MicroRAPTOR - Quick Start Guide

Intelligent Cyber Secure Platform

iMR320

Version: 1.14.10-2, Date: October 2022

iS5 COMMUNICATIONS
SERVICES • SUPPORT • SECURITY • SOLUTIONS • SYSTEMS

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Index i

1. Introduction

The Quick Start Guide provides instruction for first time users on how to login to the MicroRAPTOR through the *WebUI*, Console or *SSH* interfaces, how to backup and restore configurations, and how to upgrade the device.

This document explains how to use Command Line Interface (*CLI*) interface and Web user interface (*WebUI*) to perform the following tasks:

- Login to the MicroRAPTOR
- Create an *IP* address for *VLAN* #1
- Set password, switch name, banner name, and prompt
- Save configuration
- Restore configuration
- Upgrade the MicroRAPTOR

1.1. Purpose and Scope

This document covers the startup procedures and specifies the basic configuration commands. For more information or support, email support@is5com.com.

This document has been validated against the following product.

Product	Firmware Version
iMR320	1.14.10-2

2. Console Port: Logging into the MicroRAPTOR

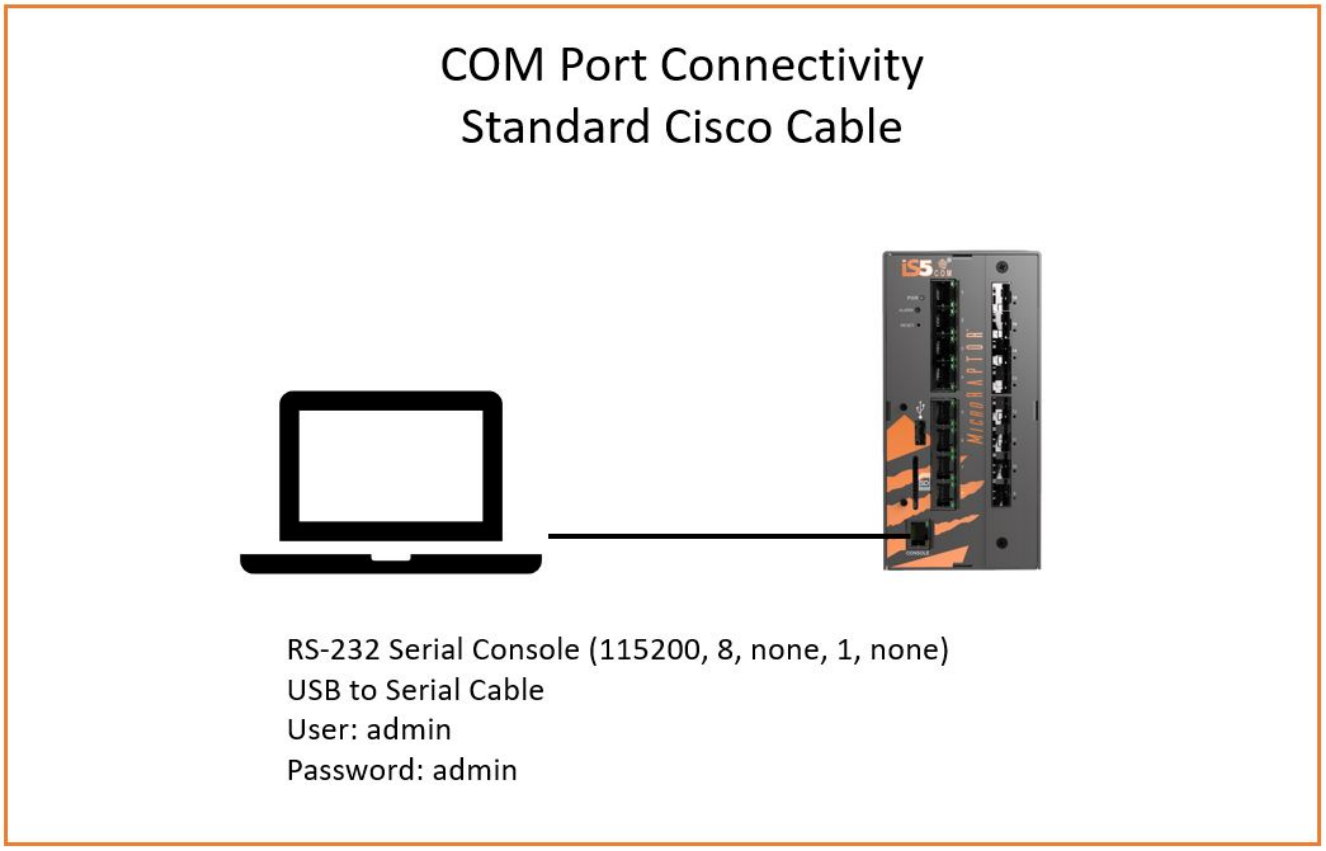
The following sections describe how the serial console interface on the MicroRAPTOR is used to configure an *IP* Address, save a configuration, and upgrade the firmware.

1. On a laptop, install a terminal emulator. A popular option is Putty.
   a. A link to download Putty is: https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

MicroRAPTOR

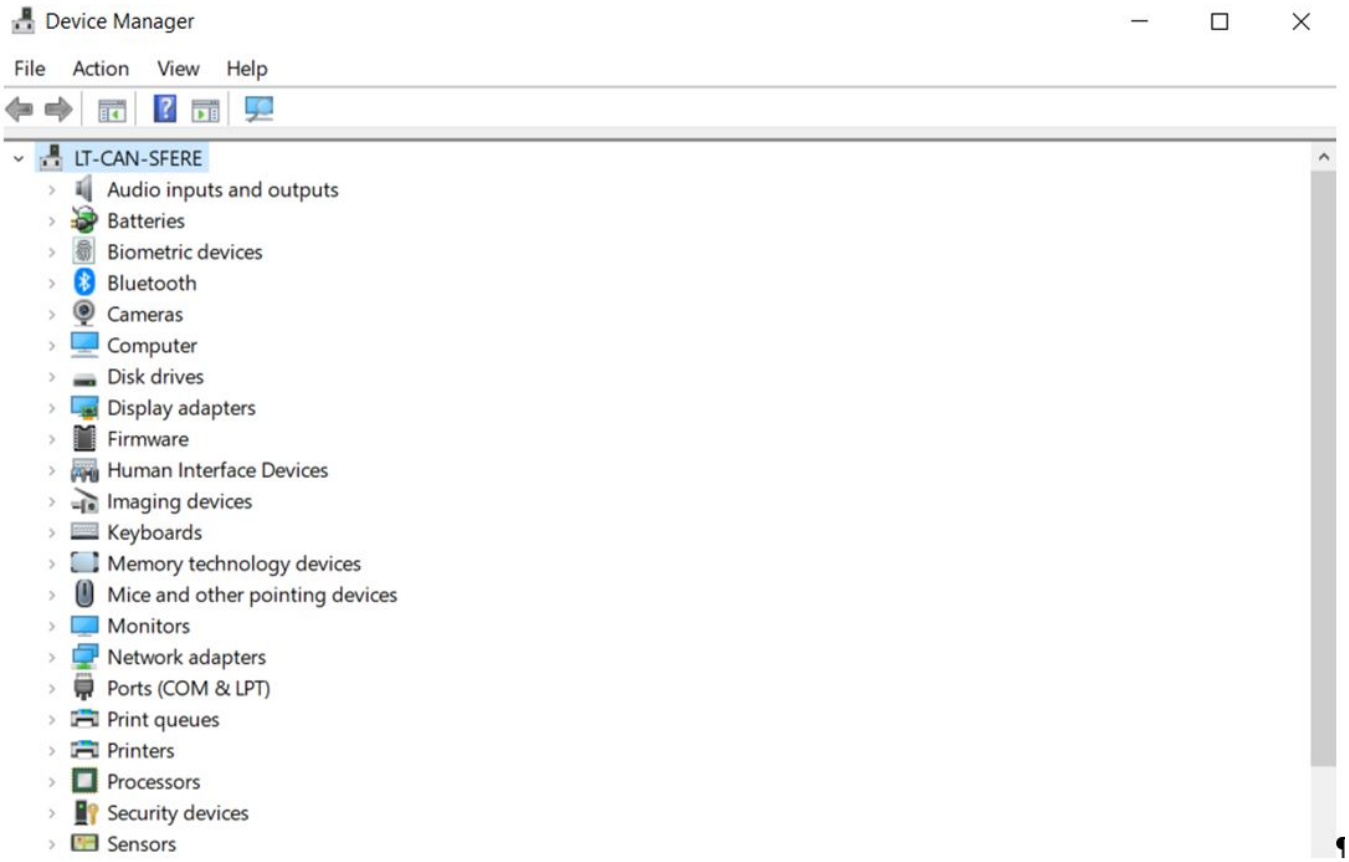
NOTE: The connection details and the Console ports are shown below. A Cisco Console cable is used to connect between the PC and the

console port.



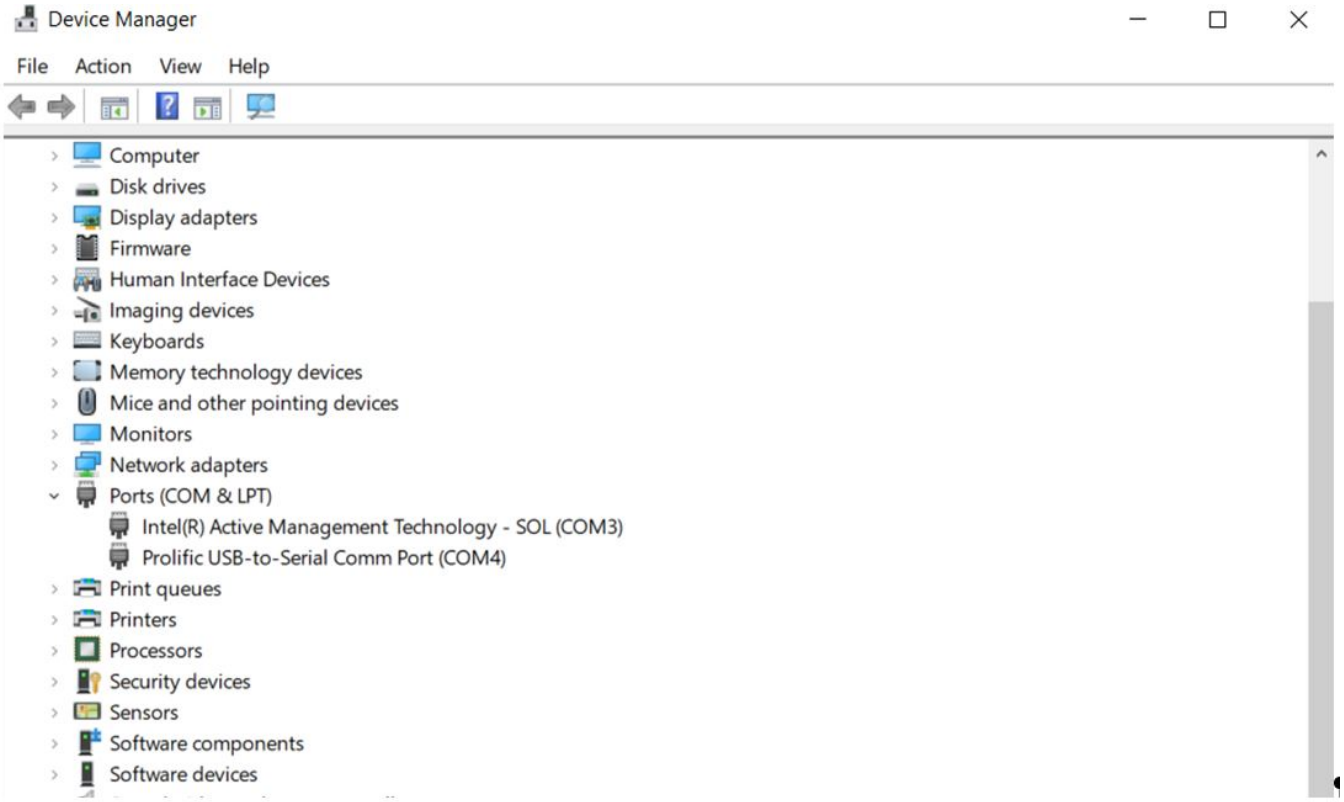
2. Form a serial connection from your computer to the console port of the MicroRAPTOR, by attaching the console port to the USB port of your laptop or PC and the RJ45 termination to the console port on the MicroRAPTOR.
3. To determine the communications port being used on your computer, open **Device Manager** on your PC or laptop.
   a. Open **Device Manager.**

