



**Server Technology**

Solutions for the Data Center Equipment Cabinet

# Sentry

## Standalone Environmental Monitor

- EMCU-IP

### Installation and Operations Manual

**Instructions**

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**Dangerous Voltage**

This symbol is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

**Protective Grounding Terminal**

This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

**Life-Support Policy**

As a general policy, Server Technology does not recommend the use of any of its products in the following situations:

- life-support applications where failure or malfunction of the Server Technology product can be reasonably expected to cause failure of the life-support device or to significantly affect its safety or effectiveness.
- direct patient care.

Server Technology will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Server Technology that:

- the risks of injury or damage have been minimized,
- the customer assumes all such risks, and
- the liability of Server Technology is adequately protected under the circumstances.

The term life-support device includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults or infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA.

**Please Recycle**

Shipping materials are recyclable. Please save them for later use, or dispose of them appropriately.

**Notices**

Copyright © 2004-2005 Server Technology, Inc. All rights reserved.  
1040 Sandhill Drive  
Reno, Nevada 89521 USA

**All Rights Reserved**

This publication is protected by copyright and all rights are reserved. No part of it may be reproduced or transmitted by any means or in any form, without prior consent in writing from Server Technology.

The information in this document has been carefully checked and is believed to be accurate. However, changes are made periodically. These changes are incorporated in newer publication editions. Server Technology may improve and/or change products described in this publication at any time. Due to continuing system improvements, Server Technology is not responsible for inaccurate information which may appear in this manual. For the latest product updates, consult the Server Technology web site at [www.servertech.com](http://www.servertech.com). In no event will Server Technology be liable for direct, indirect, special, exemplary, incidental or consequential damages resulting from any defect or omission in this document, even if advised of the possibility of such damages.

In the interest of continued product development, Server Technology reserves the right to make improvements in this document and the products it describes at any time, without notices or obligation.

# Table of Contents

<b>CHAPTER 1: INTRODUCTION</b>	<b>2</b>
Quick Start Guide.....	2
Technical Support .....	2
Equipment Overview.....	2
<b>CHAPTER 2: INSTALLATION</b>	<b>3</b>
Standard Accessories.....	3
Optional Accessories.....	3
Additional Required Items .....	3
Mounting the Standalone Environmental Monitor .....	3
Connecting to the Power Source .....	3
Connecting the Sensors .....	3
Connecting to the Standalone Environmental Monitor .....	4
<b>CHAPTER 3: OPERATIONS</b>	<b>5</b>
Interfaces .....	5
HTML Interface .....	5
Command Line Interface.....	10
<b>CHAPTER 4: ADVANCED OPERATIONS</b>	<b>15</b>
SNMP .....	15
<b>CHAPTER 5: APPENDICES</b>	<b>17</b>
Appendix A: Resetting to Factory Defaults .....	17
Appendix B: Uploading Firmware .....	17
Appendix C: Technical Specifications .....	18
Appendix D: Warranty, Product Registration and Support .....	20

# Chapter 1: Introduction

## Quick Start Guide

The following instructions will help you quickly install and configure your Standalone Environmental Monitor for use in your data center equipment cabinet. For detailed information on each step, go to the page number listed to the right.

1. Mount the Environmental Monitor.....3
2. Connect to the power source .....3
3. Connect the sensors.....3
4. Connect to the Environmental Monitor .....4
5. Configure the Environmental Monitor .....5
  - Login as the predefined Administrator (adm/admn) .....5
  - Create new administrative user account.....7
  - Configure location and Environmental Monitor names.....6
  - Configure sensor names.....6
  - Configure new user account(s) .....7
  - Remove the predefined Administrator.....7
6. Connect the Environmental Monitor to the network

## Technical Support

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 8:30 AM to 5:00 PM, Monday-Friday, Pacific Time.

Server Technology, Inc.

1040 Sandhill Drive  
Reno, Nevada 89521 USA

Tel: 775.284.2000  
Fax: 775.284.2065

Web: [www.servertech.com](http://www.servertech.com)  
Email: [support@servertech.com](mailto:support@servertech.com)

## Equipment Overview

Each connector on the Standalone Environmental Monitor is clearly labeled for easy identification. Each Standalone Environmental Monitor is equipped with the following connectors:

1. Two RJ45 connectors for Serial (RS-232) and Ethernet connection
2. Two mini RJ11 connectors for Temperature/Humidity sensors (one sensor provided)
3. Two terminals for the optional Water sensor
4. Three terminals for a third-party analog sensor
5. Four sets of three terminals for third-party Contact-Closure sensors
6. One power input connector

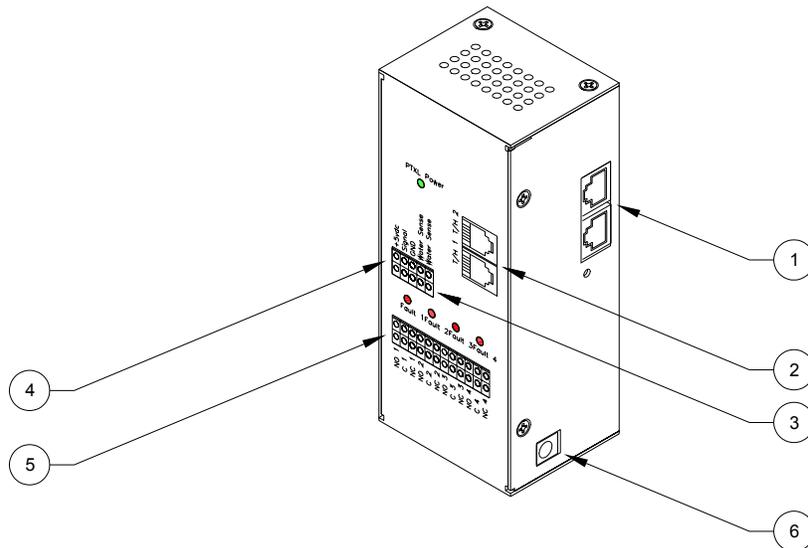


Figure 1.1 Standalone Environmental Monitor Views

## Chapter 2: Installation

Before installing your Standalone Environmental Monitor, refer to the following lists to ensure that you have all the items shipped with the unit as well as all other items required for proper installation.

