Security Gateway Manual

Netgate-6100

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CONTENTS

This Quick Start Guide covers the first time connection procedures for the Netgate® 6100 Desktop Firewall Appliance and will provide the information needed to keep the appliance up and running.

Tip: Before getting started, we recommend downloading the PDF version of the Product Manual and the PDF version of the pfSense Documentation in case you lose Internet access.


OUT OF THE BOX

1.1 Getting Started

The basic firewall configuration begins with connecting the Netgate® appliance to the Internet. The Netgate appliance should be unplugged at this time.

Connect one end of an Ethernet cable to the WAN port (shown in the *Input and Output Ports* section) of the Netgate appliance. The other end of the same cable should be inserted into a port of the Cable or DSL modem. The modem provided by the ISP should have multiple LAN ports. Any port should work.

Next, connect one end of a second Ethernet cable to the LAN port (shown in the *Input and Output Ports* section) of the Netgate appliance. Connect the other end to the computer.
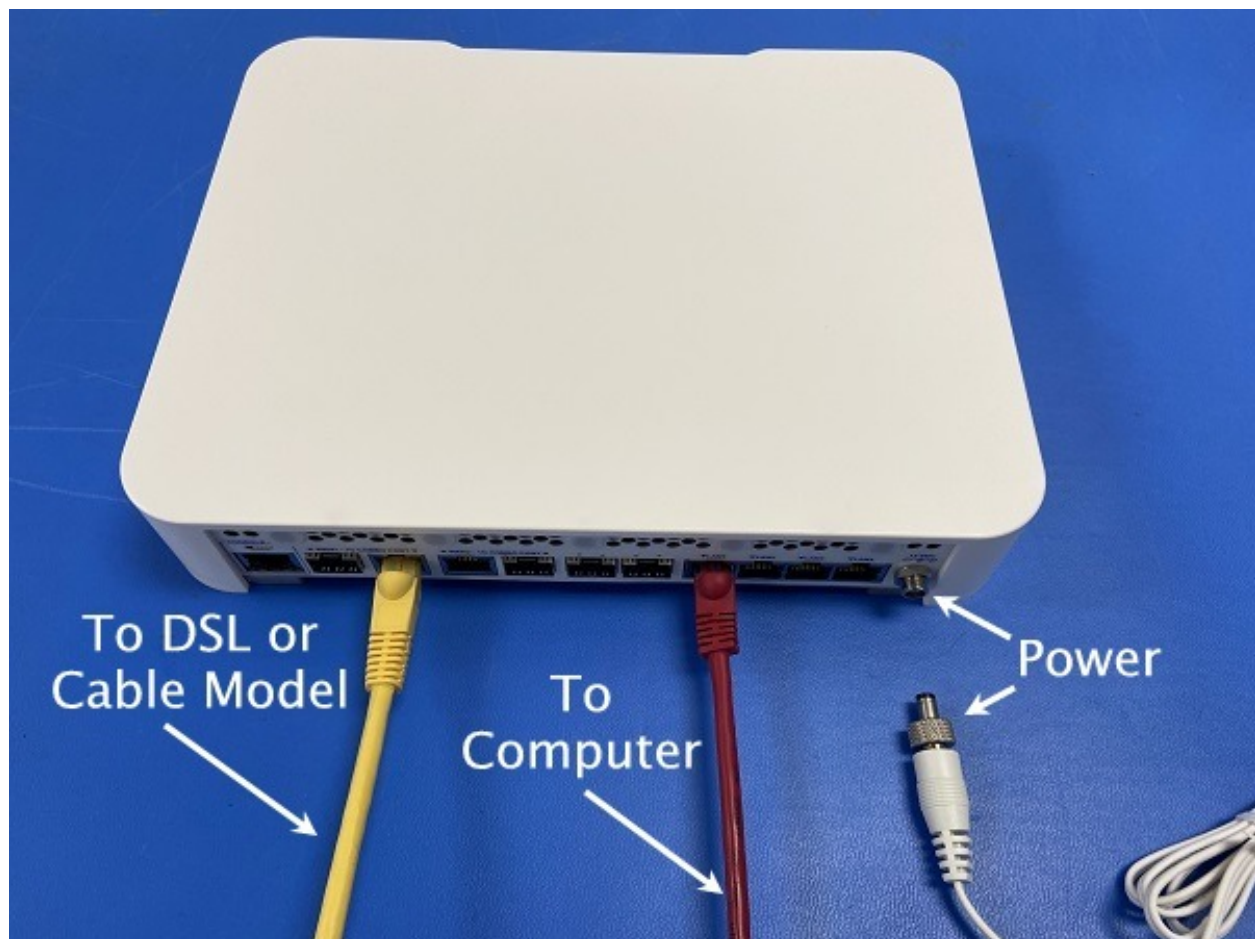
> **Warning:** The default IP Address on the LAN subnet on the Netgate firewall is `192.168.1.1/24`. The same subnet **cannot** be used on both WAN and LAN, so if the default IP address on the ISP-supplied modem is also `192.168.1.1/24`, **disconnect the WAN** interface until the LAN interface on the firewall has been renumbered to a different subnet (like **192.168.2.1/24**).

1.2 Initial Configuration

Plug the power cable into the power port (shown in the *Input and Output Ports* section) to turn on the Netgate® Firewall. Allow 4 or 5 minutes to boot up completely.

> **Warning:** If your DSL or Cable Modem has a default IP Address of 192.168.1.1, please disconnect the Ethernet cable from the WAN1 port on your Netgate 6100 Security Gateway before proceeding. You will need to change the default IP Address of the device during a later step in the configuration.