      RESULT: The Device Manager window appears.



b. Navigate to **Ports** to determine which COM number the serial connection is using. You may have to unplug and reinsert the USB connection on your PC to make a determination of which COM number has been assigned to your serial connection.

RESULT: When the Ports leaf is exanded it will appear similar to the image below.



4. Putty can be configured by selecting the type of connection, entering the port number, and setting the baud rate.
   a. Additional serial parameters can be configured in Putty by selecting the **Serial** category found at the bottom of the **Category** panel.

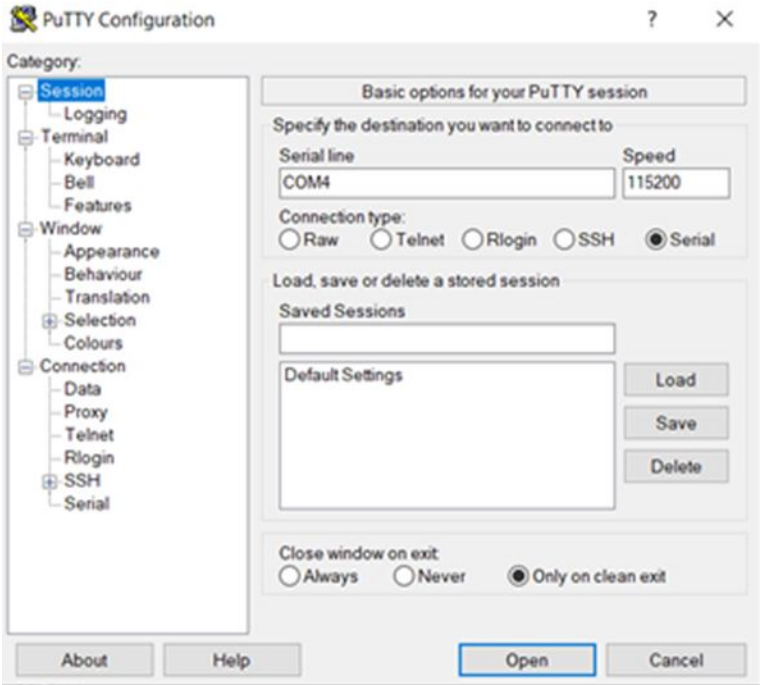
NOTE: *The serial port configuration is as follows:*

- Baud rate: 115200
- Data: 8
- Parity: none
- Stop: 1

- Flow Control: none

b. You should confirm in Putty's user interface that it has been configured with the appropriate Baud rate, Data, Parity, stop and flow control values.

STEP RESULT: The following image provides an image of the port and baud rate being set.

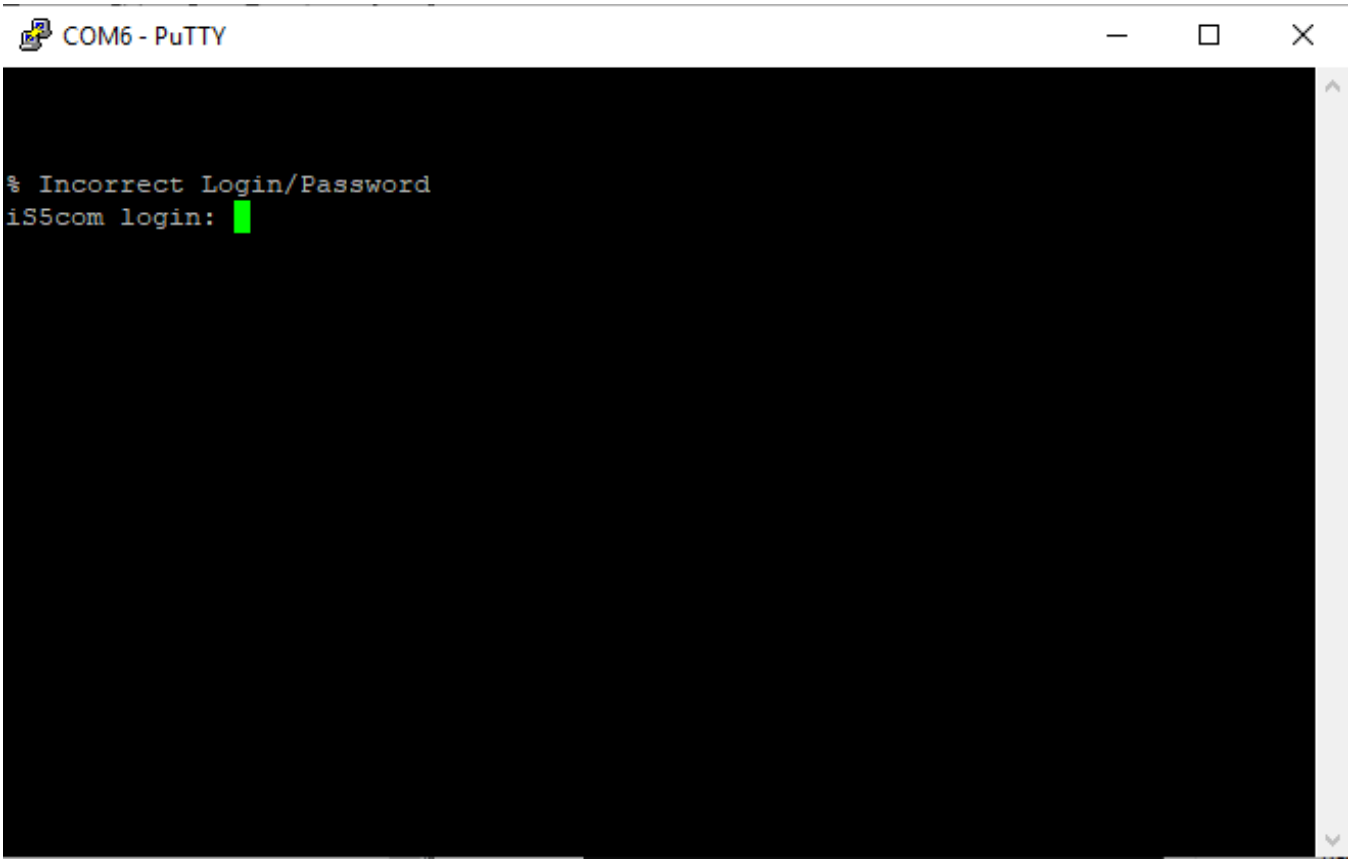


5. Click **Open** to launch a terminal.

   STEP RESULT: A blank terminal window will appear.

6. Press **Enter.**

   STEP RESULT: The login prompt will apear.



7. To access the command line interface *CLI* shell, at the MicroRAPTOR login prompt, use the user name **admin** and password **admin**.

   STEP RESULT: If this is the first login to the device, then you will be prompted to change the password.

   ```
   % Password must be reset. Please change the password
   Enter old password:
   ```

8. Enter the old password which is **admin**.

   STEP RESULT: You will now be prompted for a new password.

   ```
   Enter new password:
   ```

NOTE: The new password must meet the following criteria:

```
Password length should be in the range of 8 - 20 !! characters
Password should contain at least 1 lowercase characters !!
Password should contain at least 1 uppercase characters !!
Password should contain at least 1 numerical characters !!
Password should contain at least 1 special characters !!
New Password must be different from previous password
```

9. Enter the new password.

   STEP RESULT: You will be prompted to confirm the new password.

   ```
   Re-enter new password:
   ```

10. Re-enter the new password.

    STEP RESULT: The console prompt will appear.

    ```
    iS5comm#
    ```

RESULT:

You have logged into the MicroRAPTOR via the console port.

3. SSH: Logging into the MicroRAPTOR

This section describes how an *SSH* session can be established between a laptop and the MicroRAPTOR.

CONTEXT:

MicroRAPTOR can be configured through an *SSH*

Interface from a terminal emulator such as Putty. The command line interface allows the user to control various parameters at the system and protocol level.

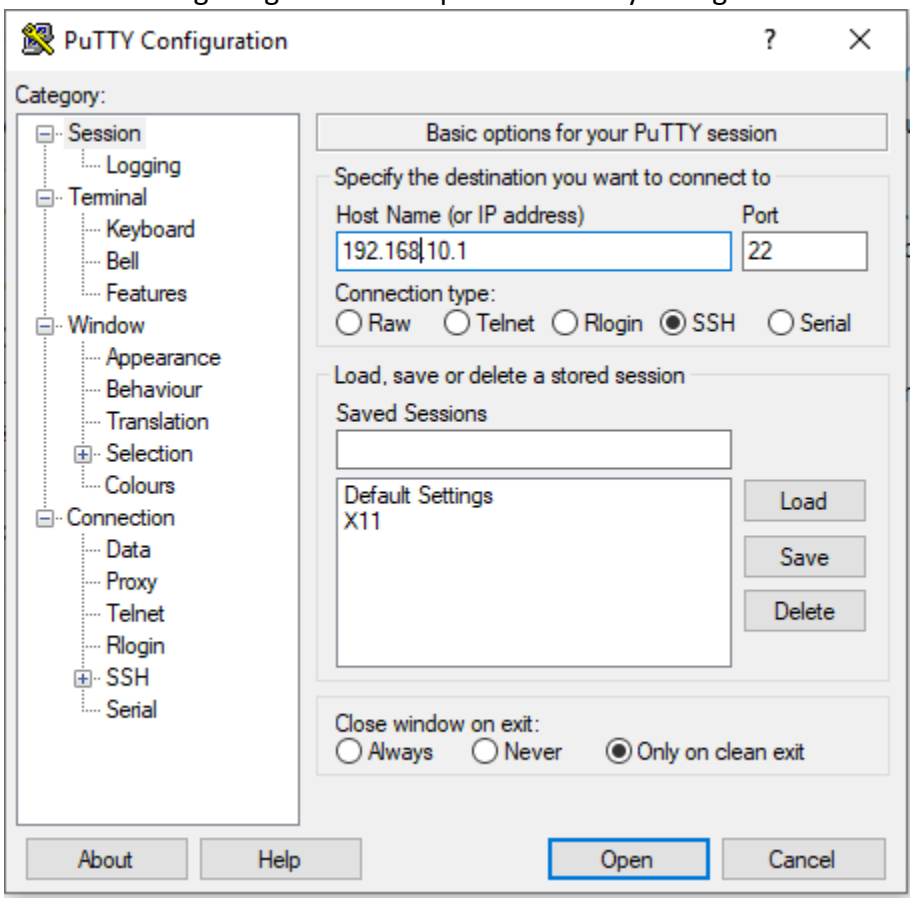
Before configuring the MicroRAPTOR from a PC, confirm accessibility of MicroRAPTOR's firmware by pinging it from the PC.

