INSTALLATION INSTRUCTIONS

MicroComm DXL

IMS-641 VoIP Intercom Master Station

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1. Intent & Scope

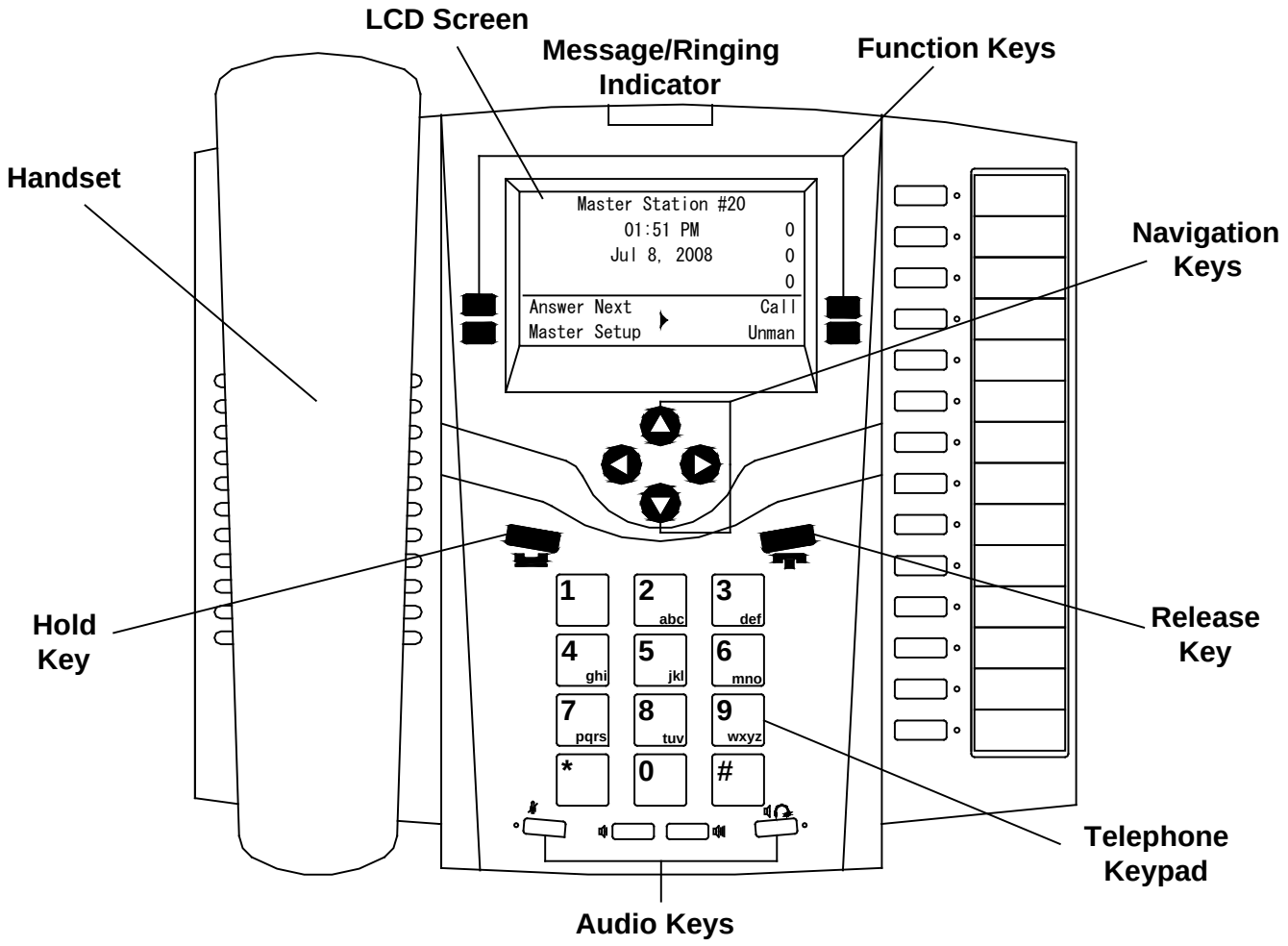
This document describes the installation and setup procedures for the DXL IMS-641 VoIP Intercom Master Station.

2. Description

The IMS-641 is a telephone style intercom master station that uses Voice over Internet Protocol (VoIP). The IMS-641 connects to an exchange via the inter-exchange Ethernet network.

The IMS-641 includes a large 128x64 pixel graphical display and provides the operator with audio communication, paging, and monitoring functions as well as alarm and control functions. It also permits the operator to receive and place calls, answer call requests, make public address and station group call announcements, and manage system background music operations. Other features include the ability to acknowledge, cancel, and reset incoming alarms and to monitor, activate and deactivate output points.

The following diagram shows the IMS-641 and the key designations.



IMS-641 Showing Key Names

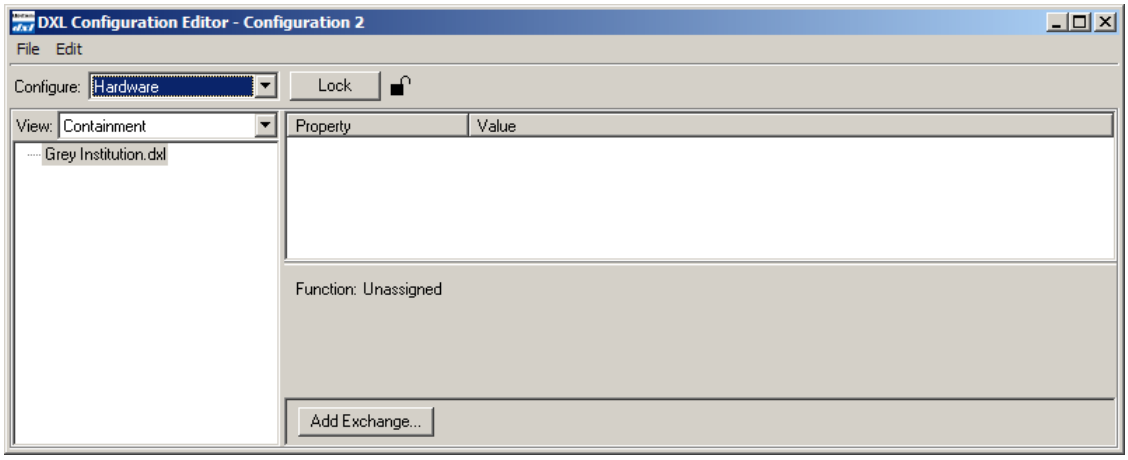
The IMS-641 is powered by a 36Vdc wall adapter power supply (included with the IMS-641) or through Power Over Ethernet (PoE) through the "LAN" Ethernet port if you have a PoE capable network switch.

