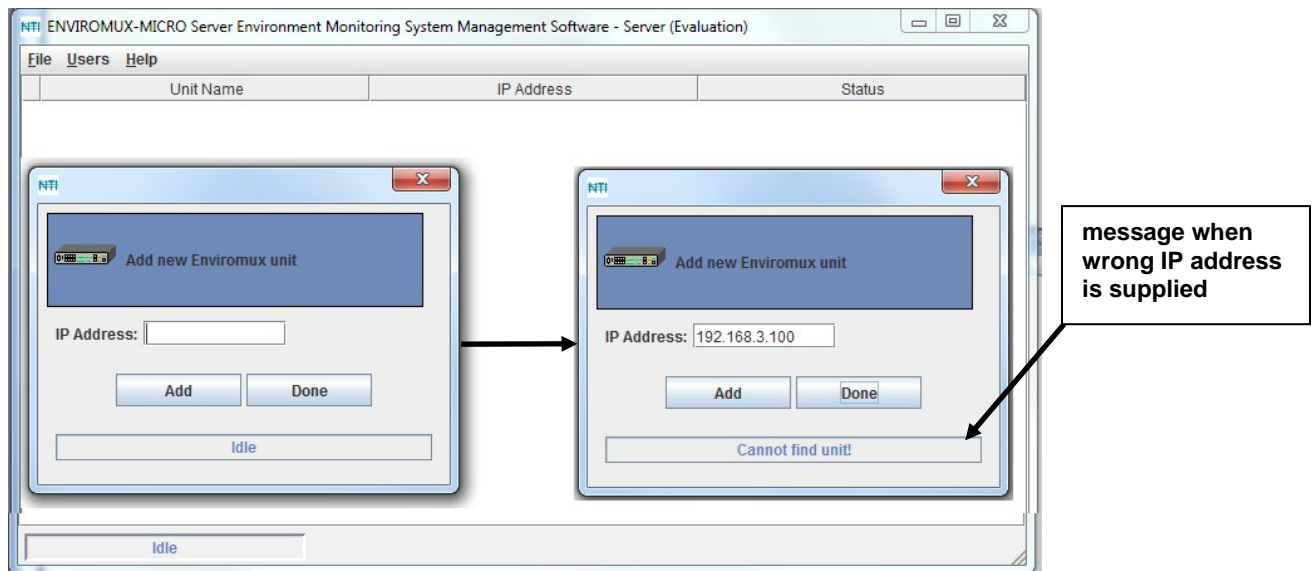


Figure 7- Add UNITS to monitor

Device Discovery Tool

In order to easily locate the UNIT on a network, the NTI Device Discovery Tool may be used. The Discovery Tool is available on many of our webpages, including <http://www.networktechinc.com/download/d-environment-monitor-micro.html>. Download the discovery.zip, extract the contents to your PC and click on the file *NTIdiscover.jar*. This will open your browser and display the Device Discovery Tool page.

Note: The Device Discovery Tool requires the Java Runtime Environment to operate.

Note: The computer using the Device Discovery Tool and the ENVIROMUX must be connected to the same physical network in order for the Device Discovery Tool to work.

Network Technologies Inc Device Discovery Tool

- **START**
 - When you load this page, the NTI Device Discovery Applet should load. Accept the Certificate to allow this applet access to your network. Press the button entitled **Detect NTI Devices** to start the discovery process. After a short time, the tool will display all NTI devices on your network, along with their network settings.

Note: Do not close this page while the NTI Discovery Tool is running. Close the NTI Device Discovery Application first, then this webpage.
- **How To Use the Discovery Tool**
 - **To Change A Device's Settings**, within the row of the device whose setting you wish to change, type in a new setting and press the **Enter** key or the **Submit** button on that row. You can also press the **Submit All** button to submit all changes at once.
 - **To Refresh the list of devices**, press the **Refresh** button.
 - **To Blink the LEDs of the unit**, press the **Blink LED** button (This feature not supported on all products). The **Blink LED** button will change to a **Blinking...** button. The LEDs of the unit will blink until the **Blinking...** button is pressed, or the NTI Device Discovery Application is closed. The LEDs will automatically cease blinking after 2 hours.
 - **To Stop the LEDs of the unit blinking**, press the **Blinking...** button. The **Blinking...** button will change to a **Blink LED** button.

Detect NTI Devices

0%

Figure 8- Device Discovery Tool page

Use the Device Discovery Tool to display all NTI ENVIROMUX units on the network, along with their network settings. Follow the instructions on the Device Discovery Tool page to use the tool and to change the device settings if so desired.

Device	MAC Address	IP Address	Mask	Gateway		
ENVIROMUX	00:40:9D:24:07:70	<input type="text" value="65.243.248.18"/>	<input type="text" value="255.255.255.128"/>	<input type="text" value="65.243.248.1"/>	<input type="button" value="Submit"/>	<input type="button" value="Blink LED"/>
		<input type="button" value="Submit All"/>	<input type="button" value="Refresh"/>	<input type="button" value="Close"/>		

Add E-MNG-LC Users

The administrator can add Users (as many as desired) that can access the MS and manage monitored UNITs. The list of users is saved in the server but can be configured from any client location. The “root” user can add users, define passwords, and assign administrator rights to a user if so desired. Only listed users will have access to the E-MNG-LC.

Users with administrative rights are able to manage users in the individual UNITs, allowing them to add, edit, and delete users, as well as change passwords.

To add a user, click on the “Users” menu item and select “Add User”. A window (see Figure 9) will open to define a User Name and Password. Place a checkmark in the box next to “Administrative Rights” if you want this user to have control has described above.

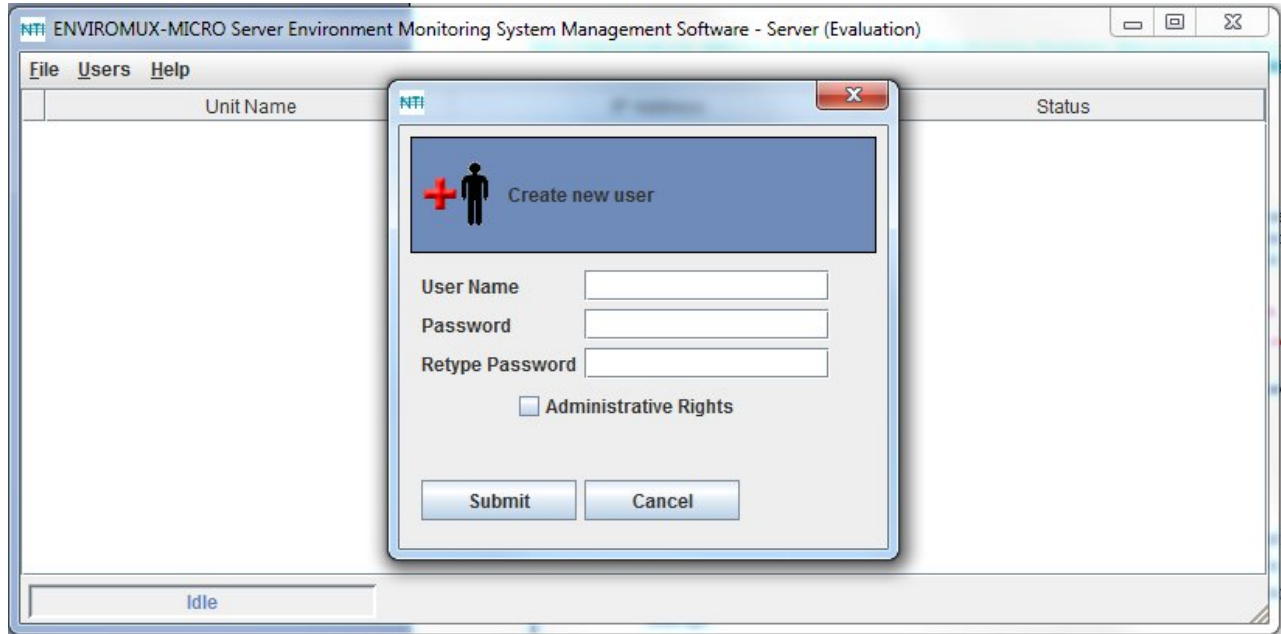


Figure 9- Create new user

Edit E-MNG-LC Users

The root user or users with administrative rights can make changes to a user’s password and change their status as an administrator. Simply click on the “Users” menu and select “Edit User”. A window will open where the desired user can be selected and boxes are available to change user settings or delete a user (see Figure 10).

After making changes, press “Submit Changes” to have them take effect.

After all changes are complete, press “Done” to exit the window.

To delete a user, select the User name from the list and press “Delete”.

Note: A password must be provided, even if it is only 1 character.



Figure 10- Edit User

UNIT Loses Connection

If a UNIT loses connection to the network, whether via power failure or Ethernet, the E-MNG-LC will indicate it.

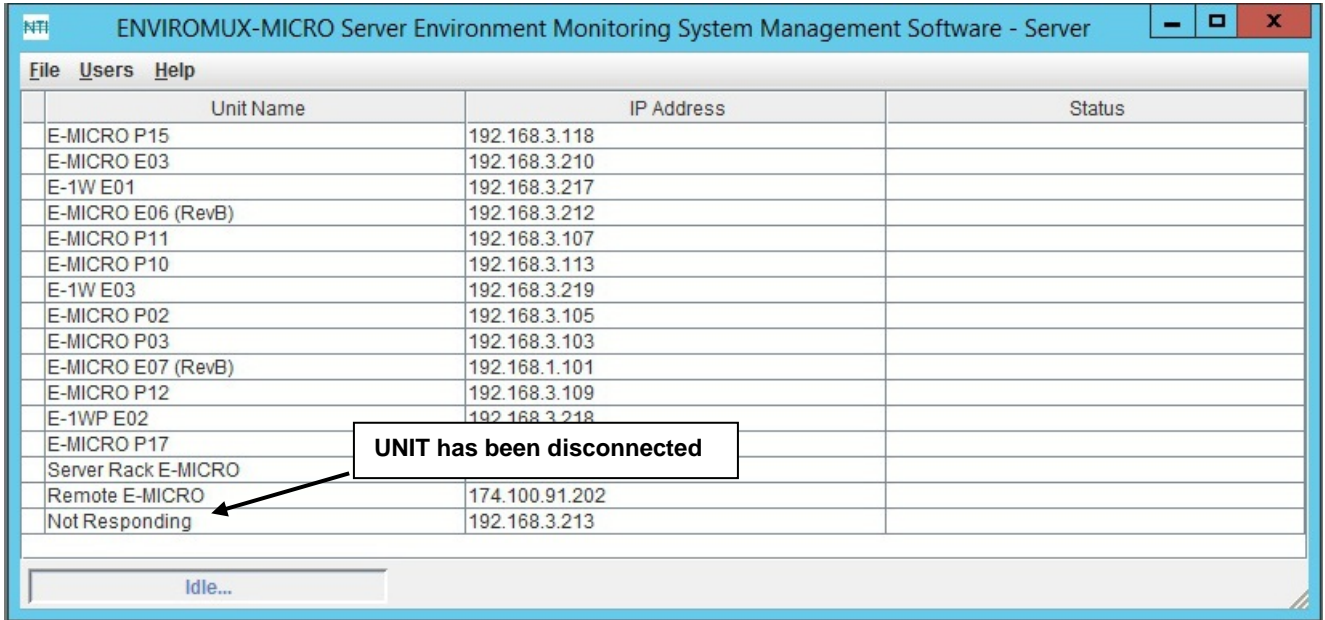


Figure 11- UNIT has lost connection to network

With the power or Ethernet connection restored, the software can be prompted to quickly reload the UNIT and restore sensing and management. Simply right-click (with the mouse) on the client IP address and be prompted to either “Reload” the UNIT or “Delete” it from the list.