### Standard Accessories

- Mounting hardware: two mounting flanges with four screws
- One Temperature/Humidity sensor
- RJ45 to RJ45 crossover cable
- RJ45 to DB9F serial port adapter (for connection to standard DB9M DTE serial port)
- One 9V power supply

### Optional Accessories

- Second Temperature/Humidity sensor
- Water Detection sensor
- 3<sup>rd</sup> party Contact Closure sensors
- 3<sup>rd</sup> party analog sensor

### Additional Required Items

- Flathead and Phillip screwdrivers
- Screws, washers and nuts to attach the Standalone Environmental Monitor to your rack

### Mounting the Standalone Environmental Monitor

1. Attach the mounting flanges to the back of the Standalone Environmental Monitor using the provided hardware.
2. Install the Standalone Environmental Monitor into the cabinet using the available mounting holes on the flanges.

### Connecting to the Power Source

Connect the female end of the power supply firmly into the power input connector and plug the male end of the power cord into the AC power source.

### Connecting the Sensors

#### Temperature/Humidity sensors

The Standalone Environmental Monitor is equipped with two mini RJ11 T/H ports for attachment of the included Temperature/Humidity sensor. Attach the mini RJ11 plug of the sensor(s) to the appropriate T/H port.

#### Water Detection sensor

The Standalone Environmental Monitor is equipped with one set of terminal contacts for attachment of the Water Detection sensor. Insert and secure the two leads from the sensor into the terminals.

---

**NOTE:** The Water Detection sensor leads are not polarity sensitive.

---

#### Contact Closures sensors

The Standalone Environmental Monitor is equipped with four sets of terminals for attachment of 3<sup>rd</sup> party Contact Closures. The Standalone Environmental Monitor is equipped to accept signaling from 'normally closed' and 'normally open' contact closure circuits.

Insert the 'common' lead into the appropriate 'C' terminal and insert the 'normally closed' lead into the appropriate 'NC' terminal or insert the 'normally open' lead into the appropriate 'NO' terminal. Insure that all leads are secure.

---

**NOTE:** Use of 'normally closed' contact closures additionally requires a short between the 'NO' and 'C' terminals.

---

## Analog sensor

The Standalone Environmental Monitor is equipped with a single set of terminals for attachment of a 3<sup>rd</sup> party analog sensor. The Standalone Environmental Monitor converts the sensor's 0V to +5V DC signal to an 8-bit value between 0 and 255.

Sensor limitations:

- Sensor inputs must be between 0V to +5V DC.
- Sensors powered by the Standalone Environmental Monitor must be powered by +5V DC.
- Sensors powered by the Standalone Environmental Monitor must draw a maximum current of 50mA.
- Sensors independently powered must have the ground reference tied to the Standalone Environmental Monitors ground reference.

Three terminals are present for attachment of a 3<sup>rd</sup> party analog device; +5 VDC, Signal and Ground. Insert and secure the 3<sup>rd</sup> party sensors leads into the Standalone Environmental Monitor terminals as prescribed by the sensor manufacturer's intended use and secure.

---

### NOTE:

1. Proper polarity of the sensor Ground and +5V DC **MUST** be maintained or damage to the Standalone Environmental Monitor will occur!
  2. **DO NOT** short +5V DC to Ground; this will damage the Standalone Environmental Monitor!
- 

## Connecting to the Standalone Environmental Monitor

### Serial (RS232) port

The Standalone Environmental Monitor is equipped with an RJ45 Serial RS-232 port for attachment to a PC or networked terminal server using the supplied RJ45 to RJ45 crossover cable and RJ45 to DB9F serial port adapter as required. See *Physical Specifications*

	Operating	Storage
<b>Temperature</b>	32° to 122° F (0° to 50° C)	-40° to 185° F (-40° to 85° C)
<b>Elevation(above MSL)</b>	0 to 10,000 ft (0 to 3000m)	0 to 50,000 ft (0 to 15000m)
<b>Relative Humidity</b>	10 to 90%, non-condensing	10 to 90%, non-condensing
	Dimensions (H x W x D)	Weight
EMCU-IP	4.75 x 2.5 x 1.1 in. (120 x 63 x 28 mm)	0.6 lbs (0.3 kg)

Data Connections in Appendix C: Technical Specifications for more information on the Serial RS-232 port.

### Ethernet port

The Standalone Environmental Monitor is equipped with an RJ45 10/100Base-T Ethernet port for attachment to an existing network. This connection allows access to the Standalone Environmental Monitor via Telnet or HTML.

The Standalone Environmental Monitor is configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet or HTML:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The local PC network connection must be configured as noted below:

---

**NOTE:** Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

---

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

# Chapter 3: Operations

## Interfaces

The Environmental Monitor has two interfaces: the HTML interface accessed via the HTTP enabled Ethernet connections and the command line for serial connections.

### Username and Passwords

The Environmental Monitor has one predefined administrative user account (username/password: admn/admn) and supports a maximum of 128 defined user accounts

**NOTE:** For security, Server Technology recommends removal of the predefined administrative user account after a new account with administrative rights has been created.

Only an administrative-level user may perform operations such as creating/removing user accounts and command privileges, changing passwords and displaying outlet and user information. An administrator may also view the status of and control power to all outlets.