The functional operation of the IMS-641 in a DXL system is carried out using the DCC software. Three procedures are required to configure an IMS-641 master station:

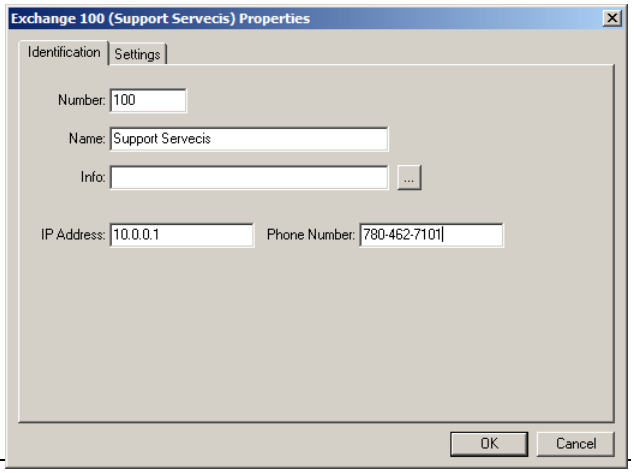
1. Configuring an IMS Master using the Administrator
2. Use DHCP to set the IP Address of the IMS-641 master station
3. Use a web browser to configure the IMS-641 master station to operate with the MicroComm system.

3. Configuring an IMS-641 with the Administrator Software

The Administrator Software is used to create a configuration where a particular VoIP port must be assigned to each VoIP IMS-641 master station. The first step in creating a configuration is to create all the Exchanges in the system. The following **DXL Configuration Editor** screen allows you to **Add Exchange…** to the configuration

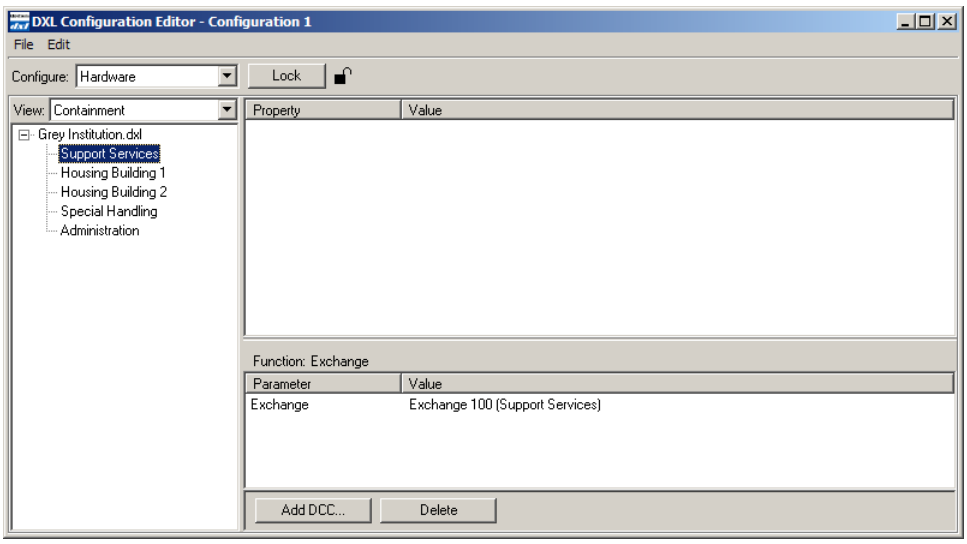


Click on the **Add Exchange…** button and the **Exchange Properties** text box with two tabs will pop up. In the **Identification tab** you need to type in a **Number:** for the exchange, the **Name:** of the exchange and assign a unique **IP Address:** to the exchange.

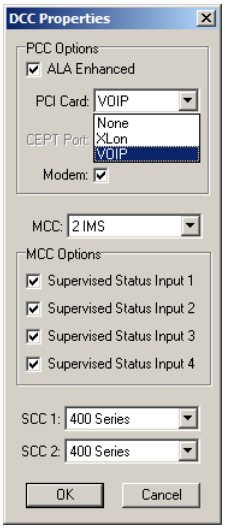


Once all the exchanges have been created each exchange requires a DCC. After the DCC has been configured DCEs, TBEs and PZEs can be added to the exchange as required.

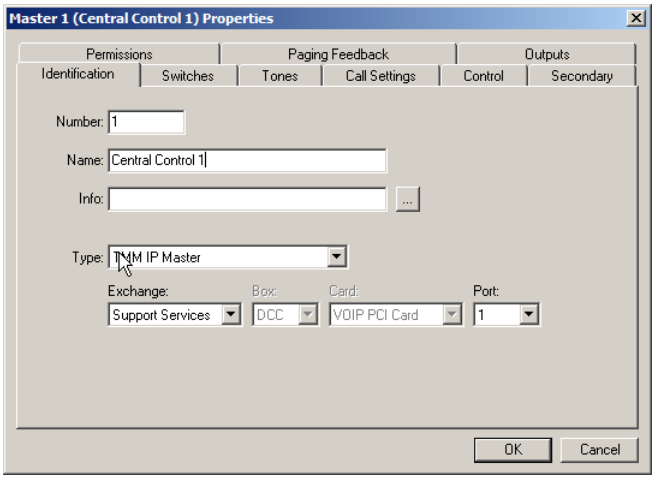
Using the pull-down menu and setting the **Configure:** entry to **Hardware** in the **DXL Configuration Editor** and selecting one of the Exchanges you can now add a DCC to the exchange.



Click on the **Add DCC…** button to bring up a **DCC Properties** text box as shown on the right. Use the check boxes and pull-down menus to configure the DCC. In this example you are going to use VoIP master stations so the **PCI Card:** should be set to **VOIP**. Once you select **VOIP** the **CEPT Port** entry will be dimmed and cannot be selected. When the parameters of the DCC have been set click on the **OK** button and return to the **DXL Configuration Editor**.



To add an IMS-641 VoIP master station set the **Configure:** entry of the **DXL Configuration Editor** to **Masters** then click on the **Add…** button to bring up a **Master Properties** dialog box. In the **Identification** tab you need to assign a **Number:** to the master station, a **Name:** for the master station and use the pull down menu to select the **Type:** of master station. In this case we need to specify that it is an IP Master.



You must specify the **Exchange:** associated with this master and assign a unique port number for the IP Master using the **Port** pull-down menu. By default the next available port will be displayed.

4. Setting the IP Address for the IMS-641

Every device connected to the inter-network Ethernet network in a DXL system must have a unique IP address.

The IMS-641 has to initially be given a temporary address from your network by using a DHCP (Dynamic Host Configuration Protocol) server. In order to configure the masters you will need a computer or device (such as a router) that can assign DHCP addresses. This is used for initial configuration only. After the masters have been configured, they will use Static IP addresses, and DHCP will no longer be required.

You can use a router that has DHCP enabled, a server with DHCP software, or temporarily install and run DHCP server software such as OpenDHCP onto a technician laptop to temporarily assign DHCP addresses.