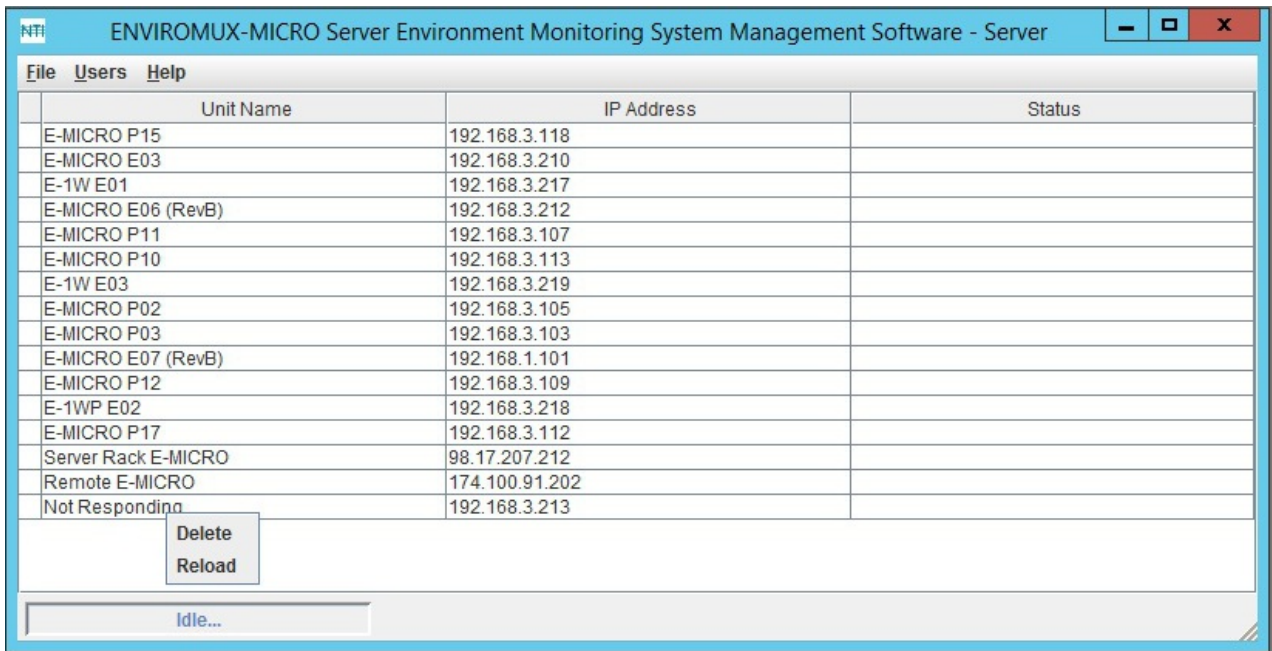


Figure 12- Reload UNIT to restore sensing and management

Manage From the Command Line

To control the E-MNG-LC Server from the command line, enter the following command from the directory the server files have been unzipped to:

```
C:\E-MNG-LC>java -jar EmicroManagerSrvr.jar root nti -config
```

```
Nb of allowed Enviromux units: 10
Expires on: Sat Dec 29 16:57:10 EST 2012
Type 'help' to view available commands
```

Type <help> to view the available commands.

```
>help
  showid                - Displays the machine ID for licensing
  license <license_string> - Install license
  del_license           - Remove current license
  passwd               - Change root password
  listunits            - Lists the Enviromux units in the project
  addunit <IPAddress>  - Add an Enviromux unit with IP address
  delunit <IPAddress>  - Delete an Enviromux unit with IP address
  listusers            - Lists the available users
  adduser              - Add a user account
  deluser              - Delete a user account
  run                  - Exit config mode and start the server
  exit                 - Exit
```

If you have not yet applied for a permanent license, you will need to get the Machine ID for the License Request Form (page 6). Enter the command <showid> to see the machine ID.

```
>showid
00-0C-29-8D-43-09
```

Write down the number presented for entry into the License Request Form.

Once you receive the license, enter the command <license> and the license string provided by NTI.

```
>license <license_string>
```

If, at some point, the E-MNG-LC Server is moved to a different CPU, the license will need to be updated to work with the new CPU. To first delete the license from the initial server, enter the command <del_license>.

Once the server is configured using the other commands to view, add, or remove ENVIROMUX Units to be managed and view, add, or remove users to have client access, either enter <run> to start the server, or <exit> to exit the configuration program.

To start the server without entering the configuration program, enter the following command (substitute current password for "nti" as applicable):

```
C:\E-MNG-LC>java -jar EmicroManagerSrvr.jar root nti -nogui
```

```
Nb of allowed Enviromux units: 10
Expires on: Sat Dec 29 16:57:10 EST 2012
Server started
```

To stop the server, terminate the program using a command appropriate for your operating system (<Ctrl+c> for DOS, <kill> for Linux, etc).

USING A CLIENT

With users and passwords assigned, a user can access the E-MNG-LC Management Software from any computer with the Client software loaded, provided the user has access to the computer the Server software is on. There is no limit to the number of Clients that can access the Server at a time and there is no limit to the number of users that can be configured to use the Client to access the Server.

User Connection

After installing the Client software and Java Runtime Environment (version 1.8 or later), the Client software can be opened by double-clicking on the EmicroManager.jar file (in the directory mng-lc-clnt-vx-x.zip was unzipped to). A login screen will appear. Enter the IP address of the server, a valid user name (**other than root**) and password and the manager screen will open.

Note: If the Server and Client software are on the same computer, instead of the Server IP address, enter "localhost".

If you enter user name "root" and the password for "root", an administrative screen will open enabling the management of server settings. See page 31 for more about this.

Note: The client software will remember the last IP address entered, so this may not need to be repeatedly entered with each login unless the IP address of the server changes.

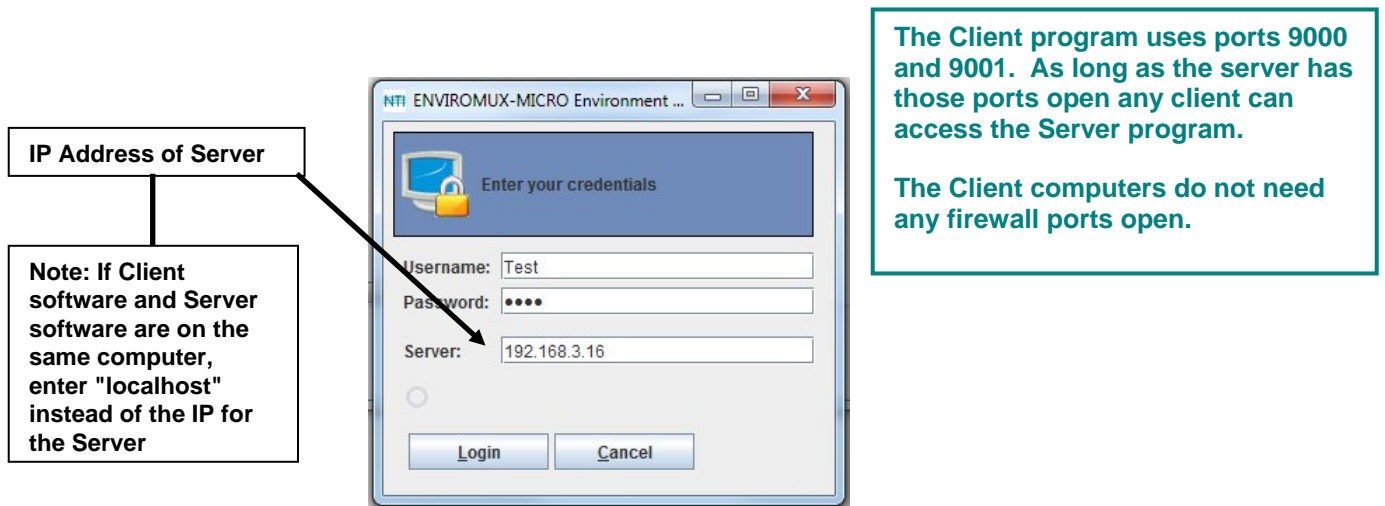


Figure 13- Login at a Client

The Client software will open to a blank window, wherein the user can create "Projects" that include groups of specific UNITS that are to be monitored. Each user can create unique projects used to monitor all available UNITS, or just a portion of them.

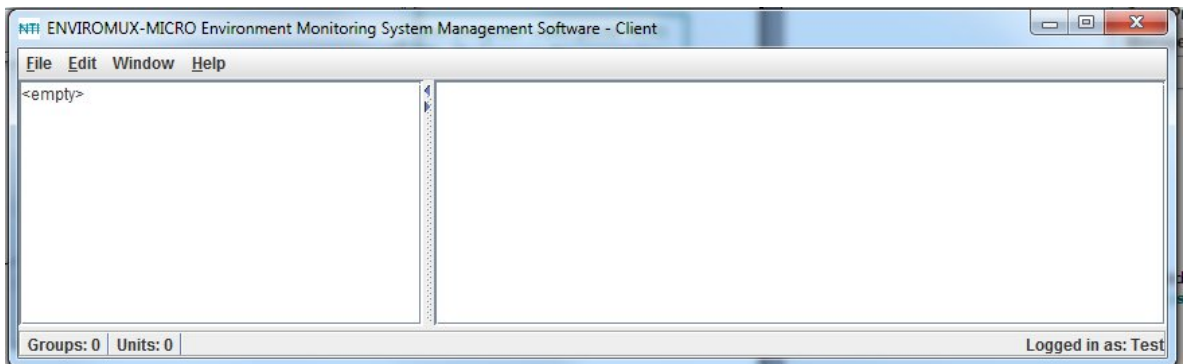


Figure 14- Empty list- no Projects defined yet

Project Management

Each user can monitor any or all connected UNITS. A project is made up of UNITS placed into a single group or can be broken up into category-specific groups for more organized monitoring. Any or all UNITS can be placed into each group. Once they are defined, the list of groups and their included UNITS can be saved as named projects for easy recall later. Multiple projects can be defined for each user. From the “File” menu, a user can create a new project, open and existing project, or delete existing projects.

Create a Project

To create a new project go to the “File menu” and select “New Project”. The word “<empty>” will be replaced by “New Project”.

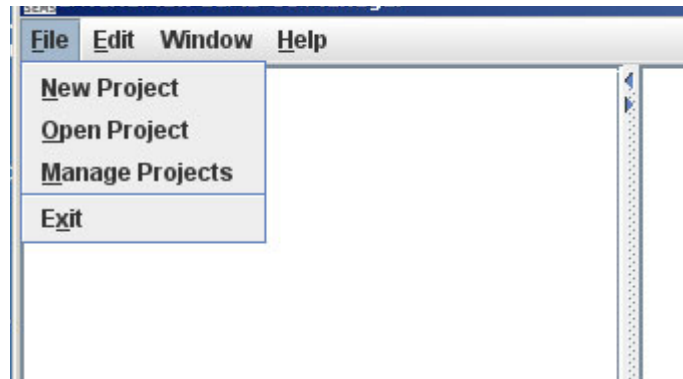


Figure 15- File Menu choices

With the project “New Project” highlighted, go to “Edit” menu and select “Project Settings”. A project window will open.
FYI: The “Project Settings” selection is also used to edit an existing project.



Figure 16- Select Project Settings

From the project window, click on the “New Group” button to add a group number under “New Project”. Then click on the group name to select it.
 Select each UNIT from the list of “Available ENVIROMUX units” list that should be included in this group. With the UNITS selected either:

- click on “Save” to save the project, then “Cancel” to exit the project window,
- click on “New Group” to define another group of UNITS,
- or just click “Cancel” to cancel the action, save nothing, and return to the empty “New Project” window.

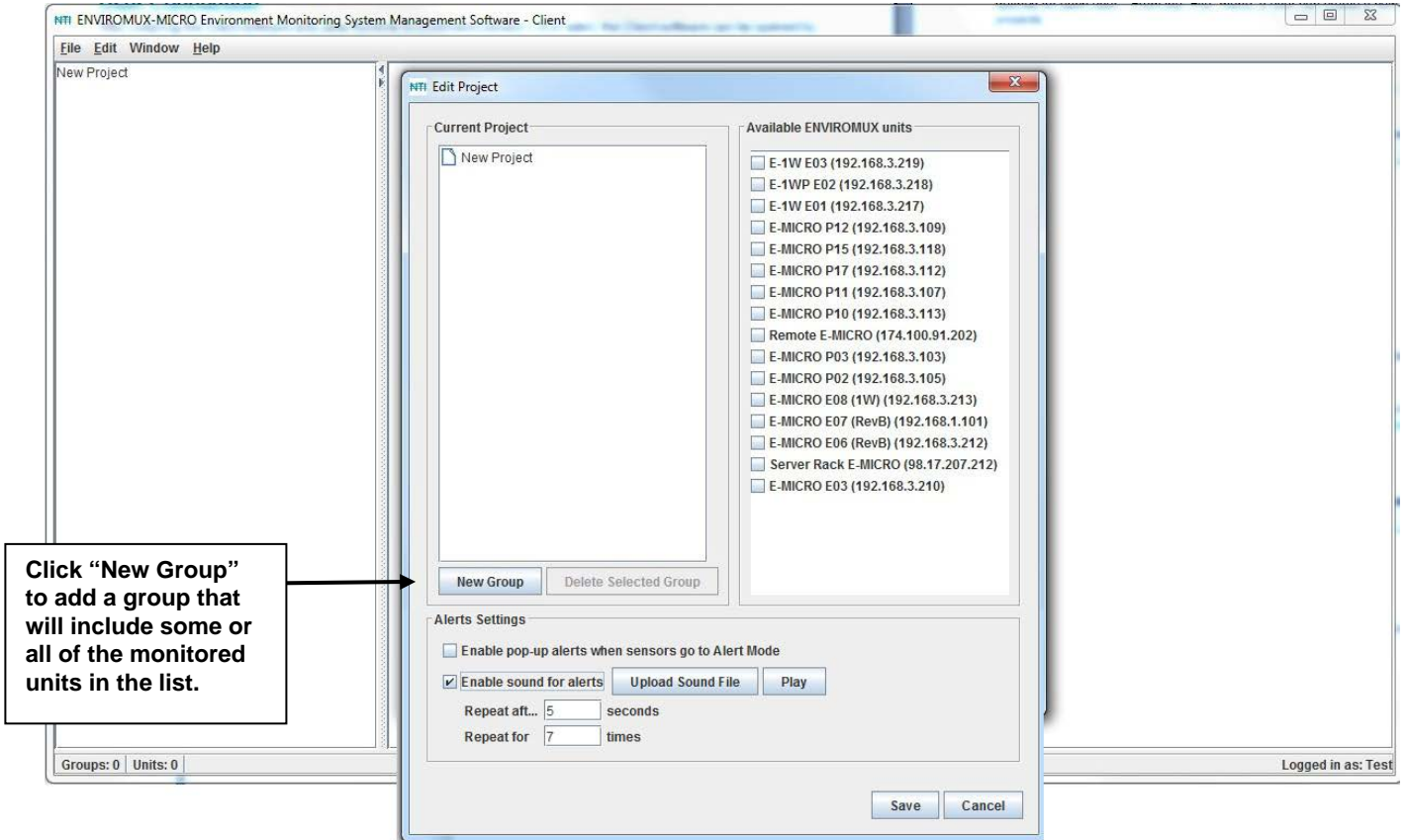


Figure 17- Define a new project

A unique name can be assigned to the project.
 To change the Project name double-click on the Project name and type the new name.
 Press <Enter> to save it, or <Esc> to cancel.
 Perform the same procedure to change Group names.

