EP2200 NetAgent Network Card

COMMUNICATIONS GUIDE

INSTALL AND OPERATION

Table of Contents

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EP2200 Network Card Introduction:.....3
Installation:.....3
Powering the Network Card:.....4
Accessing the Network Card:.....4
Webpage Navigation:.....6
Information - System and Network Status:.....6
Basic Information:.....9
Current Status:.....10
Remote Control:.....16
Configuration – UPS Configuration:.....18
Configuration – Network Settings:.....22
Configuration – SNMP.....25
Configuration – Email.....28
Configuration – Web/Telnet Account Information.....32
Configuration – Time Settings.....35
Network Card and UPS Event Logs:.....36
Help – Save and Upload Configuration:.....39
Help – More Information:.....40
Additional Resources:.....41
Login Troubleshooting:.....41

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EP2200 Network Card Introduction:

The NetAgent network card has been designed to work with multiple types of power supply systems. Its robust interface and industrial grade hardware allow it to work with Multilink's EP2200 uninterruptible power supply to provide Ethernet connectivity. Each NetAgent network card contains an embedded webpage that allows users to configure the network card and monitor and control each EP2200 remotely. This in-depth guide will describe communication protocols, webpages, and features of the NetAgent network card that are most commonly used to communicate with and control the EP2200.

Installation:

Each EP2200 has a slot to add the EP2200 NetAgent network card. If ordered with the UPS at time of manufacturing, the network card will be installed at the factory. However, if a network card is to be added to an EP2200, follow the steps below.

1. Locate the network card slot above the fan. A blank, metal plate should be covering this slot.
2. Using a #2 Phillips screwdriver, remove and retain the two screws. Discard the metal plate.
3. Remove the NetAgent network card from its packaging. Be sure to follow all ESD rules when handing this device.
4. Insert the device into the PCB guides and insert the network card into the slot.
5. Replace the two screws.
6. Attach a straight-through Ethernet cable to the Ethernet port on the network card.
7. Installation is now complete.

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Powering the Network Card:

The Network card is powered by the EP2200 from an internal power source. When AC or DC power is applied to the EP2200, the network card will start, and indicator LEDs will illuminate, displaying that power is active and the network card is initializing. After a brief period, the network card may be accessed, either locally or remotely.

Accessing the Network Card:

Accessing the network card can be done locally, with a computer connected directly to the Ethernet port or remotely through the user's network. Local connections allow for the device to be configured prior to deployment, with remote access providing operating conditions of the EP2200. Each network card comes with a default, static IP address for configuration purposes. To connect to the network card locally or remotely, follow the instructions below. The following instructions utilize Windows 7/10 operating systems and use the factory default values for these instructions.

Local Connection:

1. With power applied to the UPS, connect a straight-through Ethernet cable to the "Ethernet" port on the front panel of the UPS.
2. Connect the opposing end of the Ethernet cable to the Ethernet port of a computer.
3. Verify the current IP Address of the UPS by scrolling through the Status menu on the LCD. **The factory IP Address of the network card is 192.168.1.51**.
4. The desktop or computer's network interface card must be configured to the same IP range as the NetAgent network card.
5. Navigate to the network and ethernet connections control panel and select "Change adapter settings" on the local ethernet connection that is in use.
6. Right click on the "Local Area Connection" and select "Properties". Click to highlight "Internet Protocol Version 4 (TCP/IP) and click the "Properties" button below.
7. Highlight the "Use the following IP Address" radio button and enter an IP Address in the range of 192.168.1.1-254. For example: 192.168.1.10. Be sure not to enter the network card's IP Address in this textbox. If another IP Address has already been assigned to the network card, enter an IP Address in the same range of the network card's IP Address in the textbox.
8. Enter the appropriate subnet mask into the "Subnet mask" text box if it has not already been auto filled. For example: if 192.168.1.10 is the IP Address, the Subnet mask would be 255.255.255.0.
9. Select the "OK" button and then select "Close" on the Properties window. The computer's network interface card may now begin communication with the network card.
10. Open a preferred web browser and enter the IP address. The user will be prompted with a login page. **The default username and password are**:

    Username: **admin** Password: **user**

11. The user may now access and modify the webpages of the network card.

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Remote Connection:

1. If DHCP is enabled, connect the Ethernet cable to the network switch or router and allow the network card to be assigned an IP address.
2. If a Static IP address has been assigned, whether the factor default or a pre-configured IP address, verify the IP address of the network card through the LCD and record this address.
3. Connect the Ethernet cable to the network switch or router.
4. Open a preferred web browser and enter the IP address. The user will be prompted with a login page. The default username and password are:

   Username: **admin** Password: **user**

5. If the username and password have been modified, enter the modified credentials.
6. The user may now access and modify the webpages of the network card.

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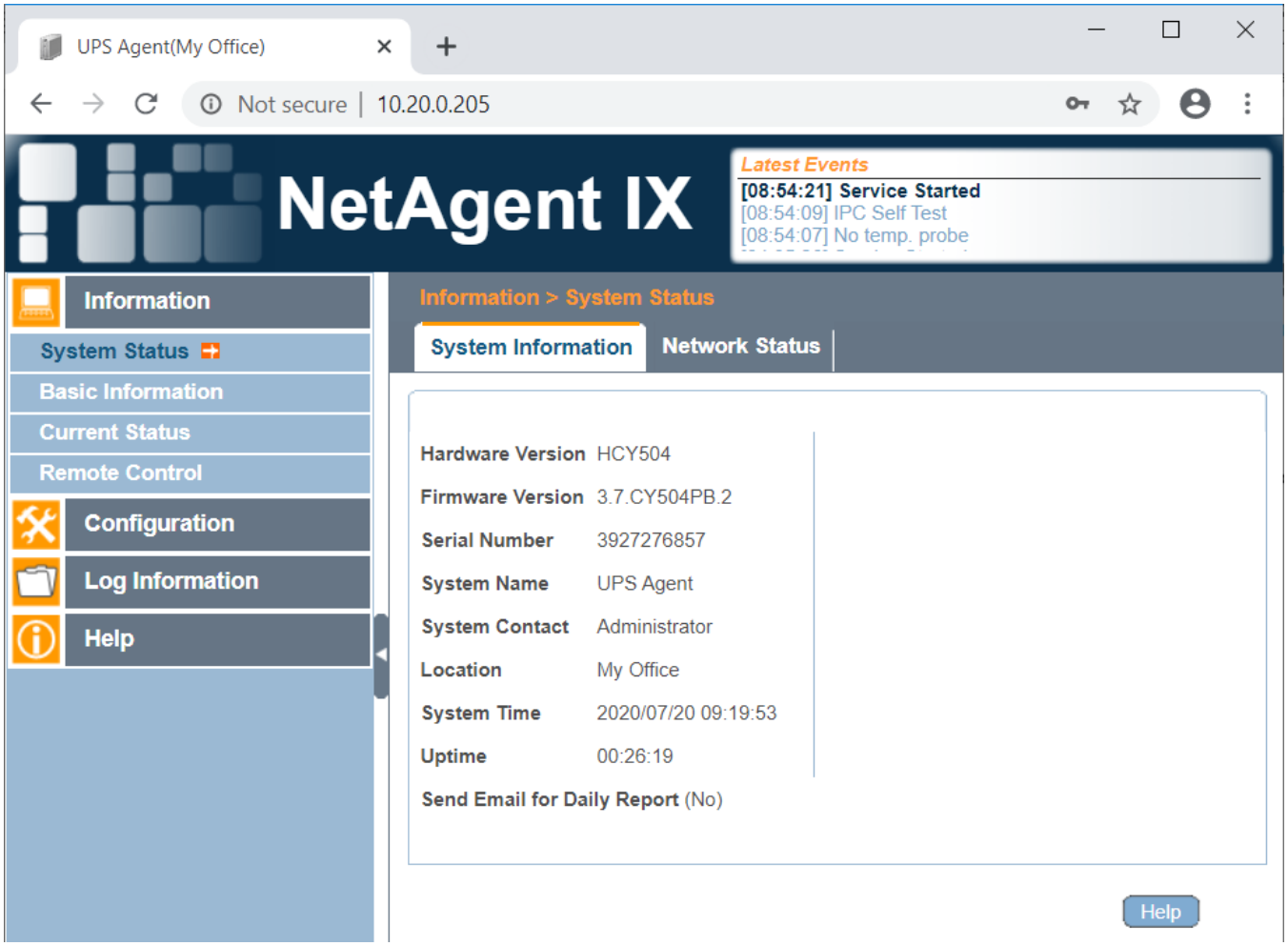
Webpage Navigation:

Below is a description of all pertinent webpages contained in the NetAgent network card. Each page will be discussed, with information regarding specific parameters or configurable items being addressed. If configuration of items such as email, SNMP, or IP addressing is necessary, please contact the network administrator to provide the necessary credentials or address information before proceeding.

Information - System and Network Status:

When first logging into the NetAgent network card, the user is presented with the System Status webpage. This page provides two tabs of information that describe parameters essential to the network card. The page contains several additional webpages in the left column as well as a message system in the upper right corner of the window, which displays the last three events that have occurred.



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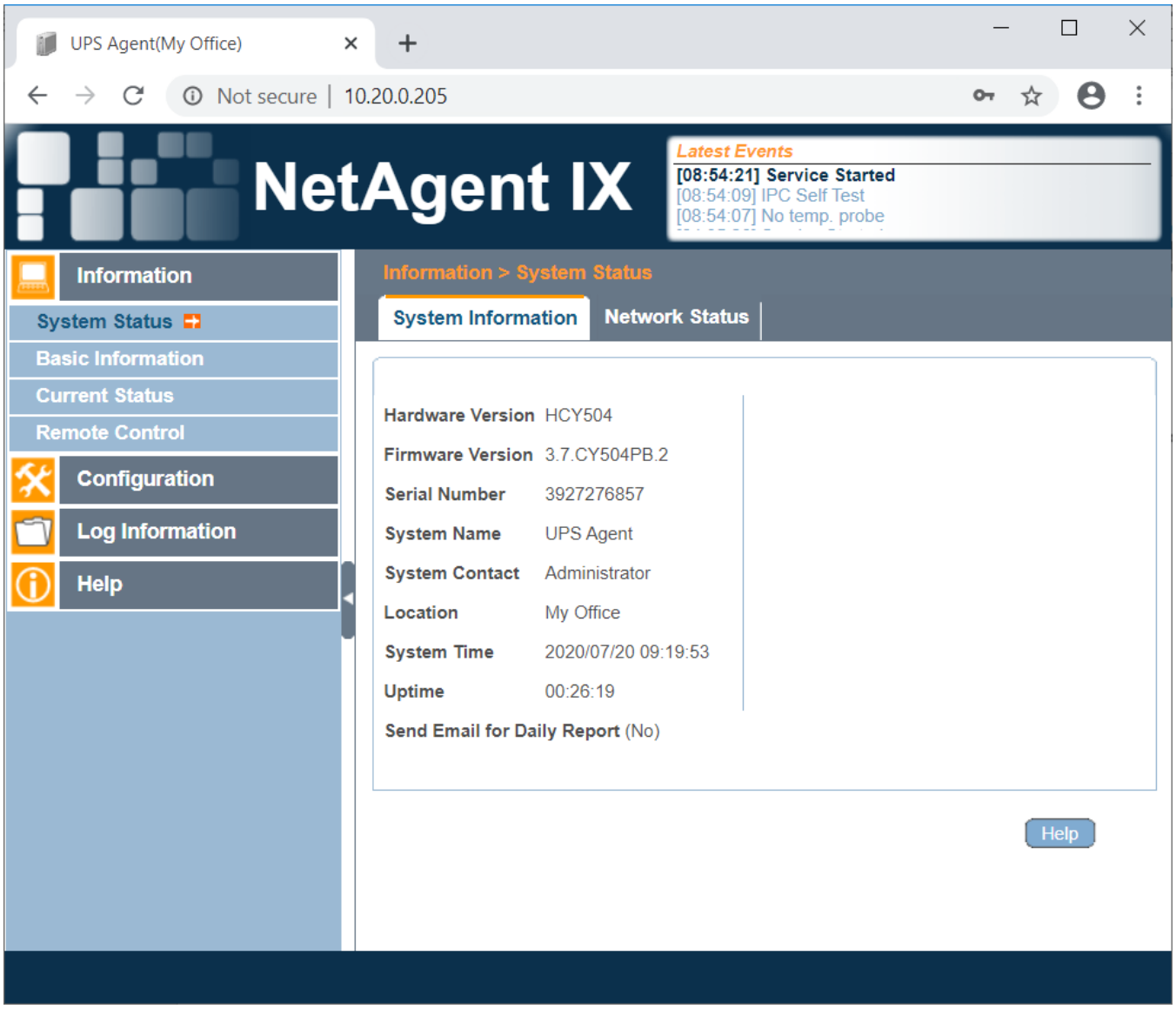
System Information:

On the System Information tab, these parameters include hardware and firmware versions, serial number of the network card, name, location, and system time.



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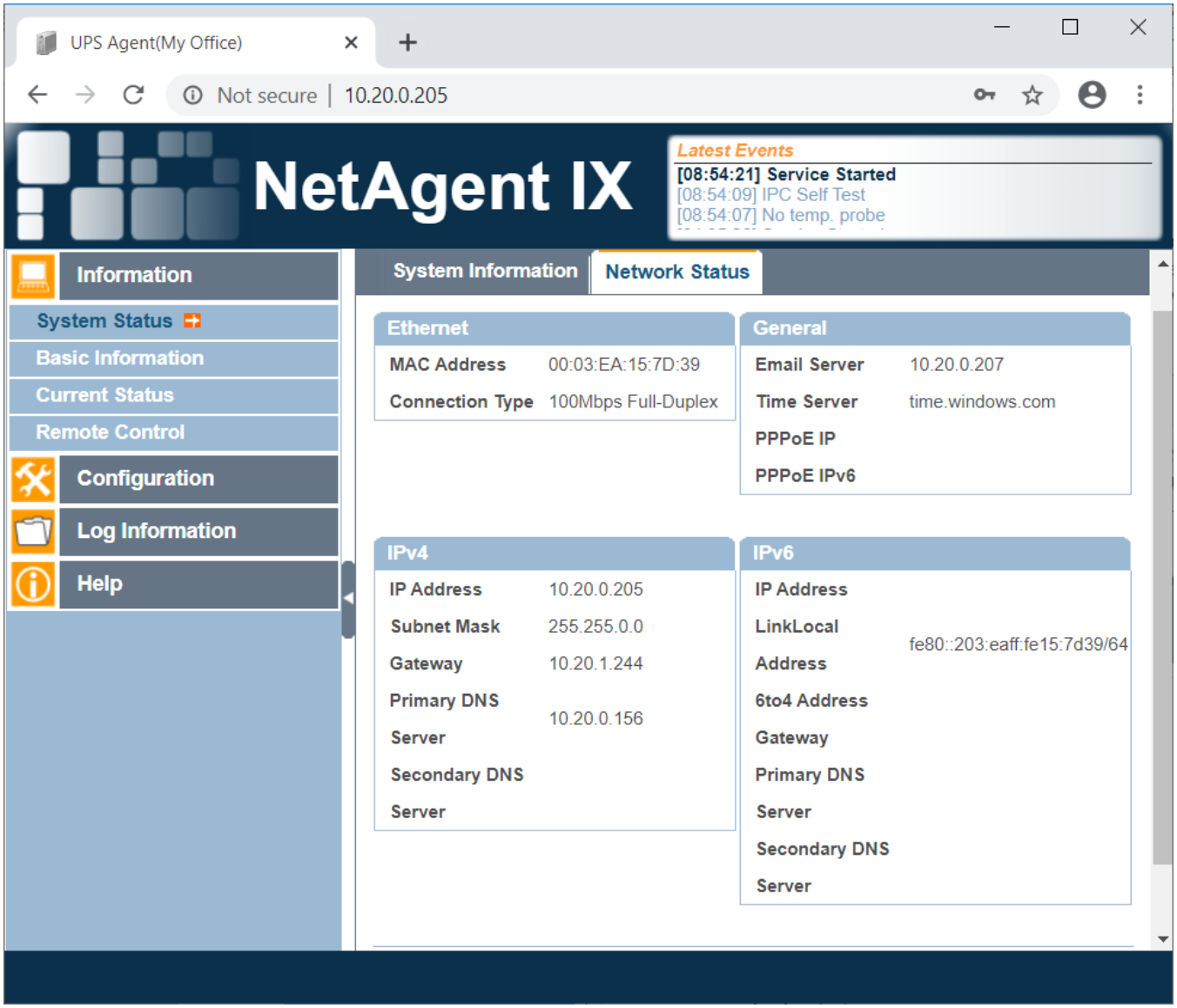
Network Status:

The Network Status tab provides a summary of all network parameters currently configured for the network card. These parameters include the MAC address, connection type, IP address, Subnet Mask, Gateway Address, Email and Time servers, and additional information.



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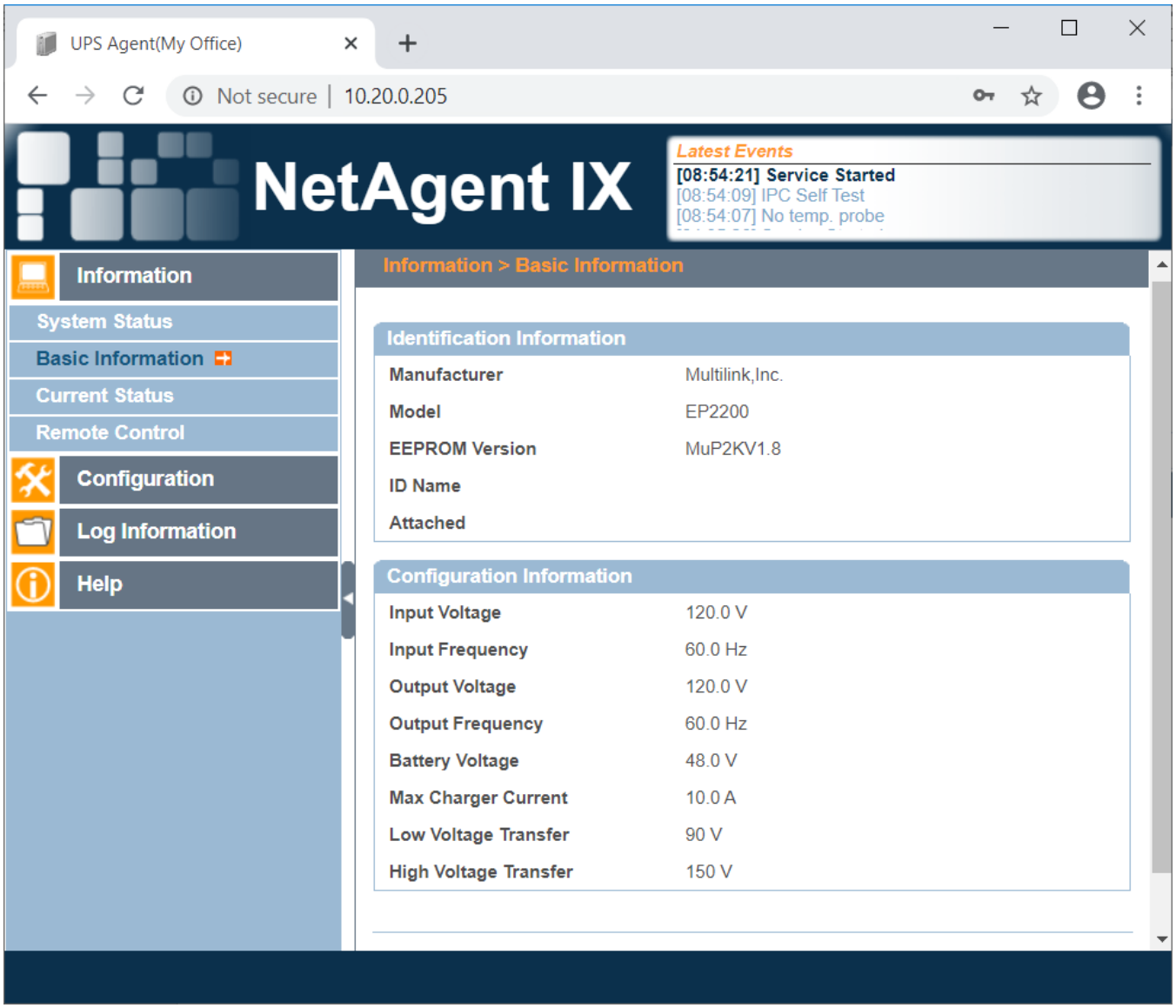
Basic Information:

The Basic Information tab provides a summary of the EP2200 identification and configuration information. Manufacturer, model number, firmware version, identifying name (if assigned), are displayed on this page. Additionally, a summary of the operating specifications and currently assigned transfer points are listed.