After you have set up a computer or device which acts as a DHCP server, connect up the Ethernet port marked "LAN" of the IMS-641 to the network switch that the DHCP server is connected to. The network switch should assign an IP address to the IMS-641. The IMS-641 will display its received DHCP address on the screen.

5. Using a Web Browser to configure the IMS-641

Once the IP address of the IMS-641 has been defined and connected to an Ethernet network, a PC on the same network can access the IMS-641 and use a web browser to set the remaining parameters necessary to make the IMS-641 work in a DXL system.

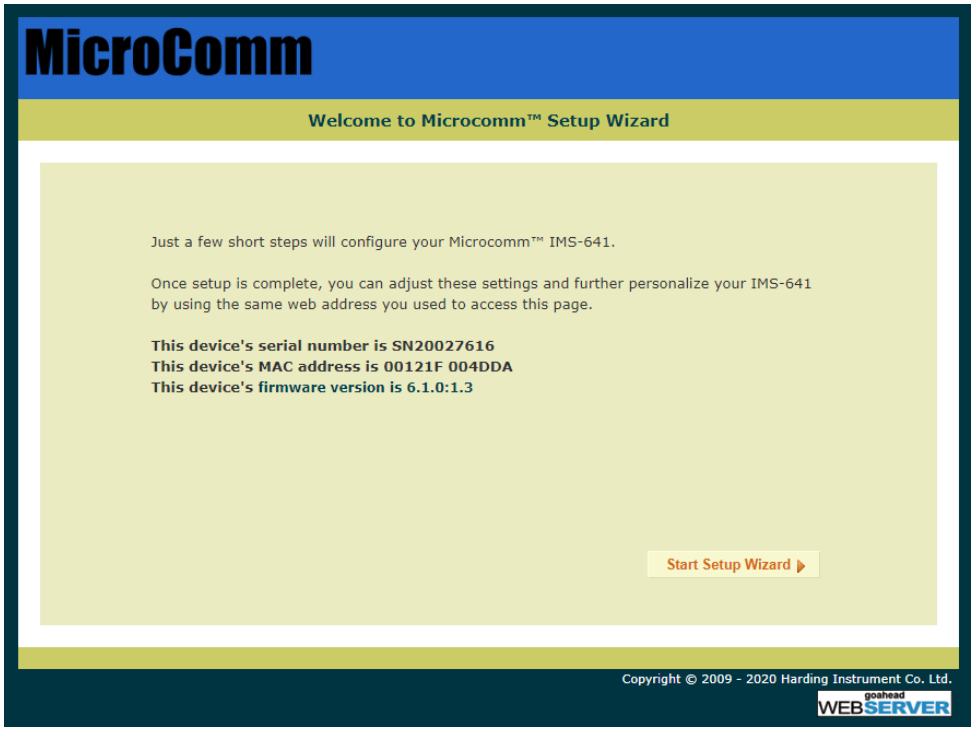
The first step is to hook up the top Ethernet port on the master to a network switch. Once the master has reset and has the setup screen displayed, you can bring up a web browser from a PC on the same network (that is assigned an IP address within the same network mask as the IMS-641).

In the address bar, type "**http://<address of master>**". For example if the master is 192.168.0.41, type "**http://192.168.0.41**". This will bring up a MicroComm DXL setup page.

If this is not the first time that the web browser has been used to configure the IMS-641 after a factory reset, the IMS-641 will skip the MicroComm Setup Wizard screens and go directly to the web browser menus. The user will have to sign in as the administrator (using the password assigned during initial configuration) to make changes to these settings. If this is the first setup after a factory reset then the user will have to enter some information before being allowed to go directly to the web browser menus. The following section describes the MicroComm Setup Wizard screens and how to configure them. The section after that describes the settings to make in the web browser menus.

5.1 Using the MicroComm Setup Wizard

If this is the first time that the IMS-641 has been configured with a web browser, the following screen will come up. If this screen is not shown, then the IMS-641 was likely previously configured, in which case you can skip to the next section.



Click the "**Start Setup Wizard**" button to continue.

On the first page, assign a **Workgroup Key**. This key can be any value you choose, but the same key should be entered on every IP master in the MicroComm system. In this example, "**microcomm**" is used for the **Workgroup Key** for this system. Once this is entered, click "**Next**" to continue.

Next, enter the **Extension Name** and **Extension Description**. Enter a short name describing this master in the **Extension name** setting. Enter a long description for this master as **Extension Description** (or leave it blank). Click the "**Next**" button to continue.

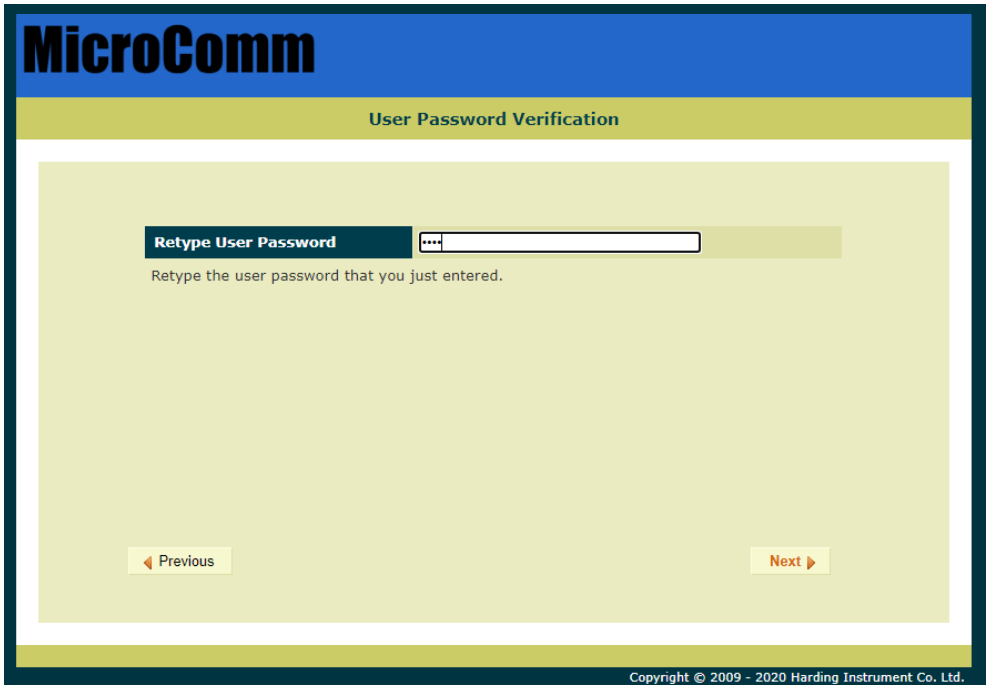
Next, enter the **Extension Number** for this IMS-641. This extension number must correspond to the IP master number configured in the DXL Administrator for this master. There can be only one IP master in the system that has this extension number. In this example, "**4005**" was used as the ID number of the master in the DXL Administrator, so this must be entered as the **Extension Number** of this IMS-641. Click the "**Next**" button.