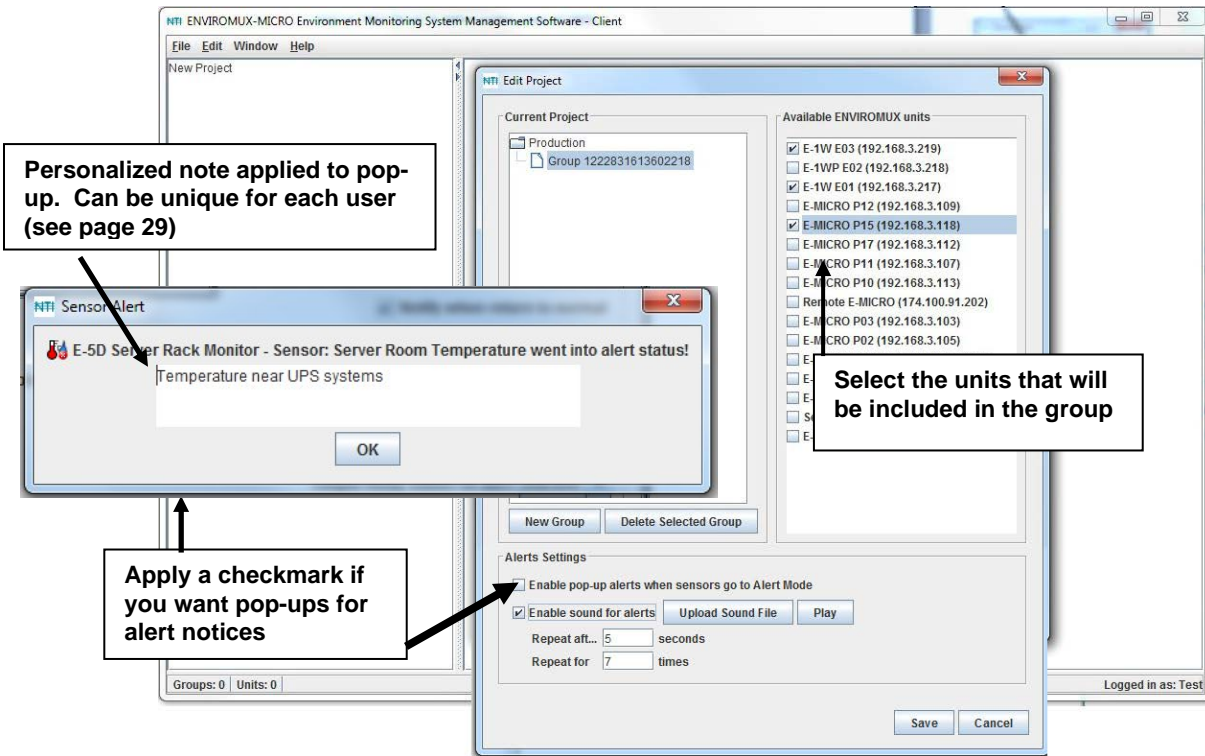


Figure 18- Change names of project and groups

If you apply a checkmark to the “Enable pop-up alerts when sensors go to Alert Mode” box, then any sensor that calls for an alert will cause a pop-up on your computer screen and an audible indication as long as you are logged into the client software and you have speakers connected to the Client PC.

Alternatively, place a checkmark in "Enable sound alerts" to have a customized sound or recorded message play when alerts occur.

Click on "Upload Sound File" to search for a .wav file on your PC to load into the software. With this loaded and enabled, when an alert occurs, the sound from the file will be heard as long as you are logged into the client software.

To have the sound repeat, select the number of times it should repeat. To have a delay between each repeat, select how many seconds should be between each time the .wav file plays (minimum is 1).

To hear the .wav file that has been loaded, click "Play".

With the project settings defined, and groups defined, click on “Save” to save the settings. Click “X” to close the window. Now the groups will be listed (below). Click the group names to see the UNITS selected listed below each (Figure 19).

Notice (right) that one UNIT in one group is also in the other group (“E-1W E01”). A UNIT can belong to as many groups as desired.

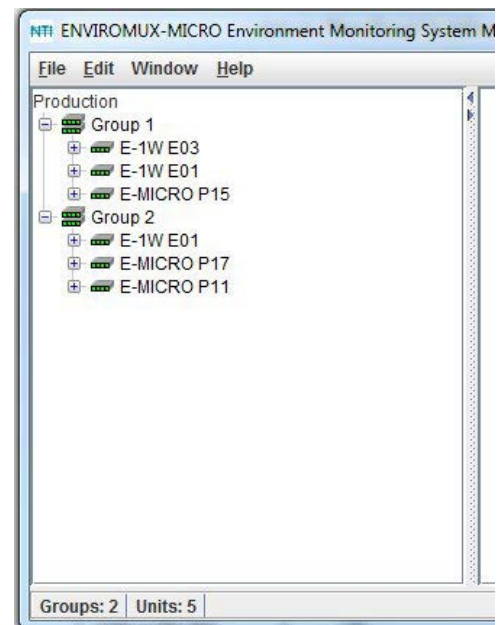


Figure 19- Project and groups exploded to view UNITS

1. Select a UNIT to view the sensor category list.
2. Select a category to see the sensors in that category.
3. Select a sensor to see the status of that sensor.

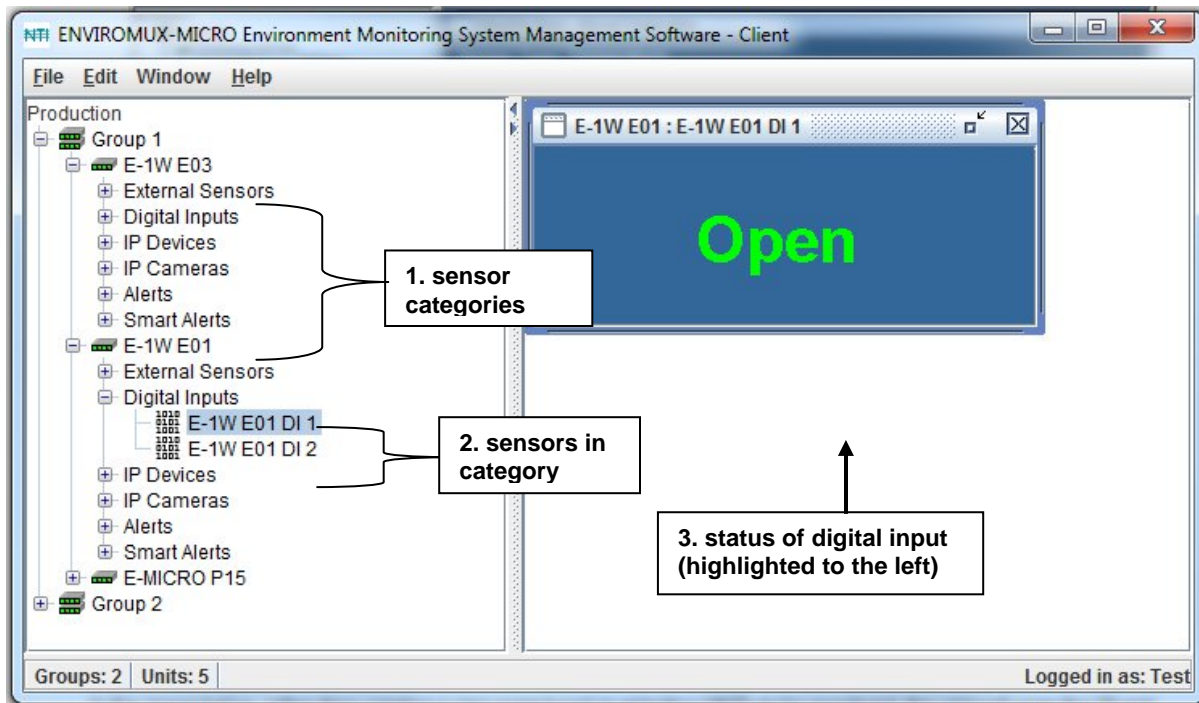


Figure 20- Exploded view of E-MNG-LC

Open a Project

In the image below, rather than creating a new project and re-selecting UNITS to be monitored, the user will open the “Test” project, a previously created project that contains all the UNITS the user wants to monitor.

1. Go to the “File” menu and select “Open Project”.

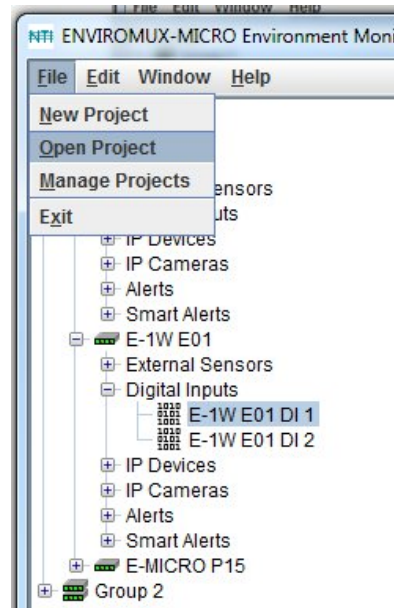


Figure 21- Open existing project

2. A list of existing projects previously defined will appear. Select the one desired and click "Open".

Click "Open" to open the pre-defined "Test Project" Project

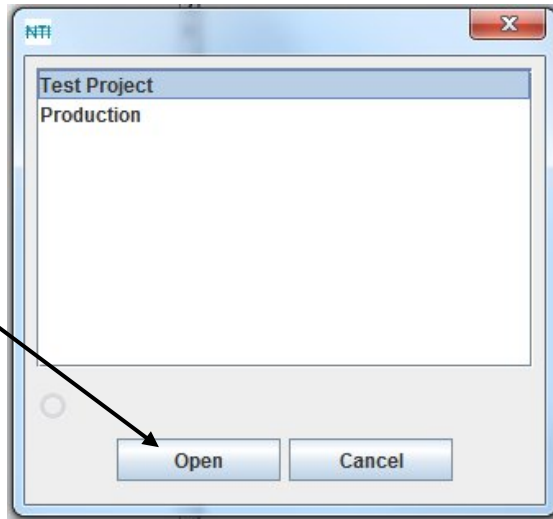


Figure 22- List of existing projects

3. The selected project is now open and ready to review.

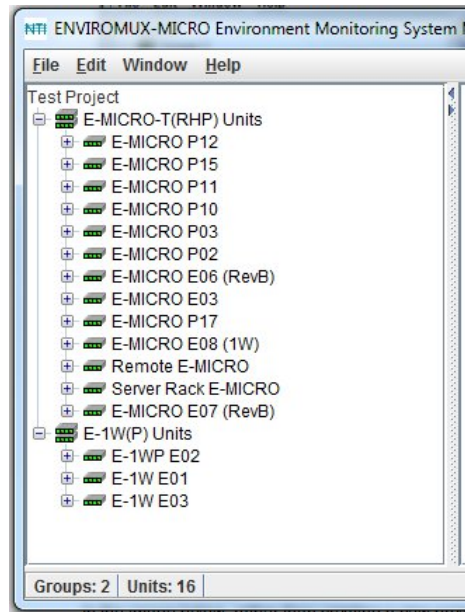


Figure 23- Existing project open, ready for viewing

Delete a Project

To delete a project, select “Manage Projects” (Figure 21) from the “File” menu. Select the project name to remove and click the “Delete”: button. That project and any groups defined within it will be removed from the projects list.

FYI: The user can also open an existing project from the Manage Projects window, if desired.

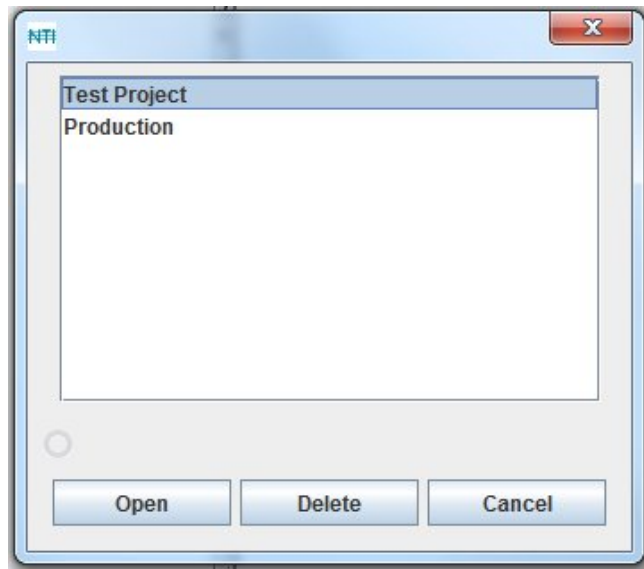


Figure 24- Deleting a project

Remote UNIT Management

From the E-MNG-LC manager, the user can perform many UNIT management functions that otherwise can only be performed when connected to the individual UNIT through the web interface.