1. On a laptop, install a terminal emulator. A popular option is Putty.
   a. A link to download Putty is: https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html
2. An Ethernet cable must connect the MicroRAPTOR's switch ports and a computer. The computer interface should be assigned an *IP* address on the 192.168.10.0/24 network.

   FOR EXAMPLE: An address of 192.168.10.100 with a subnet mask of 255.255.255.0 is one such suitable combination of an *IP* address and submask to be assigned for the computer to be used in the connection.

3. Open Putty, select the connection type of *SSH*, and provide the default *IP* address of the MicroRAPTOR of 192.168.10.1. Then, click **Open.**

FOR EXAMPLE: The following image is an example of the Putty configuration screen.



STEP RESULT: A login prompt will appear on a terminal screen after **Open** is pressed.

4. To access the command line interface *CLI* shell, at the login prompt, use the user name **admin** and password **admin**.

   STEP RESULT: If this is the first login to the device, you will be prompted to change the password.

   ```
   % Password must be reset. Please change the password
   Enter old password:
   ```

5. Enter the old password which is **admin**.

   STEP RESULT: You will now be prompted for a new password.

   ```
   Enter new password:
   ```

NOTE: The new password must meet the following criteria:

```
Password length should be in the range of 8 - 20 !! characters
Password should contain at least 1 lowercase characters !!
Password should contain at least 1 uppercase characters !!
Password should contain at least 1 numerical characters !!
Password should contain at least 1 special characters !!
New Password must be different from previous password
```

6. Enter the new password.

   STEP RESULT: You will be prompted to confirm the new password.

   ```
   Re-enter new password:
   ```

7. Re-enter the new password.

   STEP RESULT: The console prompt will appear.

   `iS5comm#`

RESULT:

You have logged into the MicroRAPTOR via a *SSH* connection.

4. Command Line: Switch Name

This section will document how to configure the MicroRAPTOR's name.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the console cable or through *SSH*.

1. Configure the switch name.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# configure terminal
   iS5comm(config)# set switch-name XYZ
   iS5comm(config)# exit
   ```

   STEP RESULT: The switch name has been changed to **XYZ**

5. Command Line: Switch Prompt

This section will document how to change the command line prompt.

PREREQUISITE:

In order to perform the tasks in this section you will have already logged into the MicroRAPTOR via the console cable or through *SSH*.

1. Configure the switch prompt.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# configure terminal
   iS5comm(config)# set prompt-name Prompt-XYZ
   Prompt-XYZ(config)# exit
   ```

   STEP RESULT: The command line prompt has been changed to **Prompt-XYZ**

6. Command Line: IP Address Configuration

This section will document the configuration of an IP Address and a default route.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the console cable or through *SSH*.

Speak with your Network Administrator to determine the values of the following parameters:

- IP Address
- IP Address Mask
- Default Route

These values will be needed to configure the MicroRAPTOR.

1. Configure the IP Address.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# configure terminal
   iS5comm(config)# interface vlan 1
   iS5comm(config-if)# ip address <IP Address> <IP Address Mask>
   iS5comm(config-if)# no shutdown
   iS5comm(config-if)# exit
   iS5comm(config)# exit
   ```

   STEP RESULT: The IP Address for the MicroRAPTOR has been set.

2. Configure the default route.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# configure terminal
   iS5comm(config)# ip route 0.0.0.0 0.0.0.0 192.168.32.254
   iS5comm(config)# exit
   ```

   STEP RESULT: The default route has been set to **192.168.32.254**.

7. Command Line: Admin Password

This section will document how to set the administrator password.

PREREQUISITE:

In order to perform the tasks in this section you will have already logged into the MicroRAPTOR via the console cable or through *SSH*.

1. Configure the administrator password.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# configure terminal
   iS5comm(config)# username admin password Abcd123! privilege 15
   confirm-password Abcd123!
   iS5comm(config)# exit
   ```

   STEP RESULT: The password has been changed to **Abcd123!**

   NOTE: The password by default must consist of a minimum of 8 characters. The characters must consist of a minimum of 1 lowercase, 1 uppercase, 1 number and 1 special character

   !@#$%^&*()_+-:”;’{}[]|\~

   NOTE: Password complexity rules may be changed by the administrator using the system commands.

8. Command Line: Save and Restore Configuration

This section will document how to save and restore the MicroRAPTOR configuration.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the console cable or through *SSH*.

1. Save the running configuration to flash memory.

   FOR EXAMPLE: At the command prompt type:

   ```
   iS5comm# write startup-config
   ```

   STEP RESULT: The following will appear on the terminal when logged in via the console port.

   ```
   Building configuration ...
   [OK]
   ```

   The prompt will reappear and the configuration will now be saved in flash memory.

2. Optionally, you could save the configuration to USB. Insert a USB drive into the MicroRAPTOR and type the following:

   FOR EXAMPLE: iS5comm# copy startup-config usb

   STEP RESULT: The following text will appear followed by a prompt:

   ```
   Configuration is copied to USB
   ```

3. Optionally, you could restore a configuration that was saved to a USB.

   a. Insert the USB thumb drive into the MicroRAPTOR and type the following:

      FOR EXAMPLE: *iS5comm#* copy usb startup-config

      RESULT: The following text will appear followed by a prompt:

      Configuration is restored from USB

      File Copied Successfully

   b. For the configuration to be applied, the MicroRAPTOR needs to be reloaded.

      FOR EXAMPLE: *iS5comm#* reload

      RESULT: Are you sure you want to reload the device? (Y/N) [N]?

   c. Confirm that you would like to reload the device by typing **Y**.

      RESULT: The *MicroRAPTOR* will be reloaded.

   STEP RESULT: The MicroRAPTOR will be reloaded with the configuration that was restored from the USB.

9. Command Line: Upgrading the MicroRAPTOR using a USB

This section will document how to upgrade the firmware on the MicroRAPTOR. This process takes approximately 5 minutes to execute.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via an *SSH* connection or through the console port. For all upgrades it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. Optionally, you may choose to upgrade the MicroRAPTOR firmware.
   a. Rename the upgrade software file to “firmware-upgrade.tgz” and copy the file to the USB stick.
   b. Insert USB stick into front panel USB connector.
   c. Type the following:

      FOR EXAMPLE: *iS5comm#* firmware upgrade usb firmware_upgrade.tgz

   STEP RESULT: The upgrade process will begin, text similar the following will begin scrolling on the

terminal:

```
USB device access:  /dev/sdb1
Copying firmware upgrade package ...
'/mnt/usb/firmware_upgrade.tgz' -> '/mnt/shared/firmware_upgrade.tgz'
Firmware upgrade package is copied successfully
Software upgrade ................... Started
######## Raptor firmware upgrade  ########
Raptor boot status: secondary
Firmware revision       :
1.3.04.125-2020.05.07_is5
BSP=00.00.001-2018.05.10
FPGA=3.20
DRAGONITE=2.11
IBIOME=1.3.04
FACTORY=IS5
PRODUCT=iMX
hgid=2bed6e3e4469
Disable SWITCH
Extraction upgrade package ..... DONE
Upgrade package revision:
1.3.04.125-2020.05.07_is5
BSP=00.00.001-2018.05.10
FPGA=3.20
DRAGONITE=2.11
IBIOME=1.3.04
FACTORY=IS5
PRODUCT=iMX
hgid=2bed6e3e4469
Verification upgrade package ... DONE
Verification upgrade package for compatibility ... Upgrading primary instance
BSP FIT upgrade ................ DONE
FPGA upgrade ................... DONE
Application partition upgrade .. DONE
Copy initcfg.txt to config part. DONE
##########################################
Upgrade primary instance is successful
##########################################
##########################################
Switch partition ............... DONE
##########################################
Software upgrade ................... Completed
Device is going to reboot ......
```

2. Allow the MicroRAPTOR to reboot, the U-Boot menu will appear. Do not interact with it.

   STEP RESULT: Do not interact with this menu and the boot process will proceed automatically.

```
*** U-Boot Boot Menu ***

   Continue to boot
   Reset
   Restore to factory Default and boot
   Restore Users only to factory Default and boot
   Recovery boot
   Disable watchdog
   Enable watchdog
   Disable silent boot

Hit any key to stop autoboot:  7
Press UP/DOWN to move, ENTER to select
```

   The clock will expire and the upgrade will proceed without user intervention.

   The upgrade process will terminate at a user prompt.