Set the **DCC/Registrar IP Address** to the IP address of the DCC that controls the exchange that the master is associated with in the DXL Administrator. For example, in this case the IP address of the DCC of the exchange that the Master is associated with is "**192.168.0.211**". Once this is entered, click "**Next**".

Now set the **GMT Offset** time zone setting to an appropriate time zone where the master will be used, then click "**Next**".

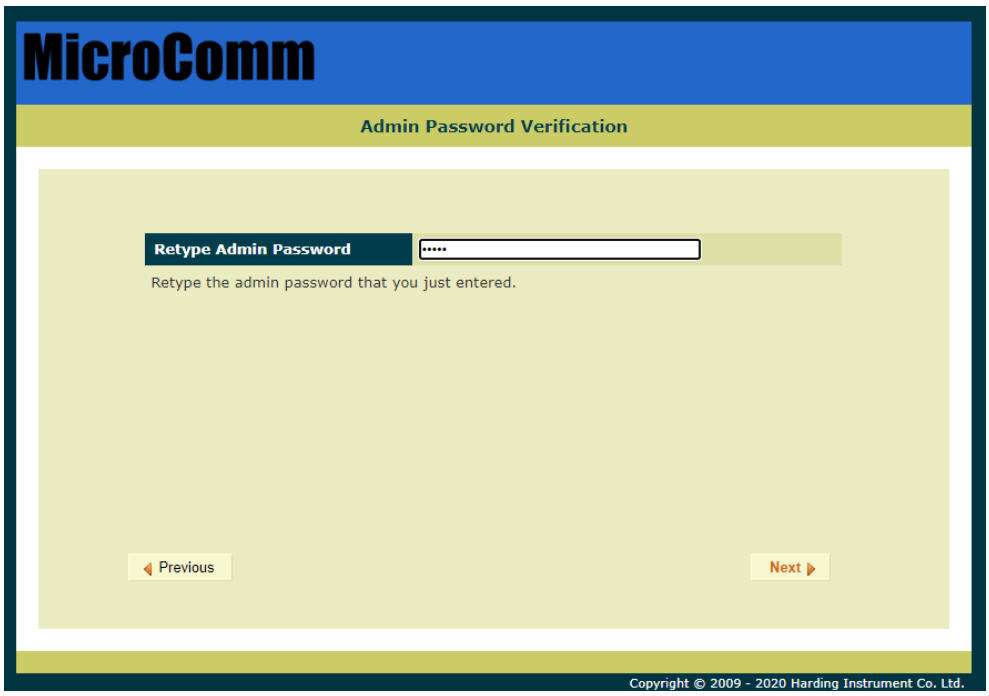
Next, enter a **User Password** for the user account on the IMS-641 then click "**Next**". This allows a separate account for install or maintenance technicians to examine the IMS-641 parameters, yet while not being able to modify them. In this case the password "**user**" is used Click "**Next**" after the password is entered.

In the following screen, re-type the same **User Password** to verify it, and then click "**Next**".



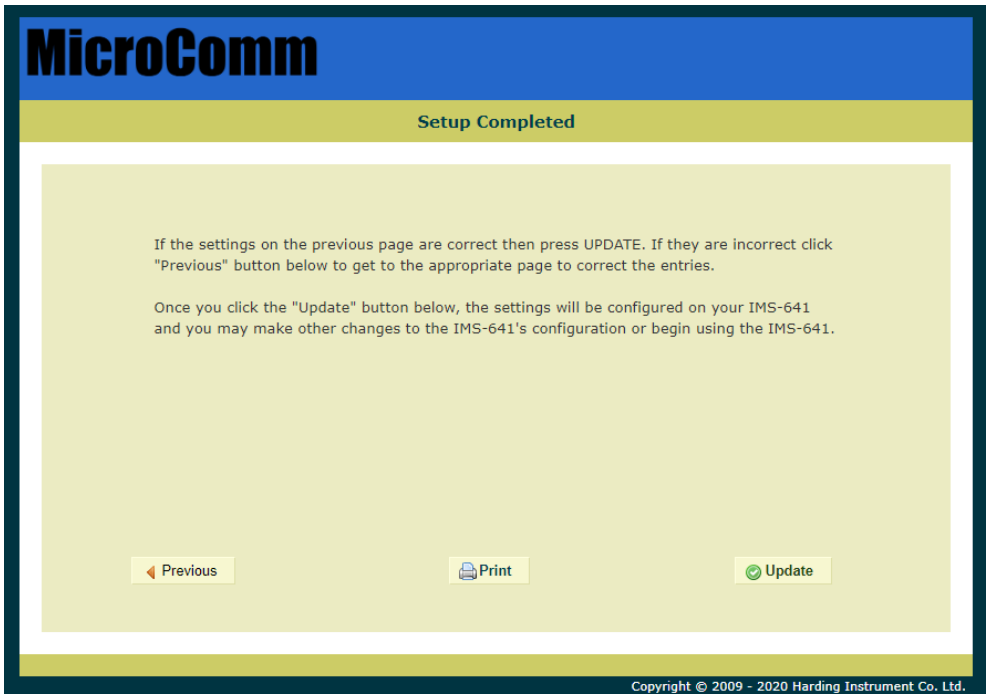
Now enter an **Admin Password** for the administrator account on the IMS-641, then click "**Next**". The Administrator account and password will be used to change as well as examine settings. In this case the password "**admin**" is used (this will be used later on in the configuration settings).

In the following screen, re-type the same **Admin Password** to verify it, and then click "**Next**".



The next screen shows a summary of the initial settings entered in the MicroComm Setup Wizard. Make sure you have recorded the information and that the confirmation check box is check marked. Click "**Next**" to continue.

The last screen in the MicroComm Setup Wizard asks you to confirm the settings you entered. Click the "**Update**" button to complete the wizard.



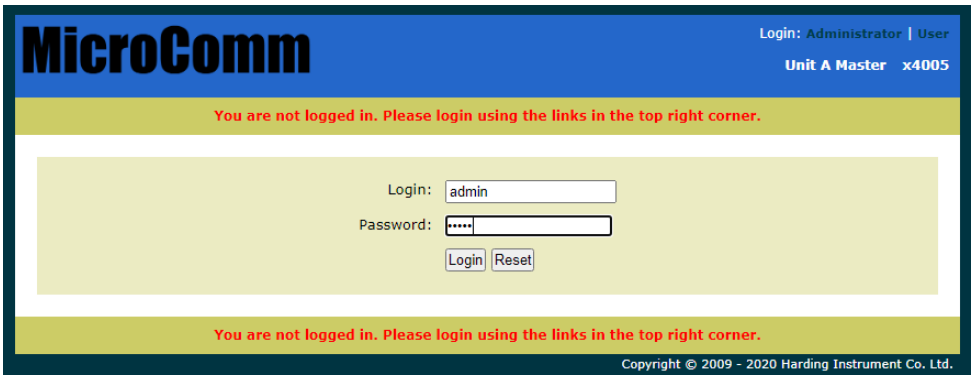
After this, the main configuration screens will be shown as in the next section.