To open a menu for making configuration changes to a UNIT, right click the UNIT name in the list. From here, the following areas of a monitored UNIT can be managed:

- **View summary**- to view a summary status of all connected sensors
- **View scrolling summary**- to view a scrolling summary with a controlled window size of all or select categories of connected sensors
- **Configure Enterprise**- Field for entering the name of the E-Micro UNIT being managed
- **Configure Network**- Fields for viewing all the network settings and changing the DNS server settings if desired.
- **Configure SNMP Agent**- Apply SNMP agent settings
- **Configure Email Server**- Apply email settings for the E-Micro
- **Configure Date & Time**- Apply Date and Time settings for the E-Micro
- **Users**- Add and edit all user settings including passwords (available to users with administrative privileges only)

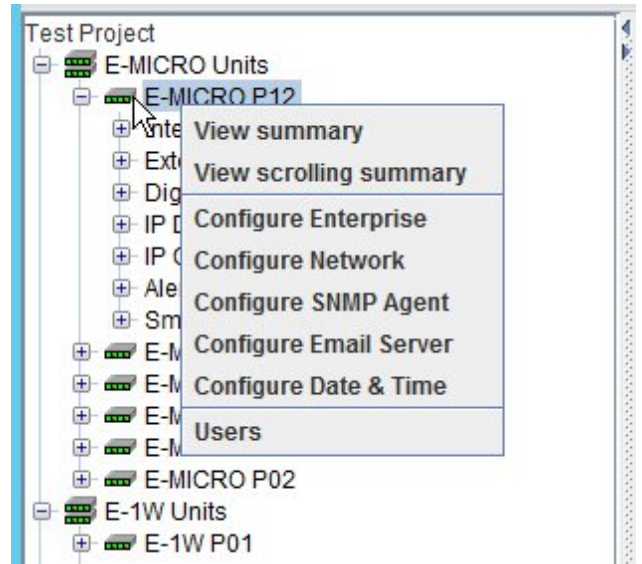


Figure 25- Options with right click on UNIT

View Summary

With the UNIT selected, right click and select “View Summary” to see a summary view of the status of all sensors connected to a UNIT.

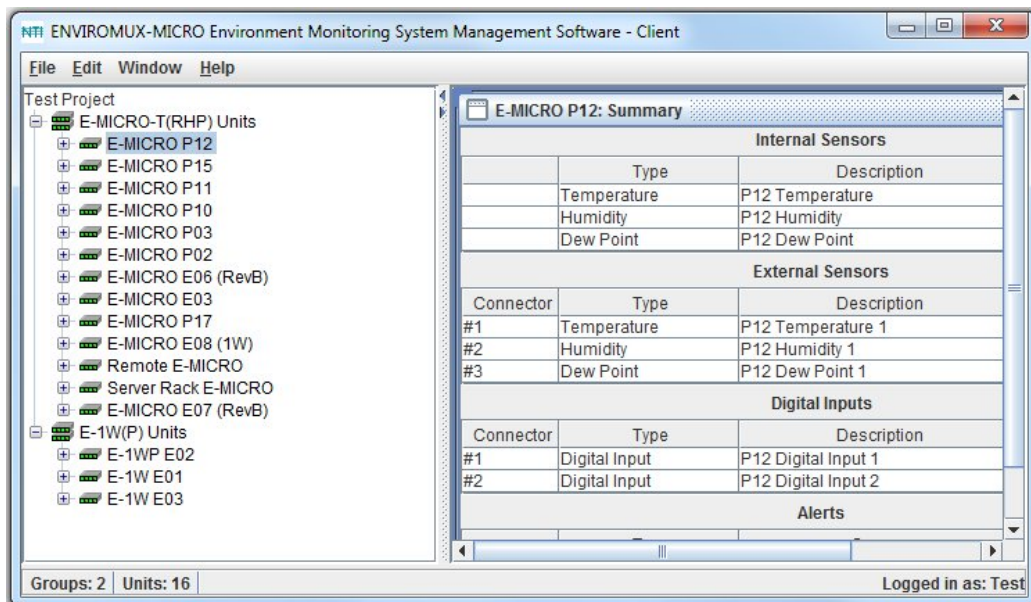


Figure 26- Summary view of sensors in a UNIT

If desired, the Summary view for each unit can be opened for easy monitoring. They can be arranged in a “Cascade” view, like in Figure 27, or in “Tile” view, like in Figure 28. Simply select the summary view for each UNIT to be displayed, then select the view method. The view methods of “Cascade” or “Tile” are found under the “Window” menu.

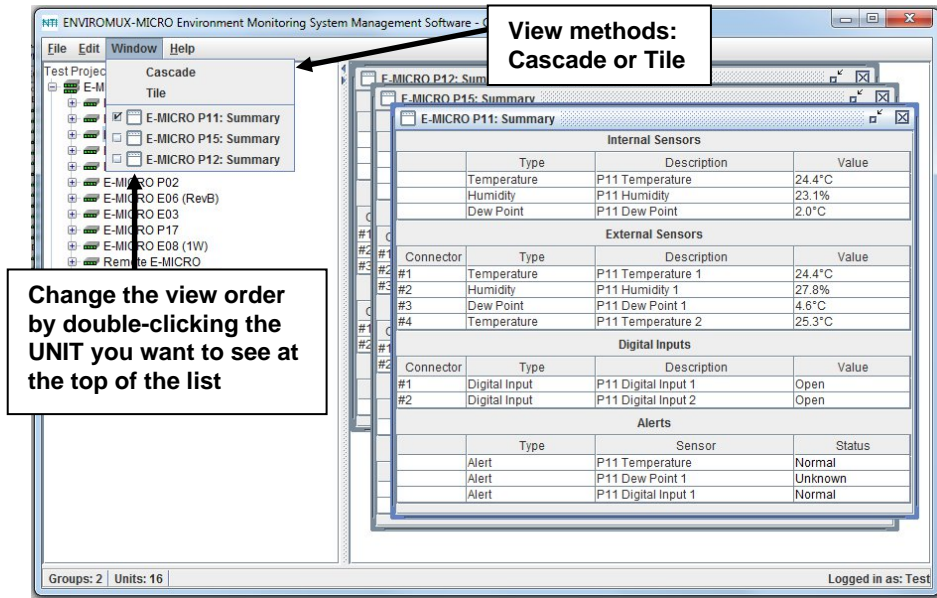


Figure 27- View multiple summary pages in Cascade View

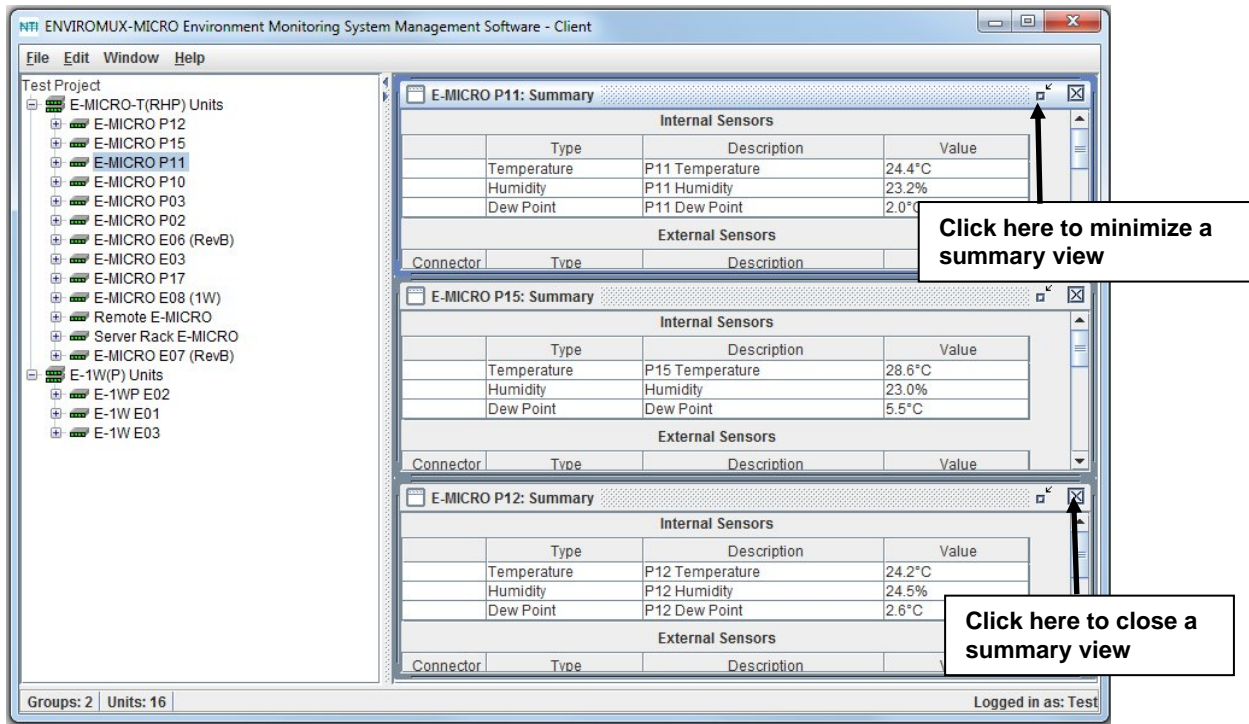


Figure 28- View summary pages in Tile View

View Scrolling Summary

The scrolling summary provides a more controlled way to limit the amount of screen space used for summary view and to view only those sensors that you want to keep on.

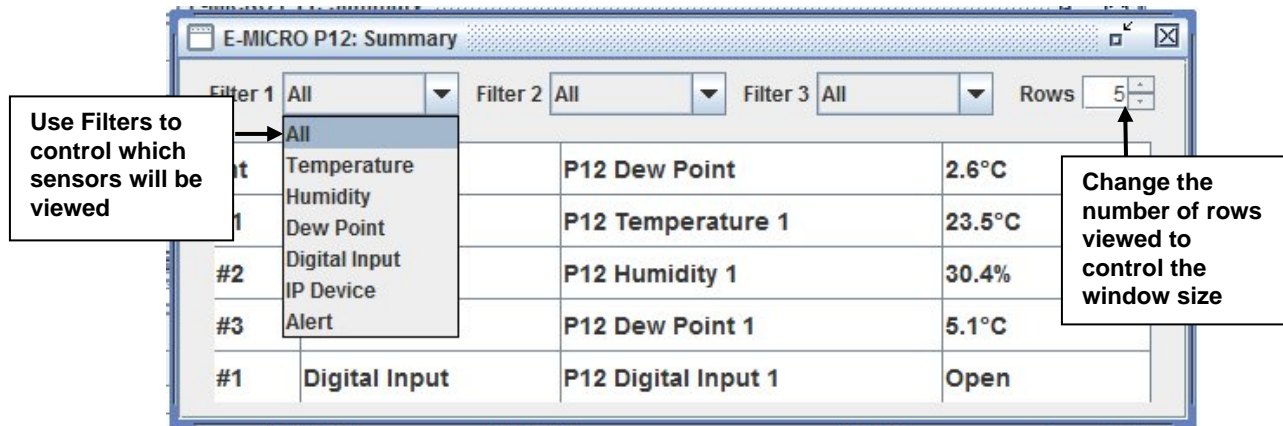


Figure 29- Scrolling window for controlled view of sensor status

By applying limitations to the Filters (1-3), limit the view of the scrolled sensors to only those types of sensors you have an interest in seeing the information on. The status of each is updated dynamically based on the configured refresh rate of each sensor.

A scrolling summary can include only the sensors for a specific unit (as shown in Figure 29), or, it can include sensors from an entire group of ENVIROMUXs (shown in Figure 30).

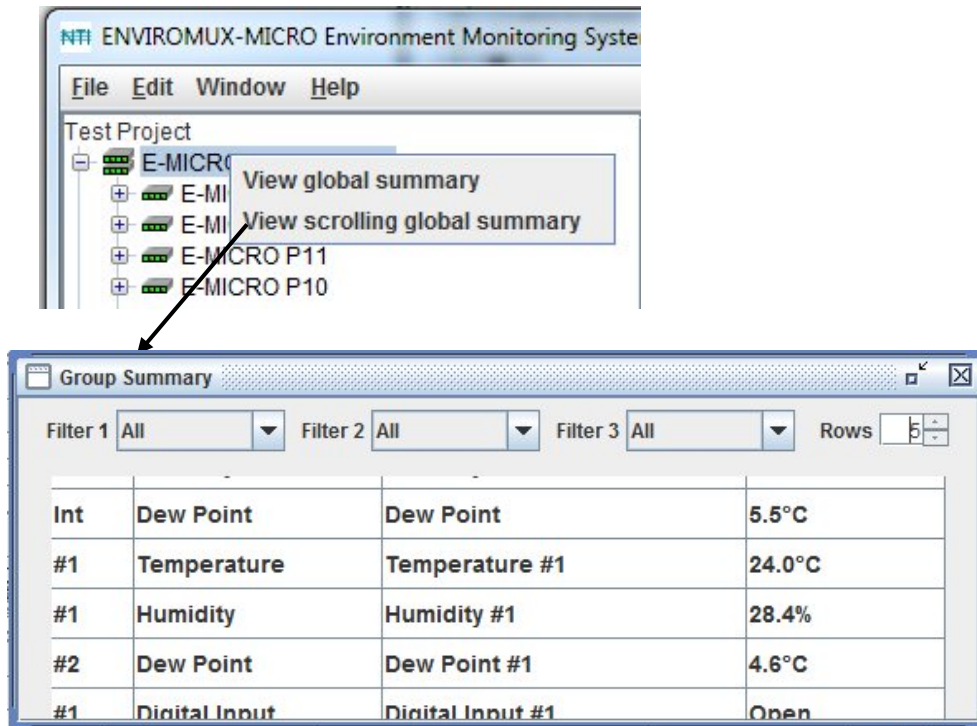


Figure 30- Scrolling summary window can be used for a group of Units

Configuration Options

Click on “Configure Enterprise”, “Configure Email Server”, “Configure Network”, “Configure SNMP Agent” or “Configure Date and Time” to access the configuration options of the ENVIROMUX you are managing.