The administrator may create additional user accounts and then grant these users the right to view the status of and control power to specific outlets, groups and ports.

Usernames may contain from 1-16 characters and are not case sensitive; spaces are not allowed. Passwords may contain up to 16 characters, and are case sensitive.

## HTML Interface

The HTML interface is constructed of three major components: the System Location bar, the User/Navigation bar and the Control Screen. The System Location bar displays the Sentry's location and IP address as well as the current Control Screen title. The User/Navigation bar displays the current user and privilege level and provides access to all HTML pages. And the Control Screen is used to display current data and allow changes to outlet states or system configuration.

The following sections describe each interface section/page and their use.

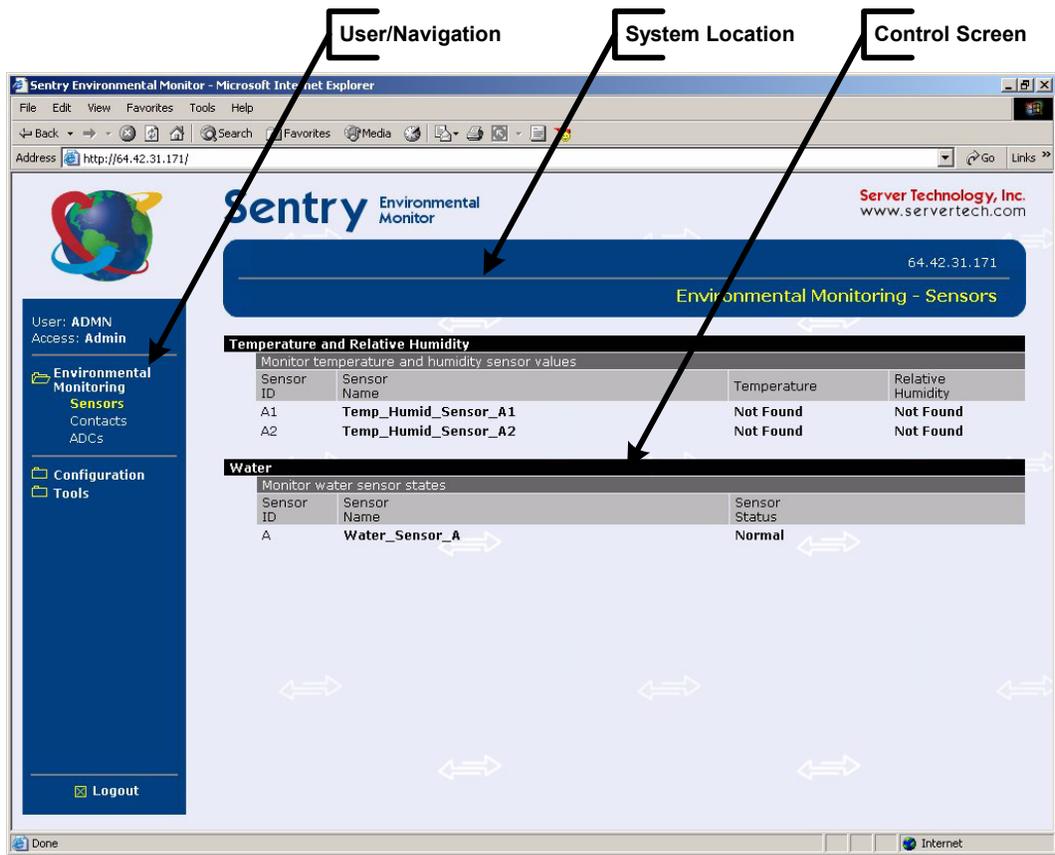


Figure 3.1 Example HTML page

## Logging In

Logging in through HTML requires directing the HTML client to the configured IP address of the unit.

### **To log in by HTML:**

1. In the login window, enter a valid username and password and press **OK**.

If you enter an invalid username or password, you will be prompted again.

You are given three attempts to enter a valid username and password combination. If all three fail, the session ends and a protected page will be displayed.

## Environmental Monitoring

### Sensors

The Sensors page displays:

- Temperature/humidity and Water sensor's absolute and descriptive names
- Temperature/humidity sensor readings in degrees Celsius and percent relative humidity
- Water sensor state

### Contacts

The Contacts page displays the Contact Closure sensor's absolute and descriptive names, and states.

### ADC

The ADC page displays the Analog-To-Digital converter's absolute and descriptive names, and digital count.

## Configuration

### System

The System page is used for assignment and/or editing of descriptive names for the Standalone Environmental Monitor and attached sensors.

Descriptive names may be up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed).

#### **Creating a descriptive system location name:**

Enter a descriptive name and press **Apply**.

#### **Creating a descriptive Environmental Monitor name:**

Click on the **Environmental Monitor Names** link.

On the subsequent page, enter the environmental monitor name in the appropriate field and press **Apply**.

#### **Creating descriptive sensor names:**

Click on the **Sensor Names** link.

On the subsequent page, enter the sensor name in the appropriate field and press **Apply**.

#### **Creating descriptive contact closure names:**

Click on the **Contact Closure Names** link.

On the subsequent page, enter the contact closure name in the appropriate field and press **Apply**.

#### **Creating a descriptive analog-to-digital convertor name:**

Click on the **Analog-to-Digital Converter Names** link.

On the subsequent page, enter the analog-to-digital converter name in the appropriate field and press **Apply**.

## **Network**

The Network configuration page is used for maintenance of the network interface. From this page an administrator may configure the IP address, subnet mask and gateway address as well as view the link status, speed and duplex value.