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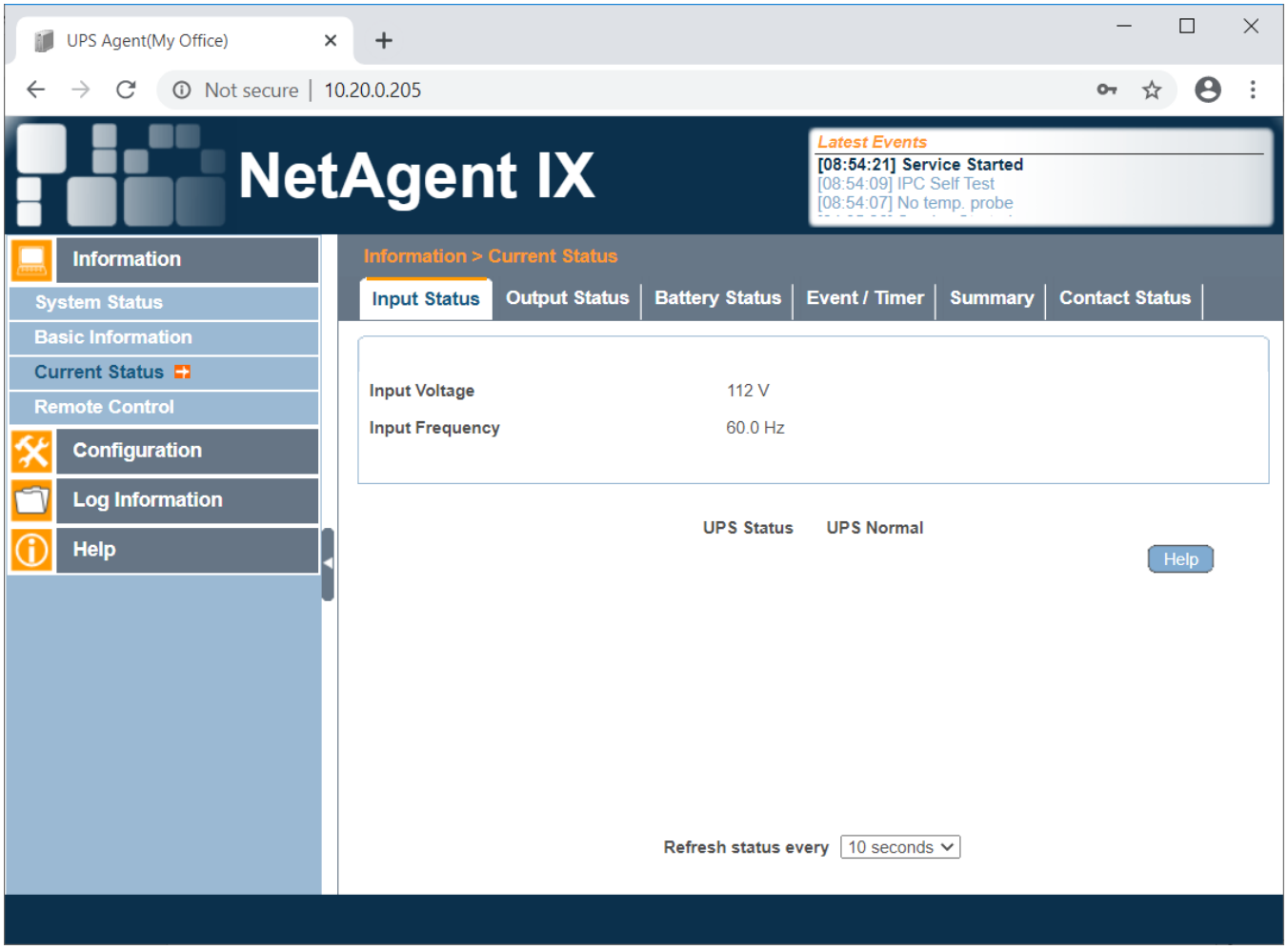
Current Status:

The Current Status tab provides measured operating parameters for each EP2200's Input, Output, Battery System, Events/Timer, Summary, and Relay Contact Status. Values displayed on each page are measured and reported by the EP2200 to the network card. The user may scroll over each of the status tabs shown. The user may also select a different refresh rate for which values will automatically be displayed. Scrolling over each tab will automatically display its respective contents.

Input Status:

Input status displayed the currently measured Input voltage and frequency.



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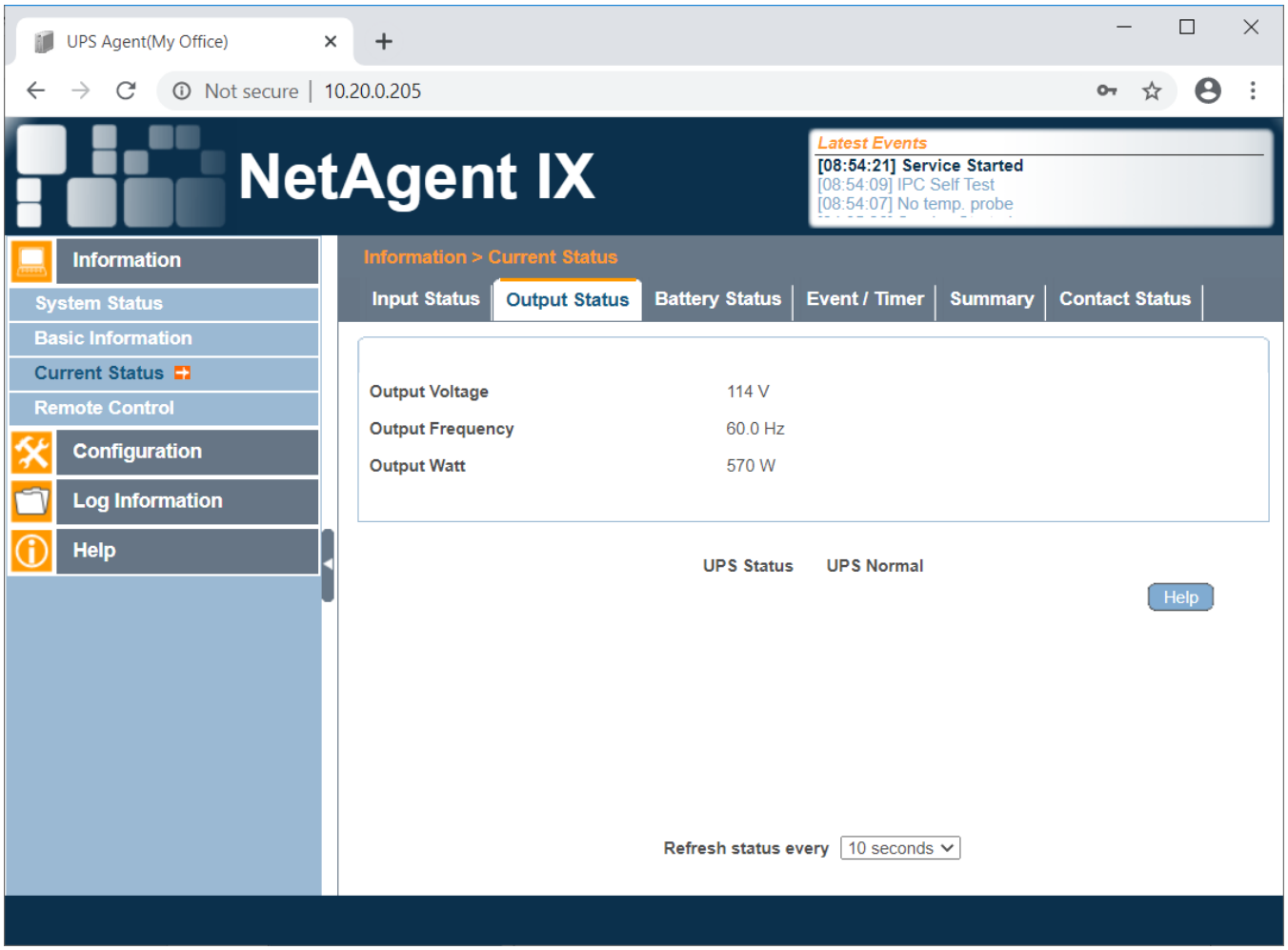
Output Status:

Output status displays the currently measured Output voltage, frequency, and output power consumption in watts.



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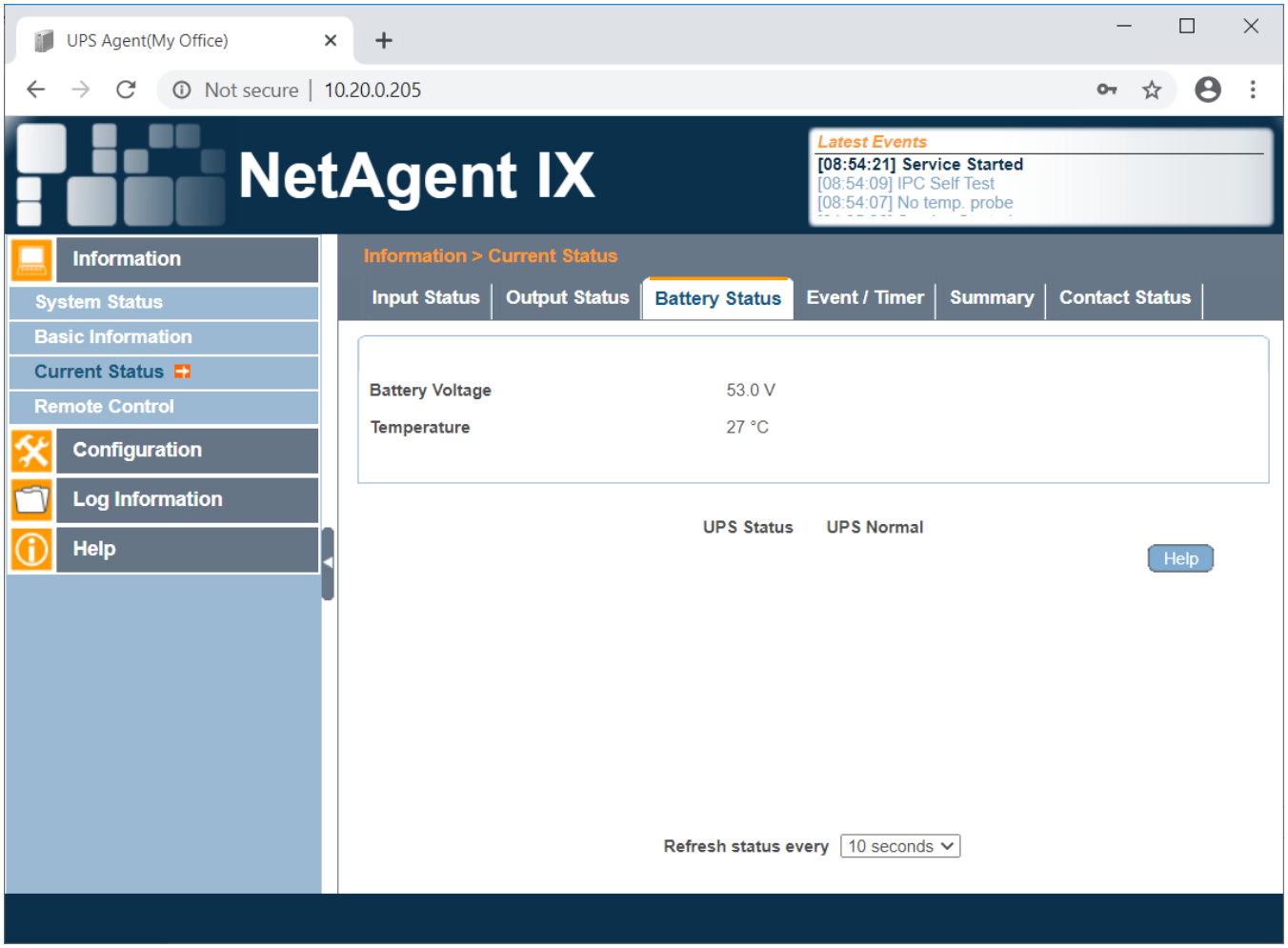
Battery Status:

Battery status displays the currently measured Battery voltage and temperature.



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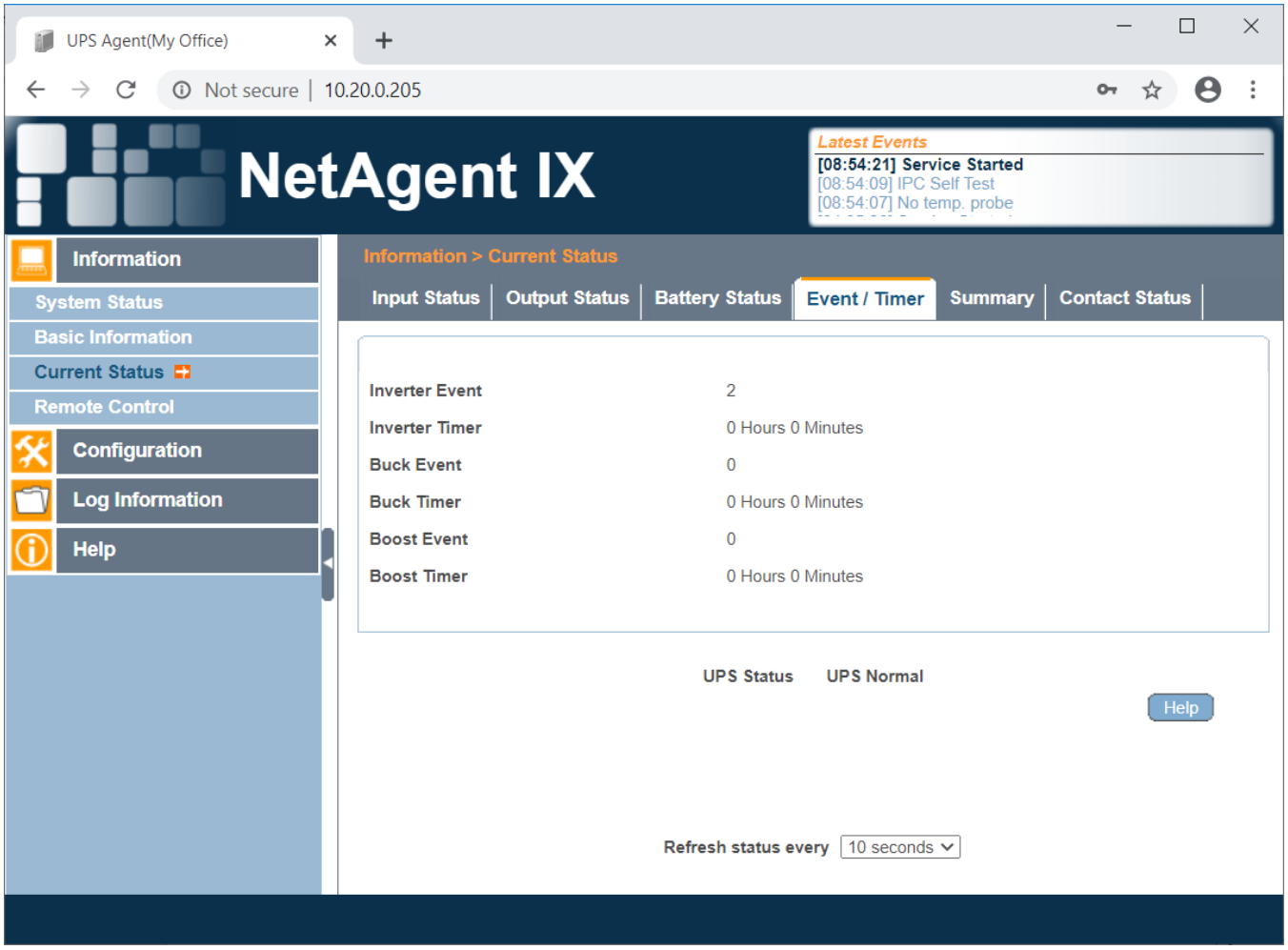
Event/Timer Status:

The Event/Timer status page shows the total number of inverter events, Buck events, Boost events, and their respective timers. Each event timer is used to record the time each event is active.