5.2 Setting the IMS-641 Operating Parameters

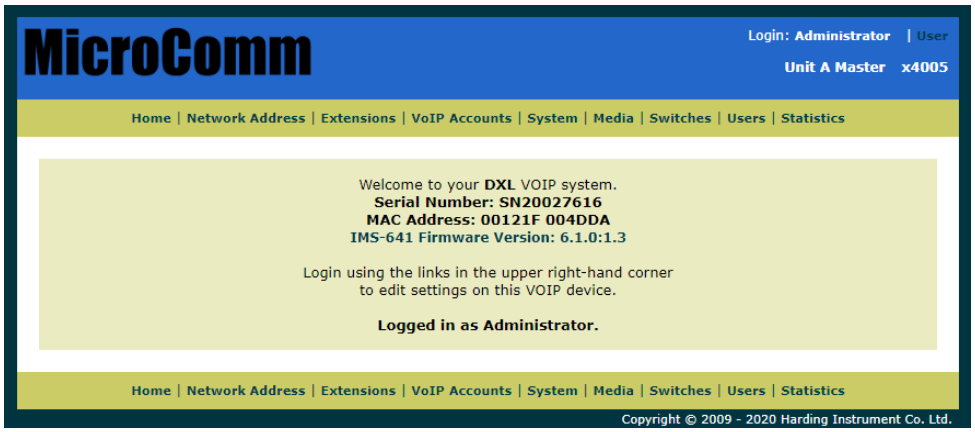
If the IMS-641 has been configured with the MicroComm Setup Wizard previously, it will skip the previous screens and go directly to the following screen when the web browser accesses the IMS-641's web page. To make changes, the user will have to sign in as the administrator using the password previously assigned during the initial configuration.

The initial web page for configuring the IMS-641 is as follows.

Click on the "Administrator" text at the top right. This will bring up a login prompt. Use the user name "**admin**" and enter the password assigned to this master ("**admin**" is the default password), then click Login.



Once you are logged in you will see more menu options.



Click on the **Network Address** menu tab on the menu bar to bring up the **Network Settings** menu.

In the **Network Settings** menu, set the following parameters:

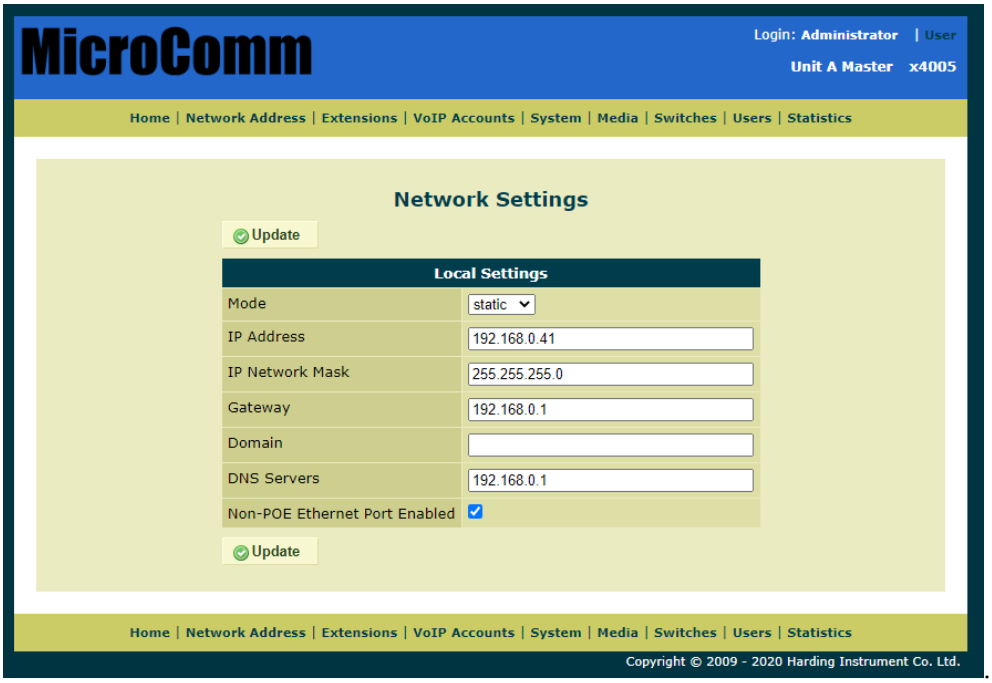
Set **Mode** to "**Static**" (to assign the master a static IP address). Static is recommended for all IP master stations.

Set **IP Address** to the IP address for this master. It should be assigned by your network administrator, and must not conflict with other IP addresses on this system. In this case this master was assigned address "**192.168.0.41**"

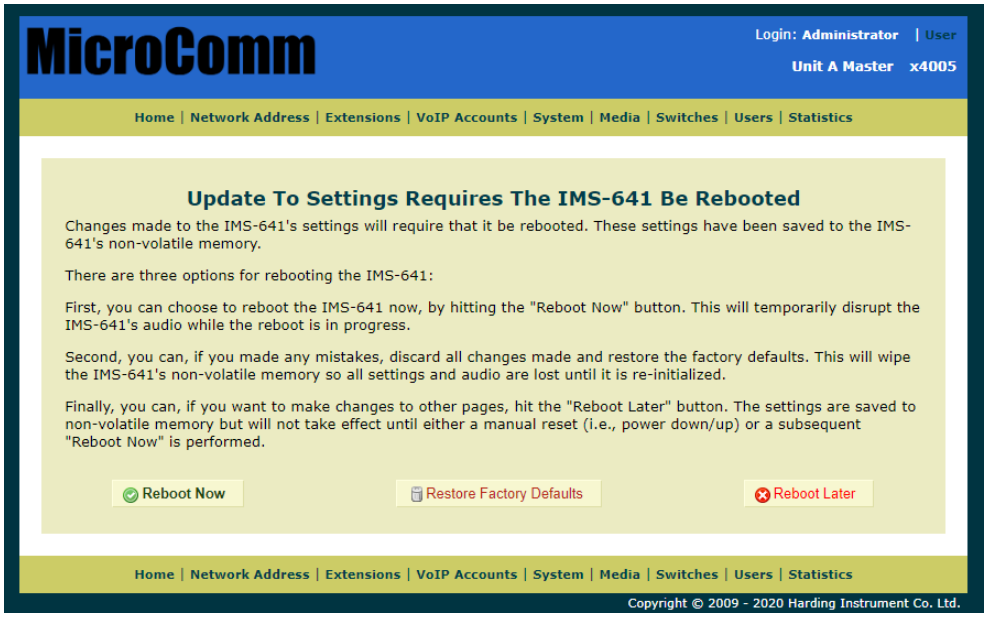
Set **IP Network Mask** to the Network mask for the network. This is also assigned by your network administrator, and should be the same network mask used for all DXL equipment including IP masters, IP stations, and IP page speakers, as well as the DXL DCC's. This example network is assigned "**255.255.255.0**" for the network mask.