The Sentry is configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet or HTML:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The initial local PC network connection must be configured as noted below:

---

**NOTE:** Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

---

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

---

**NOTE:** The unit must be restarted after network configuration changes. See *Performing a warm boot*: on page 9.

---

### **Setting the IP address, subnet mask or gateway:**

In the appropriate field, enter the IP address, subnet mask or gateway address and press **Apply**.

## **HTTP**

The HTTP configuration page used to configure the port number that the HTTP server watches and responds to and selection of the method of authentication used.

### **Changing the HTTP server port number:**

In the HTTP Port field, enter the port number and press **Apply**.

### **Setting the HTTP authentication method:**

The Sentry HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

The Basic method utilizes Base64 encoding to encode and deliver the username-password over the network to the HTTP server for decoding and authentication. This basic method is supported by all web browsers and offers a minimum level of security.

---

**NOTE:** The Base64 algorithm is widely-known and susceptible to packet-sniffer attack for acquisition of the encoded username-password string.

---

The MD5 digest method provides stronger protection utilizing one-way encoded hash numbers, never placing the username-password on the network. Instead, the sending browser creates a challenge code based on the hash algorithm, provided username-password and unique items such as the device IP address and timestamp, which is compared against the HTTP server internal user database of valid challenge codes. The MD5 digest method offers a higher level of security than the Basic method but at present is not supported by all browsers.

---

**NOTE:** MD5 is known to be fully supported by Internet Explorer 5.0+

---

Select **Basic** or **MD5** from the Authentication drop-down menu and press **Apply**.

## **Users**

The Users configuration page is used for creation and removal of usernames and the changing of user passwords.

### **Creating a new user:**

Enter a user name in the Username field. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed.

Enter a password for the new user and verify in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

### **Removing a user:**

Click on the **Remove** link in the Action column for the user to be removed and press **Yes** on the subsequent confirmation window.

## Changing a user password:

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, enter a password and verify the new password for the new user in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

## Changing a user's access privilege level:

The Sentry has two defined access privilege levels; Admin and User:

- Admin: Full-access for all configuration and status.
- User: Partial-access for status only.

The administrator may also grant administrative privileges to other user accounts allowing the EMCU-IP to have more than one administrative-level user.

---

**NOTE:** You cannot remove administrative privileges from the Admin user unless another user has already been given administrative access level privileges created.

---

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, select **Admin** or **User** from the Access Level drop-down menu and press **Apply**.

## **FTP**

The FTP configuration page is used for setup and maintenance of all settings required to perform an FTP firmware upload. See Appendix B: Uploading Firmware for more information on uploading firmware.

### Setting the FTP Host IP Address:

Enter the IP address in the Host IP Address field and press **Apply**.

### Setting the FTP username:

Enter the FTP server username in the Username field, and press **Apply**.

### Setting the FTP password:

Enter the FTP server password in the Password field, and press **Apply**.

### Setting the filepath:

Enter the path of the file to be uploaded in the Directory field, and press **Apply**.

### Setting the filename for upload:

Enter the filename of the file to be uploaded in the Filename field, and press **Apply**.

### Testing the FTP upload configuration:

This test validates that the unit is able to contact and log onto the specified FTP server, download the firmware file and verify that the firmware file is valid for this unit.

Press **Test**.

## **SNMP**

The SNMP configuration page is used for setup and maintenance of all settings required to enable SNMP support as well as access to the trap configuration pages. For additional information on SNMP support and detailed descriptions of available traps, see *SNMP Traps* on page 15.

---

**NOTE:** Traps are generated according to a hierarchical architecture; i.e. if a Tower Status enters a trap condition, only the Tower Status trap is generated. Infeed and Outlet Status traps are suppressed until the Tower Status returns to Normal.

---

### Enabling or disabling SNMP support:

Select **Enabled** or **Disabled** from the drop-down menu and press **Apply**.

### Setting the community strings:

Enter the community string in the appropriate field and press **Apply**.  
Community strings may be 1 to 24 characters

### **Setting the trap timer:**

Enter a trap timer value in the Error Trap Repeat Time field and press **Apply**. The Error Trap Repeat Time value may be 1 to 65535 (in seconds).

### **Setting trap destinations:**

Enter an IP address in the appropriate Trap Destination field and press **Apply**.

### **Enabling or disabling Standalone Environmental Monitor traps:**

Click on the **Environmental Monitor Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

### **Configuring the Water and Temperature-Humidity sensor traps:**

Click on the **Sensor Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

For Temp traps, enter a minimum and maximum threshold value for the sensor in the appropriate field and press **Apply**.

The threshold value may be 0 to 127 (in degrees Celsius).

For Humid traps, enter a minimum and maximum threshold value for the sensor in the appropriate field and press **Apply**.

The threshold value may be 0 to 100 (in percent relative humidity).

### **Enabling or disabling Contact Closure traps:**

Click on the **Contact Closure Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

### **Configuring the Analog-to-Digital converter trap:**

Click on the **Analog-to-Digital Converter Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

For the sensor thresholds, enter a minimum and maximum threshold value for the sensor in the appropriate field and press **Apply**. The threshold value may be 0 to 255.

## **Tools**

The Tools section contains access to rebooting the unit, uploading new firmware as well as resetting the unit to factory defaults. This section is available to administrative level users only.

### **Restart**

#### **Performing a warm boot:**

Select the **Restart** from the Action drop-down menu and press **Apply**.

---

**Note:** System user/outlet/group configuration or outlet states are NOT changed or reset with this command.

---

#### **Resetting to factory defaults:**

See Appendix A: for more information on resetting a Sentry to factory defaults from the HTML interface.

#### **Uploading new firmware:**

See Appendix B: for more information on uploading new firmware from the HTML interface.

### **Ping**

The Ping feature may be used to test the Sentry's ability to contact another Ethernet enabled device's IP address.