```
                RAPTOR iBiome OS
MSR: Jun  3 00:08:54 2020 Restoration successfully completed
iS5com login:
```

3.

RESULT:

The MicroRAPTOR has been upgraded and users may now login to it.

10. Command Line: Upgrading the MicroRAPTOR using TFTP

This section will document how to upgrade the firmware on the MicroRAPTOR. This process takes approximately 5 minutes to execute.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via an *SSH* connection or through the console port. For all upgrades it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

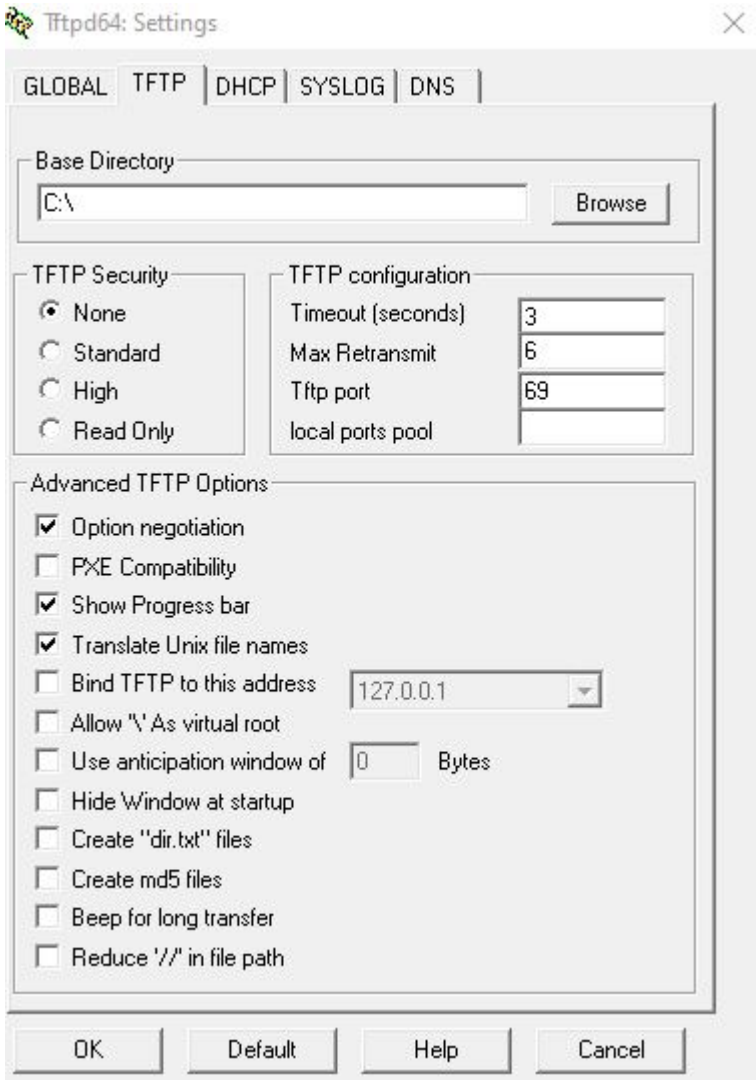
A TFTP server must be installed on a device with network connectivity to the MicroRAPTOR. There are a number of commercial and free TFTP server options available. For this example Tftpd64 was used as the server. It may be downloaded from this site: https://pjo2.github.io/tftpd64/

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. Install the TFTP server on a machine that has network connectivity to the MicroRAPTOR.
2. Configure the TFTP server such that its base directory contains the firmware file you wish to upload. Depending on the server software you are using there may be more settings that need to be configured.

   FOR EXAMPLE: This is a screen shot of theTftpd64 settings screen.



3. Optionally, you may choose to upgrade the MicroRAPTOR firmware.
   a. Copy the upgrade software file to the base directory on your TFTP server.
   b. Login to the MicroRAPTOR.
   c. Type the following, you will have to change the IP address and filename for your particular needs.:

      FOR EXAMPLE: *iS5comm#* firmware upgrade tftp://192.168.0.7/firmware_upgrade.tgz

   STEP RESULT: The upload process will begin and progress will be shown on the terminal.

   The upgrade will begin once the download is complete.

4. The MicroRAPTOR will reboot as part of the upgrade process.

   STEP RESULT: The upgrade process will terminate at a user prompt.

```
                 RAPTOR iBiome OS
MSR: Jun  3 00:08:54 2020 Restoration successfully completed
iS5com login:
```

5.

RESULT:

The MicroRAPTOR has been upgraded and users may now login to it.

11. Command Line: Upgrading the MicroRAPTOR using SFTP

This section will document how to upgrade the firmware on the MicroRAPTOR. This process takes approximately 5 minutes to execute.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via an *SSH* connection or through the console port. For all upgrades it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

A SFTP server must be installed on a device with network connectivity to the MicroRAPTOR. There are a number of commercial and free SFTP server options available. For this example the Rebex Tiny SFTP Server was used as the server. It may be downloaded from this site:
https://www.rebex.net/tiny-sftp-server/

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. Install the SFTP server on a machine that has network connectivity to the MicroRAPTOR.
2. Configure the SFTP server such that its base directory contains the firmware file you wish to upload. Depending on the server software you are using there may be more settings that need to be configured. The Rebex SFTP server uses a configuration file, RebexTinySftpServer.exe.config, which the user must modify. Please note that the free Rebex is not full featured and the professional option may be more suitable for a commercial deployment. The link is here:
   https://www.rebex.net/tiny-sftp-server/
3. Optionally, you may choose to upgrade the MicroRAPTOR firmware.
   a. Copy the upgrade software file to the base directory on your TFTP server.
   b. Login to the MicroRAPTOR.
   c. Type the following, you will have to change the IP address and filename for your particular needs.:

      FOR EXAMPLE: *iS5comm#* firmware upgrade sftp://tester:password@192.168.0.7//firmware_upgrade.tgz

   STEP RESULT: The upload process will begin and progress will be shown on the terminal.

   The upgrade will begin once the download is complete.

4. The MicroRAPTOR will reboot as part of the upgrade process.

   STEP RESULT: The upgrade process will terminate at a user prompt.