The **Gateway**, **Domain**, and **DNS Servers** settings are typically used if your DXL system extends across one network. They are typically left blank, but you can assign the **Gateway** setting to your gateway server IP address for this network, the **Domain** setting to the domain name of your network, and the **DNS Servers** setting to the DNS server IP address for this network.

Once you have entered all of the settings you require, click the "**Update**" button.

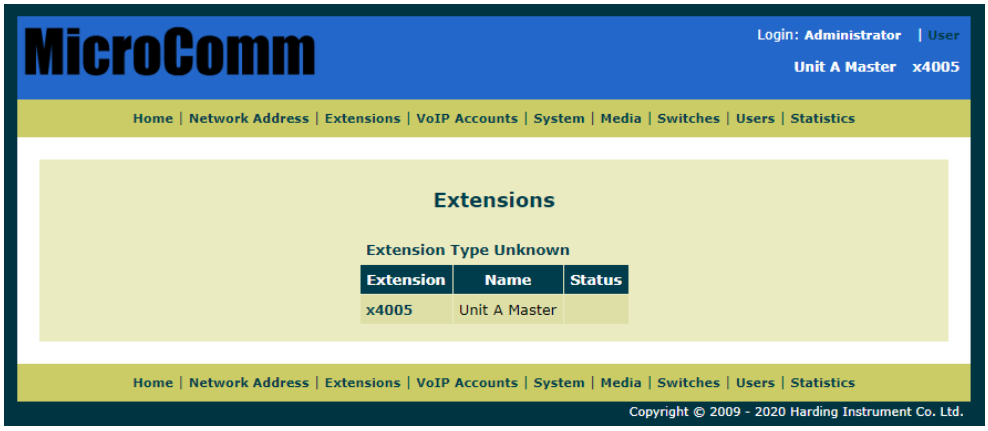


Note that changing the Network Settings will require a reboot for the settings to take effect. You can either use the "**Reboot Now**" option and re-establish the connection at the new IP address by typing "**http://<address of master>**", in your web browser, or use the "**Reboot Later**" option and continue to change the settings and reboot after you have changed all of the settings.



Once you have rebooted and logged in, or have continued from the previous screen, select the "Extensions" menu bar option.

Click on the number under **Extension** (which is the extension number entered in the MicroComm Setup Wizard) to bring up the **Settings** screen. In this example, the extension number to click is "**x4005**".



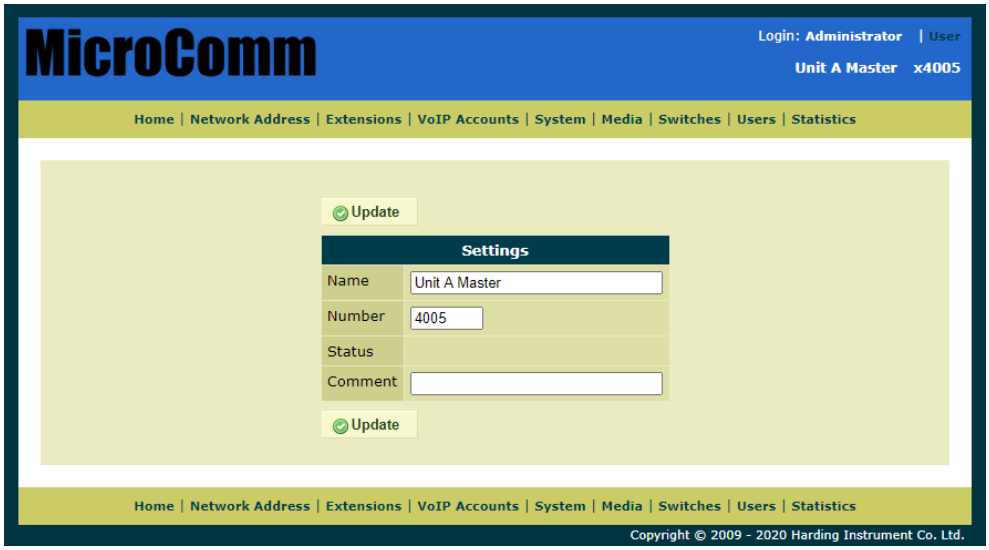
The settings for **Extensions** were previously entered in the MicroComm Setup Wizard, but a brief description of the settings is below if you need to change them after the initial setup.

Name is a short descriptive name of this master station; in this case "**Unit A Master"** is used.

Number is the master number for this master (this must be the same number as the Master **Number** entered in the DXL Administrator software for the master station). This master number cannot be the same number as any other master in the system. In this case the master number is "**4005**".

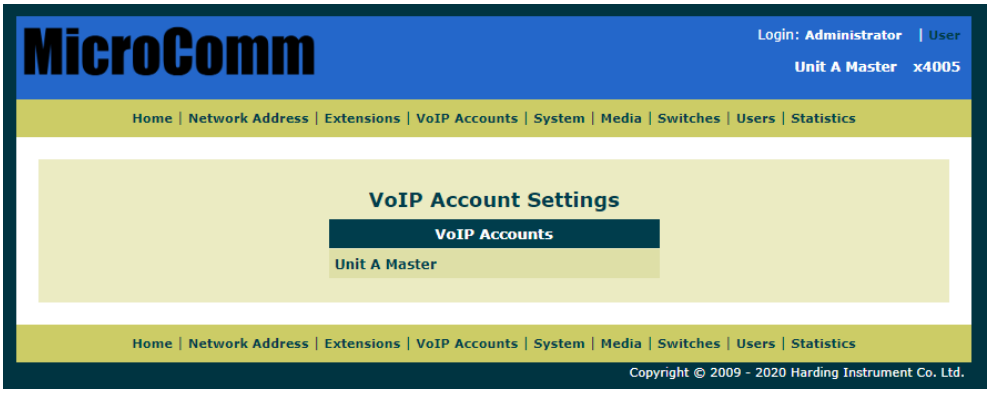
Comment is an optional long description of this master station, and can be left blank if desired.

If you have changed any settings, click "**Update**".



Next, click on the **VoIP Accounts** tab on the menu bar.

On the **VoIP Account Settings** screen, click the name of the master under **VoIP Accounts** (in this example, the name given during setup was "**Unit A Master**" so in this case you would click the text "**Unit A Master**"). This brings up the **VoIP Account Settings** screen for this master.



These **VoIP Account Settings** were previously entered in the MicroComm Setup Wizard, but a brief description of the settings is below if you need to change them after the initial setup.