## Command Line Interface

### Logging In

Logging in through the Console (RS232) port requires the use of a terminal or terminal emulation software configured to support ANSI or VT100 and a supported data rate (300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 BPS) - 8 data bits-no parity-one stop bit and Device Ready output signal (DTR or DSR).

#### To log in by RS-232:

1. Press **Enter**. The following appears, where **x.xx** is the firmware version:  

```
Sentry Environmental Monitor Version x.xx  
Username:
```
2. At the Username: and Password: prompts, enter a valid username and password. And press **Enter**.  
You are given three attempts to enter a valid username and password combination. If all three fail, the session ends.

When you enter a valid username and password, the command prompt (Sentry EM:) appears. If a location identifier has been defined, it will be displayed before the Sentry EM: prompt.

Commands may be entered in any combination of uppercase and lowercase. All command characters must be entered correctly; there are no command abbreviations. A user must have administrative privileges to use the administration commands. The following tables list and briefly describe each command.

#### Operations Command Summary

Command	Description
Envmon	Displays the status of Environmental Monitor sensors
Login	Ends the current session and brings up the Username: prompt
Logout	Ends a session
Quit	Ends a session

#### Administrative Command Summary

Restart	Performs a warm boot
Set FTP Filename	Specifies the file to be uploaded via FTP
Set FTP Filepath	Specifies the filepath for the file to be uploaded
Set FTP Host	Sets the FTP Host IP address
Set FTP Password	Sets the password for the FTP Host
Set FTP Username	Sets the username for the FTP Host
Set Gateway	Sets the Gateway
Set HTTP Port	Sets the HTTP server port number
Set HTTP Security	Sets the HTTP server authentication method
Set Ipaddress	Sets the Environmental Monitor IP address
Set Subnet Mask	Sets the Subnet Mask
Show FTP	Displays FTP configuration information
Show Network	Display network configuration information
Version	Displays the firmware version

## **Operations Commands**

### **Starting a new session**

The Login command activates the Username: prompt. The current session ends, allowing a user to log in and start a new session under a different username.

#### ***To start a new session:***

At the Sentry EM: prompt, type **login** and press **Enter**. The Username: prompt appears.

### **Ending a session**

The Quit or Logout commands ends a session. A session ends automatically when no activity is detected for five minutes, or upon loss of connection.

#### ***To end a session:***

At the Sentry EM: prompt, type **quit** and press **Enter**, or

Type **logout** and press **Enter**.

## **Administration Commands**

### **System Administration**

#### **Displaying the firmware version**

The Version command displays the firmware version.

#### ***To display the firmware version:***

At the Sentry EM: prompt, type **version** and press **Enter**.

#### **Performing a warm boot**

The Restart command performs a warm boot.

---

**NOTE:** System user/outlet/group configuration or outlet states are NOT changed or reset with this command.

---

#### ***To perform a warm boot:***

At the Sentry EM: prompt, type **restart** and press **Enter**.

### **Network Administration Commands**

---

**NOTE:** A restart is required after setting or changing ANY TCP/IP configurations. See *Performing a warm boot* on page 11 for more information.

---

#### **Setting the IP address**

The Set Ipaddress command sets the TCP/IP address of the network interface controller.

#### ***To set the IP address:***

At the Sentry EM: prompt, type **set ipaddress**, followed by the IP address and press **Enter**.

#### ***Example***

The following command sets the IP address to 12.34.56.78:

```
Sentry EM: set ipaddress 12.34.56.78<Enter>
```

#### **Setting the subnet mask**

The Set Subnet command sets the subnet mask for the network the Sentry will be attached to.

#### ***To set the subnet mask:***

At the Sentry EM: prompt, type **set subnet**, followed by the subnet mask and press **Enter**.

#### ***Example***

The following command sets the subnet mask to 255.0.0.0

```
Sentry EM: set subnet 255.0.0.0<Enter>
```

## Setting the gateway

The Set Gateway command sets the IP address of the default gateway the Sentry uses to access external networks.

### *To set the gateway IP address:*

At the Sentry EM: prompt, type **set gateway**, followed by the gateway IP address and press **Enter**.

### **Example**

The following command set the gateway IP address to 12.34.56.1:

```
Sentry EM: set gateway 12.34.56.1<Enter>
```

## **HTTP Administration Commands**

### **Changing the HTTP server port**

With HTTP support enabled, the HTTP server watches and responds to requests on the default HTTP port number 80. This port number may be changed using the Set HTTP Port command.

### *To change the HTTP port:*

At the Sentry EM: prompt, type **set http port**, followed by the port number and press **Enter**.

### **Example**

The following changes the HTTP port number to 2048:

```
Sentry EM: set HTTP port 2048<Enter>
```

### **Setting the HTTP authentication method**

The Set HTTP Security command is used to set the method of authentication. The Sentry HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

For more information on authentication methods, see *Setting the HTTP authentication method:* on page 7.

### *To set the HTTP authentication method:*

At the Sentry EM: prompt, type **set http security**, followed by **basic** or **md5** and press **Enter**.

### **Displaying network configuration information**

The Show Network command displays TCP/IP and Web configuration information.

- NIC module serial number, MAC address and hardware revision code
- IP address, subnet mask and gateway
- HTTP port number
- HTTP authentication method
- Network link status, connection speed and duplex value

### *To display network configuration information:*

At the Sentry EM: prompt, type **show network** and press **Enter**.

### **Example**

The following command displays the network configuration information:

```
Sentry EM: show network<Enter>
Network Configuration
  NIC S/N :      1600001
  MAC Address:  00-0a-9c-10-00-01
  H/W Rev Code: 0
  IP Address:   12.34.56.78
  Subnet Mask:  255.0.0.0
  Gateway:     12.34.56.1
  HTTP Port:   80
  HTTP Security: Basic
Network Status
  Link:        Up
  Speed:       100 Mbps
  Duplex:      Half
```

## **FTP Administration**

The following commands are used to configure the Sentry for an FTP firmware upload. See Appendix B: Uploading Firmware for more information on initiating a FTP firmware upload.