1. From the computer, log into the Web Interface

   Open a web browser (Google Chrome in this example) and type in `192.168.1.1` on the address bar. Press `Enter`.

Fig. 1: Enter the Default LAN IP Address

2. A warning message may appear. If this message or similar message is encountered, it is safe to proceed. Click the `Advanced` Button and then click `Proceed to 192.168.1.1 (unsafe)` to continue.

3. At the **Sign In** page, enter the default pfSense® Plus username and password and click `Next`.

   • Default Username: **admin**

   • Default Password: **pfsense**

1.2.1 The Setup Wizard

The following steps will step through the Setup Wizard for the initial configuration of the firewall.

> **Note:** Ignore the warning to reset the 'admin' account password. One of the steps in the Setup Wizard is to change the default password.

1. Click `Next` to start the Setup Wizard.

2. Click `Next` after you have read the information on Netgate Global Support.

3. On the General Information page, use the following as a guide to configure the firewall.

   Hostname: Any desired name can be entered. For the purposes of this guide, the default hostname `pfsense` is used.
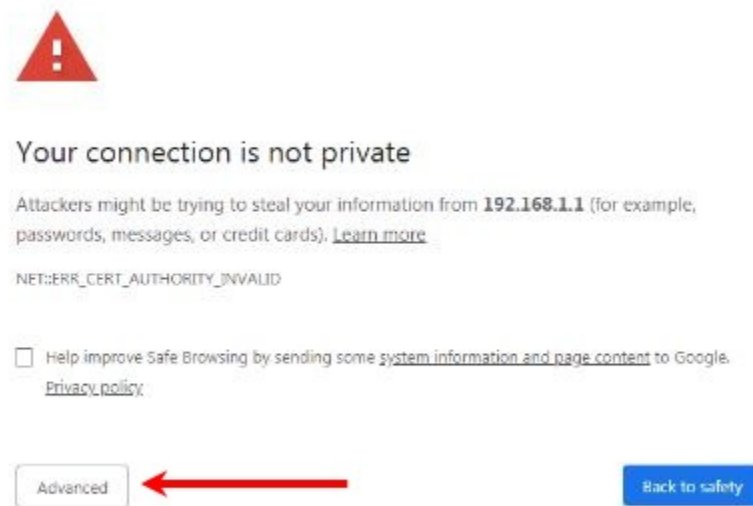
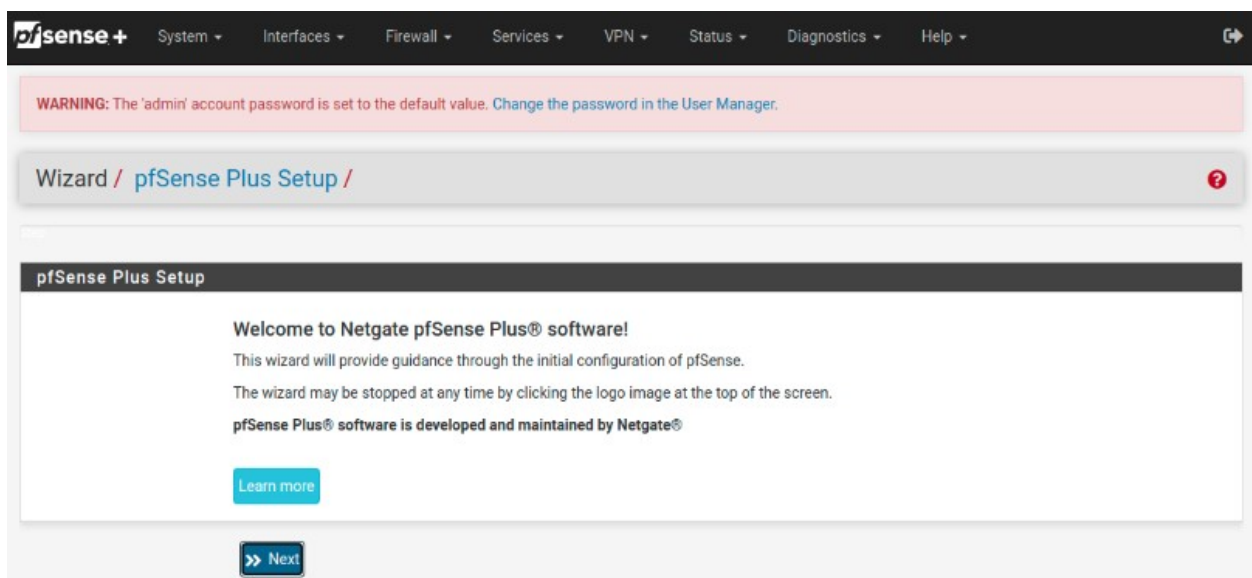Fig. 2: Click **Advanced** and then **Proceed to 192.168.1.1 (unsafe)**

Fig. 3: Click **Next**

Domain: The default `localdomain` is used for the purposes of this tutorial.

DNS Servers: For purposes of this setup guide, use the Google public DNS servers (`8.8.8.8` and `8.8.4.4`).

Fig. 4: Type in the DNS Server information and Click **Next**

4. Use the following information for the Time Server Information page.

    Time Server Hostname: Use the default time server address.

    Timezone: Select the time zone for the location of the firewall. For this guide, the Timezone will be set to `America/Chicago` for US Central time.

5. The WAN interface is the Public IP address the network will use to communicate with the Internet. Use the following information for the WAN configuration page.

    DHCP is the default and is the most common type of interface for home cable modems.