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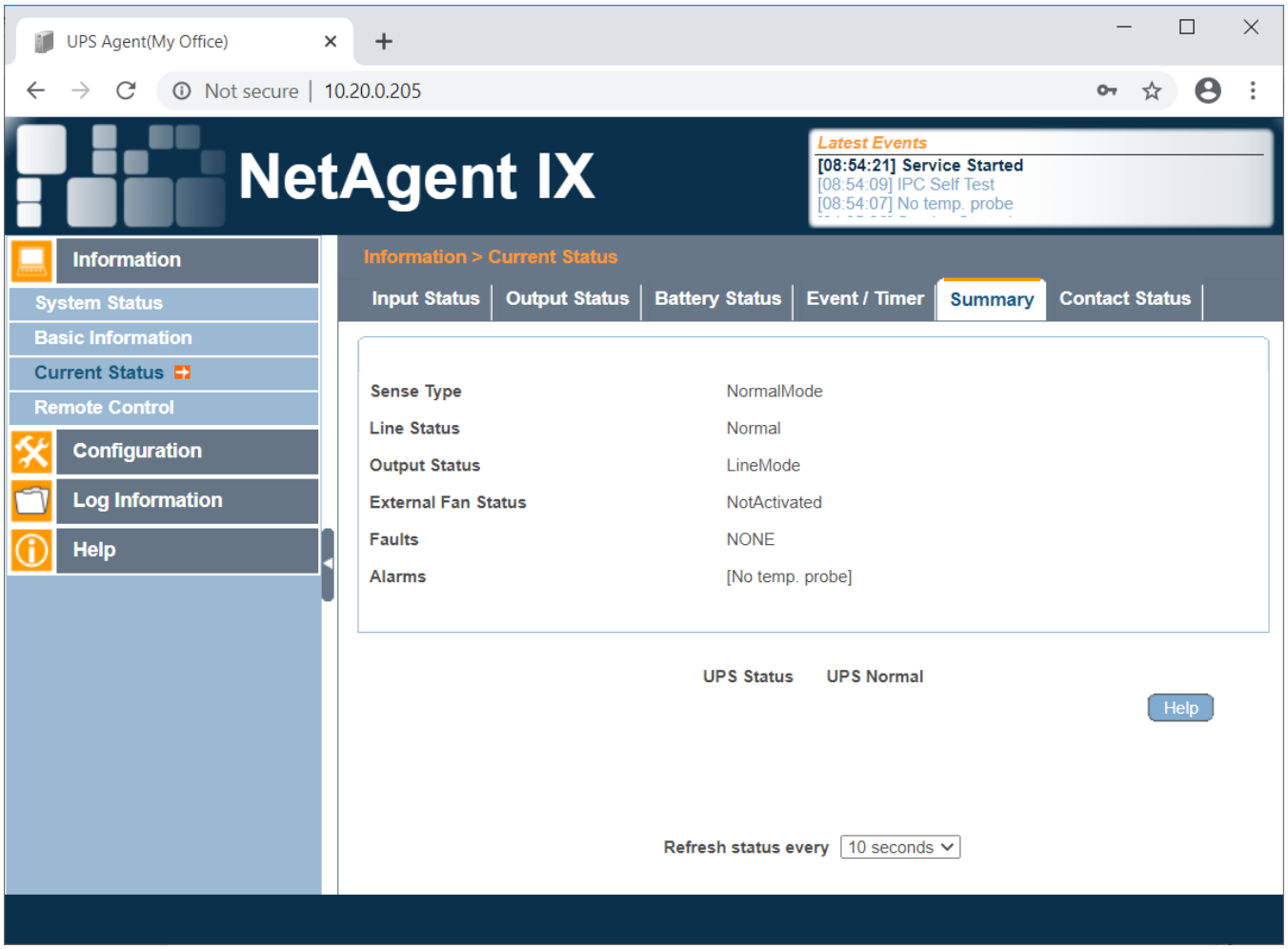
Summary Status:

The Summary status tab reports the current selected configuration and/or operating state for the UPS. Sense type is used measure total harmonic distortion of the Input voltage for each EP2200 and determines if it is a usable voltage. “Normal Mode” is selected by default. “Generator Mode” may be selected to expand the boundaries for which the EP2200 may operate from a more distorted Input voltage, commonly referred to as “dirty power”. Additionally, the status of the line Input, Output, power to an external fan, any faults or any alarms that may currently be active.



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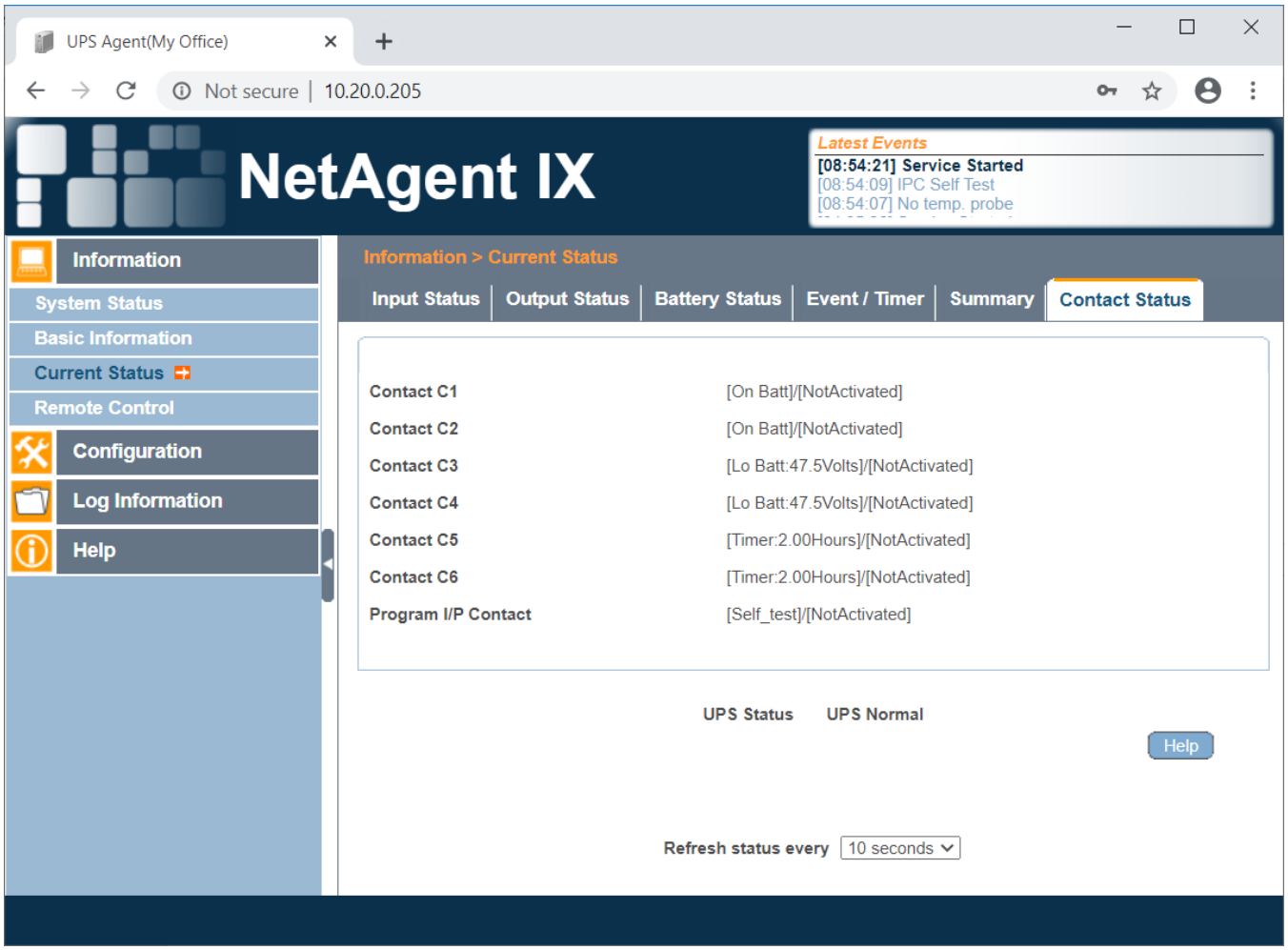
Contact Status:

Each EP2200 contains six programmable dry contact relays that close when the programmed alarm threshold or condition is met. Each contact lists the condition for which it opens (not active) or closes (active) and lists the state of the respective relay. There is also a programmable Input contact that may be programmed to perform a self-test or indicate that a door has opened, or an external alarm condition exists.



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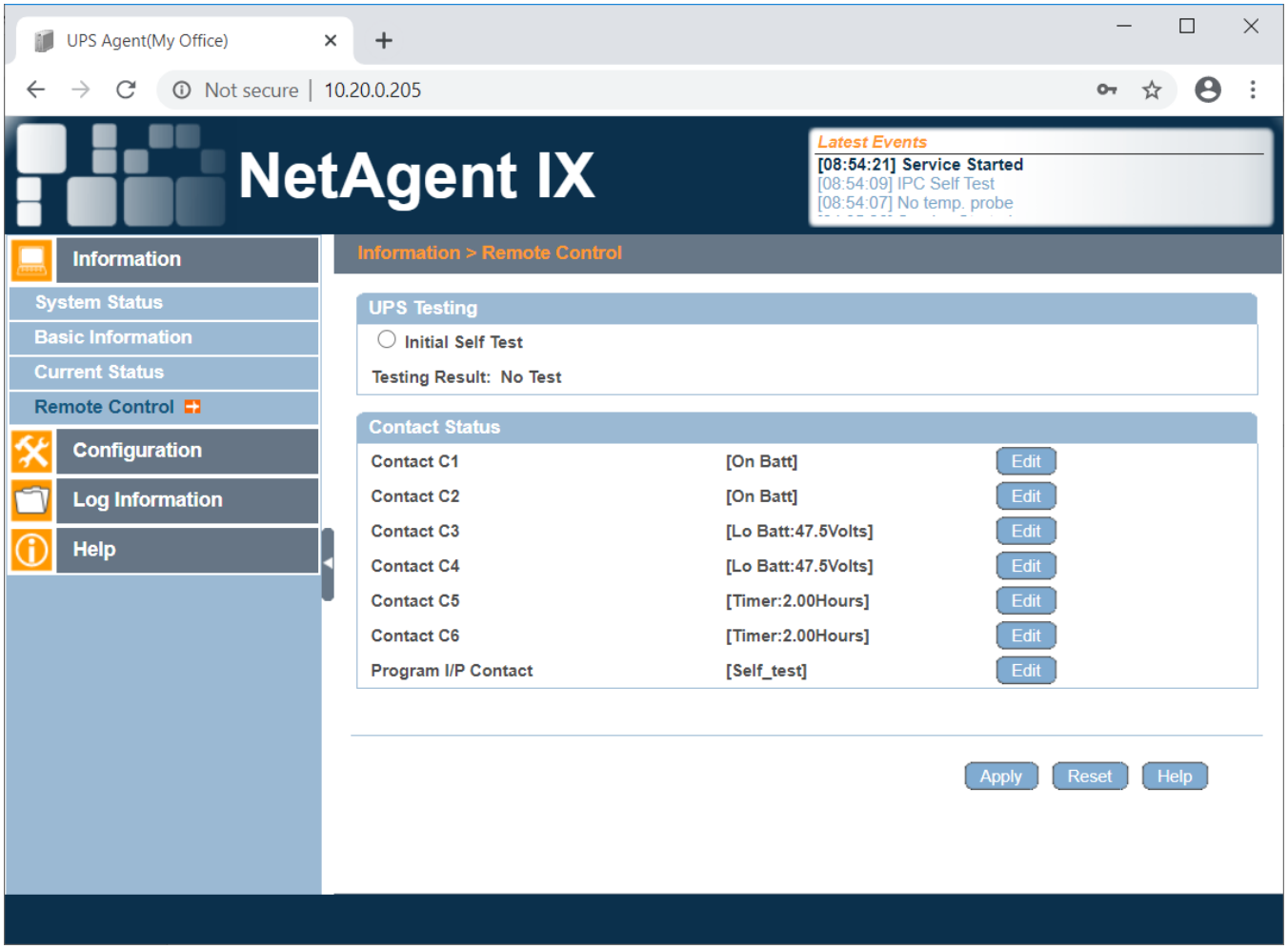
Remote Control:

Remote control of battery tests and configuration of the dry contact relays is accomplished on this page. Users may initiate a self-test to determine if the batteries for the EP2200 can support the output load during a loss of input voltage. The users may also edit the function of each of the six relays, as well as the programmable input contact.



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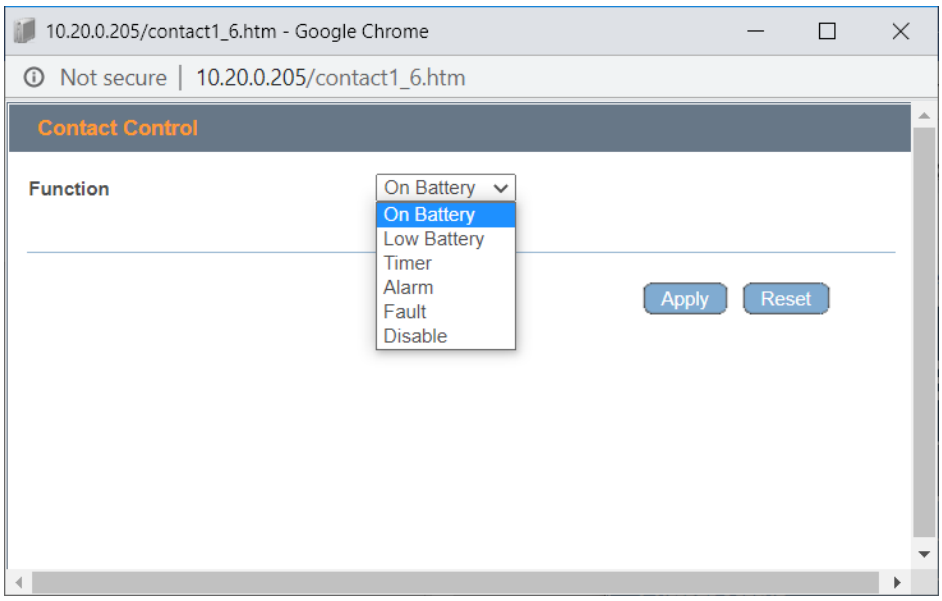
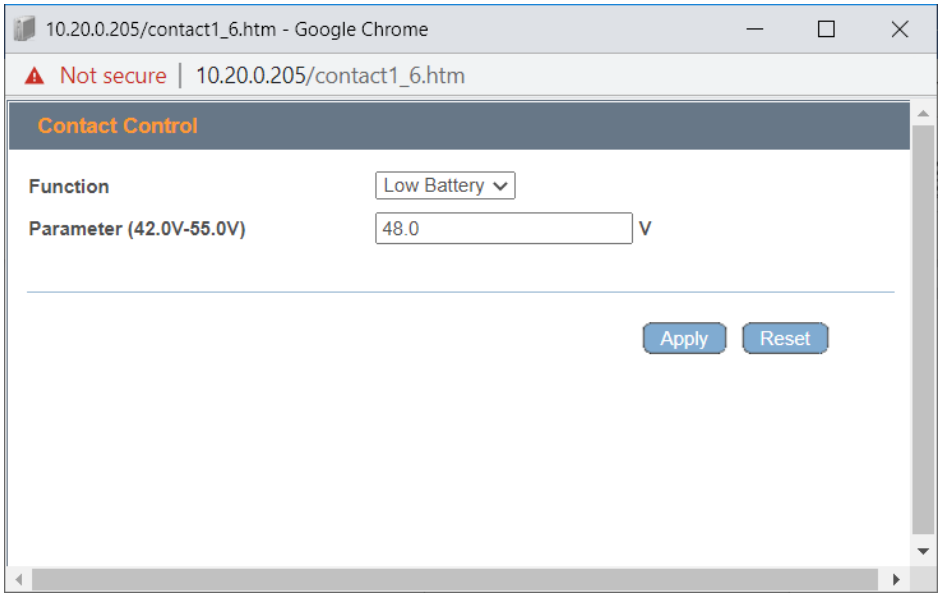
The user should click “Edit” next to the relay and a new window will be presented, allowing the user to select which function the relay contacts will play, as well as settings for when the relay will become active. Users may select from On Battery, Low Battery, Timer, Alarm, Fault, or whether to Disable the relay from activating. Be sure to configure the settings for each option and then click “Apply” to save settings. These values will display on the Remote Control tab as well as on the Current Status tab. Clicking the “Reset” button will restore the relay values to the factory defaults.





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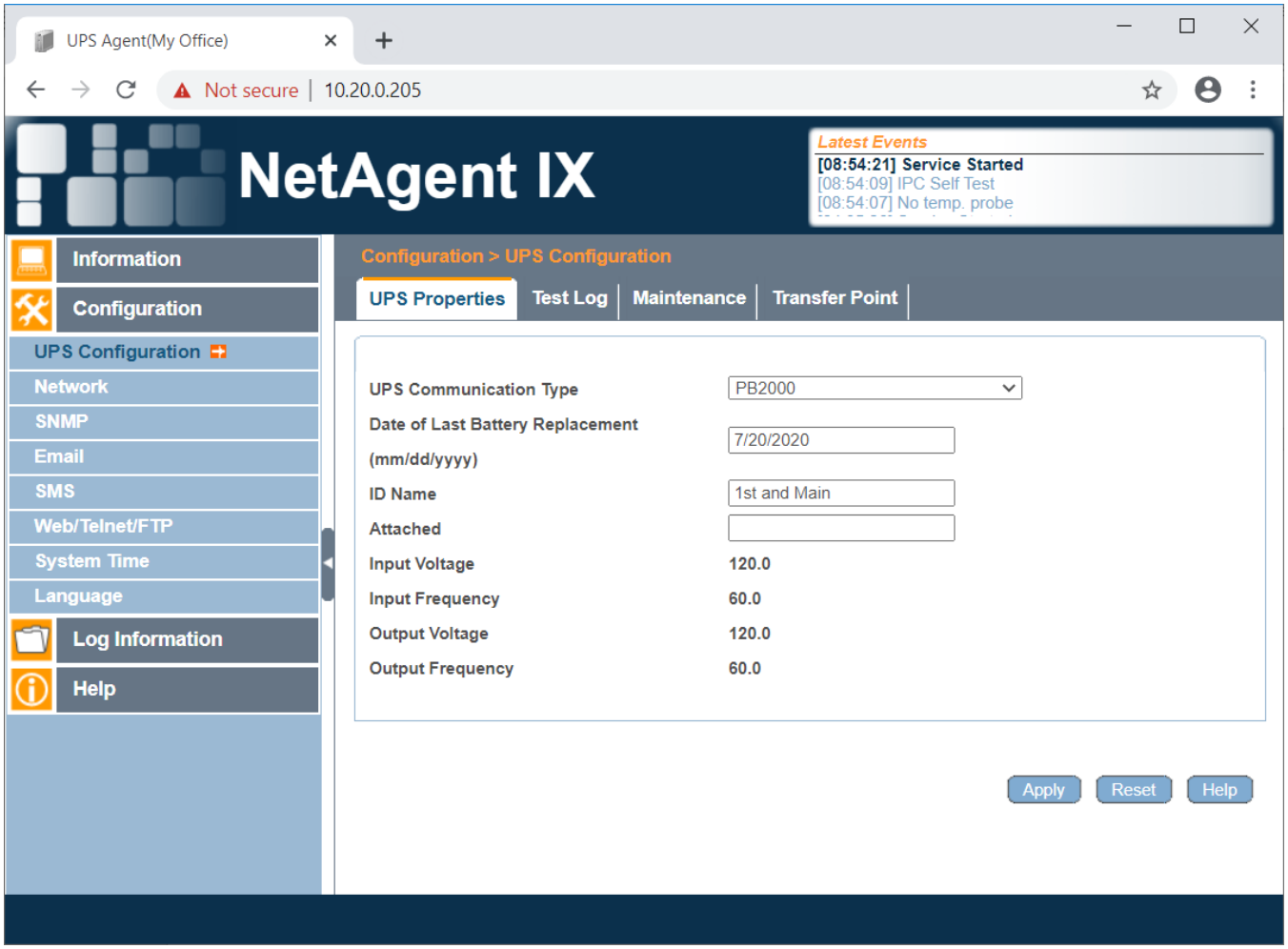
Configuration – UPS Configuration:

This webpage lists all programmable operating parameters of the EP2200, over multiple tabs. Each tab allows the user to select an option for each parameter, if required.