### **Setting the FTP Host IP address**

The Set FTP Host command sets the FTP host IP address allowing for firmware file uploads.

#### ***To set the FTP Host IP address:***

At the Sentry EM: prompt, type **set ftp host**, followed by the Host IP address and press **Enter**.

#### ***Example***

The following command sets the FTP Host IP address to 12.34.56.99:

```
Sentry EM: set ftp host 12.34.56.99<Enter>
```

### **Setting the FTP username**

The FTP Username command sets the username as required by the FTP Host.

#### ***To set the FTP username:***

At the Sentry EM: prompt, type **set ftp username**, followed by the FTP username and press **Enter**.

#### ***Example***

The following command sets the FTP username to Guest:

```
Sentry EM: set ftp username guest<Enter>
```

### **Setting the FTP Password**

The FTP Password command sets the password as required by the FTP Host.

#### ***To set the FTP password:***

At the Sentry EM: prompt, type **set ftp password**, followed by the FTP password and press **Enter**.

#### ***Example***

The following command sets the FTP password to OpenSesame:

```
Sentry EM: set ftp password OpenSesame<Enter>
```

### **Setting the filename to be uploaded**

The FTP Filename command sets the filename of the firmware file to be uploaded.

#### ***To set the FTP filename:***

At the Sentry EM: prompt, type **set ftp filename**, followed by the firmware filename and press **Enter**.

#### ***Example***

The following command sets the FTP filename to snb\_s50a.bin:

```
Sentry EM: set ftp filename em-v51a.bin<Enter>
```

### **Setting the filepath for the file to be uploaded**

The FTP Filepath command sets the filepath for the firmware file to be uploaded.

#### ***To set the FTP filepath:***

At the Sentry EM: prompt, type **set ftp filepath**, followed by the filepath and press **Enter**.

#### ***Example***

The following command sets the FTP filepath to ftp://em:

```
Sentry EM: set ftp filepath ftp://em<Enter>
```

## Displaying FTP configuration information

The Show FTP command displays all FTP configuration information.

- FTP Host IP address
- FTP Host username and password
- Firmware filepath and filename

### *To display FTP configuration information:*

At the Sentry EM: prompt, type **show ftp** and press **Enter**.

### **Example**

The following command displays the FTP configuration information:

```
Sentry EM: show ftp<Enter>
FTP Configuration
Host IP Address: 12.34.56.99
Username:       guest
Password:      OpenSesame
Directory:     ftp://em
Filename:      em-v51a.bin
```

# Chapter 4: Advanced Operations

## SNMP

The Sentry family of products supports the Simple Network Management Protocol (SNMP). This allows network management systems to use SNMP requests to retrieve information and control power for the individual outlets.

The Sentry includes an SNMP v1 agent supporting standard MIB I and MIB II objects. A private enterprise MIB extension (Sentry3 MIB) is also supported to provide remote power control.

See *SNMP* on page 8, for information on enabling and configuring SNMP.

---

**NOTE:** For security, SNMP support is disabled by default.

---

### **MIB, OID and Support**

The Sentry SNMP MIB and OID are available on the Server Technology website:

<ftp://ftp.servertech.com/pub/SNMP/sentry3>

Technical support is available 8:30AM to 5:00 PM Pacific Time, Monday-Friday.

For SNMP Support, email: [mibmaster@servertech.com](mailto:mibmaster@servertech.com)

### **SNMP Traps**

The Environmental Monitor supports three types of SNMP traps. Traps are enabled at the Environmental Monitor (E) or sensor (S) level.

#### **Trap Summary**

Name	Level(s)	Description
Status	E, S	Operational status change
Temp	S	Temperature is out of range
Humid	S	Relative Humidity is out of range

All traps include the Location of the Environmental Monitor as defined with the Set Location command.

#### **Status trap**

A Status trap is generated when an error condition occurs on the Environmental Monitor or individual sensor. Status traps include the reported Status, the Location of the Environmental Monitor and identifier and name of the affected Environmental Monitor and sensor.

Any error state generates a Status trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Status returns to a non-error status. All status traps, with exception of the Analog-to-Digital Converter status trap, are enabled by default.

#### **Environmental Monitor Status traps**

Status	Error	Description
Normal		Environmental Monitor is working correctly
NoComm	x	Communication to the Environmental Monitor has been lost

#### **Temperature/Humidity Sensor Status traps**

Status	Error	Description
Found		The sensor has been detected
NotFound		No sensor has been detected
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

#### **Water Sensor Status traps**

Status	Error	Description
Normal		The sensor is working correctly
Alarm	x	Water has been detected by the sensor
NoComm	x	Communication to the sensor has been lost

## Contact Closure Sensor Status traps

Status	Error	Description
Normal		The sensor is working correctly
Alarm	x	The contact closure is opposite of its normal state
NoComm	x	Communication to the sensor has been lost

## Analog-to-Digital Converter Status traps

Status	Error	Description
Normal		The converter is working correctly
Reading		ADC status currently being read
CountLow	x	ADC count below preset threshold
CountHigh	x	ADC count exceeds preset threshold
ReadError	x	Unable to read ADC status
NoComm	x	Communication to the converter has been lost

**NOTE:** Traps are generated according to a hierarchical architecture; ie if an Environmental Monitor Status enters a trap condition, only the Environmental Monitor Status trap will be generated. Sensor Status, Temp and Humid traps will be suppressed until the Environmental Monitor Status returns to Normal.