    Default settings for the other items on this page should be acceptable for normal home users.

6. Configuring LAN IP Address & Subnet Mask. The default LAN IP address of `192.168.1.1` and subnet mask of `24` is usually sufficient.

Tip: If your DSL or Cable Modem has a default IP Address of 192.168.1.1, change the IP Address of your Netgate 6100 Security Gateway to a different subnet, such as `192.168.2.1` with a subnet mask of `24` to avoid an IP Address conflict.

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7. Change the **Admin Password**. Enter the same password in both fields.

8. Click `Reload` to save the configuration.

Fig. 5: Change the Timezone and Click **Next**

Fig. 6: Default Settings Should be Acceptable. Click **Next**

9. After a few seconds, a message will indicate the Setup Wizard has completed. To proceed to the pfSense® Plus dashboard, click `Finish`.

10. A final notification screen will appear with the **Copyright and Trademark Notices.** Read and click `Accept` to continue to the dashboard.

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Accept

Fig. 7: Read and Click **Accept**

If you unplugged the Ethernet cable at the beginning of this configuration, reconnect it to the WAN1 port now.

This completes the basic configuration for the Netgate appliance.

1.3 pfSense Plus Overview

This page provides an overview of the pfSense® Plus dashboard and navigation. It also provides information on how to perform frequent tasks such as backing up the pfSense® Plus software and connecting to the Netgate firewall console.

1.3.1 The Dashboard

pfSense® Plus software is highly configurable, all of which can be done through the dashboard. This orientation will help to navigate and further configure the firewall.
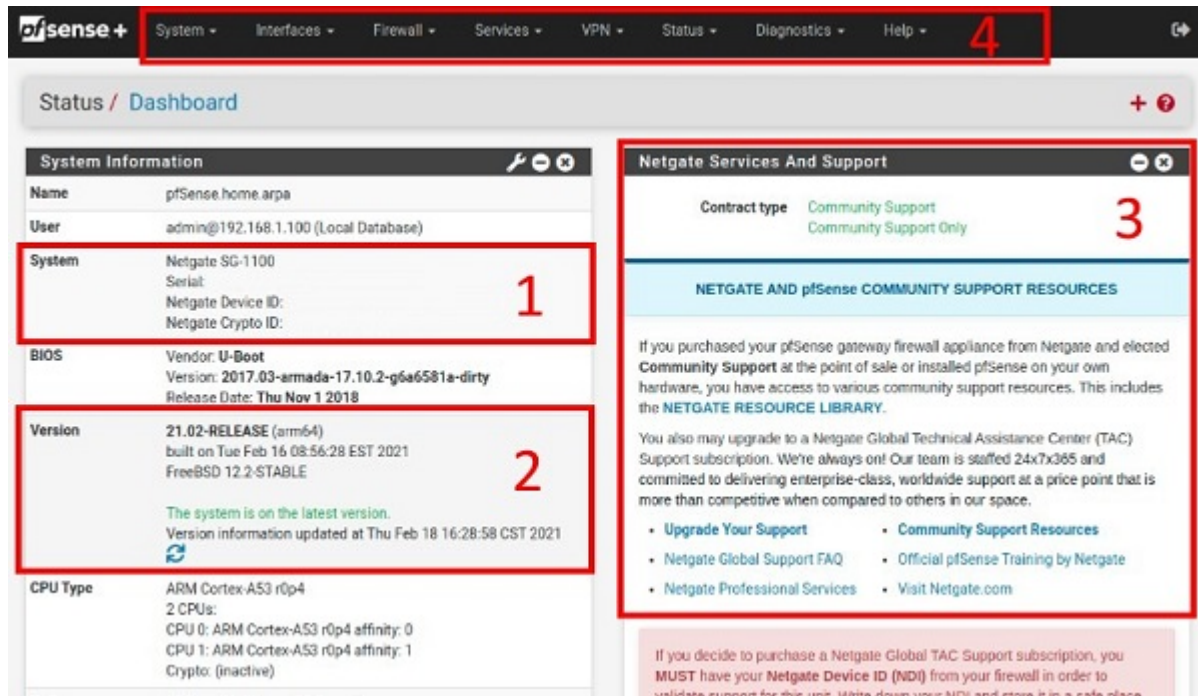

Fig. 8: The pfSense® Plus Dashboard

Section 1 shows important system information such as the model, Serial Number, and Netgate Device ID for this Netgate firewall.

Section 2 identifies what version of pfSense® Plus software is installed, and if an update is available.

Section 3 describes Netgate Service and Support.

Section 4 shows the various menu headings. Each menu heading has drop-down options for a wide range of configuration choices.

1.3.2 Re-running the Setup Wizard

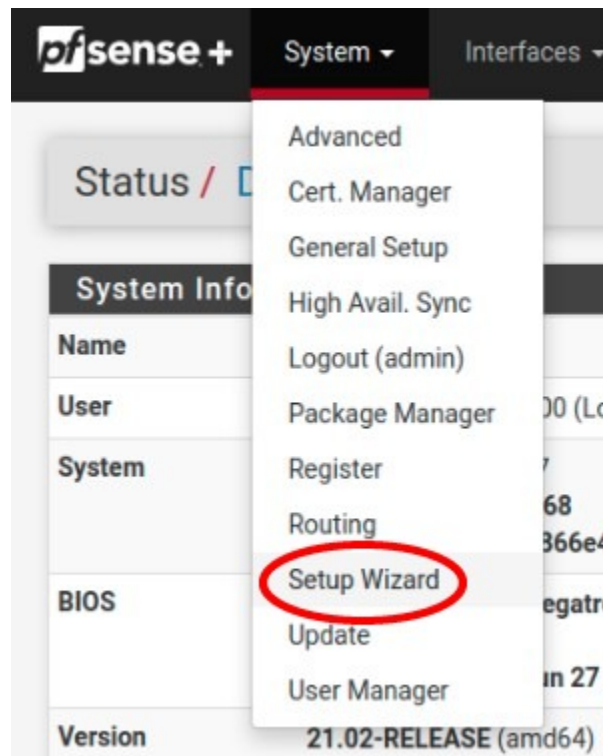To re-run the Setup Wizard, navigate to **System -> Setup Wizard**.