UPS Properties:

NOTE: the UPS Communication Type is selectable, but the user should not adjust this option. If issues with UPS communication arise, ensure this parameter is set to "**PB2000**". On the UPS Properties tab, the user may set the date for which the batteries where last replaced, modify the identification name of the unit, and explain if a user input device is attached to the EP2200. Input and Output factory configured values are displayed as well. Be sure to click "Apply" to save any changes.



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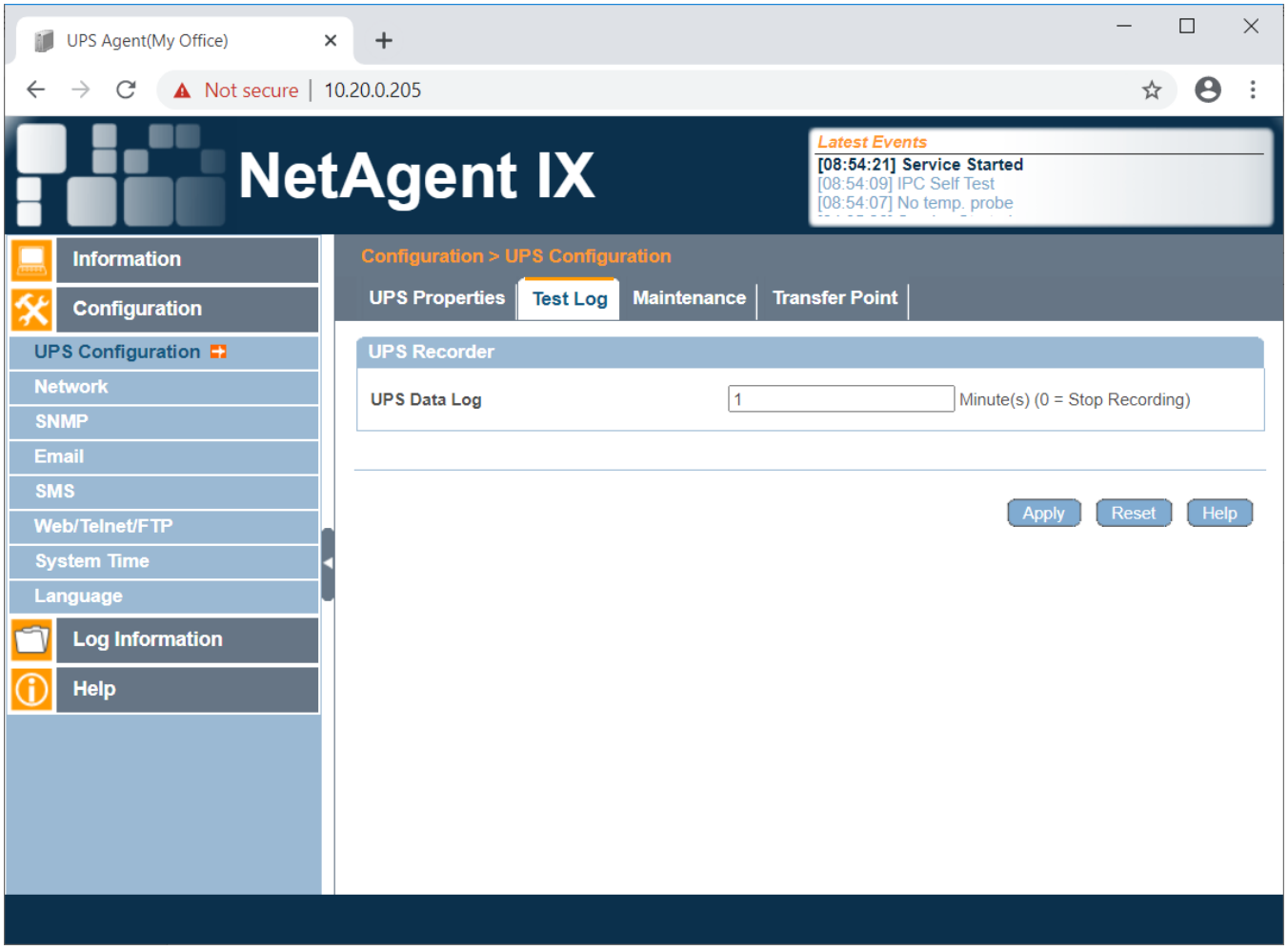
Test Log:

Allows the users to select the time interval for which items will be stored in the UPS Data log. Enter a time in minutes (1-minute default is selected) and click “Apply” to save.



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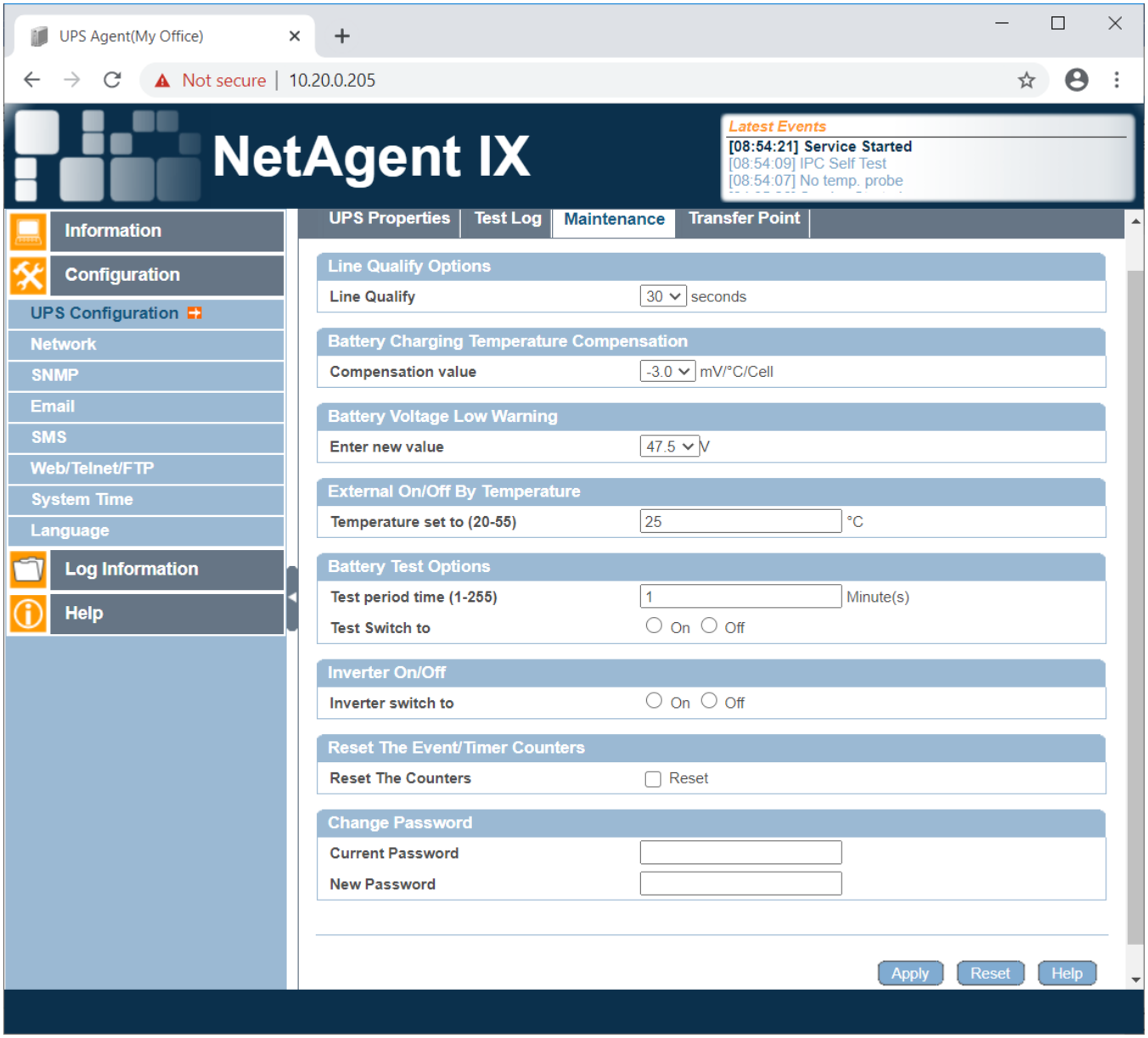
Maintenance:

This tab allows users to select and modify several operating conditions such as Line Qualification Time, Battery Charging Temperature Compensation values, Battery Voltage Low Warning value, External Fan power by Temperature, Battery Test Options, Manually Force the Inverter On or Off, Reset Event/Timer Counters, and change the maintenance menu password. This password only applies to the LCD menu option. Its default value is “1111”. Click “Apply” to save values or click “Reset” to restore default values, which are shown below.



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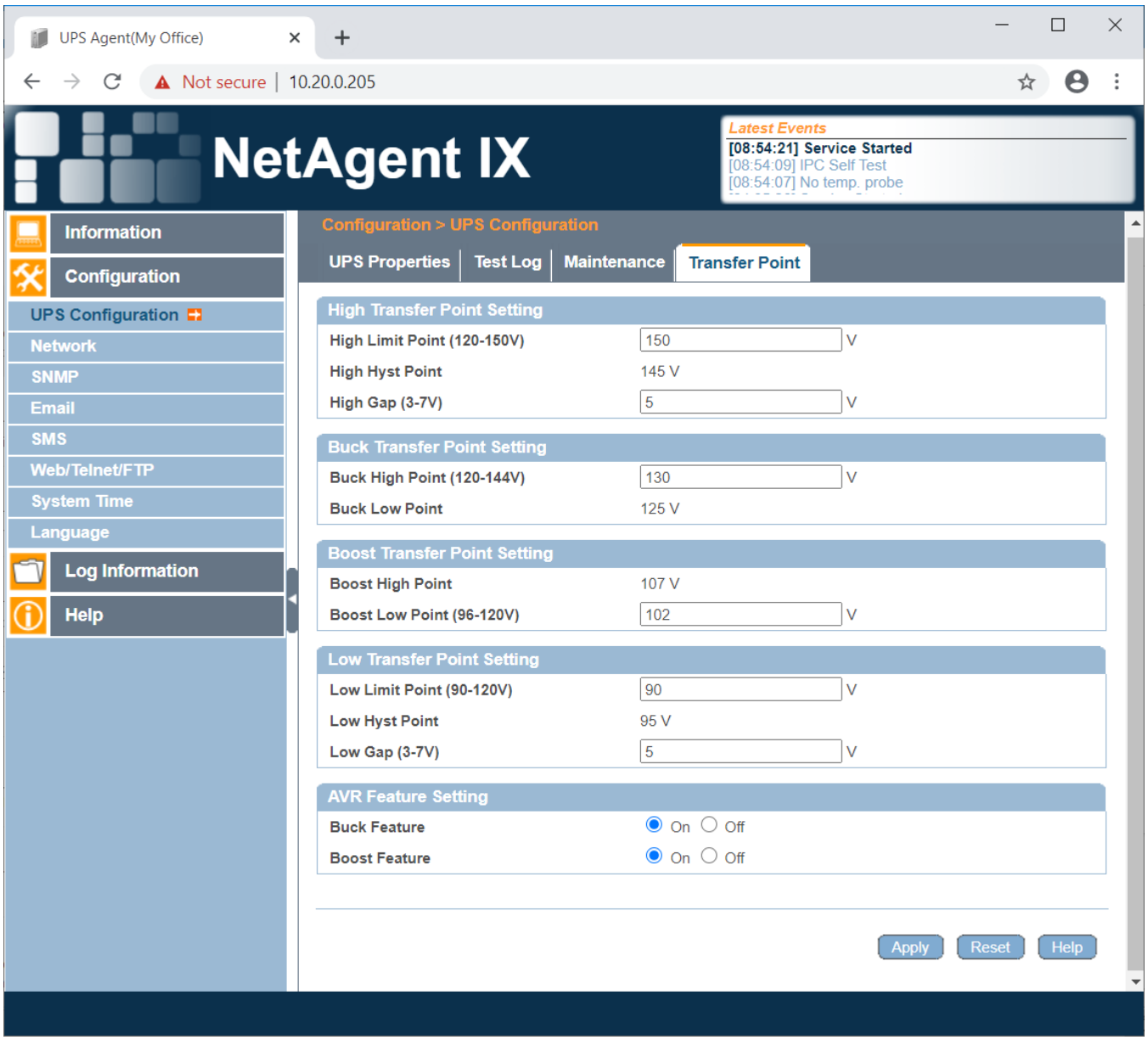
Transfer Point:

The EP2200 has default values for which line voltage is measured and if it is found to be outside of the boundaries, the unit will enter a different mode of operation. This tab allows the user to select specific values for which each EP2200 would enter a different mode. If the AVR feature is enabled, Buck and Boost modes are made available and the user may select the points as which the unit enters those modes. The user may also define the upper and lower transfer points and the hysteresis value, the amount of change in the measured value required for the mode to return to a previous mode. Be sure to click "Apply" to save settings. Click "Reset" to restore the default values for each option, which are shown below.



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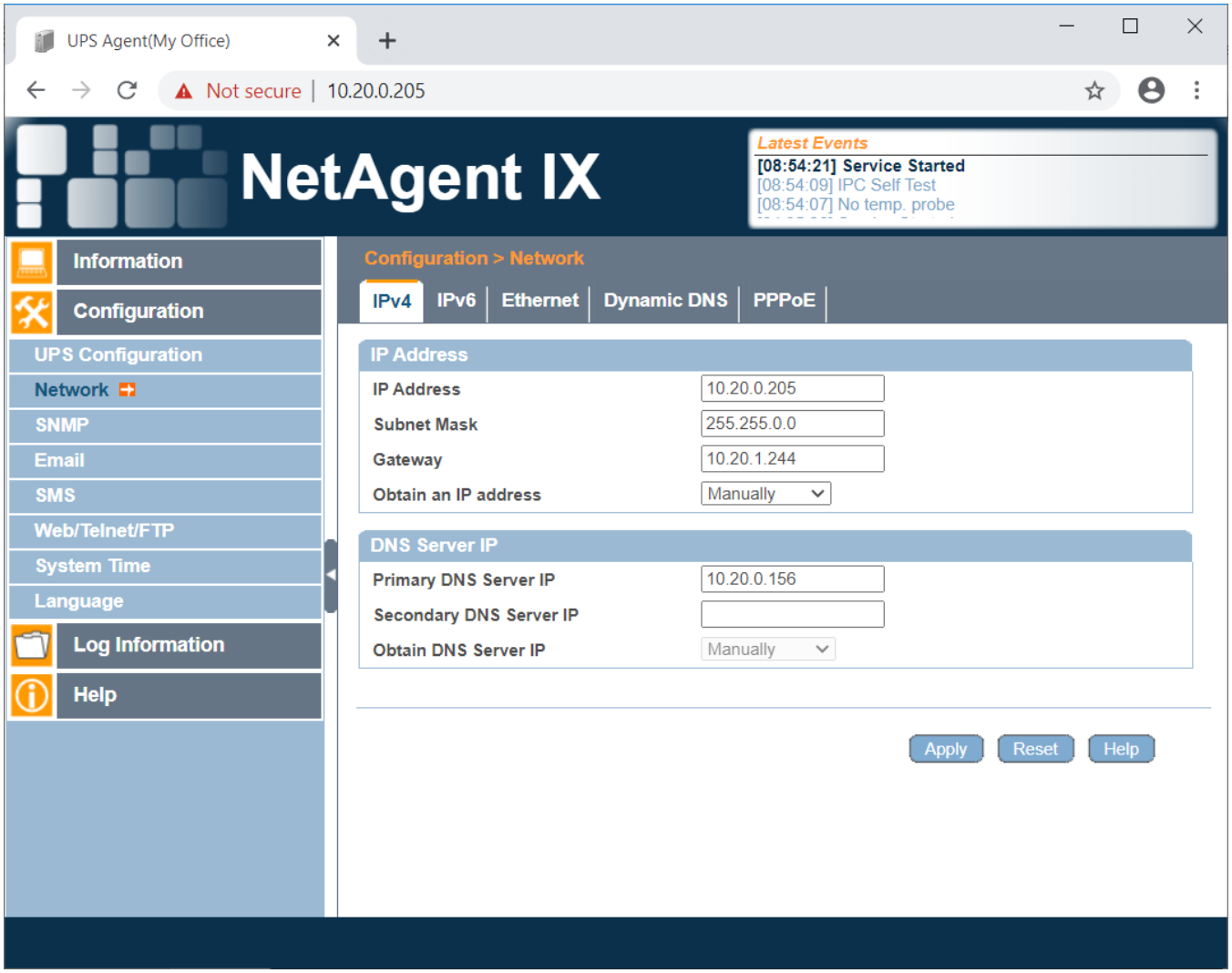
Configuration – Network Settings:

Several network parameter tabs are available for the user to configure settings. IP settings for both IPv4 and IPv6, Ethernet card settings, Dynamic DNS settings, and PPPoE settings are available for the user. The tabs for IPv4 and Ethernet are widely used in the application of the EP2200. Other option listed are available for use but are largely outside of the scope of use for the EP2200 and will not be presented in depth.