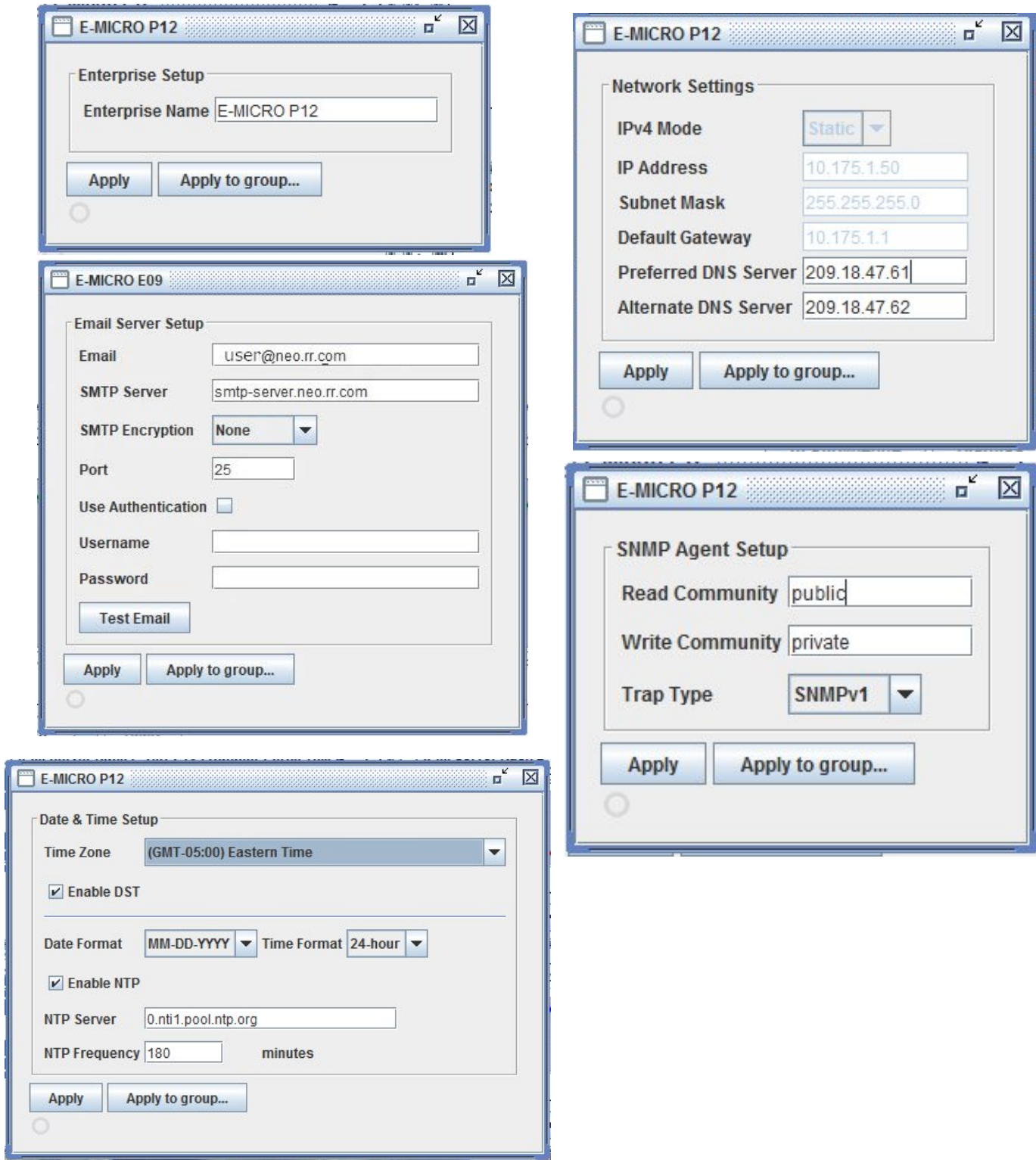


Figure 31- Configure Unit Settings

User Configuration

Click on “Users” to access individual user configurations within each ENVIROMUX. From there you can Add, Remove, and Edit user configurations.

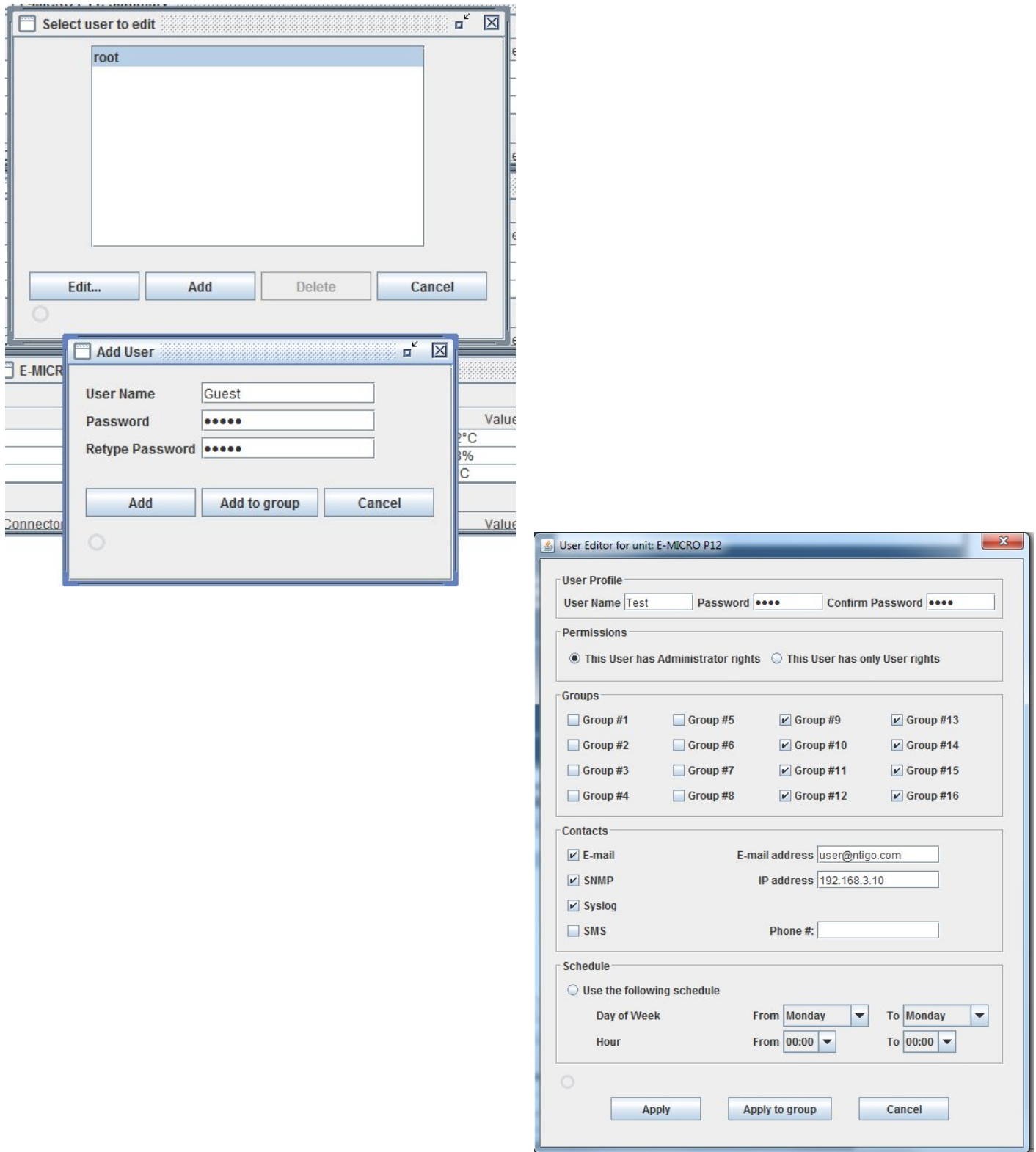


Figure 32- Manage User Settings

Sensor Monitoring and Configuration

Sensor readings can be monitored, settings can be quickly configured to change the criteria for reporting alerts, or they can be removed altogether. Right-click on a sensor to bring up a menu enabling you to Monitor, Configure, Remove a sensor, Start Recording sensor readings taken and View a History Graph of those readings.

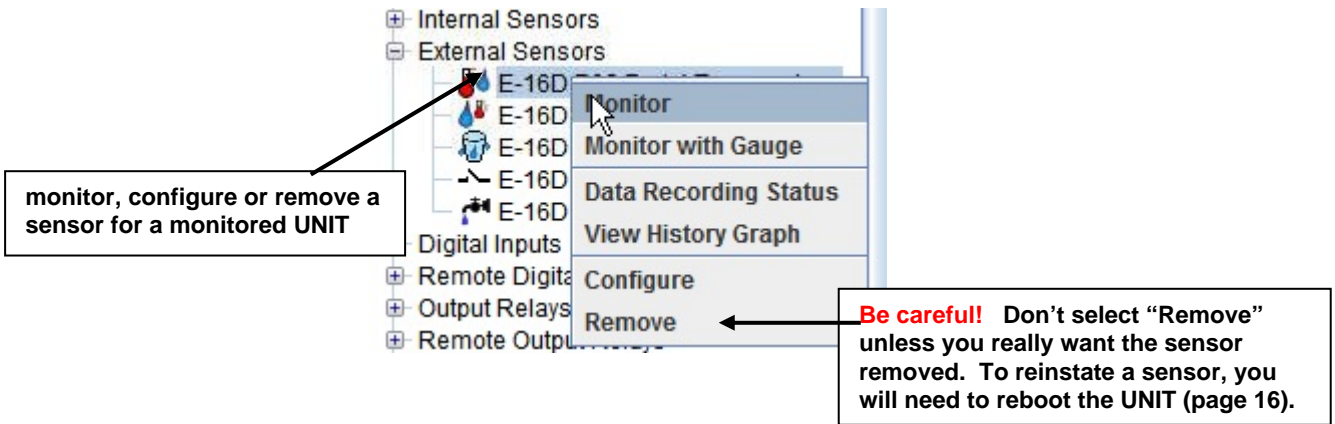


Figure 33- Manage a sensor- choose action

Select **Monitor** to see the status of the sensor as a bar graph or "Monitor with Gauge" to view the status in gauge format. (This option only applies to Temperature, Humidity and Dewpoint sensors.) With "View History Graph" you can track recorded readings for these sensors.

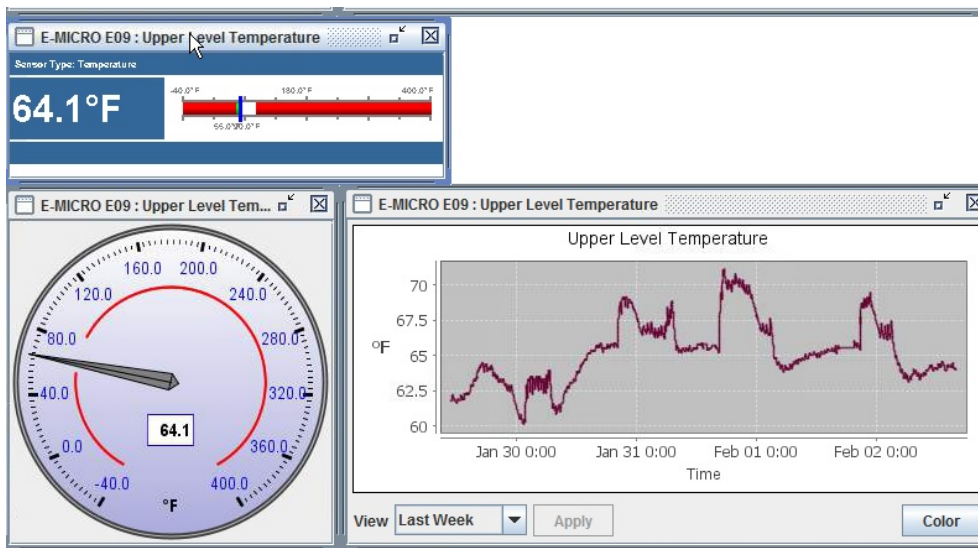


Figure 34- Monitor status of the external sensor

Select **“Data Recording Status”** and then click **“Start Recording”** to have the readings for the sensor stored in memory. Once the start recording, a graph will be created from the readings taken. Readings will be stored for up to 120 days, after which old readings will drop off to make room for new readings.

To view the readings stored, select **“View History Graph”**.