Fig. 9: Re-run the Setup Wizard

1.3.3 Backup and Restore

It is important to backup the firewall configuration prior to updating or making any configuration changes. From the menu at the top of the page, browse to **Diagnostics > Backup/Restore**.

Click `Download configuration as XML` and save a copy of the firewall configuration to the computer connected to the Netgate firewall.

This backup (or any backup) can be restored from the same screen by choosing the backed up file under **Restore Configuration**.

Note: Auto Config Backup is a built-in service located at **Services -> Auto Config Backup**. This service will save up to 100 encrypted backup files automatically, any time a change to the configuration has been made. Visit the Auto Config Backup page for more information.

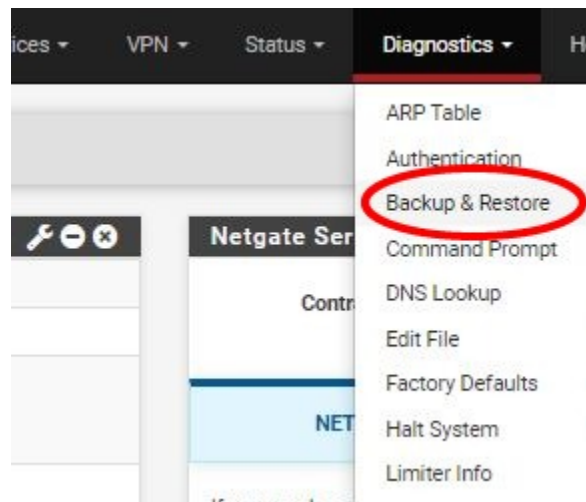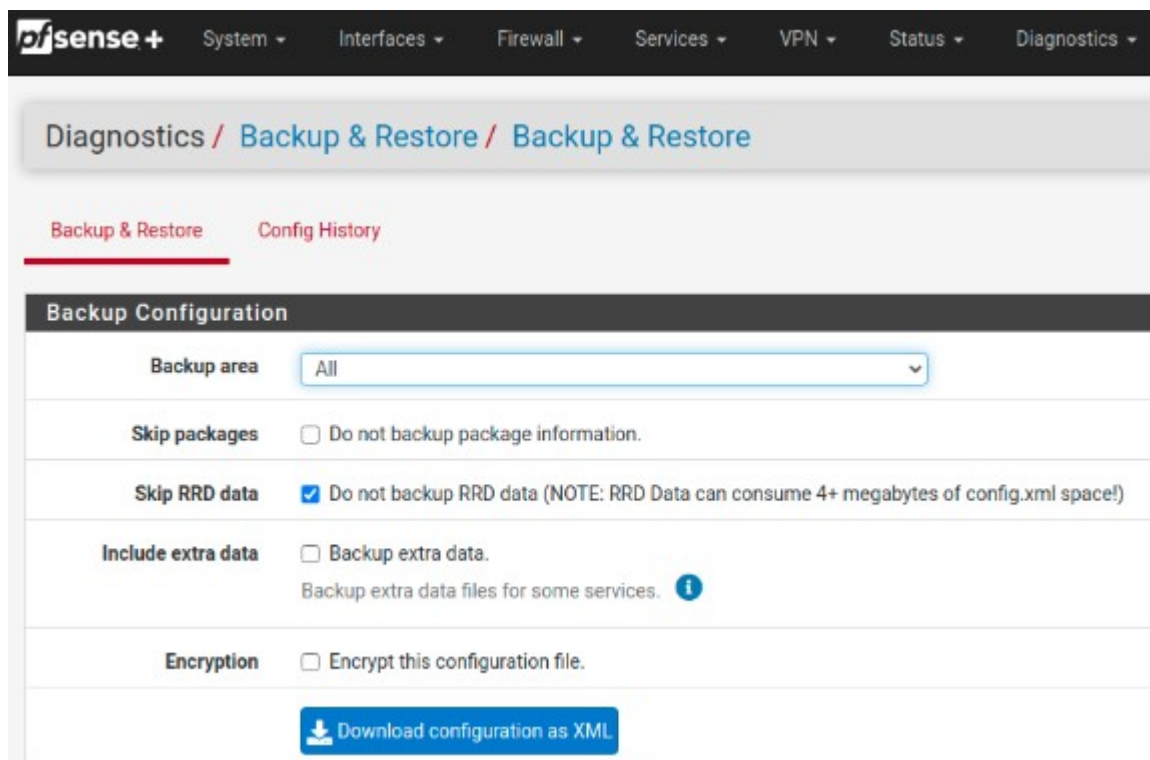
Fig. 10: Backup & Restore

Fig. 11: Click Download configuration as XML

Connecting to the Console

There are times when accessing the console is required. Perhaps GUI console access has been locked out, or the password has been lost or forgotten.

See also:

Connecting to the Console Port Connect to the console. Cable is required.

Tip: To learn more about getting the most out of your Netgate appliance, sign up for a pfSense Plus Training course or browse our extensive Resource Library.