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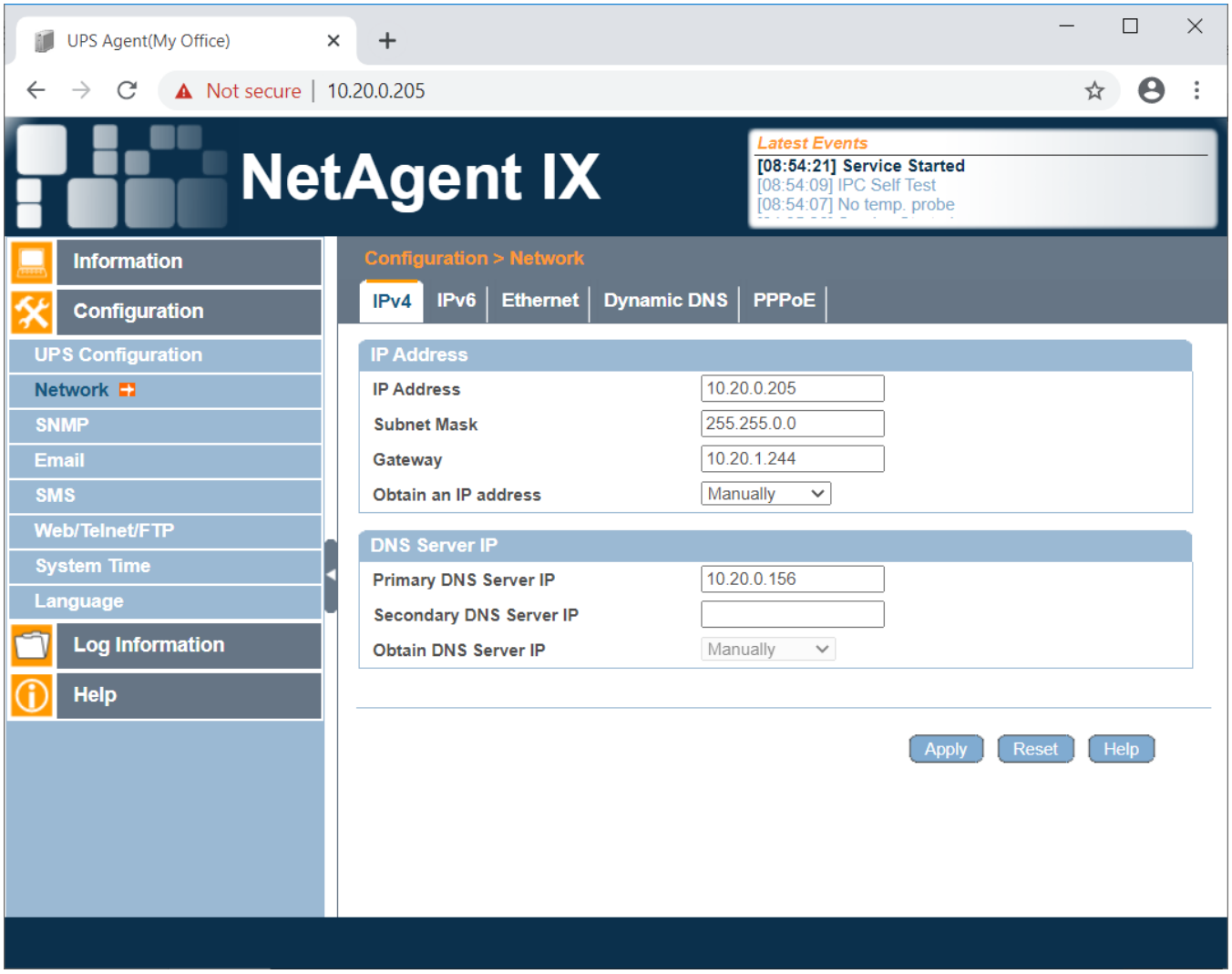
IPv4 Settings:

This is the primary network settings tab for each NetAgent network card. The user may modify the network parameters required to establish communication with each network card. IP address, subnet mask, gateway, DNS addresses, as well as selecting to manually enter a static IP address or enable DHCP, are available on this tab. Be sure to click “Apply” to save settings. Click “Reset” to restore the default values for each option, which are shown below. Note that the network card will restart if these values are modified. **NOTE**: IF these settings are modified remotely, loss of network communication may occur if entered incorrectly.



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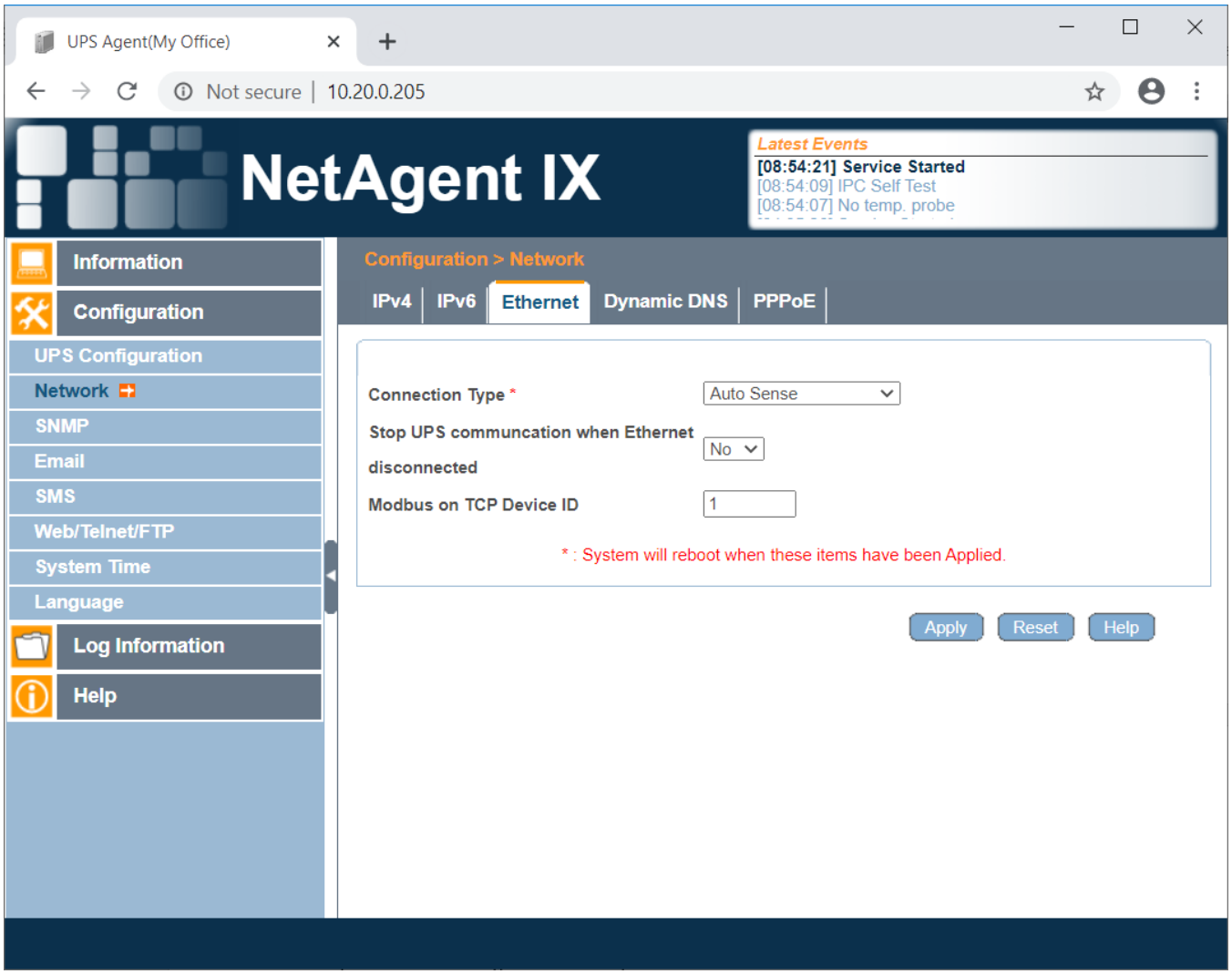
Ethernet Tab:

By default, the Ethernet port is setup for auto-sense detection of the network connection type. However, the user may select a specific connection type from the list provided, such as 10Mbps or 100Mbps, half or full duplex.



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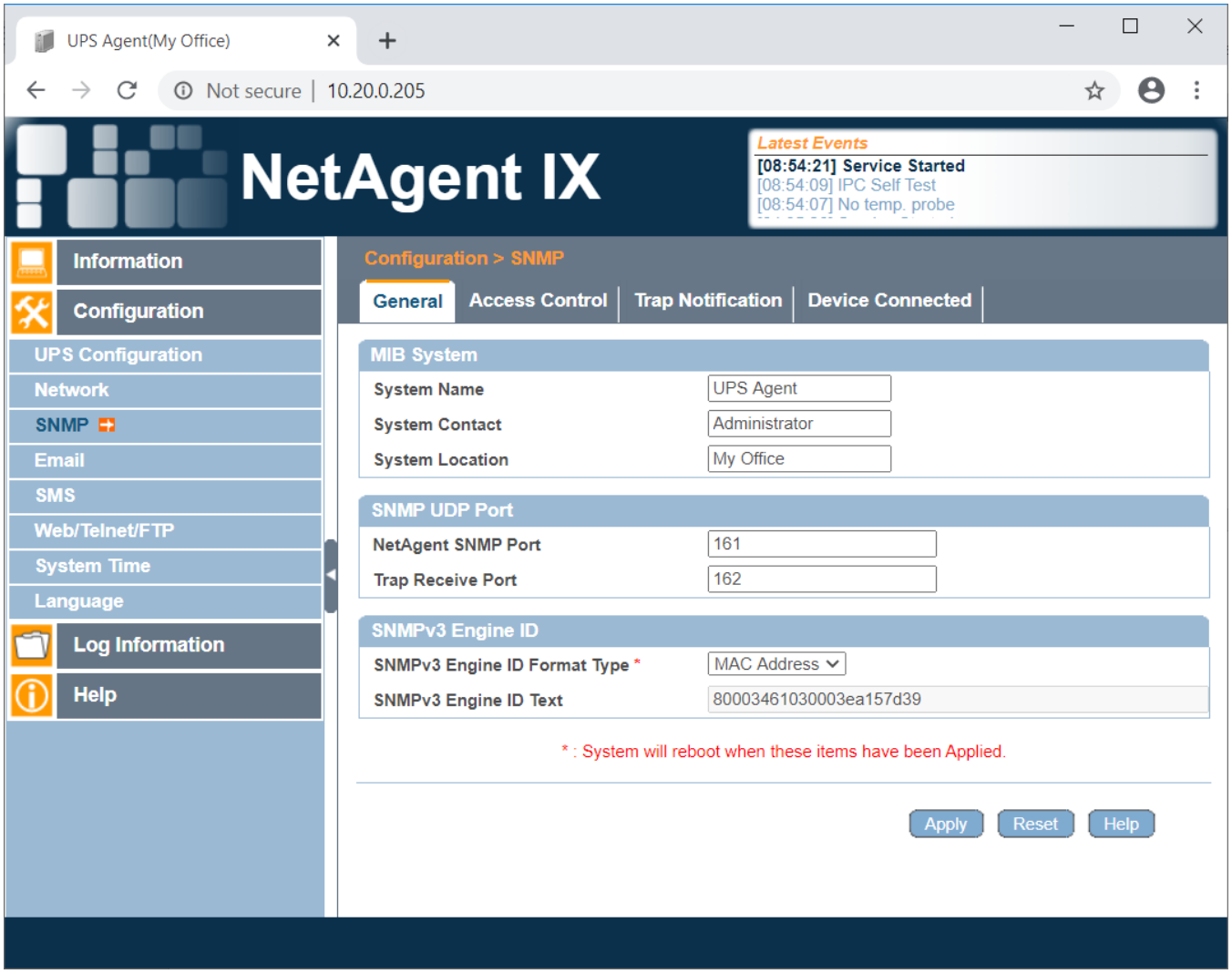
Configuration – SNMP

Simple Network Management Protocol (SNMP) is a useful tool for remotely monitoring each EP2200. It can automate the notification of events, known as Traps, that occur for each EP2200, such as loss of input power. This page allows the user to configure the necessary client (agent) and server (manager) addresses, ports, as well as security settings to establish an SNMP connection for all three SNMP versions. The General Tab allows the user to modify the name, contact, and location of the EP2200, as well as establish the ports for both the agent and manager for which traps will be forwarded. Additionally, the user may select the SNMPv3 Engine ID Format Type and Text for unique entity identification purposes. Be sure to click “Apply” to save settings. Note that the system will reboot after these settings are modified.



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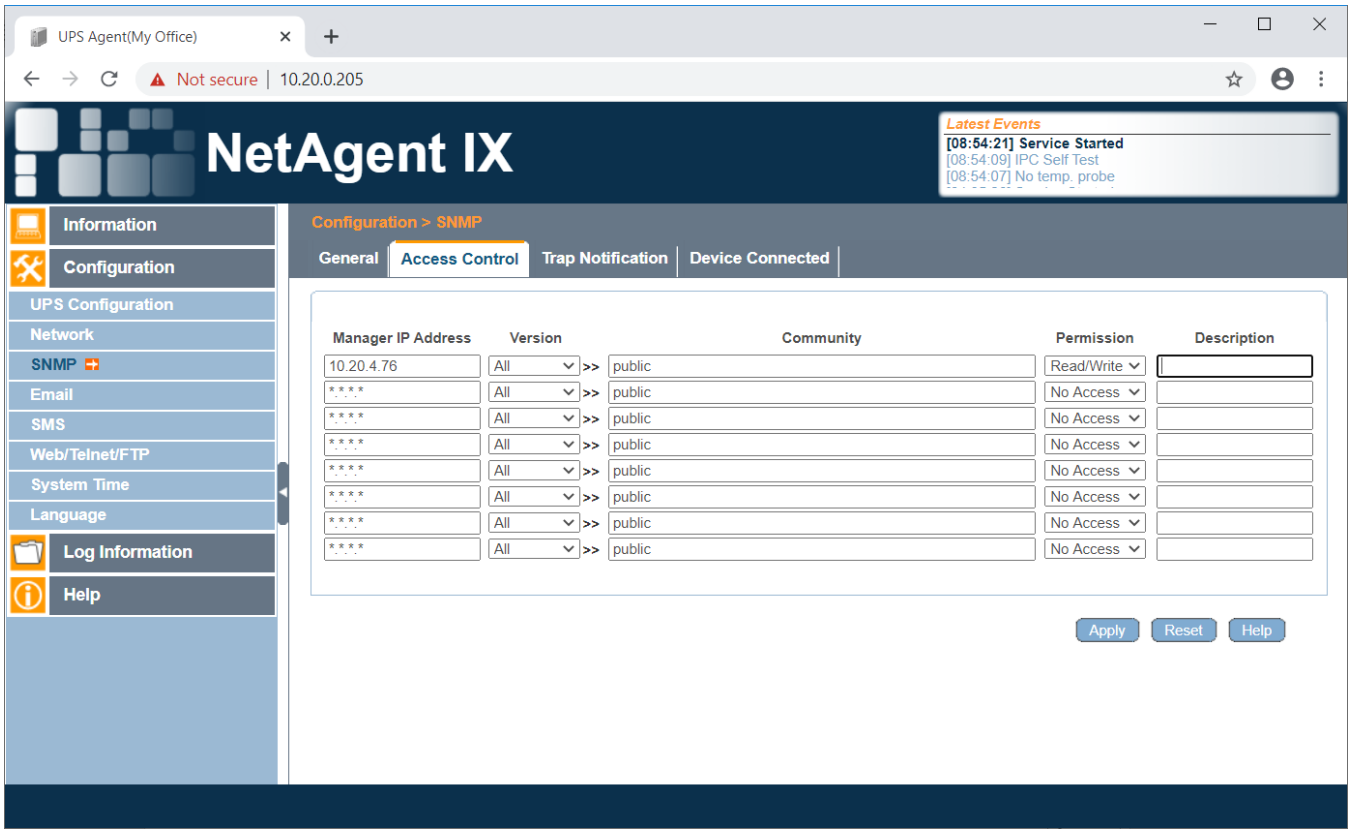
Access Control:

Access control is used to define the SNMP server (manager) IP address from which one or more managers may initiate SNMP communication. Users may modify the IP address, SNMP version, community string, permission, and description of the connection for up to 10 managers. The user would enter the specific IP address of the machine (note that entering *.*.*.* allows any machine on the network communicate with this SNMP agent), modify the Community string, if required. This string is required to match for both the agent and the manager for communication to be allowed. Users may select permission types such as Read, Read/Write, or prevent access all together.



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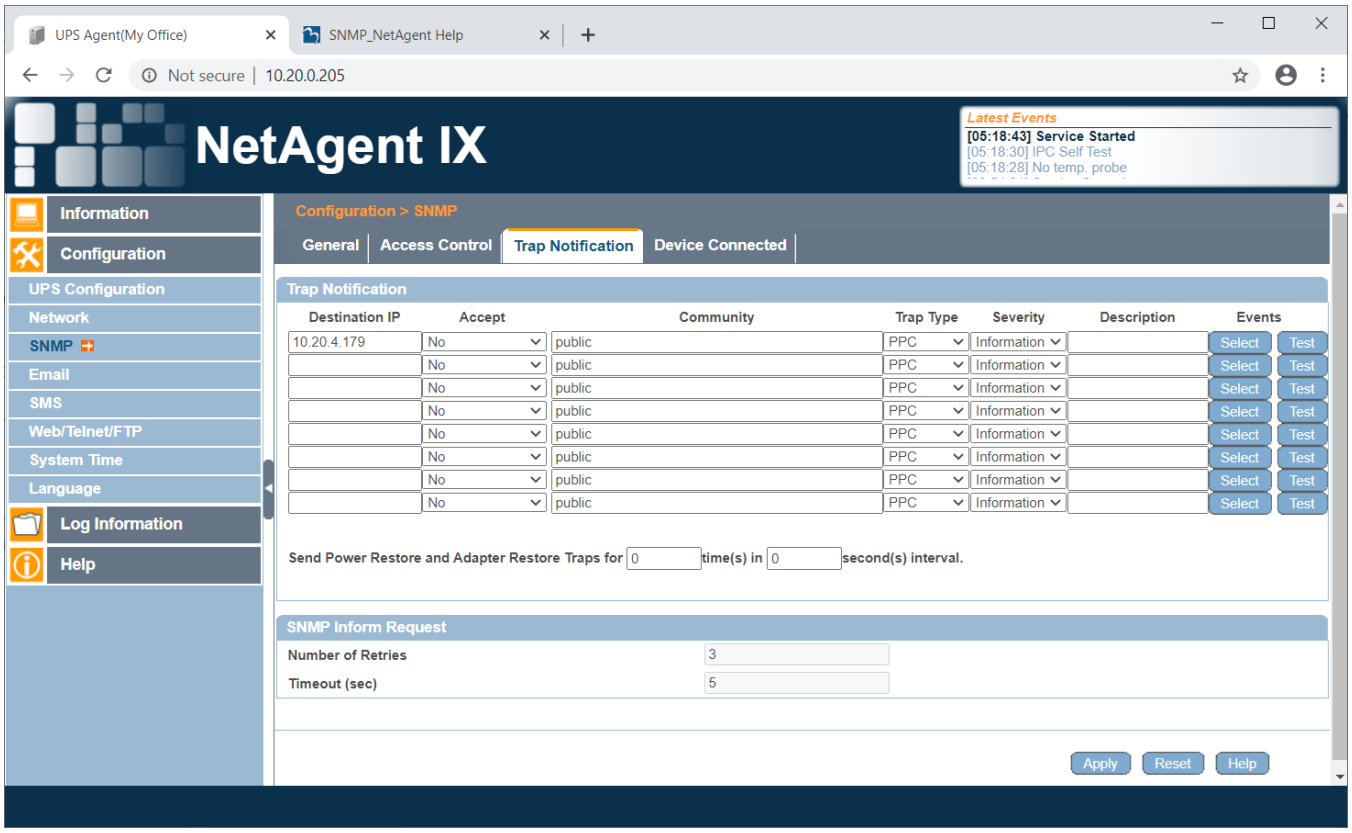
Trap Notification:

A feature of SNMP, Trap notifications can provide automated notification of events that occur with each EP2200 or NetAgent network card. If Trap notifications are required, the user will modify the information on this page. The destination IP is the address for which trap will be sent and received. This IP address may coincide with Manager IP address in the previous section or may be modified for up to ten destinations. The user may change the accept type to fit the SNMP protocol version and type required for the network. Additionally, the user may modify the community string, trap type, issue a severity level, describe the destination, or select and test the connection to ensure trap delivery. SNMP inform requests may also be issued, with the number of retries and timeout selectable. Be sure to click “Apply” to save changes.