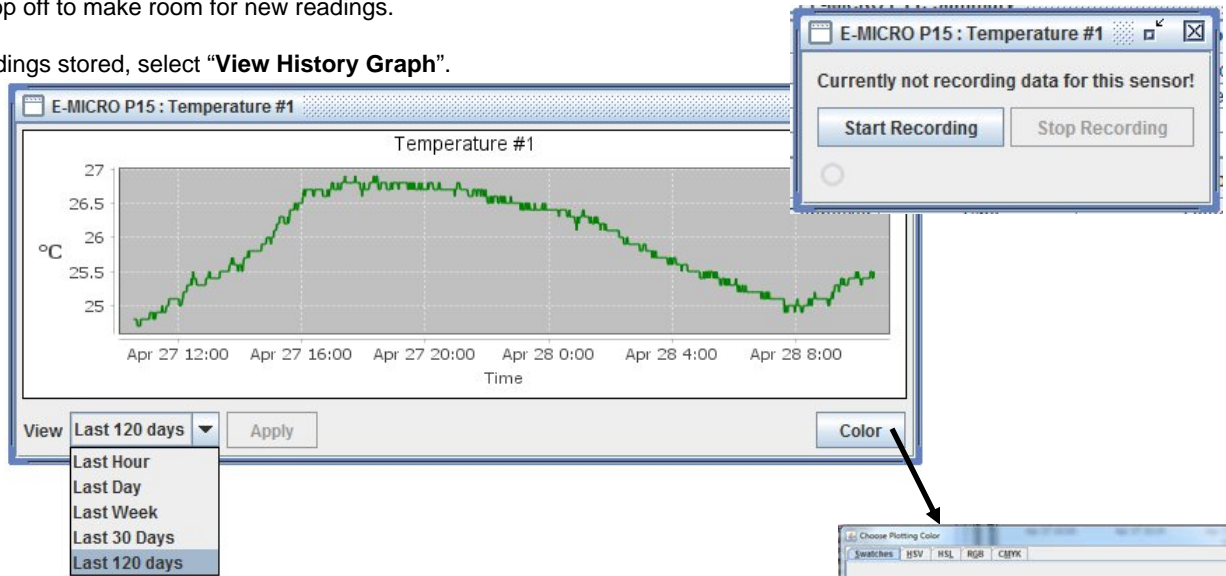
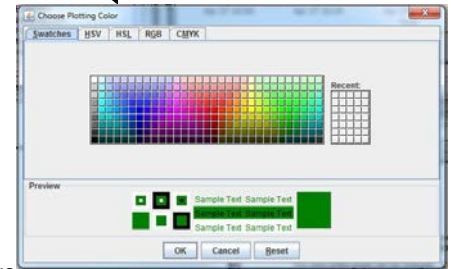


Figure 35- View History Graph

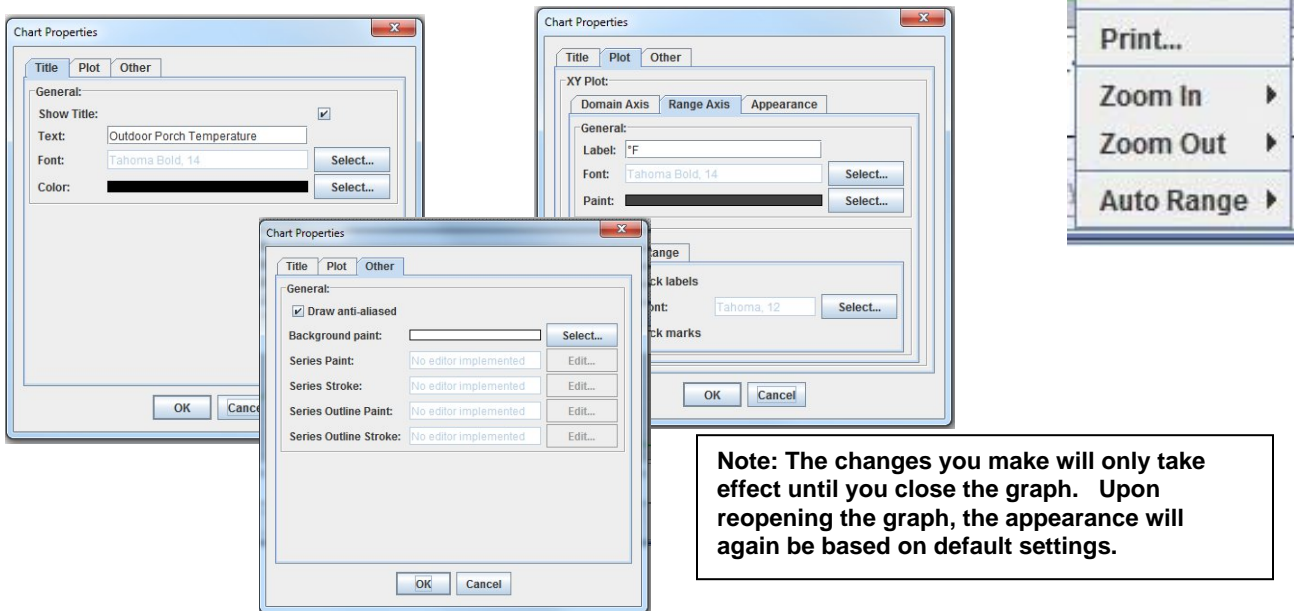
A graph that shows a sensor's readings can be viewed. The time period displayed can be changed to show the last hour, last day, last week, last 30 days or the last 120 days.

The color of the graph can be changed. Click on **“Color”** to bring up a color chart. Select the desired color and press **“OK”**. (The color change will only take effect as long as you have the history graph open. Once closed, upon reopening the graph the original color will be displayed again.)



The range of readings displayed will adjust as the readings are taken. For example, in the above image, for the time period displayed the range of readings was between 38.2°F. to 39.2°F. If expanded to view the Last Day, the range would automatically update to a wider range of temperatures and adjust the graph accordingly.

If you right-click inside the graph, a menu with more options will be presented. Click on **“Properties”** to bring up options to change the **“Chart Properties”** or appearance of the graph.



Note: The changes you make will only take effect until you close the graph. Upon reopening the graph, the appearance will again be based on default settings.

Figure 36- Change the appearance of your graph (temporary)

To copy the graph image to your computer's clipboard for pasting into another document, click "Copy".

To save the graph image as a .png image file on your computer, select "Save as..." .

To send the graph image to a printer, select "Print...".

To see greater detail in the graph, the range and/or domain axis can be zoomed in or out. To quickly return to a normal view of the graph, click on "Auto Range-Both Axes".

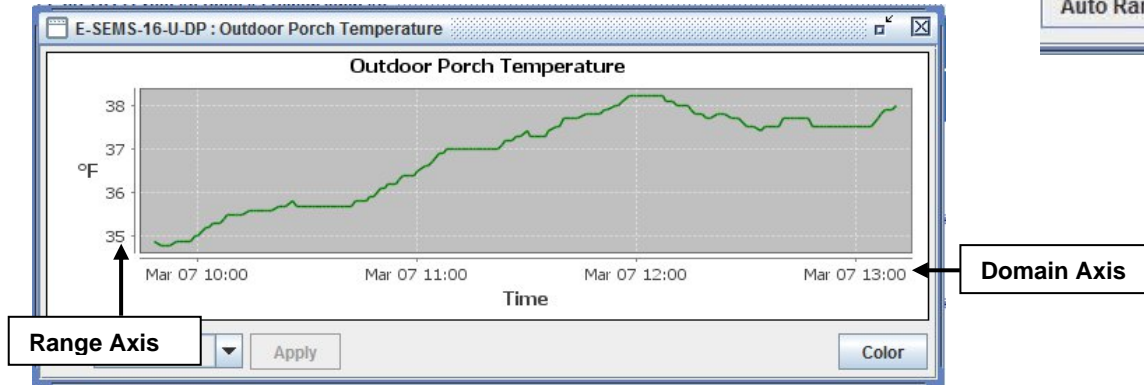
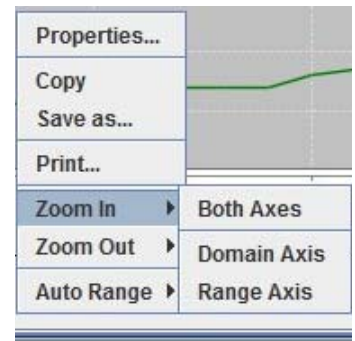


Figure 37- You can zoom your axes

Another way to see greater detail is to select a specific area on the graph dragging from the top in a downward diagonal motion. When you let go of the mouse the graph will update with a closeup of the area you selected.

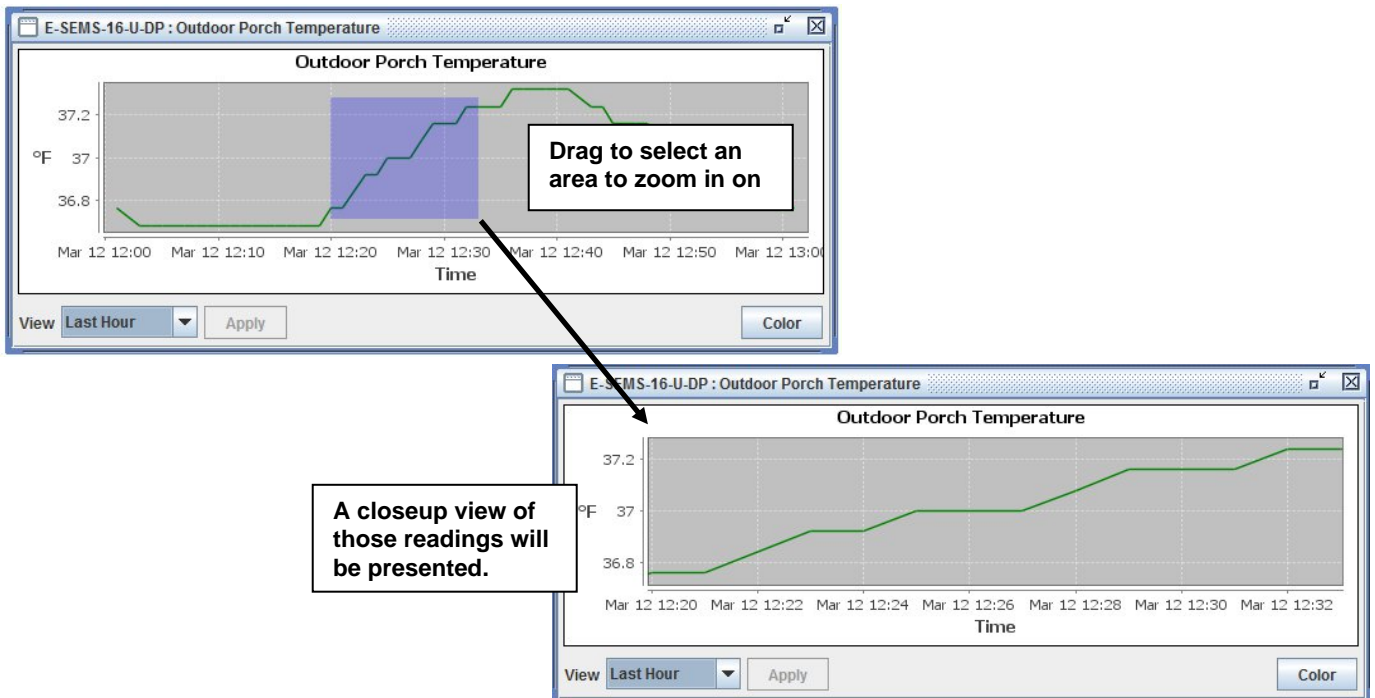


Figure 38- Drag a selected area to zoom in on

To restore the default appearance of the graph, drag upward on the graph.

Select **Configure** (from Figure 33) to configure the settings for that sensor.

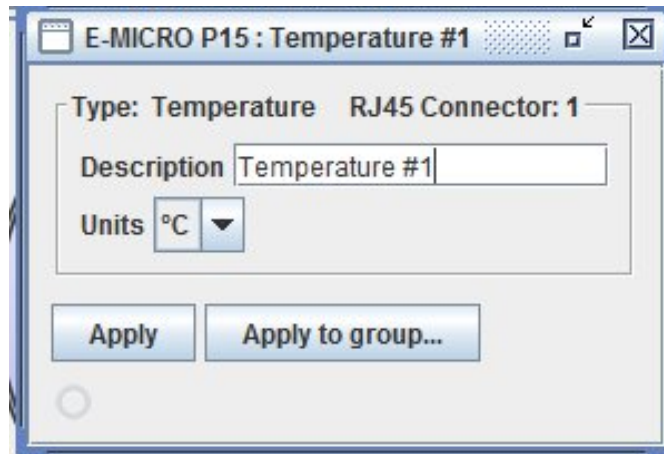


Figure 39- Configure the external sensor

Respond to Alerts

When an alert is present, the first screen in the project will indicate it by displaying the group name in red.

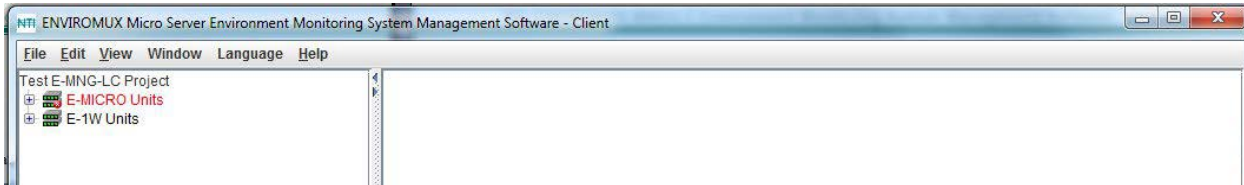
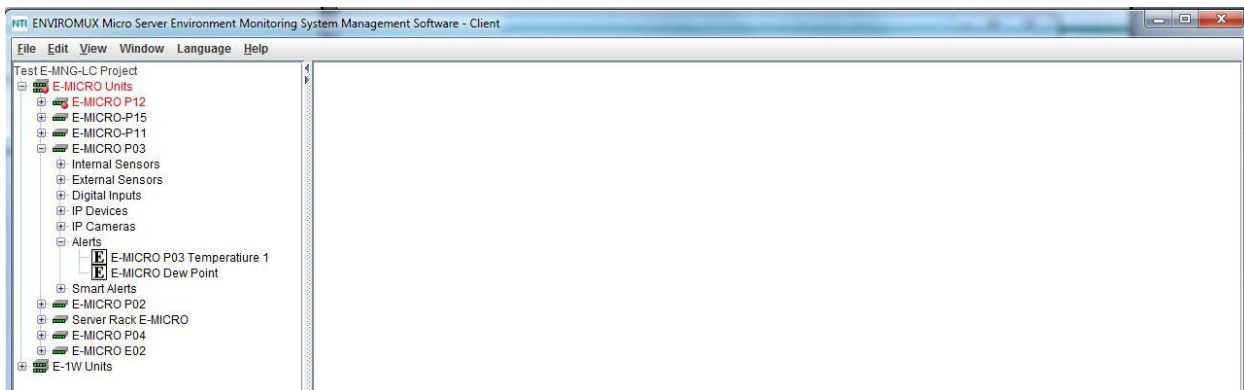


Figure 40- Alert 1- Indication in group

Click on the group name to see which UNIT is reporting an alert.