1.4 Input and Output Ports
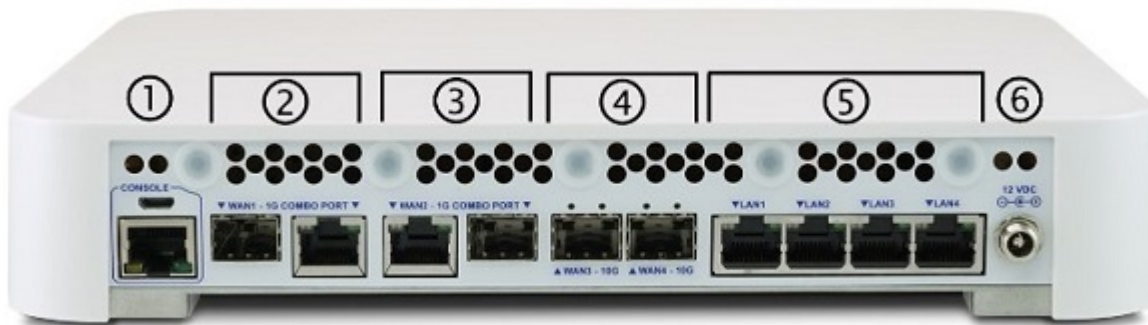
1.4.1 Networking Ports

The WAN1 and WAN2 Combo-Ports are shared ports. Each has an RJ-45 port and an SFP port. Only the RJ-45 *or* the SFP connector can be used each port.

Note: Each port, WAN1 and WAN2, is descrete and individual. You can use the RJ-45 connector on one port, and the SFP connector on the other.

Port	Interface Name	Port Name	Port Type	Port Speed
2	WAN1	ix3	RJ-45/SFP	1 Gbps
3	WAN2	ix2	RJ-45/SFP	1 Gbps
4	WAN3 and WAN4	ix0 and ix1	SFP+	10 Gbps
5	LAN1 - LAN4	igc0 - 3	RJ-45	2.5 Gbps

SFP+ Ethernet Ports

WAN3 and WAN4 are discrete ports, each with dedicated 10 Gbps back to the Intel SoC.

> **Warning:** There is an Intel-supplied driver issue for the C3000, preventing 1Gbps and 10Gbps copper modules from being recognized on the SFP+ ports. Copper modules are not supported.

Compatible SFP/SFP+ Modules

Below are some general guidelines for compatible SFP/SFP+ modules:

- Intel-branded SFP+ SR/LR Dual Speed (1G/10G) optical modules.

- Intel-branded SFP+ DA twin-ax cables that comply with SFF-8431 v4.1 and SFF-8472 v10.4 specifications. **Note:** Limited to 10G link speed (no 1G support).

- Third party SFP+ DA twin-ax cables that comply with SFF-8431 v4.1 and SFF-8472 v10.4 specifications. **Note:** Limited to 10G link speed (no 1G support).

- SFP+ AoCs (Active optical Cables). **Note:** Limited to 10G link speed (no 1G support).

- Third party SFP+ SR/LR dual speed 1G/10G) optical modules

- SFP+ active copper cables

- 1000BASE-SX / 1000BASE-LX optical modules

Specific known-working modules include:

Model / Part Number	Description
Finisar FTLF1318P3BTL	1000BASE-LX and 1G Fibre Channel (1GFC) 10km Industrial Temperature Gen 3 SFP Optical Transceiver
Finisar FTLX1471D3BCL	10Gb/s 10km Single Mode Datacom SFP+ Transceiver
Intel FTLX8571D3BCV-IT	1G/10G Dual Rate SFP Fiber Optical Transceiver Module
Finisar FTLX8574D3BCL	10GBASE-SR/SW 400m Multimode Datacom SFP+ Optical Transceiver
Finisar FTLF8519P3BNL	1000BASE-SX and 2G Fibre Channel (2GFC) 500m Extended Temperature SFP Optical Transceiver **Note:** Links at 1G, 2G is not supported

1.4.2 Other Ports

Port	Description
1	Console
6	Power

- The Console access can be accessed with a console cable using the mini-USB connector, or it can be accessed with a USB-to-RJ-45 "Cisco" cable

- The Power connector is 12VDC with threaded locking connector. Power Consumption 20W (idle)

1.5 Safety and Legal

1.5.1 Safety Notices

1. Read, follow, and keep these instructions.

2. Heed all warnings.

3. Only use attachments/accessories specified by the manufacturer.

Warning: Do not use this product in location that can be submerged by water.

Warning: Do not use this product during an electrical storm to avoid electrical shock.

1.5.2 Electrical Safety Information

1. Compliance is required with respect to voltage, frequency, and current requirements indicated on the manufacturer's label. Connection to a different power source than those specified may result in improper operation, damage to the equipment or pose a fire hazard if the limitations are not followed.

2. There are no operator serviceable parts inside this equipment. Service should be provided only by a qualified service technician.

3. This equipment is provided with a detachable power cord which has an integral safety ground wire intended for connection to a grounded safety outlet.

   a) Do not substitute the power cord with one that is not the provided approved type. If a 3 prong plug is provided, never use an adapter plug to connect to a 2-wire outlet as this will defeat the continuity of the grounding wire.

   b) The equipment requires the use of the ground wire as a part of the safety certification, modification or misuse can provide a shock hazard that can result in serious injury or death.

   c) Contact a qualified electrician or the manufacturer if there are questions about the installation prior to connecting the equipment.

   d) Protective grounding/earthing is provided by Listed AC adapter. Building installation shall provide appropriate short-circuit backup protection.

   e) Protective bonding must be installed in accordance with local national wiring rules and regulations.