## Temp Trap

The Temp trap is generated whenever the temperature on a temperature/humidity sensor is beyond preset thresholds. Temp traps include the reported temperature, temp status, Location of the Environmental Monitor, and identifier and name of the affected sensor.

Any error state generates a Temp trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Temp returns to a non-error status.

### Temp traps

Status	Error	Description
Normal		The sensor is working correctly and the temperature is within preset thresholds
NotFound		No sensor has been detected
Reading		Temp status currently being read
TempLow	x	Temperature at the sensor below preset low threshold
TempHigh	x	Temperature at the sensor exceeds preset high threshold
ReadError	x	Unable to read Temp status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

## Humidity Trap

The Humidity trap is generated whenever the umidity on a temperature/humidity sensor is beyond preset thresholds. Humidity traps include the reported relative humidity, humidity status, Location of the Environmental Monitor, and identifier and name of the affected sensor.

Any error state generates a Humidity trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Humidity returns to a non-error status.

### Humidity traps

Status	Error	Description
Normal		The sensor is working correctly and the relative humidity is within preset thresholds
NotFound		No sensor has been detected
Reading		Humidity status currently being read
HumidLow	x	Relative humidity at the sensor below preset low threshold
HumidHigh	x	Relative humidity at the sensor exceeds preset high threshold
ReadError	x	Unable to read Humidity status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

## Chapter 5: Appendices

### Appendix A: Resetting to Factory Defaults

You may reset the non-volatile RAM that stores all configurable options. This clears all administrator-editable fields and resets all command line configurable options to their default values, including all user accounts.

You may reset the unit to factory defaults from the command line or the HTML interface, or by pressing the reset button. You must have administrator-level privileges to issue the command. Using the reset button may be necessary when a forgotten password prevents administrator login. Each of the methods updates the current working configuration to the factory defaults.

---

**NOTE:** Resetting the unit resets all TCP/IP and Telnet/Web configurations. Reconfiguring the TCP/IP and Telnet/web settings will be required.

---

#### **To reset to factory defaults from the HTML interface**

On the Restart page in the Tools section of the HTML interface, select **Restart and reset to factory defaults** from the drop-down menu and press **Apply**.

#### **To reset to factory defaults from the command line**

At the Sentry: prompt, type **restart factory** and press **Enter**.

#### **To reset to factory defaults using the reset button**

Locate the recessed reset button directly beside the Serial & Ethernet ports. You will need a non-conductive, non-metallic tool that fits inside the recess.

Insert the tool in the recess, then depress and hold the reset button for at least ten seconds.

---

**NOTE:** If the reset button is depressed and held for more than 15 seconds, the reset will abort.

---

### Appendix B: Uploading Firmware

You may upload new versions of firmware using File Transfer Protocol (FTP). This allows access to new firmware releases for firmware improvements and new features additions.

---

**NOTE:** To begin an FTP upload session, you must first configure the FTP Host address, username/password, filename and filepath. For information on configuring the FTP settings required for firmware upload see Chapter 3: Operations.

---

You may initiate an FTP upload session by issuing a command or from the HTML interface. You must have administrator-level privileges to initiate an upload.

#### **To initiate an FTP upload session from the HTML interface**

On the Restart page in the Tools section of the HTML interface, select **Restart and upload firmware via FTP** from the drop-down menu and press **Apply**.

Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* in Chapter 3: for more information.

#### **To initiate an FTP upload session from the command line**

The Restart FTPLoad command initiates an upload of firmware. Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* in Chapter 3: for more information.

To initiate an FTP firmware upload session:

At the Sentry: prompt, type **restart ftpload** and press **Enter**.

## Appendix C: Technical Specifications

### Physical Specifications

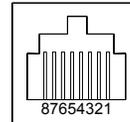
	Operating	Storage
<b>Temperature</b>	32° to 122° F (0° to 50° C)	-40° to 185° F (-40° to 85° C)
<b>Elevation</b> (above MSL)	0 to 10,000 ft (0 to 3000m)	0 to 50,000 ft (0 to 15000m)
<b>Relative Humidity</b>	10 to 90%, non-condensing	10 to 90%, non-condensing
	Dimensions (H x W x D)	Weight
EMCU-IP	4.75 x 2.5 x 1.1 in. (120 x 63 x 28 mm)	0.6 lbs (0.3 kg)

### Data Connections

#### RS-232 port

Environmental Monitors are equipped standard with an RJ45 DTE RS-232c serial port. This connector may be used for direct local access or from other serial devices such as a terminal server. An RJ45 crossover cable is provided for connection to an RJ45 DCE serial port.

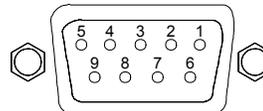
Pin	DTE Signal Name		Input/Output
1	Request to Send	RTS	Output
2	Data Terminal Ready	DTR	Output
3	Transmit Data	TD	Output
4	Signal Ground		
5	Signal Ground		
6	Receive Data	RD	Input
7	Data Set Ready	DSR	Input
8	Clear to Send	CTS	Input



#### RJ45 to DB9F serial port adapter

Additionally, an RJ45 to DB9F serial port adapter is provided for use in conjunction with the RJ45 crossover cable to connect to a PC DB9M DCE serial port. The adapter pinouts below reflect use of the adapter with the provided RJ45 crossover cable.