Click on the E-MICRO to see which group of sensors the individual sensor is in.

Figure 41- Alert 2- Indication of which UNIT

Click on the UNIT and "Alerts" to see which sensor has an alert.

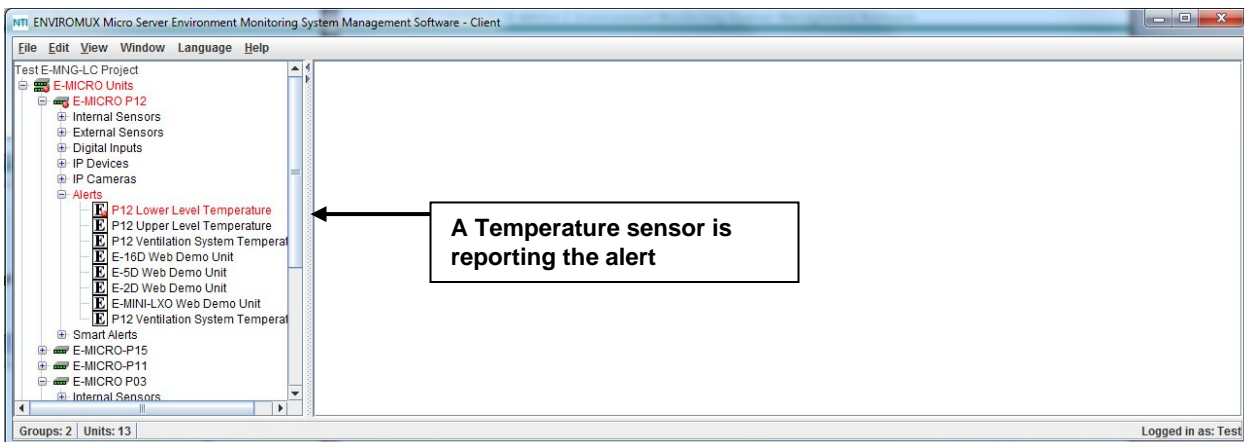


Figure 42- Alert 3- Indication of which sensor group

Click on the sensor to monitor its status. Click on the alert to respond to the alert condition.

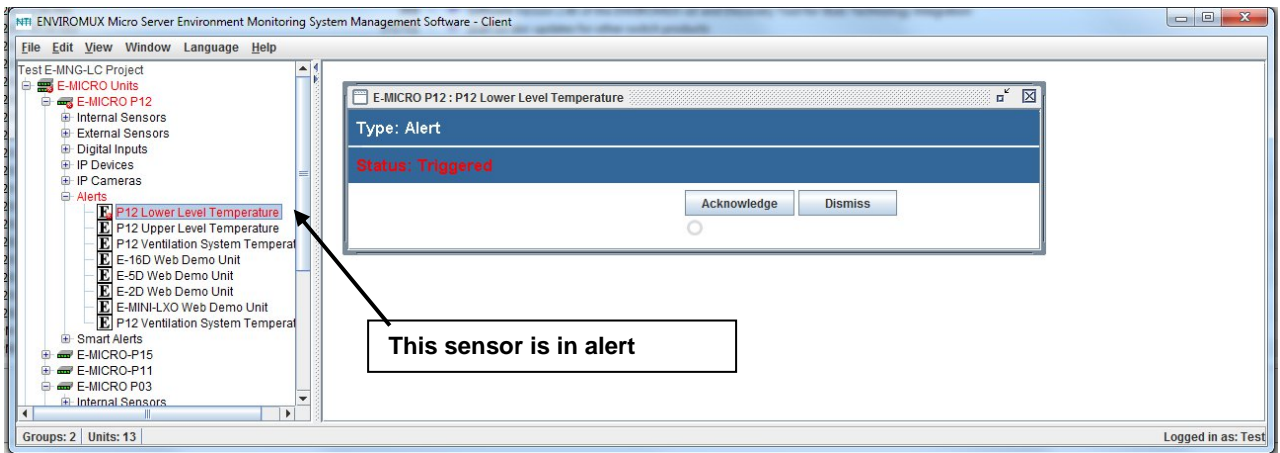


Figure 43- Alert 4- Status of the sensor in alert

With the sensor status returned to normal, the sensor tree returns to an alert-free appearance.

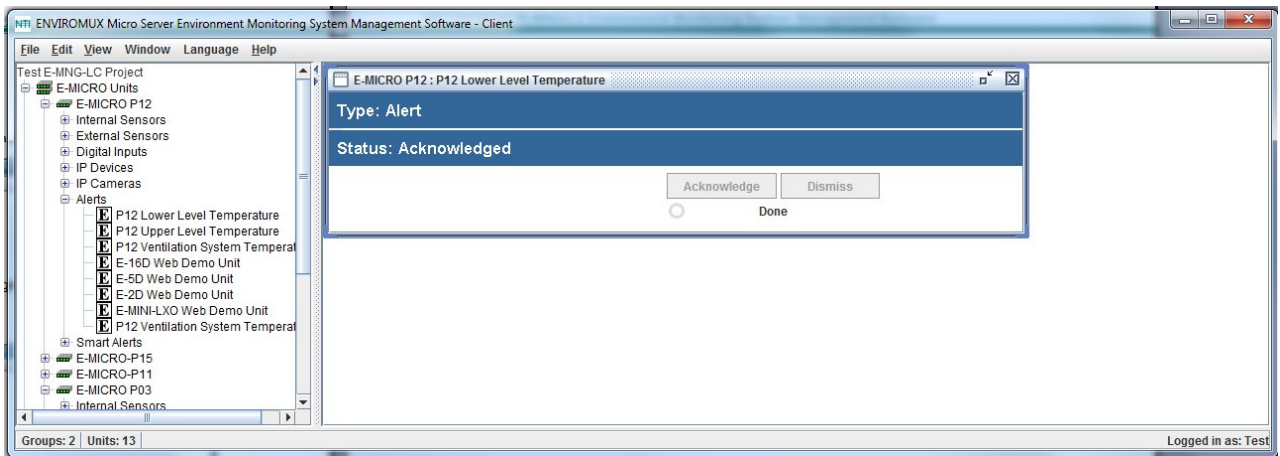


Figure 44- Alert 5- Alert has been acknowledge

Server Management from the Client

If, at the login screen, you enter the username “root” and the password for root (default is “nti”), the program will open to an administrative menu that provides options for server management. The server can be managed from the graphic interface provided by the server software, from the command line interface, or, in this case, through the client software.

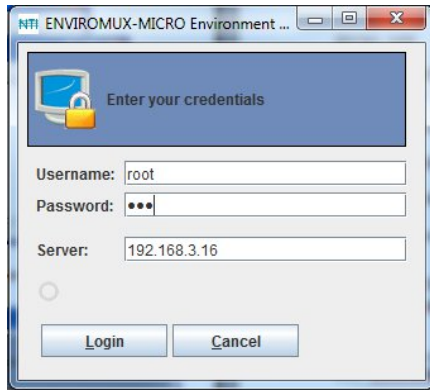
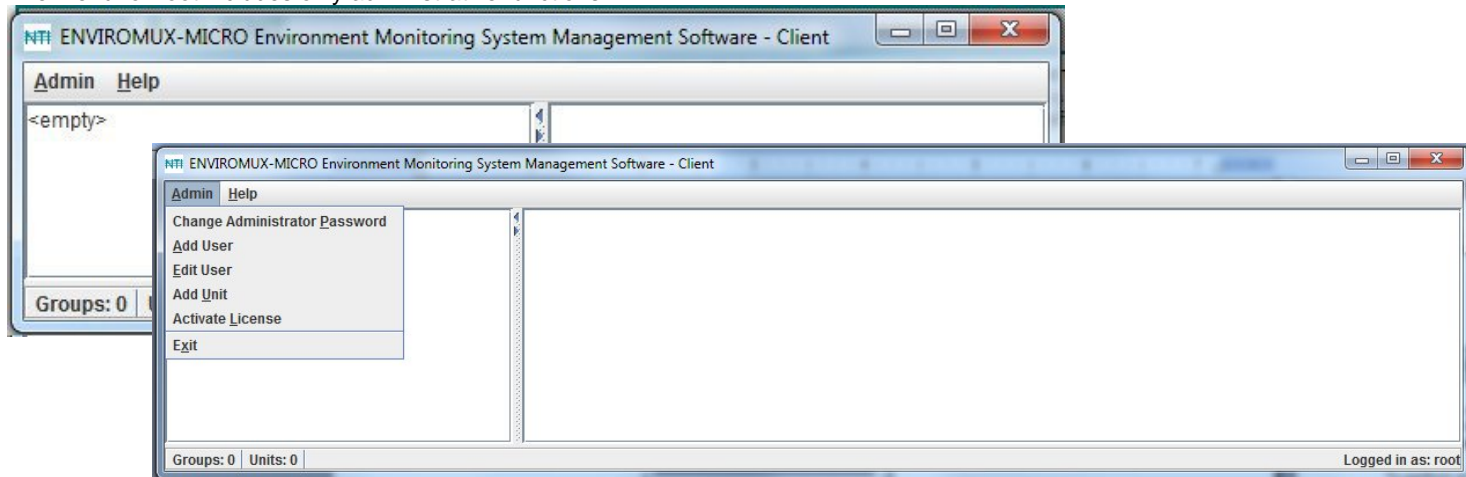


Figure 45- Login as root from Client

The menu for root includes only administrative functions.



Using these functions you can configure the server for password preference, adding, editing, or removing users, adding units, or activating the license.

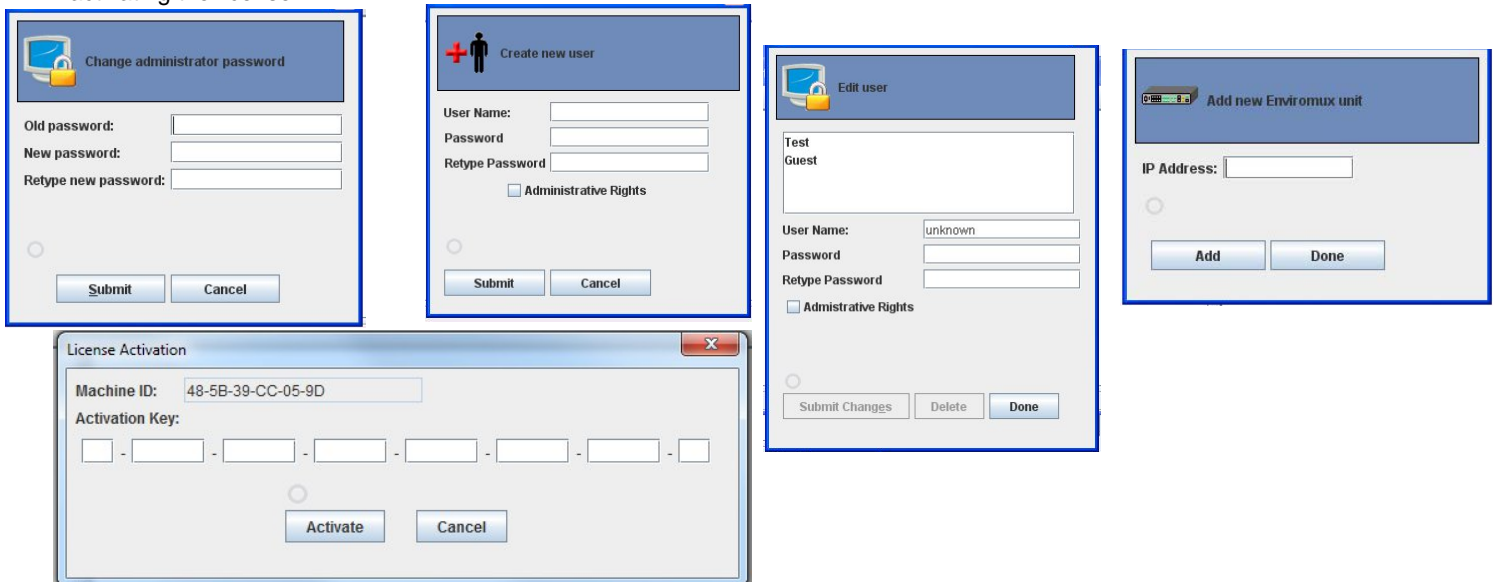


Figure 46- Manage Server from Client

E-MNG-LC Log Files

Log files can be generated as they pertain to the events monitored by the E-MNG-LC software. By configuring the `sems.conf` file found in the directory the Server was extracted into, log files can be generated and then viewed for use in troubleshooting, generating reports, or other programs intended to cause actions based on alert status.

Server Logs

Datalogs and alert logs on **Server** Software can be configured by editing “`sems.conf`” file (using a text editor such as Notepad) below.

Please note license activation is required to enable all logging features.