1.5.3 FCC Compliance

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment.

1.5.4 Industry Canada

This Class B digital apparatus complies with Canadian ICES-3(B). Cet appareil numérique de la classe B est conforme à la norme NMB-3(B) Canada.

1.5.5 Australia and New Zealand

This is a AMC Compliance level 2 product. This product is suitable for domestic environments.

1.5.6 CE Marking

CE marking on this product represents the product is in compliance with all directives that are applicable to it.

1.5.7 RoHS/WEEE Compliance Statement

English

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Deutsch

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist, nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Español

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

Français

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

1.5.8 Declaration of Conformity

Česky[Czech]

NETGATE tímto prohla uje, e tento NETGATE device, je ve shod se základními po adavky a dal ími p íslu n mi ustanoveními sm rnice 1999/5/ES.

Dansk [Danish]

Undertegnede NETGATE erklærer herved, at følgende udstyr NETGATE device, overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Nederlands [Dutch]

Hierbij verklaart NETGATE dat het toestel NETGATE device, in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. Bij deze verklaart NETGATE dat deze NETGATE device, voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.

English

Hereby, NETGATE , declares that this NETGATE device, is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Eesti [Estonian]

Käesolevaga kinnitab NETGATE seadme NETGATE device, vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Suomi [Finnish]

NETGATE vakuuttaa täten että NETGATE device, tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen. Français [French] Par la présente NETGATE déclare que l'appareil Netgate, device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Deutsch [German]

Hiermit erklärt Netgate, dass sich diese NETGATE device, in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)

Ελληνικ**H [Greek]**

ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ NETGATE ΔΗΛΩΝΕΙ ΟΤΙ NETGATE device, ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1995/5/ΕΚ.

Magyar [Hungarian]

Alulírott, NETGATE nyilatkozom, hogy a NETGATE device, megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.

Íslenska [Icelandic]

Hér me l sir NETGATE yfir ví a NETGATE device, er í samræmi vi grunnkröfur og a rar kröfur, sem ger ar eru í tilskipun 1999/5/EC.

Italiano [Italian]

Con la presente NETGATE dichiara che questo NETGATE device, è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Latviski [Latvian]

Ar o NETGATE deklar , ka NETGATE device, atbilst Direkt vas 1999/5/EK b tiskaj m pras b m un citiem ar to saist tajiem noteikumiem.

Lietuviškai [Lithuanian]

NETGATE deklaruoja, kad šis NETGATE ırenginys atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Malti [Maltese]

Hawnhekk, Netgate, jiddikjara li dan NETGATE device, jikkonforma mal- ti ijiet essenzjali u ma provvedimenti o rajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

Norsk [Norwegian]

NETGATE erklærer herved at utstyret NETGATE device, er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

Slovensky [Slovak]

NETGATE t mto vyhlasuje, e NETGATE device, sp a základné po iadavky a v etky príslu né ustanovenia Smernice 1999/5/ES.

Svenska [Swedish]

Härmed intygar NETGATE att denna NETGATE device, står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Español [Spanish]

Por medio de la presente NETGATE declara que el NETGATE device, cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Polski [Polish]

Niniejszym, firma NETGATE o wiadcza, e produkt serii NETGATE device, spełnia zasadnicze wymagania i inne istotne postanowienia Dyrektywy 1999/5/EC.

Português [Portuguese]

NETGATE declara que este NETGATE device, está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Română [Romanian]

Prin prezenta, NETGATE declară că acest dispozitiv NETGATE este în conformitate cu cerințele esențiale și alte prevederi relevante ale Directivei 1999/5/CE.

1.5.9 Disputes

ANY DISPUTE OR CLAIM RELATING IN ANY WAY TO YOUR USE OF ANY PRODUCTS/SERVICES, OR TO ANY PRODUCTS OR SERVICES SOLD OR DISTRIBUTED BY RCL OR ESF WILL BE RESOLVED BY BINDING ARBITRATION IN AUSTIN, TEXAS, RATHER THAN IN COURT. The Federal Arbitration Act and federal arbitration law apply to this agreement.

THERE IS NO JUDGE OR JURY IN ARBITRATION, AND COURT REVIEW OF AN ARBITRATION AWARD IS LIMITED. HOWEVER, AN ARBITRATOR CAN AWARD ON AN INDIVIDUAL BASIS THE SAME DAMAGES AND RELIEF AS A COURT (INCLUDING INJUNCTIVE AND DECLARATORY RELIEF OR STATUTORY DAMAGES), AND MUST FOLLOW THE TERMS OF THESE TERMS AND CONDITIONS OF USE AS A COURT WOULD.

To begin an arbitration proceeding, you must send a letter requesting arbitration and describing your claim to the following:

Rubicon Communications LLC
Attn.: Legal Dept.
4616 West Howard Lane, Suite 900
Austin, Texas 78728
legal@netgate.com

The arbitration will be conducted by the American Arbitration Association (AAA) under its rules. The AAA's rules are available at www.adr.org. Payment of all filing, administration and arbitrator fees will be governed by the AAA's rules.

We each agree that any dispute resolution proceedings will be conducted only on an individual basis and not in a class, consolidated or representative action. We also both agree that you or we may bring suit in court to enjoin infringement or other misuse of intellectual property rights.

1.5.10 Applicable Law

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HOW-TO GUIDES

2.1 Netgate 6100 Wall Mount

The Netgate 6100 has an optional Wall Mount Kit available. This page provides an overview for attaching the system to the wall.