Account Enabled should be check-marked to enable the account.

Account Name is a short description for this SIP account; usually this should be the same as the **Extension Name**.

Account Username must be the master number (same as the Master **Number** in the DXL Administrator).

Authorization Username, and **Authorization Password** settings should be set the the same number as **Account Username**. Note thet **Authorization Password** is protected by showing "*" when typed in and will show as blank when you come back to this screen.

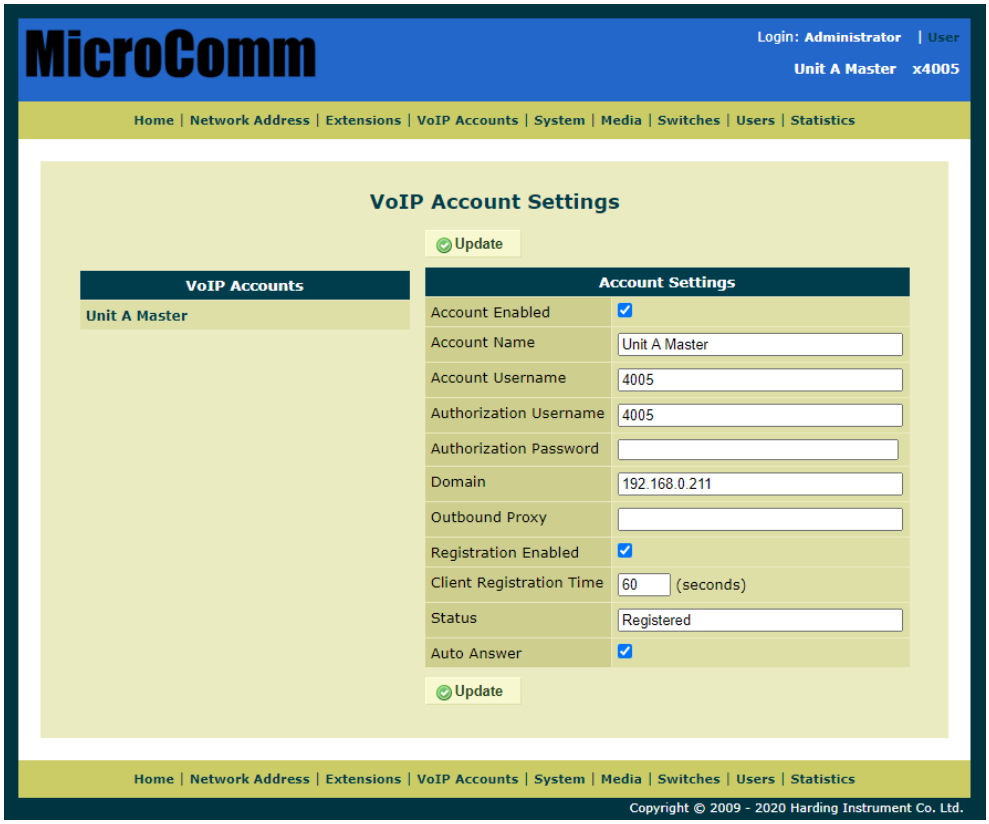
Domain must be set to the IP address of the DCC that controls the exchange that the master associated with in the DXL Administrator.

The **Outbound Proxy** setting is only used when the IMS-641 is used with a SIP Proxy server. This is not used for a DXL system, so should be set to blank.

Check-mark the **Registration Enabled** and **Auto Answer** check boxes.

If you have made any changes, click "**Update**".

Note that the "Status" field indicates if the master is communicating to the DCC exchange (Domain address). If it shows "Registered", this is a good indicatation that you have entered the correct **Account Username** and **Domain** settings.



Next, click on the **System** tab on the menu bar.

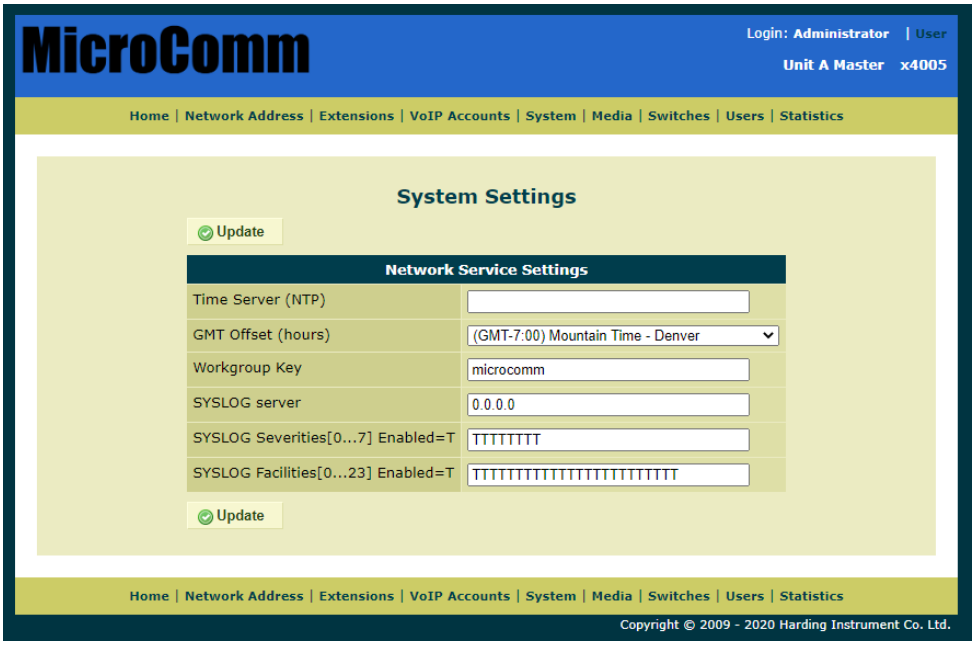
Time Server (NTP) is the IP address or Domain Name of a Network Time Protocol (NTP) server. This can be used by the IMS-641 master to set its clock time to same time as the NTP server when it is not connected to the DXL system. This should be left blank for most cases.

GMT Offset (hours) should be set to the time zone that the IMS-641 will be used in.

Workgroup Key should be set to the workgroup name used by all of the IP masters in the MicroComm system. While the **Workgroup Key** setting for the network can be any value you choose, all IP masters should have the same **Workgroup Key.** This setting is optional and can be left blank.