Pin	DCE Signal Name		Input/Output
1			
2	Receive Data	RD	Output
3	Transmit Data	TD	Input
4	Data Terminal Ready	DTR	Input
5	Signal Ground		
6	Data Set Ready	DSR	Output
7	Request to Send	RTS	Input
8	Clear to Send	CTS	Output



## **Regulatory Compliance**

### **USA Notification**

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

### **Canadian Notification**

This Class A digital apparatus complies meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### **European Union Notification**

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms:

- EN55022 Electromagnetic Interference
- EN55024 Electromagnetic Immunity
- EN60950-1 Product Safety
- EN61000-3 Harmonics and Flicker

### **Japanese Notification**

この装置は、情報処理装置等電波障害自主規制協議会 ( V C C I ) の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

## **Recycling**



Server Technology Inc. encourages the recycling of its products. Disposal facilities, environmental conditions and regulations vary across local, state and country jurisdictions, so Server Technology encourages consultation with qualified professional and applicable regulations and authorities within your region to ensure proper disposal.

### **Waste Electrical and Electronic Equipment (WEEE)**



In the European Union, this label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.

For information on how to recycle this product responsibly in your country, please visit: [www.servertech.com/support/recycling](http://www.servertech.com/support/recycling).

## Appendix D: Warranty, Product Registration and Support

### Warranty and Limitation of Liability

Server Technology, Inc. agrees to repair or replace Products that fail due to a defect within twelve (12) months after the shipment date of each Product unit to Buyer (“Warranty Period”). For purposes of this Agreement the term “defect” shall mean the Product fails to operate or fails to conform to its applicable specifications. Any claim made pursuant to this Agreement shall be asserted or made in writing only by Buyer. Buyer shall comply with Server Technology’s Standard Return Merchandise Authorization (“RMA”) procedure for all warranty claims as set forth in Server Technology’s operation manual.

**Buyer must return Products in original packaging and in good condition.** This limited warranty does not include labor, transportation, or other expenses to repair or reinstall warranted Products on site or at Buyer’s premises.

Server Technology reserves the right to investigate any warranty claims to promptly resolve the problem or to determine whether such claims are proper. In the event that after repeated efforts Server Technology is unable to repair or replace a defective Product, then Buyer’s exclusive remedy and Server Technology’s entire liability in contract, tort, or otherwise shall be the payment by Server Technology of Buyer’s actual damages after mitigation, but shall not exceed the purchase price actually paid by Buyer for the defective Product.

Server Technology shall have no responsibility or liability for any Product, or part thereof, that (a) has had the Serial Number, Model Number, or other identification markings altered, removed or rendered illegible; (b) has been damaged by or subject to improper installation or operation, misuse, accident, neglect and/or has been used in any way other than in strict compliance with Server Technology’s operation and installation manual; (c) has become defective or inoperative due to its integration or assembly with any equipment or products not supplied by Server Technology; (d) has been repaired, modified or otherwise altered by anyone other than Server Technology and/or has been subject to the opening of any sealed cabinet boxes without Server Technology’s prior written consent. If any warranty claim by Buyer falls within any of the foregoing exceptions, Buyer shall pay Server Technology its then current rates and charges for such services.

THE ABOVE WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. SERVER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, OR EXEMPLARY DAMAGES; EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

For warranty issues, contact the Product Support Department at the number listed above. All repair and return shipments must be approved by Server and must be accompanied by a RMA (Return Merchandise Authorization) number and dated proof of purchase.

### Product Registration

Registration is your key to special offers and services reserved for Registered Users.

- Excellent Technical Support Services
- Special Update and Upgrade Programs
- Warranty Protection
- Extended Warranty Service
- New Product Information

Register your products online today!

[www.servertech.com](http://www.servertech.com)

## **Technical Support**

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 8:30 AM to 5:00 PM, Monday-Friday, Pacific Time.

Server Technology, Inc.

1040 Sandhill Drive

Reno, Nevada 89521 USA

Tel: 775.284.2000

Fax: 775.284.2065

Web: [www.servertech.com](http://www.servertech.com)

Email: [support@servertech.com](mailto:support@servertech.com)

## **Return Merchandise Authorization**

If you have a unit that is not functioning properly and is in need of technical assistance or repair:

Submit a request for support by phone at the above number, or via the web at

[www.servertech.com/support](http://www.servertech.com/support)

Be ready to provide:

Company Name

Contact Name, Phone Number, and Email address

Model or Part Number (from the label on the equipment)

Server Technology Serial Number

Version of firmware

Description of problem

1. Technical Support will work to diagnose/resolve the problem remotely, if possible. If the problem cannot be resolved, Technical Support will then issue an RMA# for the return/repair of the equipment in question. RMA#'s are valid for 30 days only from the issue date.
2. Shipping charges for the return of the equipment to Server Technology shall be the responsibility of the customer. For warranty repairs, Server Technology shall assume return shipping charges but for non-warranty repairs, the shipping charges shall be billed.
3. The RMA# shall be placed conspicuously on all shipping documentation, associated correspondence, and the shipping container.
4. Equipment must be returned in proper/original packaging to protect the equipment in transit. The customer shall be financially responsible for any damage/destruction of the equipment due to improper packaging.
5. Equipment shall typically be turned around within 48-72 hours of receipt at Server Technology. Equipment under warranty shall be repaired at no cost. Equipment NOT under warranty shall be repaired at the standard labor rate plus parts. Upon diagnosis of the equipment, the customer shall be notified of estimated charges prior to repair.
6. For non-warranty repairs, return of the equipment will be expedited with the inclusion of a Purchase Order or credit card number for incurred charges.



**Solutions for the Data Center Equipment Cabinet**

Server Technology, Inc.  
1040 Sandhill Drive  
Reno, NV 89521

**+1.800.835.1515 TF**  
**+1.775.284.2000 Tel**  
**+1.775.284.2065 Fax**

[www.servertech.com](http://www.servertech.com)  
[sales@servertech.com](mailto:sales@servertech.com)

Sentry and Standalone Environmental Monitor are trademarks of Server Technology, Inc.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Server Technology, Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

301-0124-3 Rev. A (081305) © 2004-2005 Server Technology, Inc. All rights reserved.