SNMP MIB File:

The management information base (MIB) is an important text file that is used by an network management solution (NMS) tool, such as a MIB browser or NMS suite. This file contains the object identifier (OID) for each item that may be read or written to. These objects are the EP2200 operating parameters. The standard **UPS-MIB** (RFC 1628) is used to receive SNMP objects for the EP2200. This file may be downloaded from www.ietf.com and used with an NMS tool to perform SNMP communication with the EP2200.

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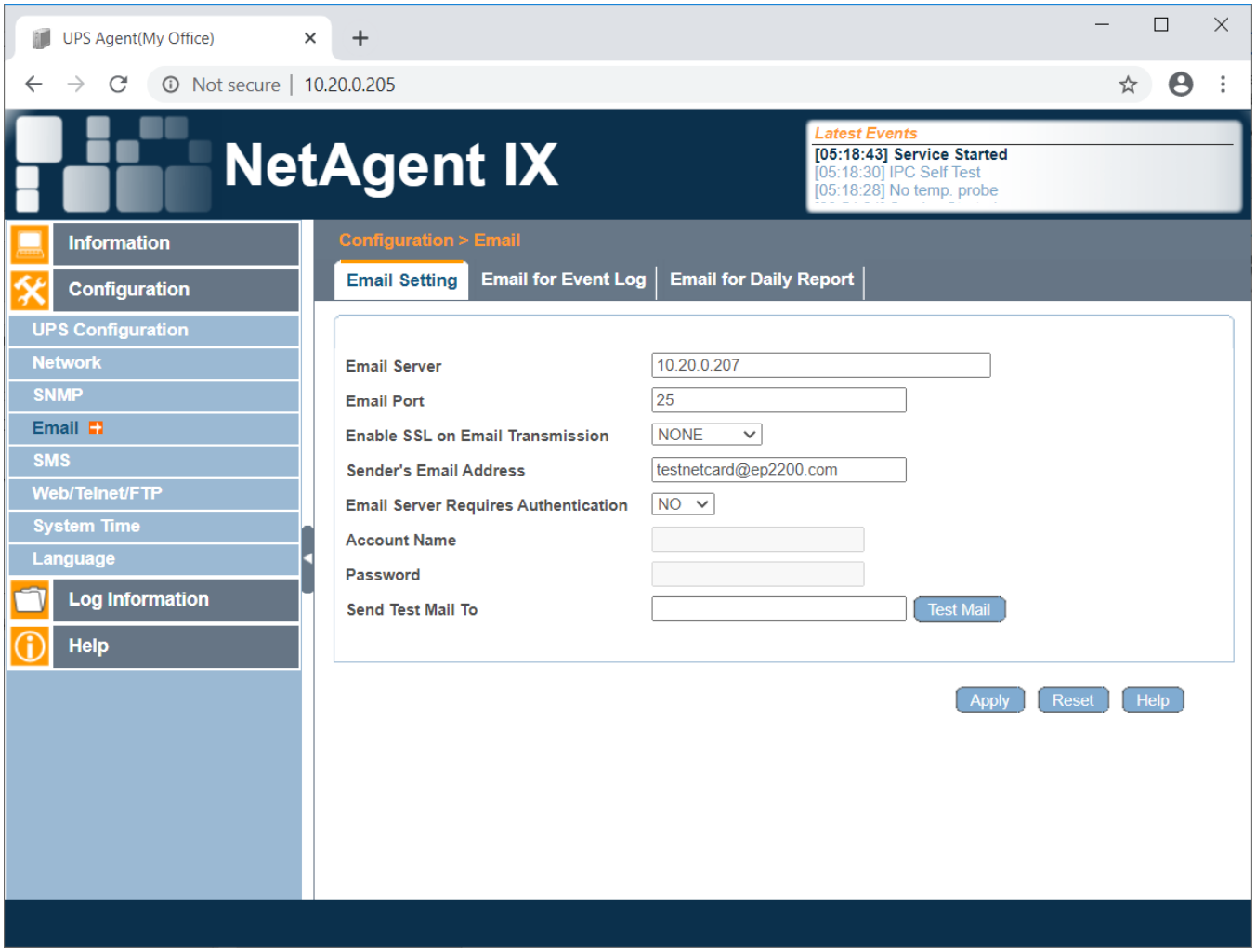
Configuration – Email

The NetAgent can automatically forward emails to a list of recipients when the EP2200 experiences an event. These events are displayed and described for each EP2200, with pertinent information about the event, the time and location of the event, etc. The user may assign the SMTP network parameters to each network card, as well as add a list of recipients. The user may need to consult with the network administrator to acquire the necessary information shown below to establish an email connection. This will require the user know the network's SMTP or email server IP address, port for email forwarding, authentication credentials, if required, and a useful sender's email address to apply to each network card. After applying the settings, the user may send a test email to verify the connection.



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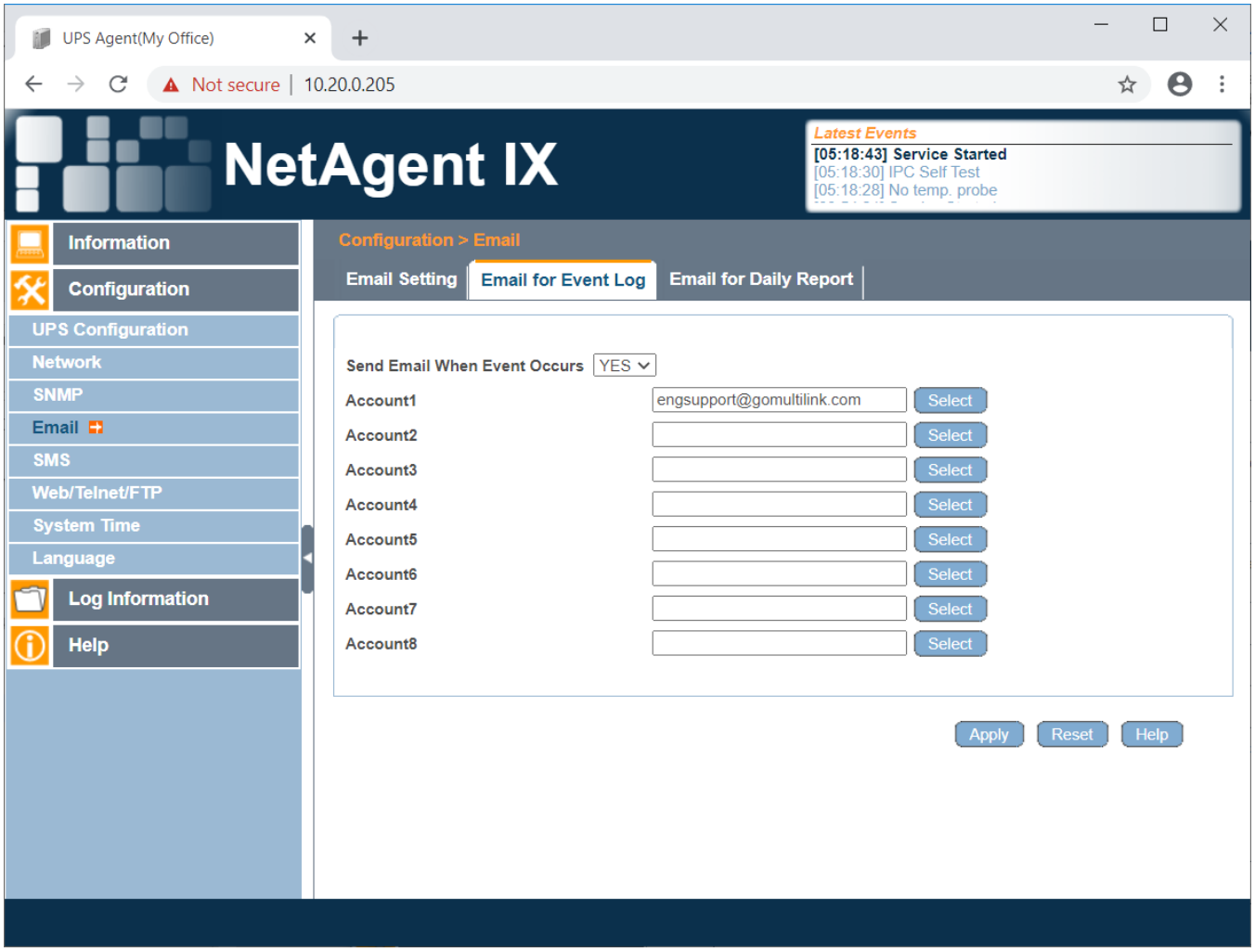
Email for Event Log:

This page allows the user to enable automated email notification as well as enter multiple recipients of the emails. Users should enter the email address of the user that is to receive the email next to each account. Be sure to click “Apply” to save settings.



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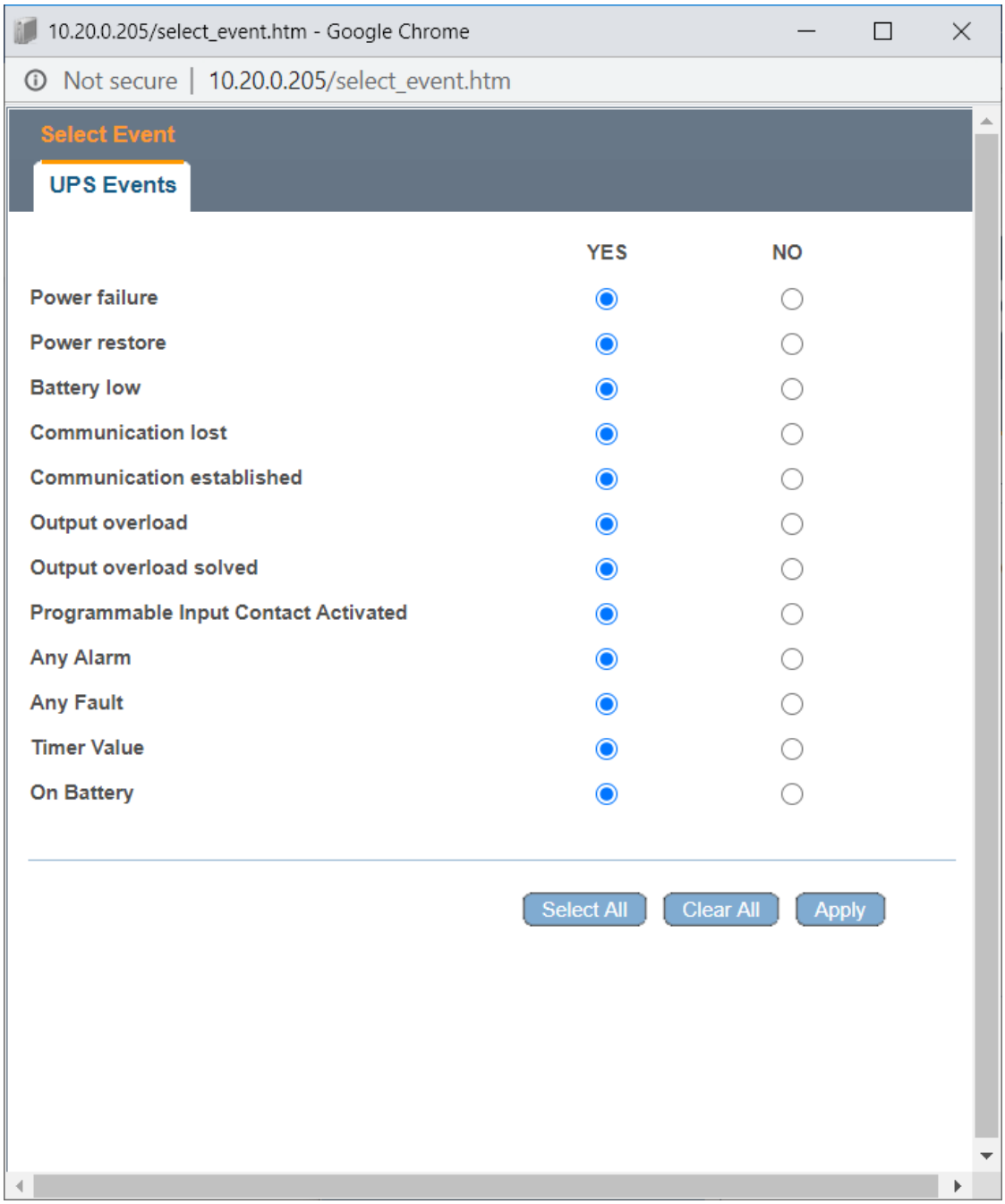
The user may select any number of events to receive an email notification. Click the “Select” button next to each account and a window will display, allowing the user to select or deselect specific events. Click “Apply” to save selections.



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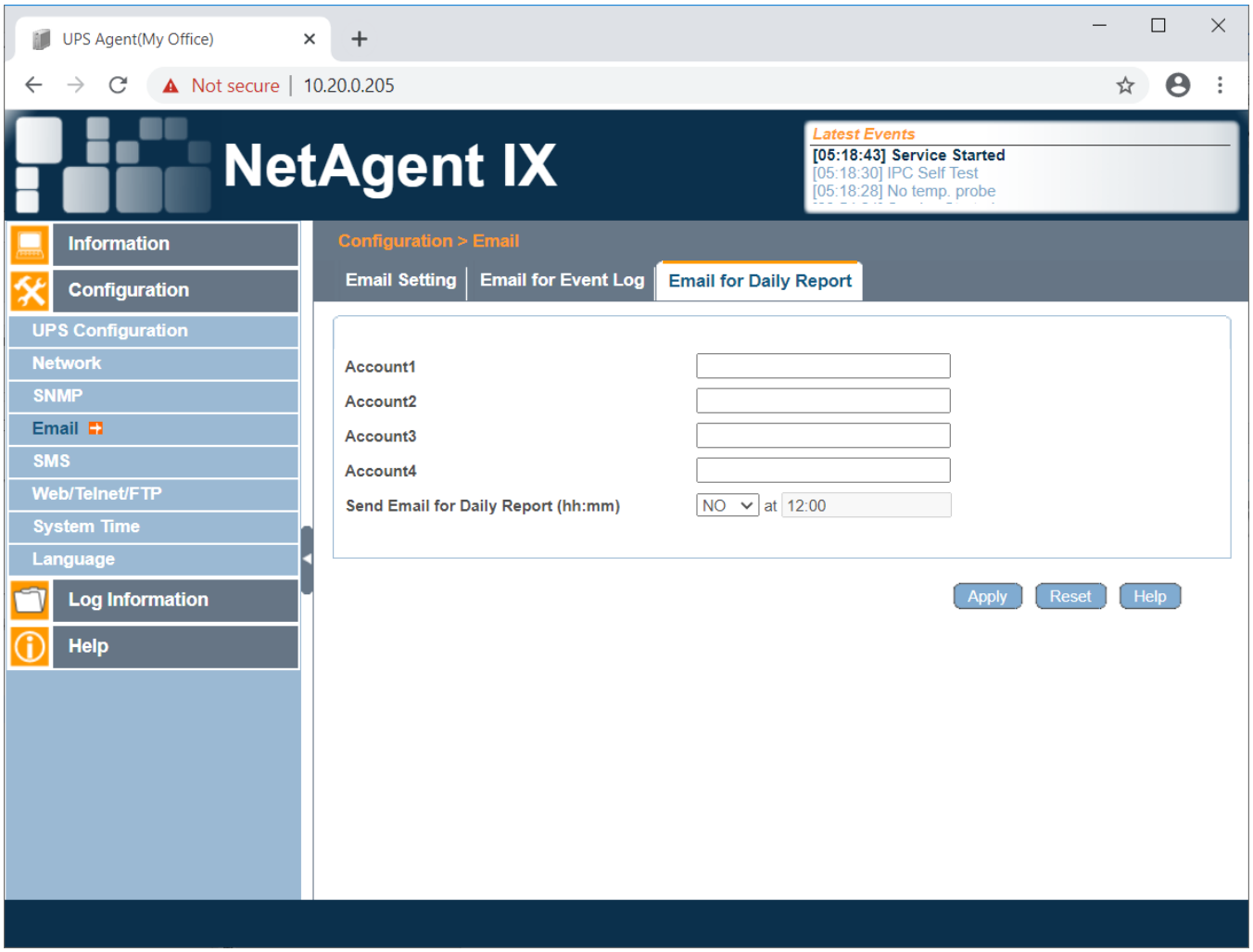
Email for Daily Report:

If the user would like to receive a daily report for the respected EP2200, enter the email address of the recipients, enable automatic email reporting, and set the time of day for the report email to take place.