```
                RAPTOR iBiome OS
MSR: Jun  3 00:08:54 2020 Restoration successfully completed
iS5com login:
```

5.

RESULT:

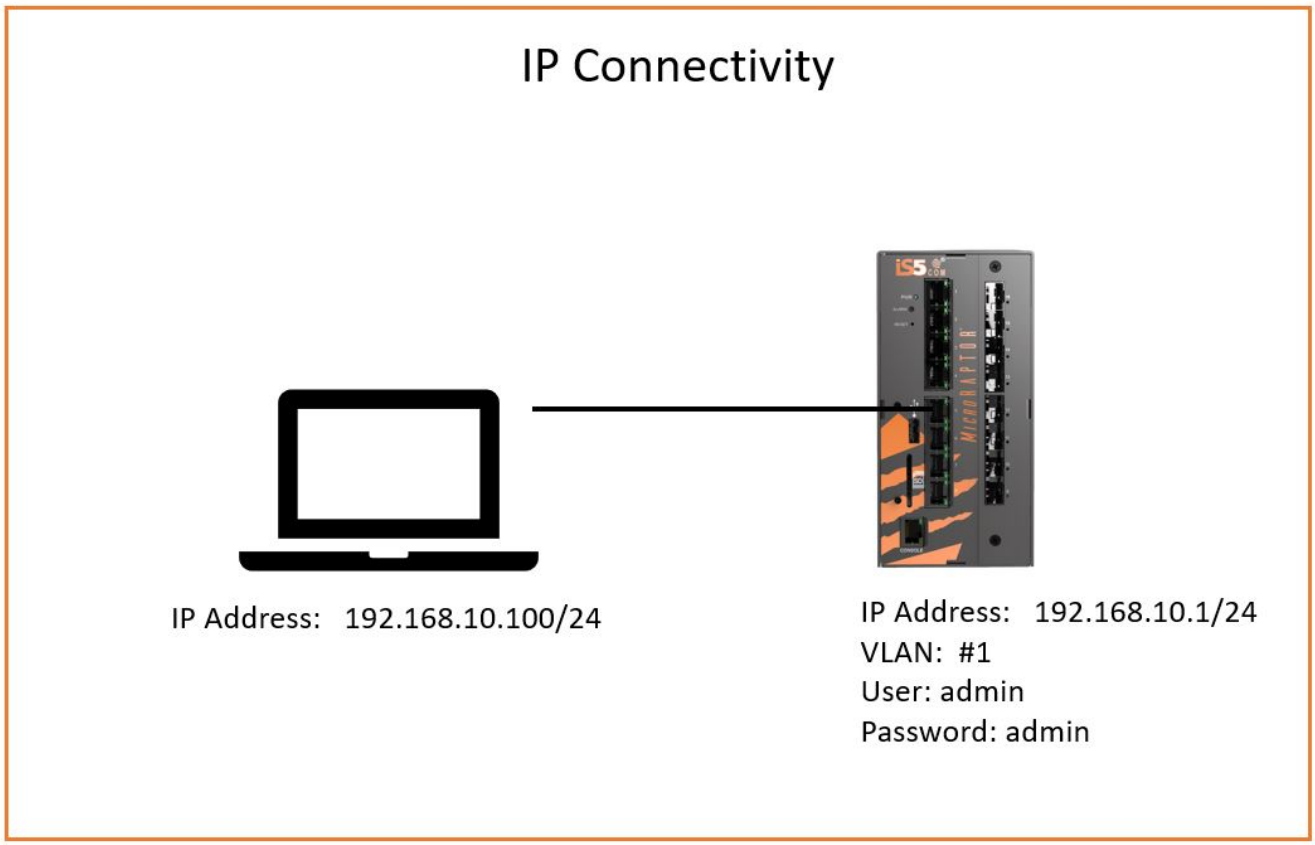
The MicroRAPTOR has been upgraded and users may now login to it.

12. Web Interface: Logging into the MicroRAPTOR

This section describes how to login to the MicroRAPTOR via the *Web UI* (Web User Interface).

PREREQUISITE:

Figure 1: Ethernet / IP Connectivity



CONTEXT:

MicroRAPTOR can be configured through Web User Interface (*Web UI*) from web browsers. The *Web UI* allows the user to control various parameters at the System and Protocol level.

Before configuring the Raptor from a PC, confirm accessibility of MicroRAPTOR's firmware by pinging it from the PC.

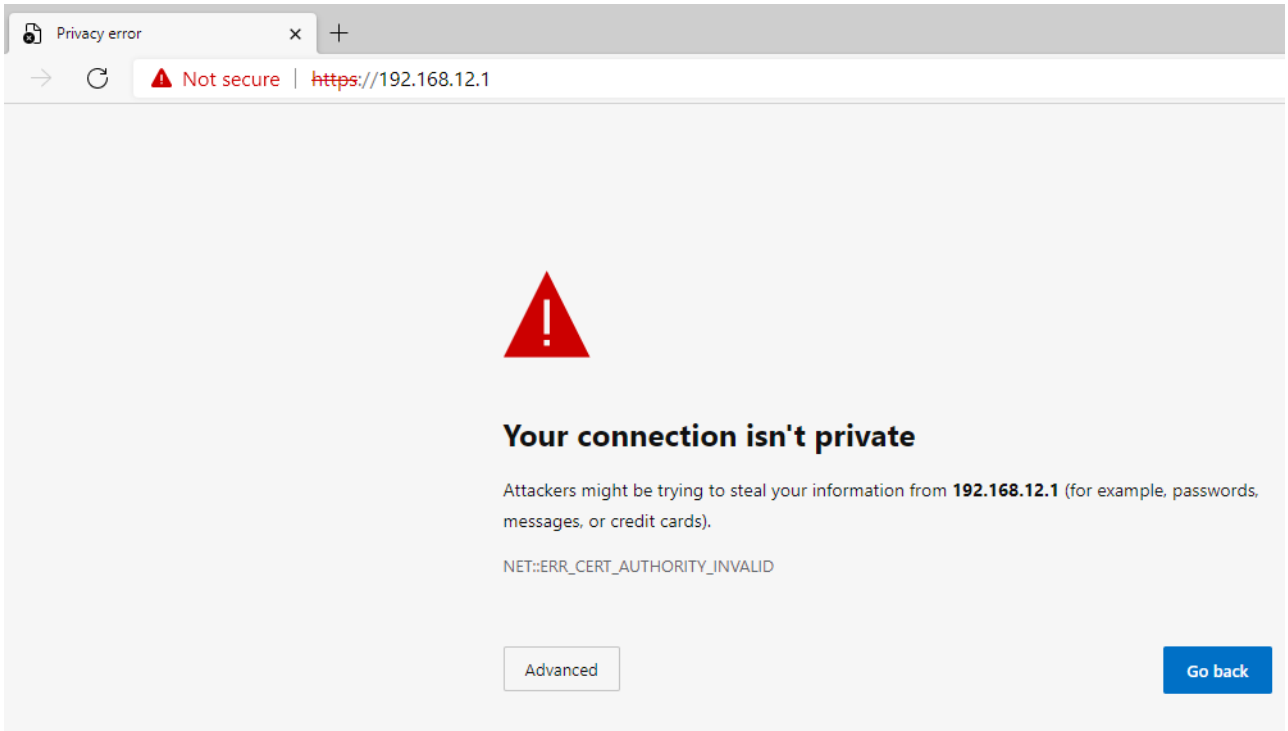
1. An Ethernet cable must connect the switch and a computer. The computer interface should be assigned an IP address on the 192.168.10.0/24 network. This is summarized in *Figure 1*.

   FOR EXAMPLE: An address of 192.168.10.100 with a subnet mask of 255.255.255.0 is one such suitable combination of an IP address and submask to be assigned for the computer to be used in the connection.

2. Launch a web browser to enter the MicroRAPTOR's default IP address. The IP address of the MicroRAPTOR's interface is 192.168.10.1. The https protocol is now the default protocol.

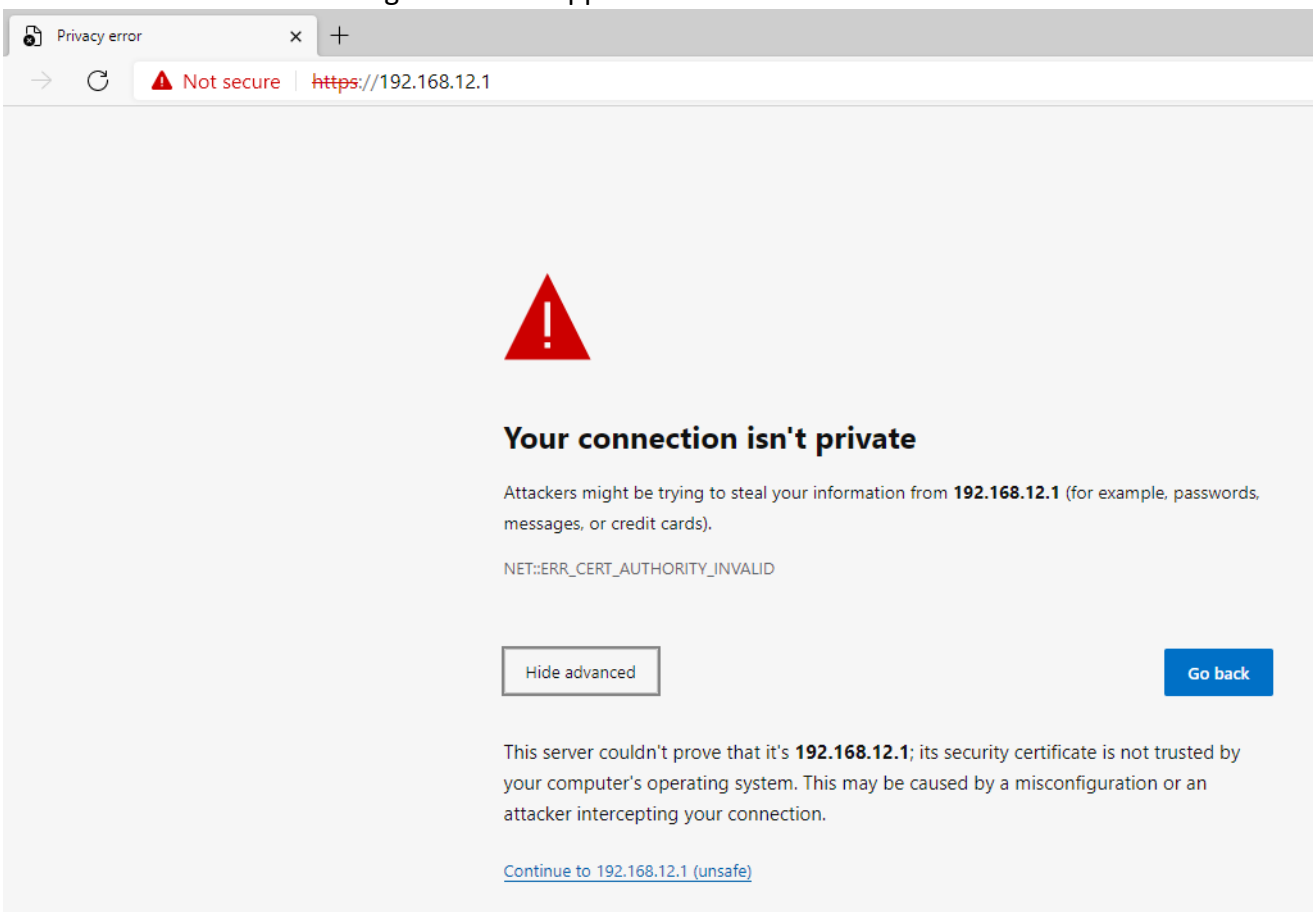
   FOR EXAMPLE: https://192.168.0.1

   STEP RESULT: Warnings from the browser about the web site having an invalid certificate may appear. On the Edge Browser, the following will appear. If the warnings do not appear, skip ahead to Step *4*.



3. Click the **Advanced** button.

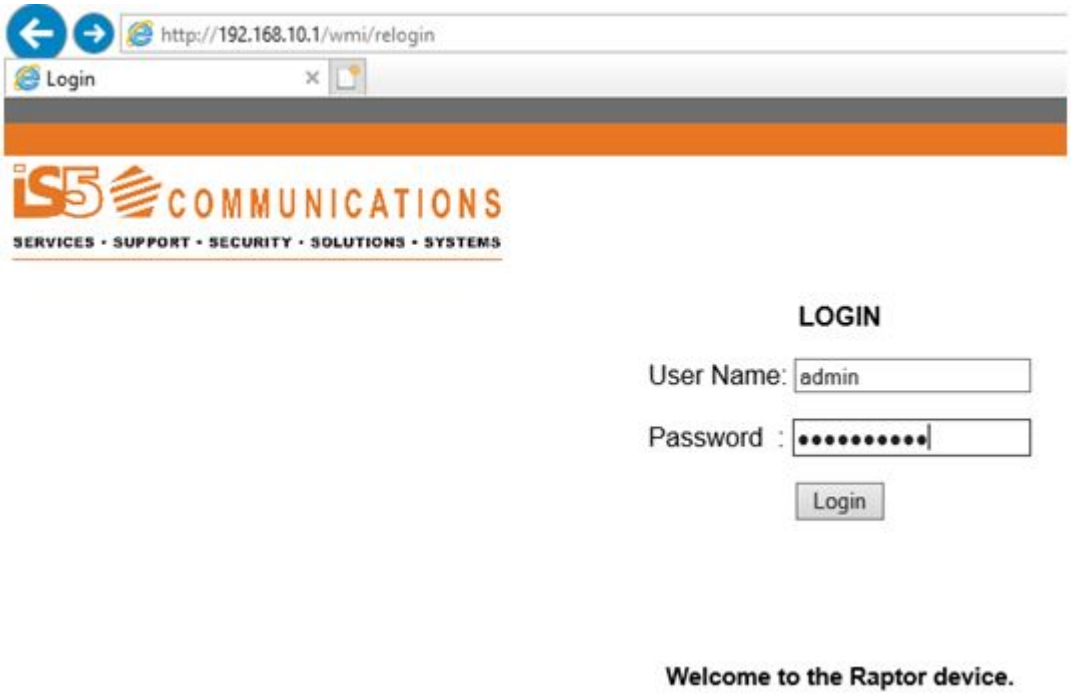
   STEP RESULT: The following screen will appear.



4. Launch a web browser to enter the MicroRAPTOR's default IP address. The IP address of the MicroRAPTOR's interface is 192.168.10.1. Enter **https**://192.168.10.1 into the browser's address bar.

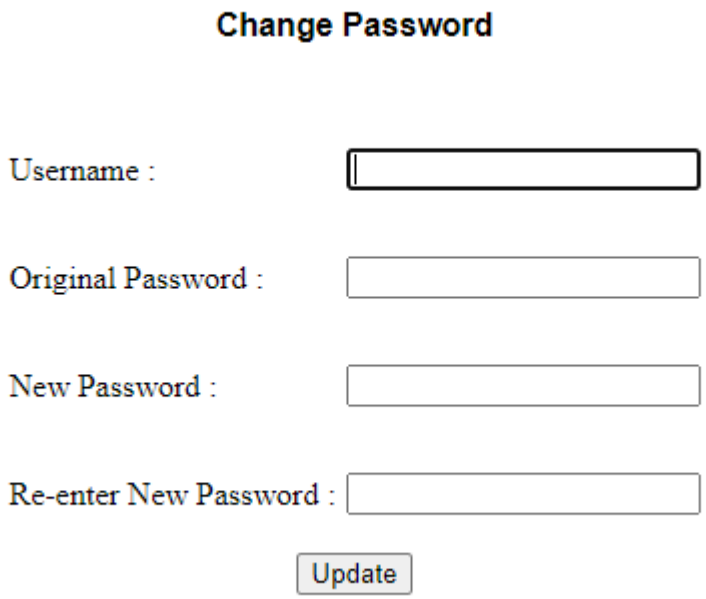
   STEP RESULT: The **Login** page appears.

Figure 2: Login Page



5. Enter the **User Name** “admin” and **Password** “admin” and click **Login.**

   STEP RESULT: If this is the first login to the device the user will be prompted to change the password.



NOTE: The new password must meet the following criteria:

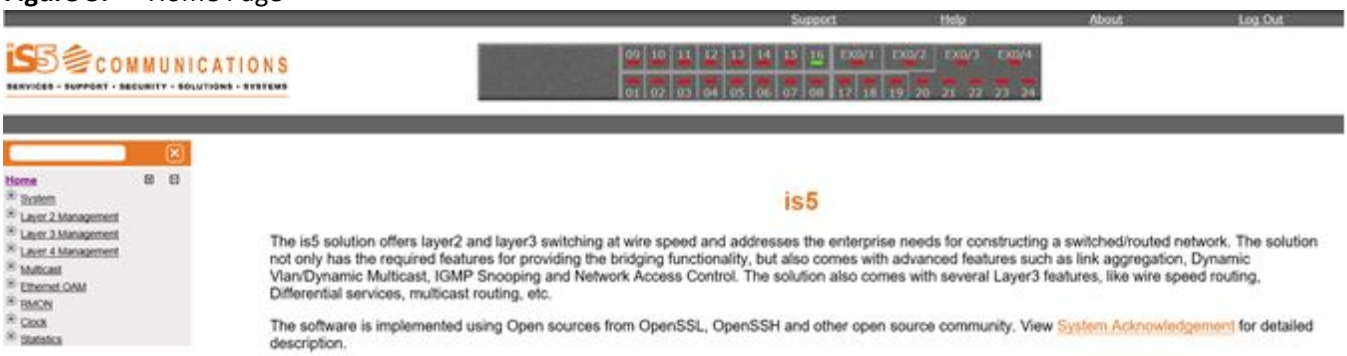
```
Password length should be in the range of 8 - 20 !! characters
Password should contain at least 1 lowercase characters !!
Password should contain at least 1 uppercase characters !!
```