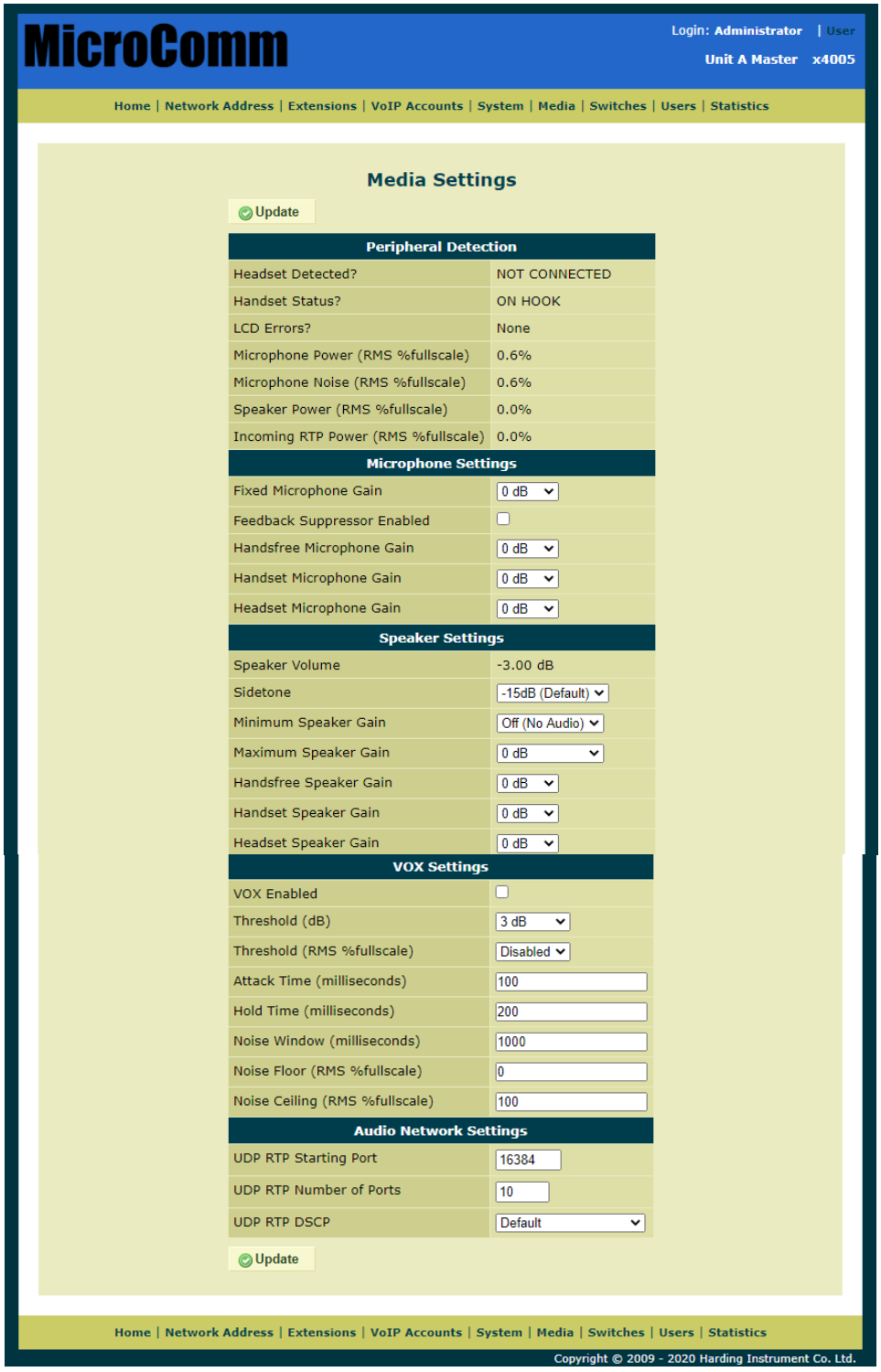
The other settings are for SYSLOG diagnostic reporting and are usually not used. You can leave these at the defaults.

If you have made any changes, click "**Update**".



Next, click on the **Media** tab on the top menu bar to access the **Media Settings** menu. Normally you can start with the default settings, but if you need to change the master's volume settings or VOX control you can make changes to these settings to adjust audio quality. A brief description of these settings is as below.

Gain settings are 0 dB for mid-range, negative values to make it quieter than normal, and positive values to make it louder than normal.



Fixed Microphone Gain is the overall microphone volume applied to all microphones.

Handsfree Microphone Gain, **Handset Microphone Gain**, and **Headset Microphone Gain** are adjustments over and above the **Fixed Microphone Gain** for that specific microphone input (this mainly can be used to adjust for different headset types but can apply to the handset and built in microphone as well).

Feedback Suppressor Enabled enables the built in microphone feedback suppressor software algorithm which may reduce the severity of feedback when a station or page zone speaker is close to this master's microphone, but more likely you may have to solve this with acoustic means by isolating the master from the stations.

Sidetone is for the sound level of sidetone in the handset. When you talk into the handset microphone, sidetone echos the microphone signal into the handset earpiece speaker to simulate the sidetone normally heard on the handset earpiece speaker in an analog telephone call.

Minimum Speaker Gain and **Maximum Speaker Gain** are the minimum and maximum levels that the volume control buttons on the IMS-641 will allow for adjustments. The normal settings are between off (minimum) and 0 dB (maximum), but if you want the speaker to not be turned off (just at a low volume) at minimum volume, you can increase the minimum speaker gain, or even set it equal to the maximum speaker gain if you do not want to be able to adjust the volume from the master station voluime controls.

Handsfree Speaker Gain, **Handset Speaker Gain**, and **Headset Speaker Gain** are the volume settings for the respective speaker output (this mainly can be used to adjust for different headset types but can apply to the handset and built in speaker as well).

VOX Enabled allows the master to use automatic voice switching (Voice Operated Switching) for hands-free operation without requiring the use of the Push To Talk button. However for control room operation usually it is best to use PTT operation (VOX not enabled) for security and operational purposes since a PTT switch allows staff to only talk out when they are ready to talk rather than picking up possibly confidential background conversations or radio chatter.

Threshold (dB) is a VOX related setting that indicates how loud above the average room noise that voice has to be to trigger the microphone to be active.

The remainder of the VOX Settings affect the operational parameters of the VOX and are best left at the default values.

The Audio Network Settings affect the VoIP audio communication of the TMM-440 master station and should be left at the default values.

UDP RTP DSCP is the Differentiated Services Code Point (DSCP) Class quality of service (QoS) priority for VoIP RTP audio packets sent by the master station to allow your network QoS switch to prioritize audio traffic. This will indicate to your QoS router the desired priority level of voice packet.. If you are using QoS, you can consult with your IT network staff for the priority they wish to assign to intercom audio voice traffic. A suggested priority level for VoIP RTP packets is "Expedited Forwarding"

If you have made any changes, click "**Update**".

5.3 Firmware and Release Notes

Latest Firmware Version	Devices
6.2.0	IMS-641

- The footswitch port is disabled by default and can be changed on the media.asp web page or during initial setup. Any existing systems that use footswitches which upload this new firmware will have to re-enable their footswitch ports on the media.asp web page.

This concludes the settings for one IMS-641 master.

Repeat this process for each IP master, making sure that the IP address for each master is unique. Fill in this master station's number and the Domain IP address of the controlling DCC in the appropriate places above.