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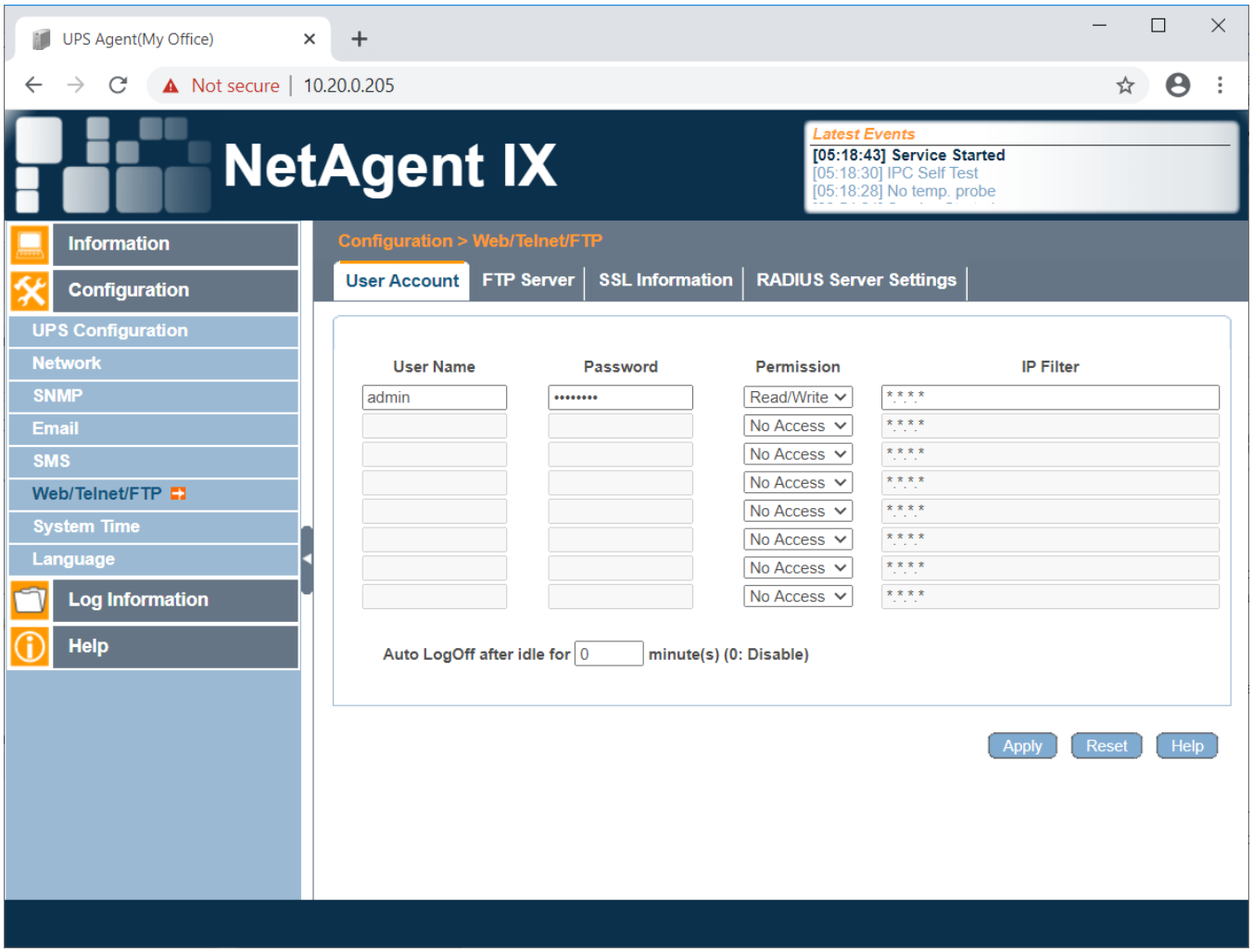
Configuration – Web/Telnet Account Information

The NetAgent network card can utilize Telnet to provide the user with another method for communicating and configuring each EP2200. Additionally, this webpage is used to modify the credentials for username and passwords. To use Telnet, a default user account is setup from the factory and the user may enter the default credentials in order to view the menu system. The default credentials are:

Username: **admin** Password: **user**

The user may view this webpage and choose to add additional users, modify the default account, and enable or disable access for each user. IP filtering may also be used to restrict access to the device, or left as "*.*.*.*" to allow any computer to access the network card.



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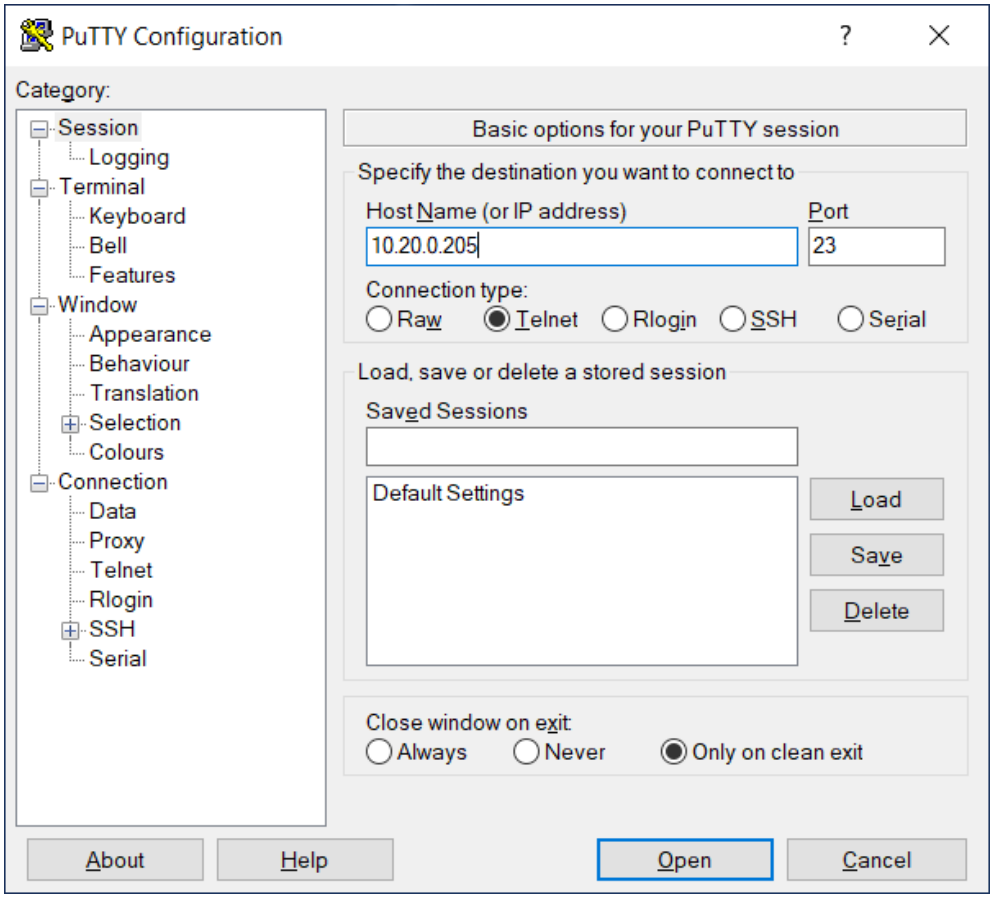
To view the menu via Telnet, a Telnet client program, such as PuTTy, is required for communication. Enter the IP address of the network card and open the session.



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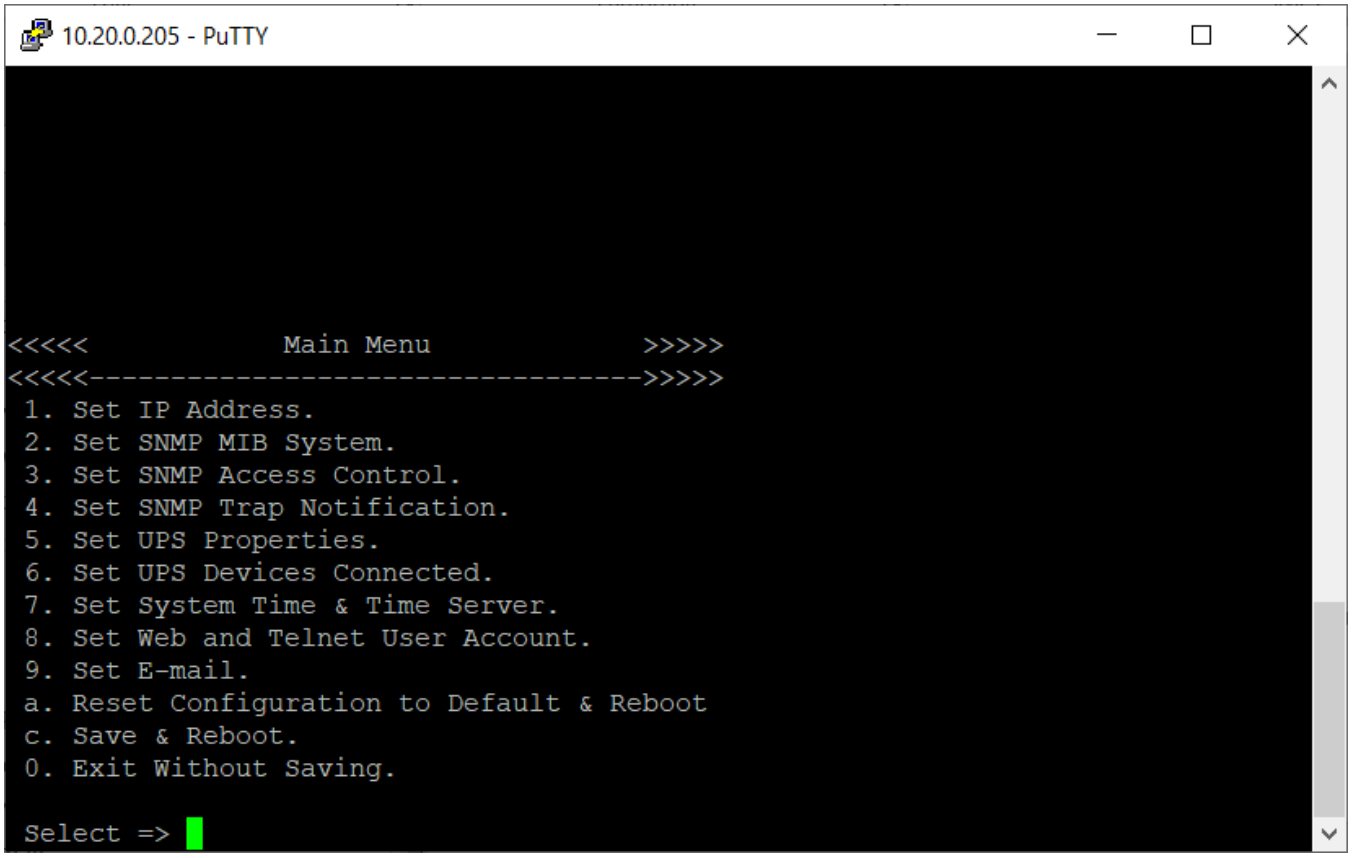
Press any button. The user will be prompted to enter the username and password and once verified, will be presented with the menu system. The user may then select a number and enter that number in the terminal to access any of the menus and modify the respective options shown. Each menu contains helpful instructions for each step to ensure accuracy of entering information and omitted from this guide for brevity.



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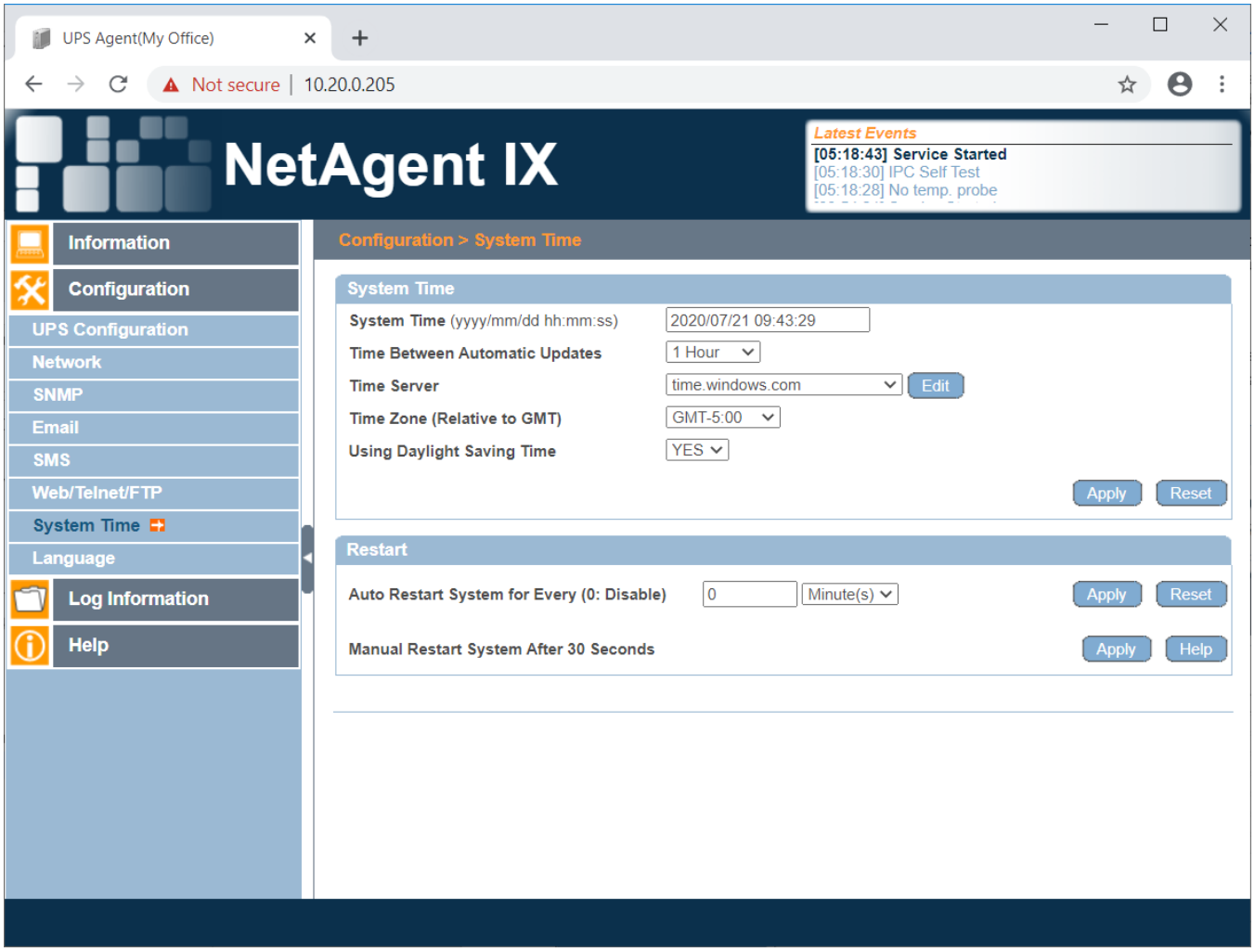
Configuration – Time Settings

To modify the date and time of the NetAgent network card, the user may view this tab and manually adjust the date and time, configure the NTP time server address, Time Zone, and whether to enable or disable Daylight Savings Time. The user may also wish to set an automatic update time or to restart the network card if the time cannot automatically be updated. Each network card contains a real time clock to maintain the date and time when powered off.



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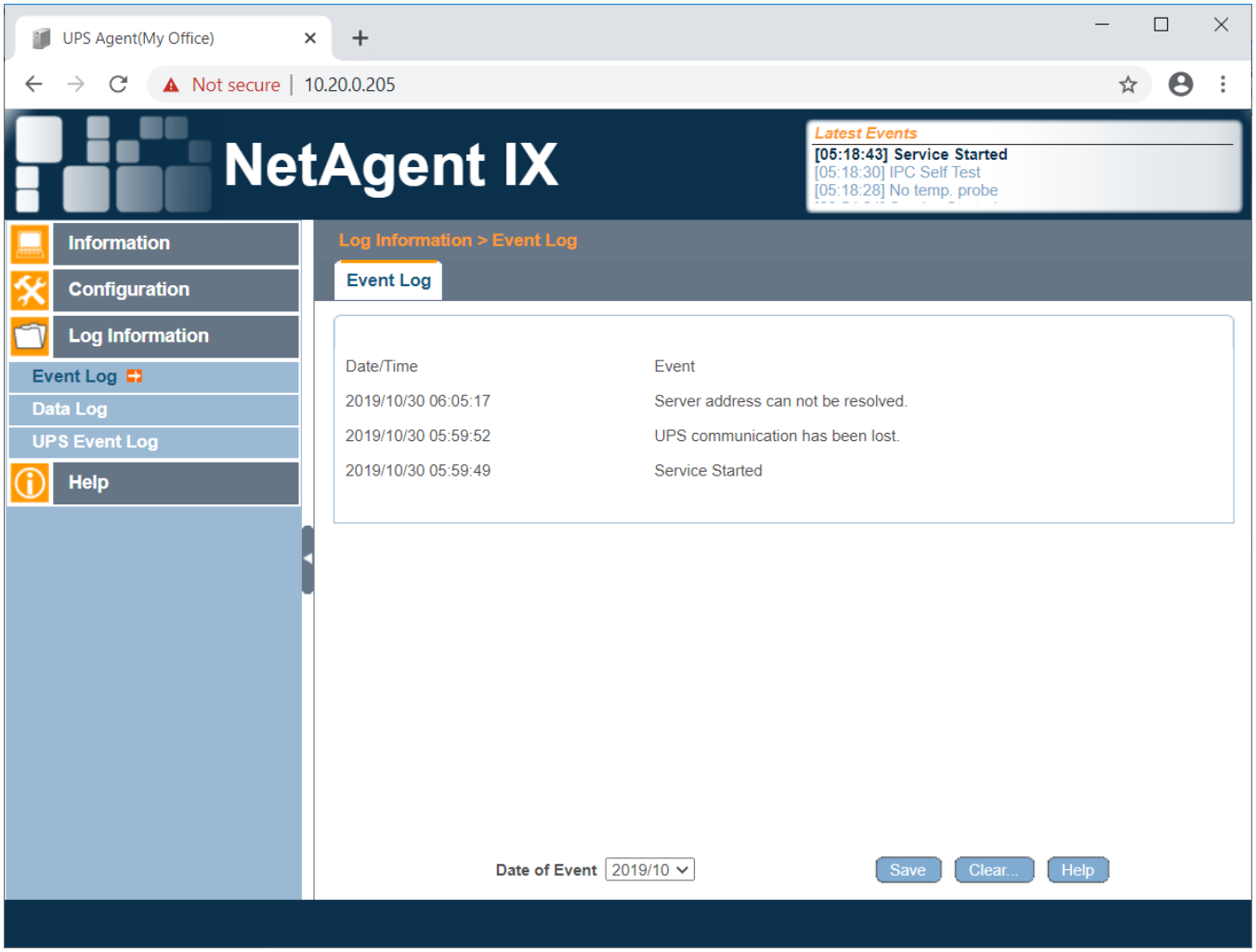
Network Card and UPS Event Logs:

Event logs for the network card, EP2200, and data collection are maintained for each EP2200 deployed. These event logs provide timestamped information that may be used for troubleshooting. Three event logs are available for viewing and may be downloaded for record keeping. Users may select the date range to review information and may also clear each event log independently.

Event Log:

This event log maintains a list of events that pertain to the network card and the EP2200. When service has started, if communication is lost, server address resolution errors, etc. are examples of events that may be stored in this log.