```
Password should contain at least 1 numerical characters !!
Password should contain at least 1 special characters !!
New Password must be different from previous password
```

6. Enter the **User Name** “admin” and **Password** “admin” and then a new password in the **New Password** and **Re-enter New Password** fields. Then click **Update.**

   STEP RESULT: The home page will appear.

Figure 3: Home Page



RESULT:

You have logged into the MicroRAPTOR via the *Web UI*.

13. Web Interface: System Settings

This section will document how to configure common MicroRAPTOR system settings.

PREREQUISITE:

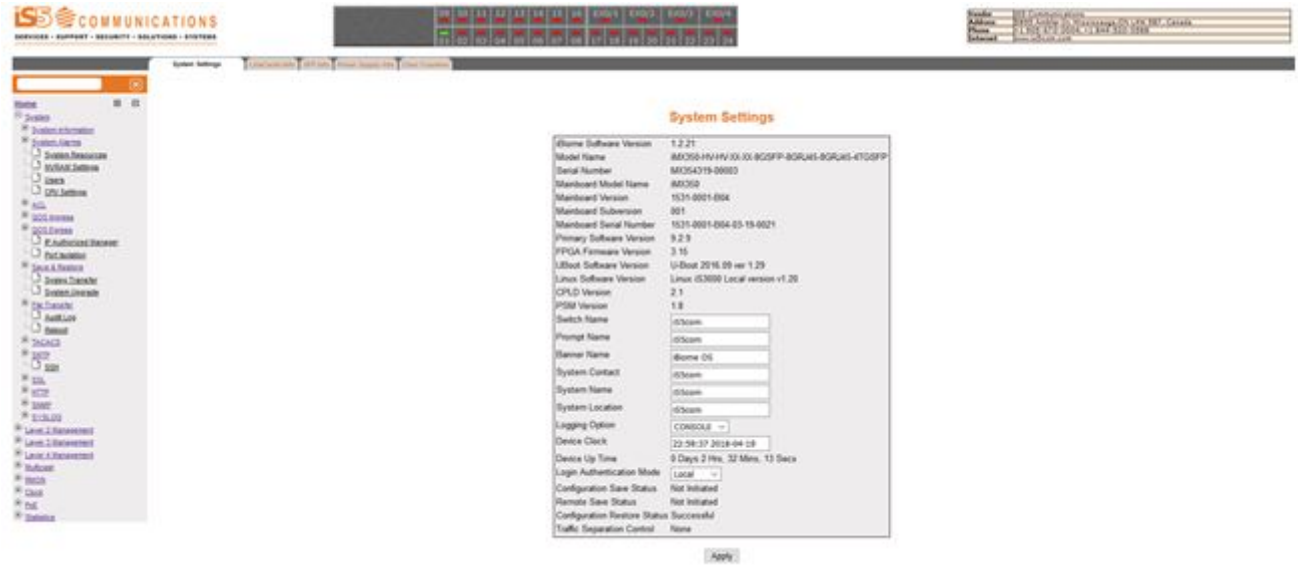
To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

1. Navigate to the **System Settings** page.

   FOR EXAMPLE: In the Home page, go to **System > System Information > System Settings**

   STEP RESULT: The following screen will appear.

Figure 1: System Settings



2. At this point you may change the values of any of the following fields.
   - **Switch Name**—enter the name for identifying the device. The default value is iS5. This value range is a string of size 15.
   - **Prompt Name**—enter the prompt name to be used. The default value is iS5.
   - **Banner Name**—enter the banner name to be used. The default value is MicroRAPTOR iBiome OS.
   - **System Contact**—enter the contact person details for this managed node. This value range is a string of size 50. The default value is iS5com.
   - **System Name**—enter the system name. The default value is iS5com.
   - **System Location**—enter the physical location of this node. This value range is a string of size 50. The default value is iS5com.

3. Click **Apply** to make your changes effective.

RESULT:

The system settings have been changed.

14. Web Interface: IP Address and Default Routes

This section will explain how to set the IP Address on the MicroRAPTOR and create a default route.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

Speak with your Network Administrator to determine the values of the following parameters:

- IP Address
- IP Address Mask
- Default Route

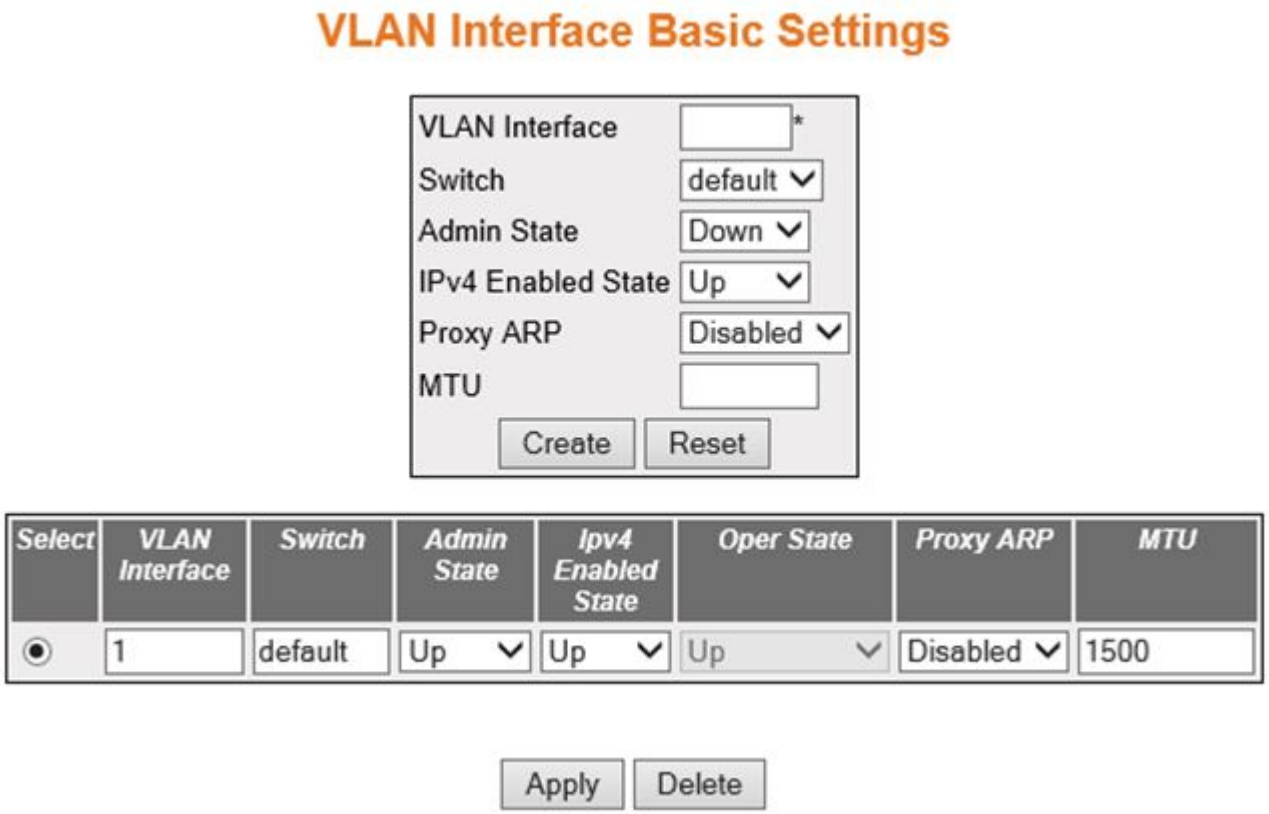
These values will be needed to configure the MicroRAPTOR.

1. Configure the *VLAN* settings by first navigating to the *VLAN* settings screen.

   FOR EXAMPLE: Go to **Layer 3 Management > IP > VLAN Interface.**

   STEP RESULT: The following screen will appear.

   VLAN Interface Basic Settings



2. Configure the values as follows:
   – **Select**—select the *VLAN* Interface for which configuration needs to be modified or deleted. In this case it will be *VLAN* interface #1.

- **VLAN Interface**—enter “1”.
- **Switch**—default.
- **Admin State**—select “UP” from the drop down list.
- **Operating State**—choose UP.
- **Proxy ARP**—select the Proxy *ARP* admin status for the interface. The default option is Disabled. Select **Disabled.**
- **MTU**—enter 1500

3. Click **Apply**.

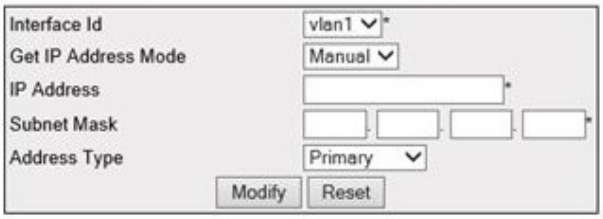
   STEP RESULT: The *VLAN* is now configured.

4. Configure the *PIv4* settings of the *VLAN* by first navigating to the *PIv4* Settings Page.

   FOR EXAMPLE: Go to **Layer 3 Management > IP > IPv4 AddrConf. IPv4 Interface Settings**

   STEP RESULT: The following page will appear:

   IPv4 Interface Settings



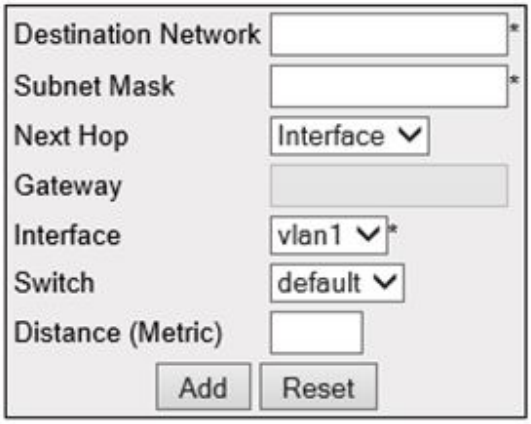
5. If you wish to change the *IP* address and subnet, enter new values in those fields and then click **Modify.**

   STEP RESULT: The *IP* address of *VLAN* 1 will have changed.

6. Configure the *IP* routes.

   FOR EXAMPLE: For *IP* Route Configuration, go to **Layer 3 Management > IP > IP Route. IP Route Configuration** appears.

IP Route Configuration



Select	Destination Network	Subnet Mask	Gateway	Interface	Switch	Distance (Metric)	Routing Protocol
◉	192.168.10.0	255.255.255.0	0.0.0.0	vlan1	default	0	Connected

Apply Delete

7. You will need two routes: one route to your network and a default route to your control center. Once these routes are established, a remote user can configure the switch for proper configuration.
   a. You will need to configure *VLAN* 1 to use the default gateway. This route may already be in your list. The destination network should be the network for the *IP* Address configured in section 0, the subnet mask, the interface should be “vlan1”, the switch option should be “default”, and the distance should be “0”. Click **Add.**
   b. Configure the default gateway. The destination network should be 0.0.0.0, the subnet mask should be 0.0.0.0, and the gateway should be the gateway router IP address. Consult with your administrator if you do not know this value. Leave the interface blank. The switch should be “default” and the distance should be “1”. Click **Add.**
   c. Click **Apply**

   STEP RESULT: You should see a screen similar to the following:

Select	Destination Network	Subnet Mask	Gateway	Interface	Switch	Distance (Metric)	Routing Protocol
○	0.0.0.0	0.0.0.0	192.168.13.254		default	1	Static
◉	192.168.13.0	255.255.255.0	0.0.0.0	vlan1	default	0	Connected

Apply Delete

RESULT:

The *IP* address and default routes have been configured on MicroRAPTOR.

15. Web Interface: User Password

This section will explain how to change a users password.

PREREQUISITE:

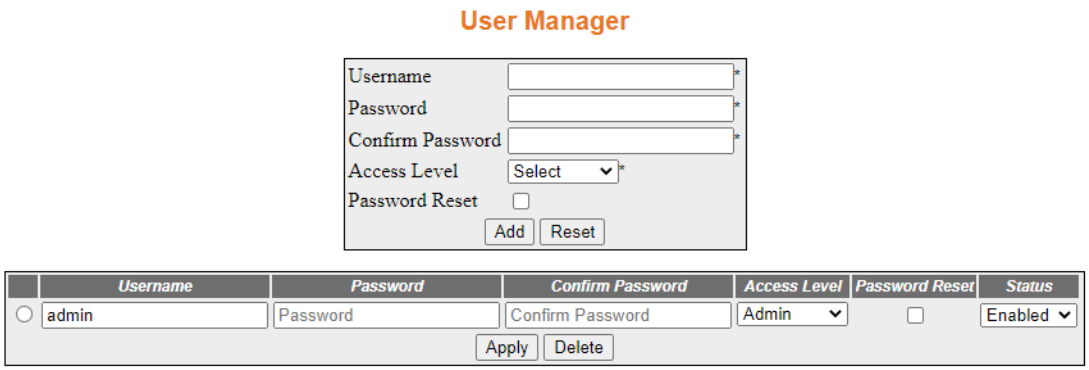
To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

1. Navigate to the **Users** page.

   FOR EXAMPLE: In the Home Page, go to **System > Users**

   STEP RESULT: The following screen will appear.

Figure 1: User Manager



2. Click the **admin** radial button.

   STEP RESULT: The username and password fields, starred out, will be populated on the panel above the radial selection.

3. Change the password in the **Password** and **Password Verification** fields.

4. Click **Apply** button.

RESULT:

The admin password has been changed.