Fig. 1: The Netgate 6100 Mounted Vertically

The Netgate 6100 can be mounted vertically or horizontally. If mounted horizontally, the ports and cables should face up to reduce the pull from the weight of the cables on the ports.

The Netgate 6100 Wall Mount Kit contains all of the components necessary to mount the 6100.

The Netgate 6100 Wall Mount can be used in an *inboard* fashion, or an *outboard* fashion.
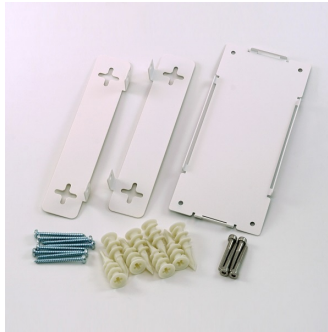
Fig. 2: The Netgate 6100 Wall Mount Kit

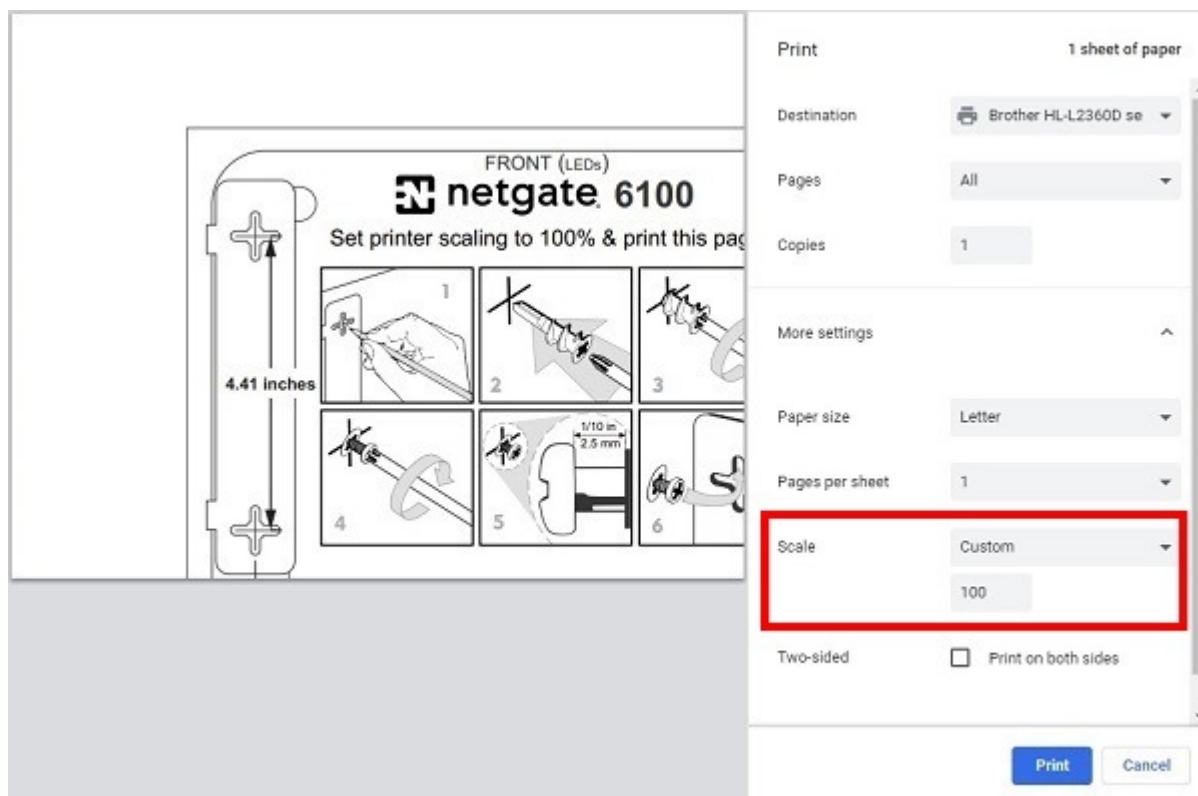Fig. 3: The Netgate 6100 *Inboard* Wall Mount Orientation

Fig. 4: The Netgate 6100 *Outboard* Wall Mount Orientation

2.1.1 Inboard Wall Mount Instructions

Click on the button below to download the Wall Mount Template.

Once the PDF template is downloaded, you must print it out at 100% Scale for it to be accurate.

Note: The 100% Scale setting varies by printer manufacturer and model.

Follow the pictured instructions on the PDF to complete the wall mount installation.

2.1.2 Outboard Wall Mount Instructions

Click on the button below to download the Wall Mount Template.

Once the PDF template is downloaded, there are two options to use it. Print out the first page at 100% Scale on 8.5" x 17" paper for it to be accurate.

Alternatively, you can print off pages 2 and 3 at 100% scale on 8.5" x 11" paper. Each page has a dotted line. Cut along the lines and verify the dimensions before using it.


Note: You can also use use the mounting brackets themselves to make the wall markings.