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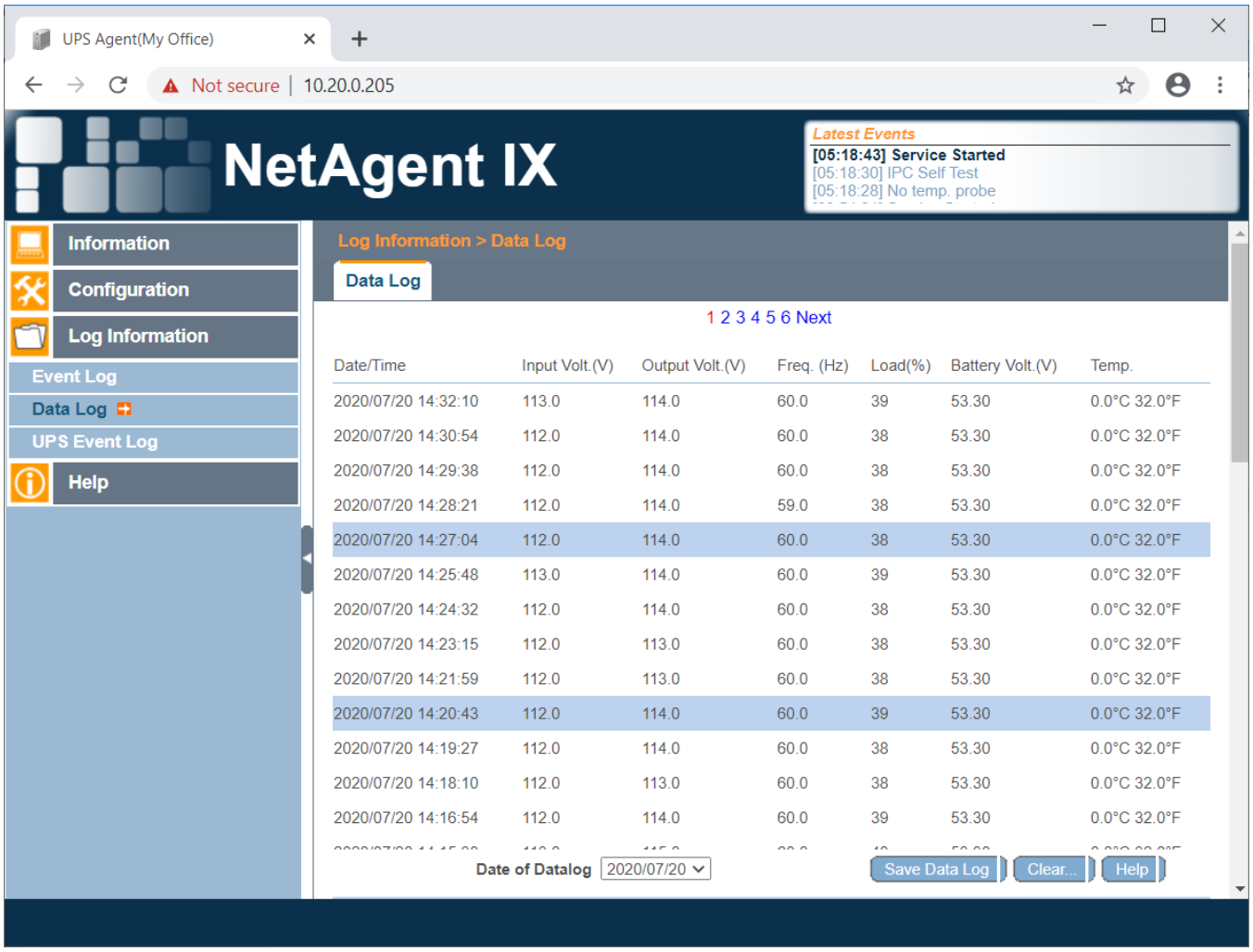
Data Log:

The information stored in this log coincides with the UPS Test log configuration time. By default, information such as input voltage, output voltage, power, battery voltage, and temperatures are recorded every minute. This information may be reviewed for troubleshooting specific issues regarding any of these data points.



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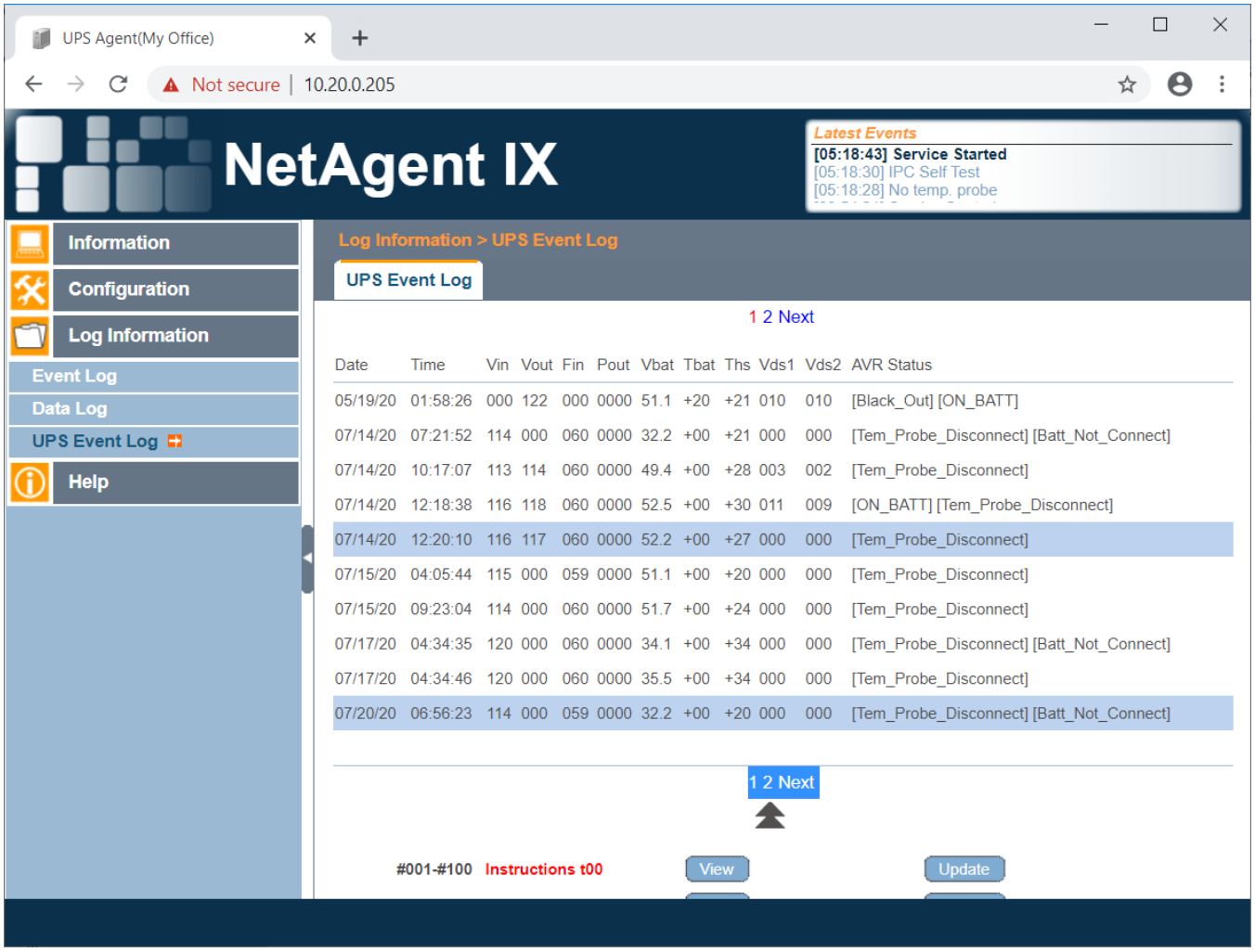
UPS Event Log:

The EP2200 records several pieces of information in regard to each event that occurs. For example, if the EP2200 experiences a power outage, a sample of the operating parameters is taken at the time of the outage and stored for review. This information may be used for troubleshooting specific events. Users may click the “Update” button in order to refresh the log. Several hundred events may be stored, so the user may want to update several times. Users may view this items 100 events at a time.



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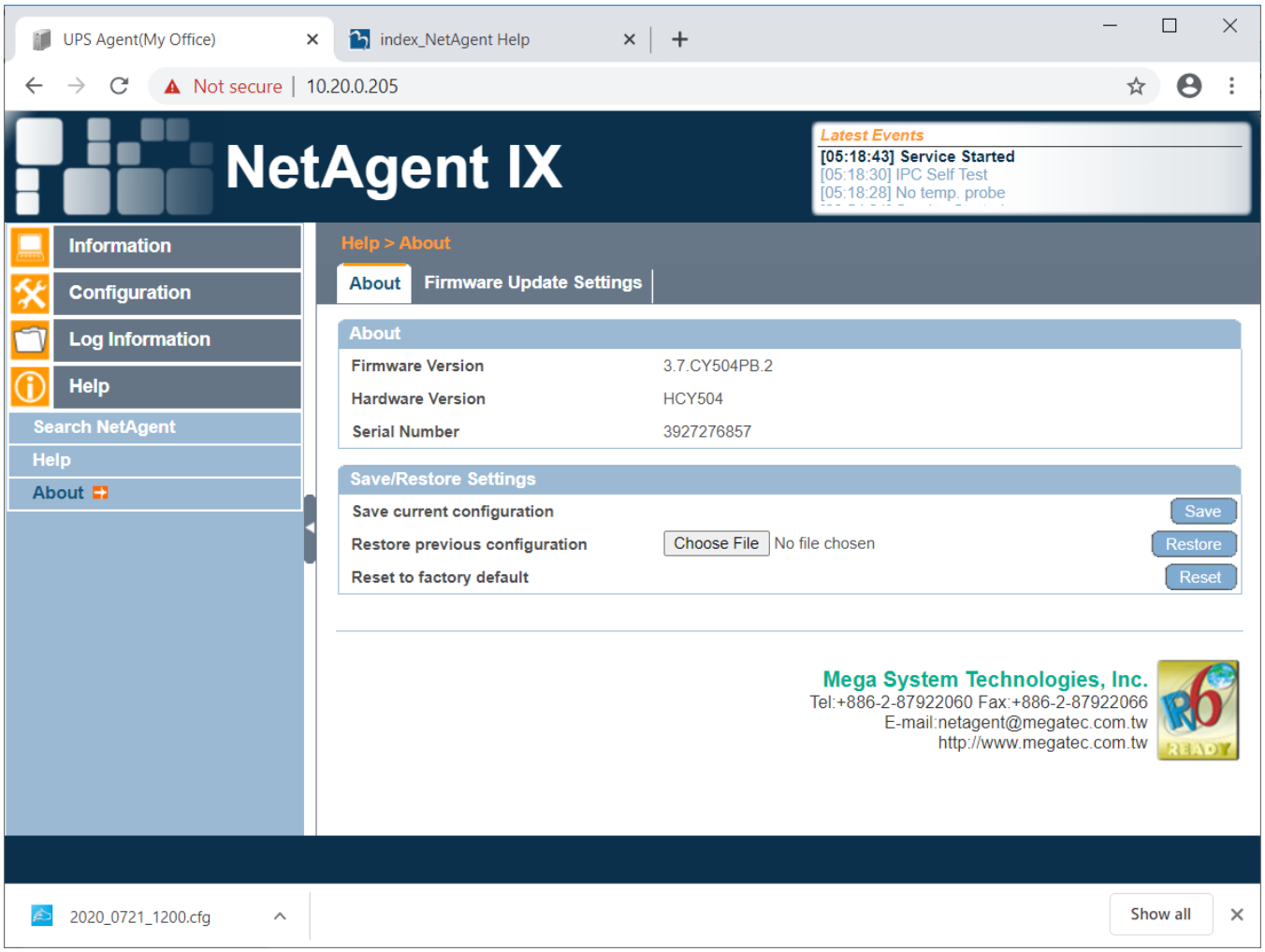
Help – Save and Upload Configuration:

The NetAgent has a useful feature that allows users to configure one device, download and store the configuration of that device, and upload it to several devices. This allows several network cards to be programmed with the same settings file quickly and efficiently, minimizing time to deployment. In the Help Tab, select the About tab to save the current configuration. Users should save and rename this file to upload to new network cards, or to restore a network card to a previous configuration. To save the current configuration, click “Save” and a file with the file extension of “.cfg” will download. To upload the file to configure a new network card or restore a previous configuration, click “Choose File” and select the appropriate config file. Click “Restore” to apply the settings. Users may also “Reset” the device back to its original settings as well.



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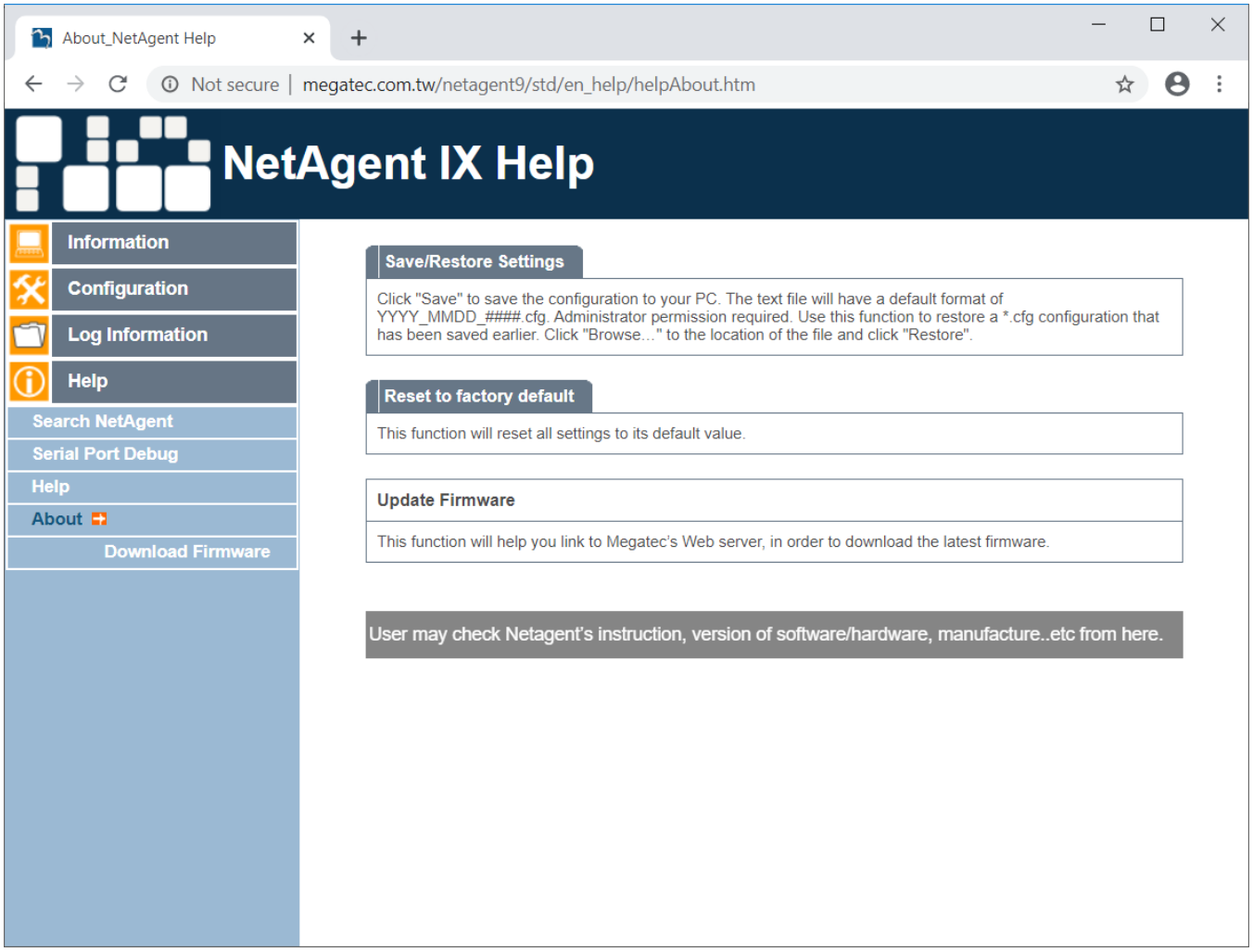
Help – More Information:

For information that is not explicitly listed in this guide, select “Help” from the Help tab, and a new window will open, providing the user with a useful guide, further explaining items on each page.



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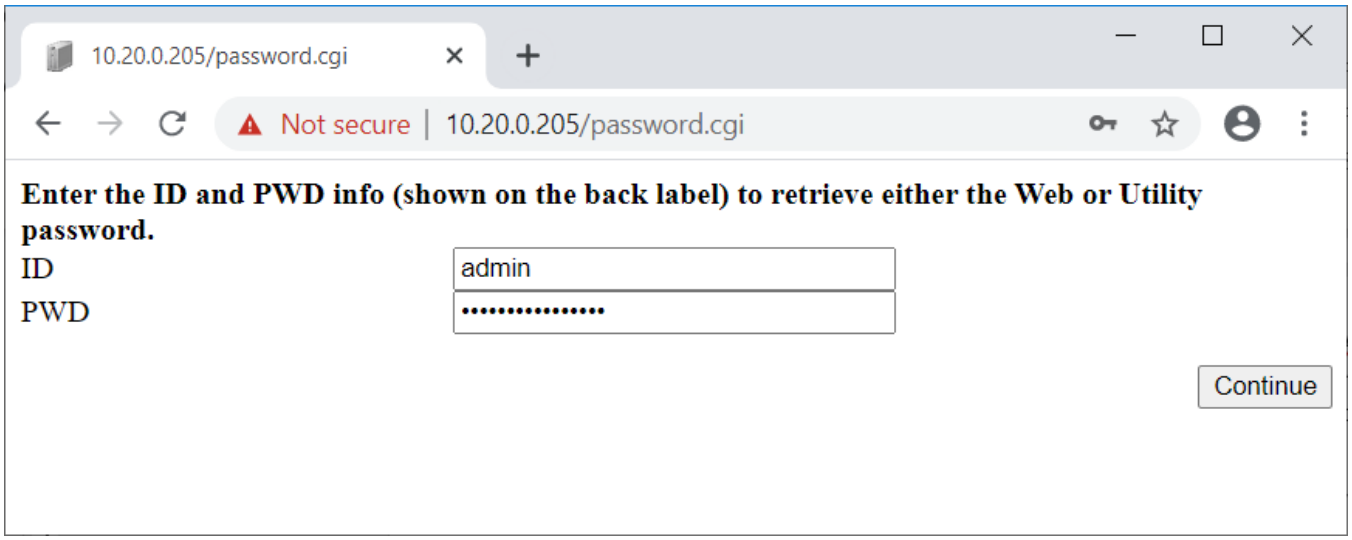
Additional Resources:

With each NetAgent network card, a CD containing user manuals, useful software tools, and files that may be used to further expand the capabilities of the network card are included with the network card packaging. The user may elect to download the Netility Tool to assist with configuration of network cards. This tool is used to modify username and passwords, restore factory settings, and configure network settings. It is not required to utilize Netility or any software contained on the CD to communicate with the network card or EP2200. Additional resources may also be found at www.gomultilink.com or by emailing engsupport@gomultilink.com.

Login Troubleshooting:

In the event that the username and/or password are lost for the NetAgent network card, the user may enter a special webpage to access this information. Access to this webpage requires knowledge of a unique hardware ID that is physically printed on each network card. The user would access this information by entering the username “admin” and the hardware ID at the following web address to retrieve credentials.

X.X.X.X/password.cgi where “X.X.X.X” is the currently assigned IP address.



For additional troubleshooting assistance, please contact engsupport@gomultilink.com or call 440-366-6966.

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INSTALL AND OPERATION