16. Web Interface: Save and Restore Configurations

This section will describe how to save and restore the MicroRAPTOR's configuration.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

1. To save the configuration to flash memory, perform the following.
   a. Navigate to the **Save Configuration** screen.

      FOR EXAMPLE: In the Home page, go to ***System > Save and Restore > Save***

      RESULT: The following web page will appear.

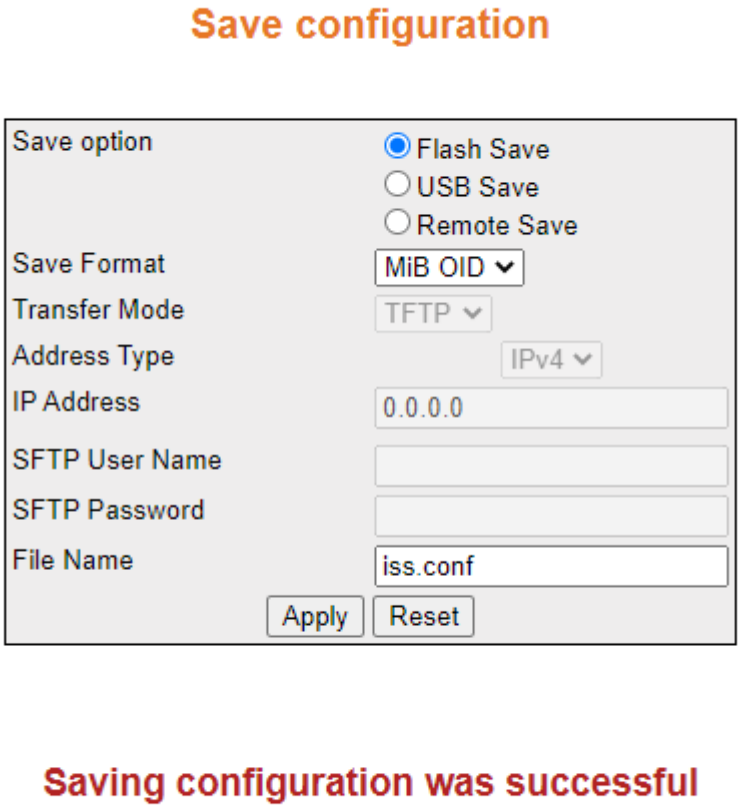
   b. Set the fields as follows:
      - **Save option**—select Flash Save.
      - **Save Format**—select either *MIB OID* or Script. Script format is human- readable and is the default option.

- **File Name**—default file name where the switch configurations are saved is iss.conf. Use the default file name.

c. Click **Apply** to save the changes.

STEP RESULT: The running configuration will now be saved to flash memory. Without saving to flash, the configuration will be lost in the event of a power cycle or device reset. The following screen will appear when the save configuration process is complete:

Save Configuration



2. To save the configuration to USB, perform the following.
   a. Navigate to the Save Configuration screen.

      FOR EXAMPLE: In the Home page, go to ***System > Save and Restore > Save***

      RESULT: The following web page will appear.

   b. Set the fields as follows:
      - **Save option**—select USB Save.
      - **Save Format**—select either *MIB OID* or Script. Script format is human- readable.
      - **File Name**—default file name where the switch configurations are saved is iss.conf. Use the default file name.
   c. Insert the USB thumb drive into the USB port on the front of the MicroRAPTOR.
   d. Click **Apply** to save the changes.

   STEP RESULT: The current configuration will be saved to USB.

3. To Restore a Configuration from USB.
   a. Navigate to the **Restore** page.

      FOR EXAMPLE: Go to ***System > Save and Restore > Restore.***

      RESULT: The ***Startup Configuration Restore Source***page appears.

Figure 1: Startup Configuration Restore Source

   b. Set the fields as follows:
      - **Save option**—select USB Save.

- **Save Format**—select either *MIB OID* or Script. Script format is human- readable.
- **File Name**—default file name where the switch's configurations are saved is iss.conf. Use the default file name.

c. Insert the USB thumb drive into the USB port on the front of the MicroRAPTOR.

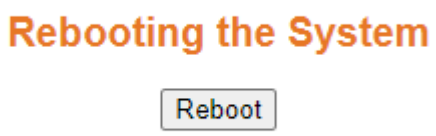
d. Click **Apply** to save the changes.

RESULT: The *MicroRAPTOR* will restore the configuration on the USB.

e. For the changes to take effect, the RAPTOR must be rebooted. Navigate to the reboot screen.

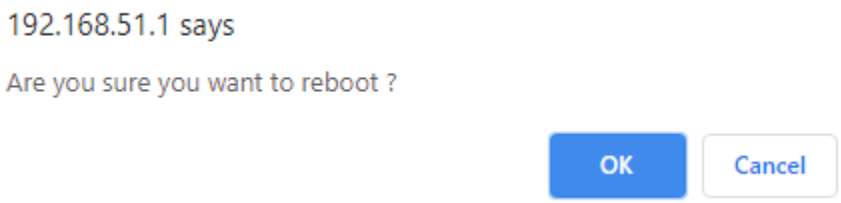
FOR EXAMPLE: Go to ***System > Reboot.***

RESULT: The following screen will appear.



f. Click **Reboot** .

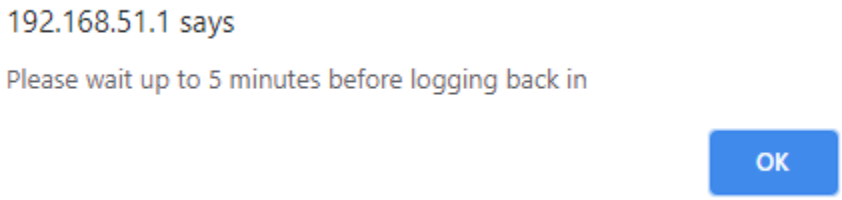
RESULT: A confirmation window will appear.



NOTE: *The IP address will depend on the address of the MicroRAPTOR.*

g. Click **OK**.

RESULT: A second confirmation window will appear.



NOTE: *The IP address will depend on address of the MicroRAPTOR.*

h. Click **OK**.

STEP RESULT: The MicroRAPTOR will reboot and the restored configuration will take effect.

17. Web Interface: Upgrade the MicroRAPTOR using USB

This section will explain how to upgrade the MicroRAPTOR firmware. This process takes approximately 5 minutes to execute.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

For all upgrades, it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. To Upgrade a Configuration from USB navigate to the Upgrade page.

   FOR EXAMPLE: Go to **System > System Upgrade**

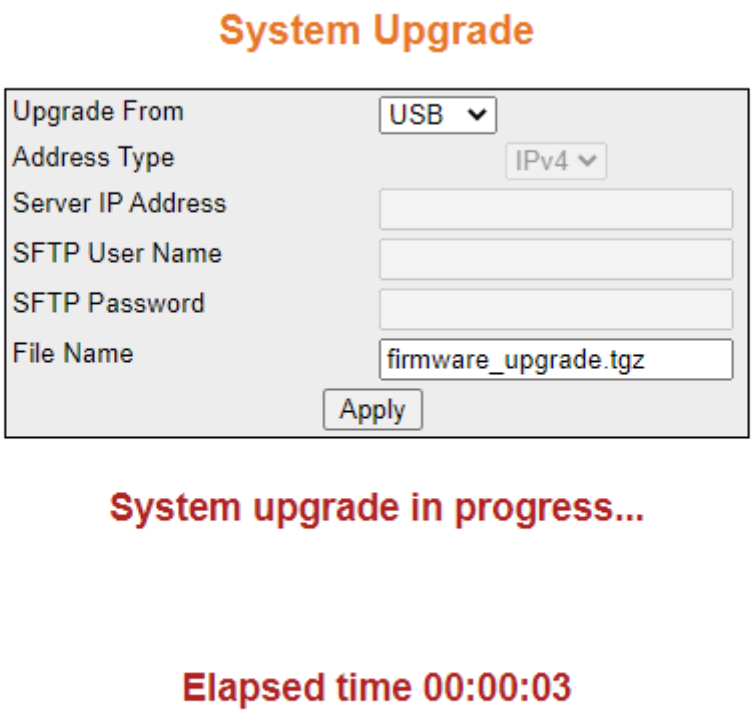
   STEP RESULT: The upgrade page appears:

   System Upgrade

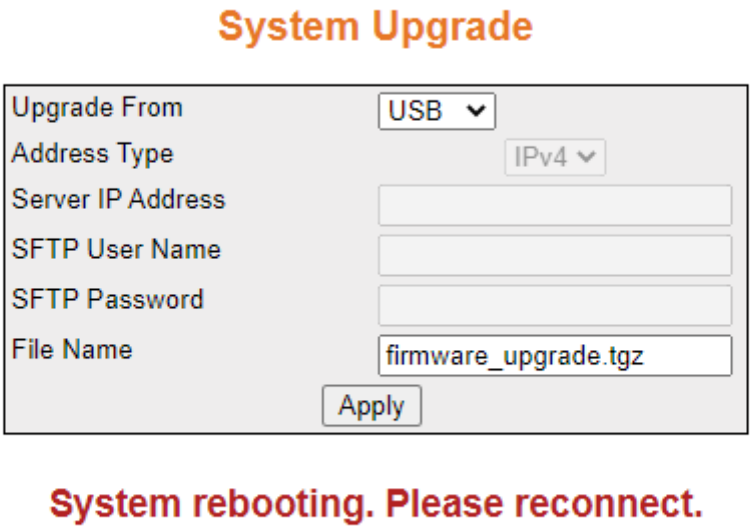
2. Set the fields as follows:
   - **Upgrade From** field—select USB.
   - **File Name**—enter the file name to be loaded from the USB.

3. Click **Apply** to upgrade the MicroRAPTOR.

   STEP RESULT: A timer will appear providing the elapsed time since the upgrade started. The screen will appear similar to the following:



The screen will eventually change to the following:



The MicroRAPTOR firmware will be upgraded and reloaded automatically. After about 5 minutes the device will be ready for users to login to it.

4.

RESULT:

The MicroRAPTOR upgrade is complete.

18. Web Interface: Upgrade the MicroRAPTOR using TFTP

This section will explain how to upgrade the MicroRAPTOR firmware. This process takes approximately 20 minutes to execute when there is a fast network connection between the TFTP server and the MicroRAPTOR.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

For all upgrades, it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

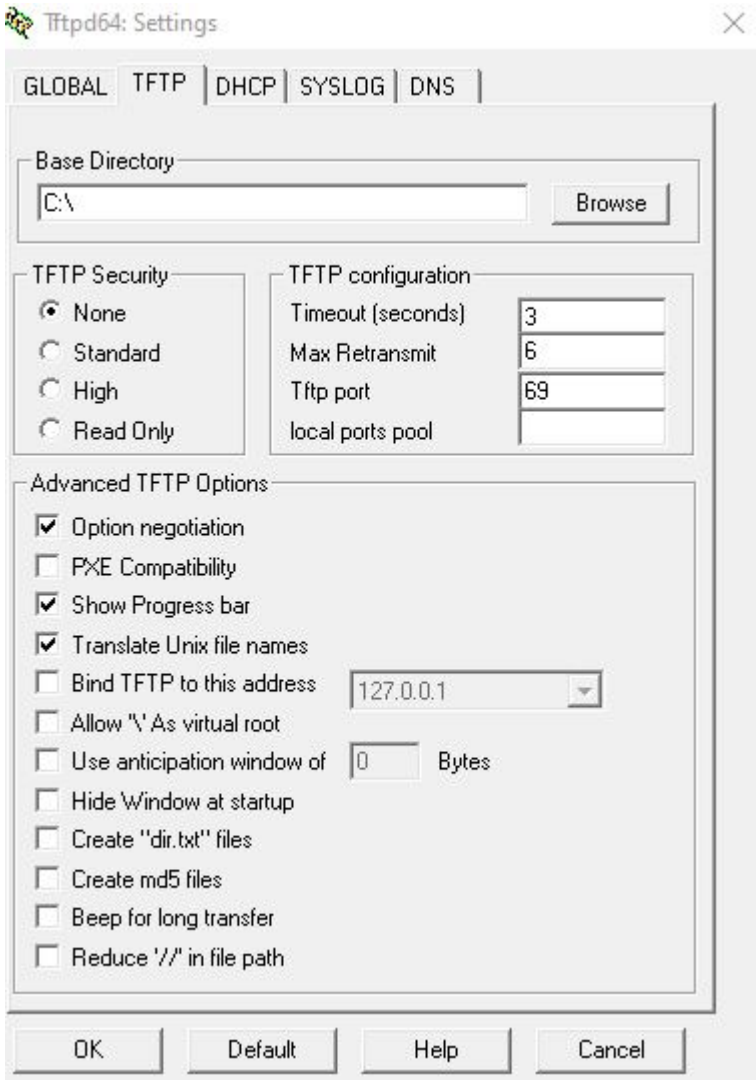
A TFTP server must be installed on a device with network connectivity to the MicroRAPTOR. There are a number of commercial and free TFTP server options available. For this example Tftpd64 was used as the server. It may be downloaded from this site: https://pjo2.github.io/tftpd64/

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. Install the TFTP server on a machine that has network connectivity to the MicroRAPTOR.
2. Configure the TFTP server such that its base directory contains the firmware file you wish to upload. Depending on the server software you are using there may be more settings that need to be configured.

   FOR EXAMPLE: This is a screen shot of theTftpd64 settings screen.



3. To Upgrade a Configuration from TFTP navigate to the Upgrade page.

   FOR EXAMPLE: Go to **System > System Upgrade**

   STEP RESULT: The upgrade page appears:

   System Upgrade

4. Set the fields as follows:
   - **Upgrade From** field—select TFTP.
   - **File Name**—enter the file name to be downloaded from the TFTP Server.