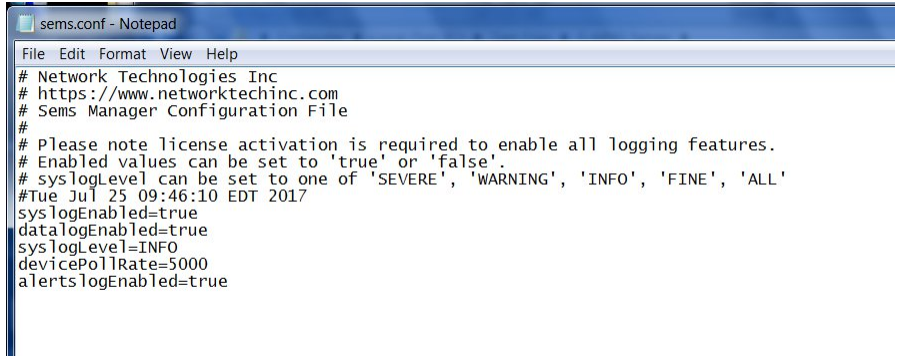
`syslogEnabled=true`

`datalogEnabled=true`

`syslogLevel=INFO`

`devicePollRate=5000`

`alertslogEnabled=true`



1. “Enabled” values can be set to “**true**” or “**false**”.
2. “syslogLevel” can be set to one of 'SEVERE', 'WARNING', 'INFO', 'FINE', 'ALL'. Recommended Setting: INFO
 - SEVERE will log only system crash like messages.
 - WARNING will log severe messages and messages that user needs to look into
 - INFO will log all above messages plus some rudimentary messages like “server started”
 - FINE or ALL will log all communications and may generate several GB of data over a few days (**not recommended**)
3. “devicePollRate” is the period between polling of sensors for same unit in milliseconds. (1000 milliseconds = 1 second) Polling rate has to be between 900ms and 3,600,000ms. It can be adjusted based on refresh rate, data log rate # required and system load on the server.
4. When syslog is enabled, the Server software logs any errors and usage to a `system.log` file (in the same directory) which can be used for troubleshooting.
5. When alertslog is enabled, the Server software logs sensor status changes to an `alerts.log` file in tab delimited format (example record given below):

DATE_TIME	SENSOR_TYPE	SENSOR_INDEX	LOG_LEVEL	ALERT_STATUS	ENVIRONMENTAL_UNIT_ID	UNIT_IP_ADDRESS	UNIT_NAME
Mon Jul 31 10:08:04 EDT 2017	DIGITALOUTPUT	3	INFO	NORMAL	983168	192.168.3.100	E-16D
				E-16D-M Door Strike 4			

6. When datalog is enabled, server software logs sensor data per device poll rate to 'data.log' in below tab delimited format (example record given). Sensor value may contain appropriate sensor unit separated by whitespace:

DATE_TIME	SENSOR_TYPE	SENSOR_INDEX	LOG_LEVEL	ENVIRONMENTAL_UNIT_ID	UNIT_IP_ADDRESS	UNIT_NAME	SENSOR_VALUE
Mon Jul 31 10:07:59 EDT 2017	INTERNAL	0	INFO	1048667	192.168.3.217	E-5D-48V	
				.1.3.6.1.4.1.3699.1.1.10.1.3.1.1.6.	Internal Temperature		32.8 °C

Note: For the edited `sems.conf` file to take effect, it must be edited and saved, and then the E-MNG-LC Server must be shut down (close the application) and then restarted.

Client Logs

Datalogs can be configured on **Client** Software by editing “sems.conf” file as below.

Please note license activation is required to enable all logging features.

```
syslogEnabled=true
syslogLevel=INFO
datalogEnabled=true
alertslogEnabled=true
```

1. “Enabled” values can be set to “true” or “false”.
2. "syslogLevel" can be set to one of 'SEVERE', 'WARNING', 'INFO', 'FINE', 'ALL'. Recommended Setting: INFO
 - SEVERE will log only system crash like messages.
 - WARNING will log severe messages and messages that user needs to look into
 - INFO will log all above messages plus some rudimentary messages like "server started"
 - FINE or ALL will log all communications and may generate several GB of data over a few days (not recommended)
3. When syslog is enabled, the Client software logs any errors and usage to a `system.log` file (in the same directory) which can be used for troubleshooting.
4. When datalog is enabled, the Client software logs only currently monitored sensor data, every 8-10 second, to “data.log” in tab delimited format (example record given below). Sensor value may contain appropriate sensor unit separated by whitespace:

DATE_TIME	SENSOR_TYPE	SENSOR_INDEX	LOG_LEVEL	ENVIRONMENTAL_SENSOR_NAME	UNIFORMITY_ID	UNIFORMITY_IP_ADDRESS	UNIFORMITY_NAME
Mon Jul 31 10:08:06 EDT 2017	EXTERNAL	0	INFO	E-16D-M Temperature	983168	192.168.3.100	ENVIRONMENTAL-16D Unit 1
						83.1 °F	

Note: For the edited sems.conf file to take effect, it must be edited and saved, and then the E-MNG-LC Client must be shut down (close the application) and then restarted.

Additional configuration options that apply to the Server and Client software (requires version 3.1) include:

```
datalogRollPeriod=
alertslogRollPeriod=
syslogRollPeriod=
```

1. These can be set to one of 'HOUR', 'DAY', 'WEEK', 'MONTH' which rolls the log every such period.
 - Except for HOUR, the rest of the options trigger log roll at midnight local time.
 - End Of WEEK is considered Saturday at midnight

Log Roll support provides the ability to save data accumulated for set periods of time. Once the period of time has expired, the Server and/or Client (as configured) will save the data into a numbered archive file. The newest archive will be numbered "1" (i.e. data_archive1.log, or alert_archive1.log). When the period expires again, archive "1" will be renamed archive "2" and the newest archive will again be archive "1". Archives will continue to be added to depending upon how many have been configured to be kept (see value for "numSyslogsToKeep", "numDatalogsToKeep" or "numAlertslogsToKeep").

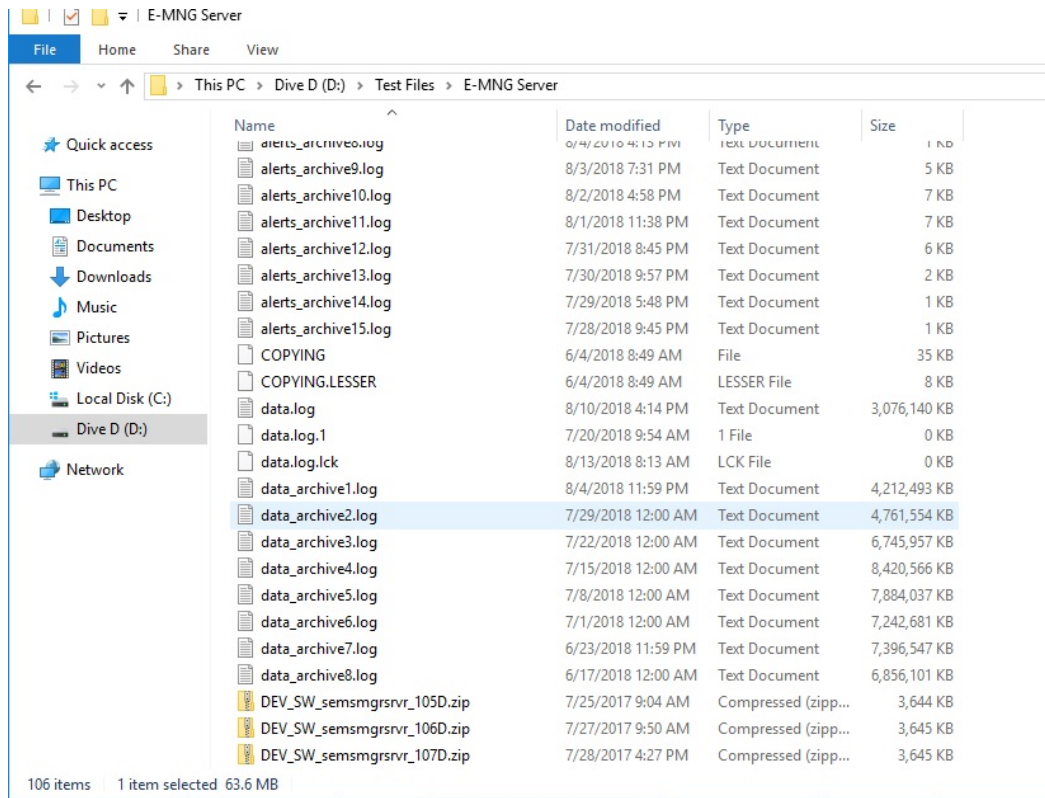


Figure 47- Directory view of accumulated log archives

`numSyslogsToKeep=`

`numDataLogsToKeep=`

`numAlertslogsToKeep=`

2. These can be set to any integer value between 1 and 5000. This will **keep** as many archives as configured and **purge** logs older than this.

Note: After installing Server and Client software version 3.1 (or later), the `sems.conf` file will not automatically update with the new options. To use the new configuration options, either

A. Delete and Edit

1. Close the Server software and Client software.
2. Delete the `sems.conf` file from the Server software directory (same directory `micromanagersvr.jar` file is in) and Client software directory (same directory `micromanager.jar` file is in).
3. Restart the Server and Client software. The updated `sems.conf` file will be generated and ready to edit.
4. Edit the `sems.conf` file with the values desired and save it.
5. Close the Server software and Client software.
6. Restart the Server and Client software. The values entered will now take effect.

B. Edit Only (saving the values you already have in place without having to re-enter them)

1. Open the `sems.conf` file (will need to be done for the Server, and again for the Client)
2. Add the options below to the `sems.conf` file manually. (It would be easiest to copy from this document and paste them in.)

```
datalogRollPeriod=  
alertslogRollPeriod=  
syslogRollPeriod=  
numSyslogsToKeep=  
numDatalogsToKeep=  
numAlertslogsToKeep=
```

3. Enter the desired values for the options using the instruction on pages 33 and 34.
4. Save the completed `sems.conf` file.
5. Close the Server/Client software.
6. Restart the Server/Client software. The options and values entered will now take effect.

Note: The syntax of the values entered is important for configuration to be successful (sems.conf file content sample below):

The order the configuration options are listed in does not matter.

```
syslogEnabled=true  
syslogLevel=ALL  
syslogRollPeriod=DAY  
numSyslogsToKeep=7  
datalogEnabled=true  
datalogRollPeriod=DAY  
numDatalogsToKeep=7  
alertslogEnabled=true  
alertslogRollPeriod=DAY  
numAlertslogsToKeep=7  
devicePollRate=5000
```

SOFTWARE UPDATE

When newer versions of the E-MNG-LC become available, you may desire to update your client and/or server software. You will be notified by email that new versions are available, what changes were made to the software, and how to obtain updated software.

To perform an update, simply unzip the new client (`mng-lc-clnt-vx-x.zip`) or server (`mng-lc-srvr-vx-x.zip`) software files into the same directory the present client or server files were installed to (see "Installation" on page 4). Do not delete any files. None of your data, license, or configuration files will be affected. Once the new files have been unzipped, simply open the client or server as normal (pages 31 and 13). No additional changes or configuration are necessary.

SETUP E-MNG-LC TO RUN AT STARTUP

You may want to have the server that runs the E-MNG-LC server application to run the application automatically each time the server that hosts it powers ON. The instruction below should assist you in setting this up.

1. Create a batch file: **EmicroManagerSrvr.bat** containing the following 2 lines:

```
@ECHO OFF
```

```
START "EMICRO" /D"<PATH TO EMICRO MANAGER SERVER>" "<PATH TO JAVA>" -jar EmicroManagerSrvr.jar  
root nti
```

2. Replace the 2 paths:

PATH TO EMICRO MANAGER SERVER = the path to the directory containing EmicroManagerSrvr.jar (e.g. C:\Test Files\Server)

PATH TO JAVA =the path to the Java Runtime executable (e.g. C:\Program Files\Java\jre7\bin\java)

3. Replace the root password "nti" with the one you are using.

EXAMPLE: START "EMICRO" /D"\Test Files\Server" "\Program Files (x86)\Java\jre7\bin\java" -jar EmicroManagerSrvr.jar root 123

4. Depending on your operating system version, follow the instructions provided by the links to open the Group Policy Editor and add "EmicroManagerSrvr.bat" as a startup script. For Windows 2003, also enable the policy "Run startup scripts asynchronously".

For Windows 2008

1. Open the Local Group Policy Editor: <http://technet.microsoft.com/en-us/library/cc731745.aspx>
2. Assign Computer Startup Scripts: <http://technet.microsoft.com/en-us/library/cc770556.aspx>

For Windows 2003

1. Open Group Policy as an MMC snap-in: <http://technet.microsoft.com/en-us/library/cc782895%28WS.10%29.aspx>
2. Assign Computer Startup Scripts: <http://technet.microsoft.com/en-us/library/cc779329%28WS.10%29.aspx>
3. Run startup scripts asynchronously: <http://msdn.microsoft.com/en-us/library/ms811602.aspx>

RESTORE ROOT PASSWORD TO DEFAULT

You can restore the default root password without losing the server configuration by performing the following:

Note: You will need the E-MNG-LC License Key to perform this operation.

1. Shut down the E-MNG-LC server program.
2. Browse to the folder containing the E-MNG-LC server program.
3. Delete the file "serverLib.dll"
4. Re-start the E-MNG-LC server program. You should see the "License Terms" window
5. Accept the license terms. You should see a "License Error" window
6. Select "Install Permanent License"
7. Enter in your License Key, then select "Activate"
8. You should get a "License Activated" message; Select "OK" You should then get the root login prompt.
9. Enter in "nti" and select "Login".

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