   - **Server IP Address**—enter the IP address of the TFTP server.

   STEP RESULT:

   The MicroRAPTOR will be upgraded and reloaded automatically. After about 5 minutes the device will be ready for users to login to it.

5. Click **Apply** to upgrade the MicroRAPTOR.

   STEP RESULT: A timer will appear providing the elapsed time since the upgrade started. The screen will appear similar to the following:

   The screen will eventually change to the following:

6.

RESULT:

The MicroRAPTOR upgrade is complete.

19. Web Interface: Upgrade the MicroRAPTOR using SFTP

This section will explain how to upgrade the MicroRAPTOR firmware. This process takes approximately 20 minutes to execute when there is a fast network connection between the TFTP server and the MicroRAPTOR.

PREREQUISITE:

To perform the tasks in this section, you will have already logged into the MicroRAPTOR via the *Web UI*.

For all upgrades, it is recommended that user's backup their current running configuration prior to commencing the upgrade process.

A SFTP server must be installed on a device with network connectivity to the MicroRAPTOR. There are a number of commercial and free SFTP server options available. For this example the Rebex Tiny SFTP Server was used as the server. It may be downloaded from this site:
https://www.rebex.net/tiny-sftp-server/

Valid Upgrade Paths

If the release that your device is running is not listed in the Supported Upgrade Paths table, it is recommended that the support team is contacted for more detailed instructions.

1. Install the SFTP server on a machine that has network connectivity to the MicroRAPTOR.
2. Configure the SFTP server such that its base directory contains the firmware file you wish to upload. Depending on the server software you are using there may be more settings that need to be configured. The Rebex SFTP server uses a configuration file, RebexTinySftpServer.exe.config, which the user must modify. Please note that the free Rebex is not full featured and the professional option may be more suitable for a commercial deployment.

3. To Upgrade a Configuration from TFTP navigate to the Upgrade page.

   FOR EXAMPLE: Go to **System > System Upgrade**

   STEP RESULT: The upgrade page appears:

   System Upgrade

4. Set the fields as follows:
   - **Upgrade From** field—select SFTP.
   - **File Name**—enter the file name to be downloaded from the SFTP Server.
   - **Server IP Address**—enter the IP address of the SFTP server.
   - **SFTP User Name**—enter the User Name of the SFTP server.
   - **SFTP Password**—enter the Password of the SFTP server.

   STEP RESULT:

5. Click **Apply** to upgrade the MicroRAPTOR.

   STEP RESULT: A timer will appear providing the elapsed time since the upgrade started. The screen will appear similar to the following:

   The screen will eventually change to the following:

   The MicroRAPTOR will be upgraded and reloaded automatically. After about 5 minutes the device will be ready for users to login to it.

6.

RESULT:

The MicroRAPTOR upgrade is complete.

GLOSSARY ENTRIES

ARP

ARP (Address Resolution Protocol). The ARP is a communication protocol used for discovering the link layer address, such as a MAC address, associated with a given Internet layer address, typically an IPv4 address.

CLI

Command line interface (CLI) is a text-based interface that is used to operate software and operating systems while allowing the user to respond to visual prompts by typing single commands into the interface and receiving a reply in the same way

IP

Internet Protocol (IP).

IPv4

IPv4 and IPv6 are Internet protocol version 4 and Internet protocol version 6. IPv4 supports:

- IPv4 has a 32-bit address length
- IPv4 binary bits are separated by a dot(.) whereas IPv6 binary bits are separated by a colon(:).
- IPv4 is a numeric addressing method whereas IPv6 is an alphanumeric addressing method
- It Supports Manual and DHCP address configuration
- In IPv4 end to end, connection integrity is Unachievable
- It can generate 4.29×109 address space
- Fragmentation performed by Sender and forwarding routers
- In IPv4 Packet flow identification is not available
- In IPv4 checksum field is available
- It has broadcast Message Transmission Scheme
- In IPv4 Encryption and Authentication facility not provided
- IPv4 has a header of 20-60 bytes.

MIB OID

Management Information Base (MIB) is the hierarchical database used by the simple network management protocol (SNMP) to describe the particular device being monitored.
MIB Object IDentifier (OID), as known as a MIB object identifier in the SNMP, is a number assigned to devices in a network for identification purposes. OID numbering is hierarchical. Using the IETF notation of digits and dots, resembling very long IP addresses, various registries such as ANSI assign high-level numbers to vendors and organizations. They, in turn, append digits to the number to identify individual devices or software processes.

SSH

(Secure SHell) is a security protocol for logging into a remote server. SSH provides an encrypted session for transferring files and executing server programs on all platforms. Also serving as a

secure client/server connection for applications such as database access and email, SSH supports a variety of authentication methods.

VLAN

Virtual Local Area Network (VLAN) is a logical subgroup within a local area network that is created via software rather than manually moving cables in the wiring closet.

Web UI

Web User Interface (Web UI) is a control panel in a device presented to the user via the Web browser. Network devices such as gateways, routers, and switches typically have such control panel that is accessed by entering the IP address of the device into a Web browser in a computer on the same local network.

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