Fig. 5: Using the Netgate 6100 Wall Mount Bracket to Mark the Screw Locations

2.1.3 Mounting the Power Supply

The mounting bracket for the power supply uses two zip-ties to hold the power supply to the mounting bracket. There is no PDF for the Power Supply Bracket. Use the holes directly to mark the wall for mounting.
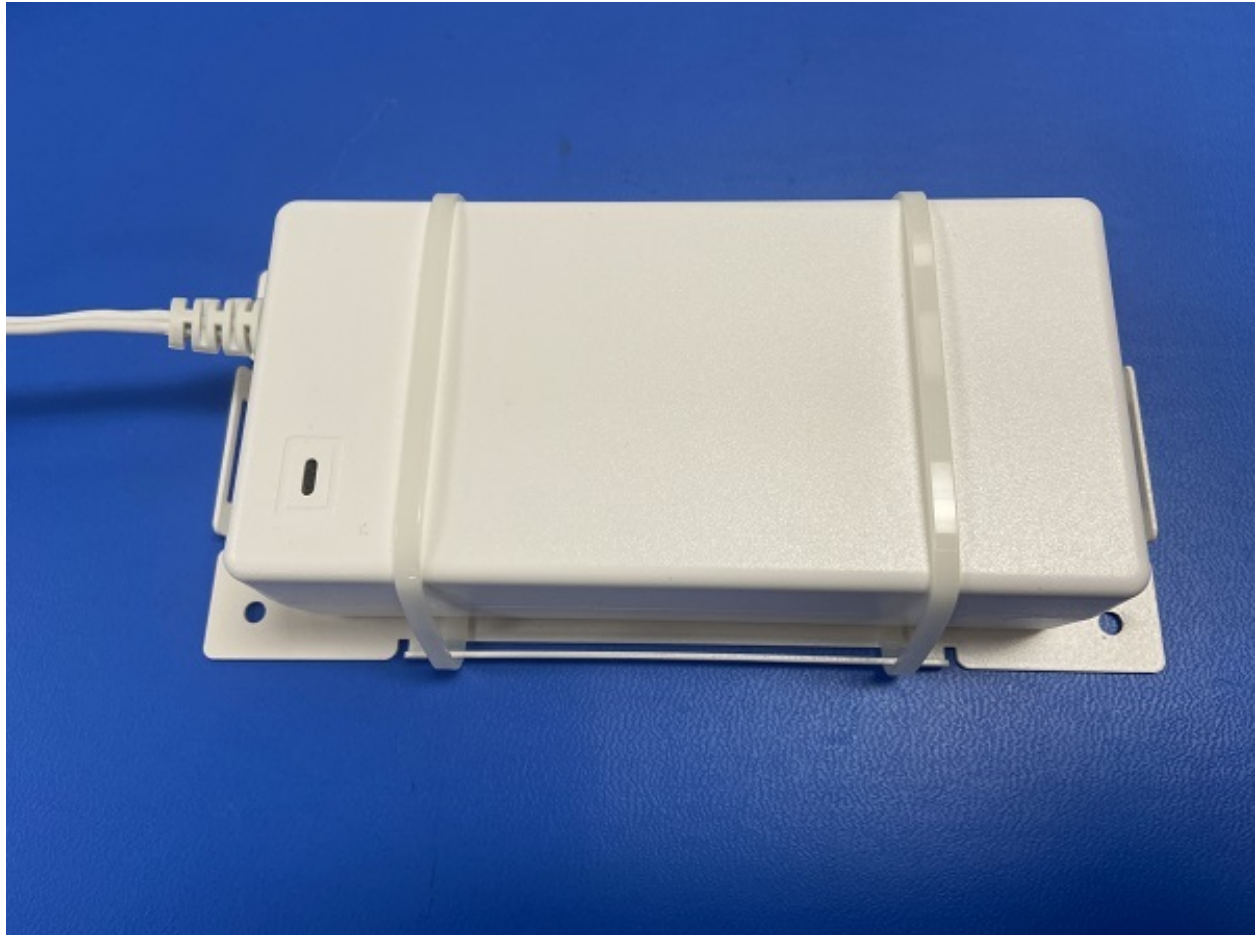
2.2 Connecting to the Console Port

There are times when directly accessing the console is required. Perhaps webGUI or SSH access has been locked out, or the password has been lost or forgotten. This guide shows how to regain access directly through the console.

2.2.1 Install the Driver

A **Silicon Labs CP210x USB-to-UART Bridge** driver is used to provide access to the console, which is exposed via the **USB Mini-b (5-pin)** port on the appliance.

If needed, install an appropriate **Silicon Labs CP210x USB to UART Bridge** driver on the workstation used to connect with the system.

Windows

There are drivers available for Windows available for download.

Mac OSX

There are drivers available for Mac OSX available for download.

For Mac, choose the **Macintosh OSX** download.

Linux

There are drivers available for Linux available for download.

FreeBSD

Recent versions of FreeBSD include this driver and will not require manual installation.

2.2.2 Connect a USB Cable

Next, locate an appropriate USB cable that has a **USB Mini-b (5-pin)** connector on one end and a regular **USB Type A** plug on the other end. These cables are commonly used with smaller USB peripherals such as GPS units, cameras, and so on.

Gently push the **USB Mini-b (5-pin)** plug end into the console port on the appliance and connect the **USB Type A** plug into an available USB port on the workstation.

Tip: Be certain to gently push in the **USB Mini-b (5-pin)** connector on the system side completely. With most cables there will be a tangible "click", "snap", or similar indication when the cable is fully engaged.


2.2.3 Locate the Console Port Device

The appropriate console port device that the workstation assigned as the serial port must be located before attempting to connect to the console.

Note: Even if the serial port was assigned in the BIOS, the workstation's OS may remap it to a different COM Port.

Windows

To locate the device name on Windows, open **Device Manager** and expand the section for **Ports (COM & LPT)**. Look for an entry with a title such as **Silicon Labs CP210x USB to UART Bridge**. If there is a label in the name that contains "COMX" where X is a decimal digit (e.g. **COM3**), that value is what would be used as the port in the terminal program.
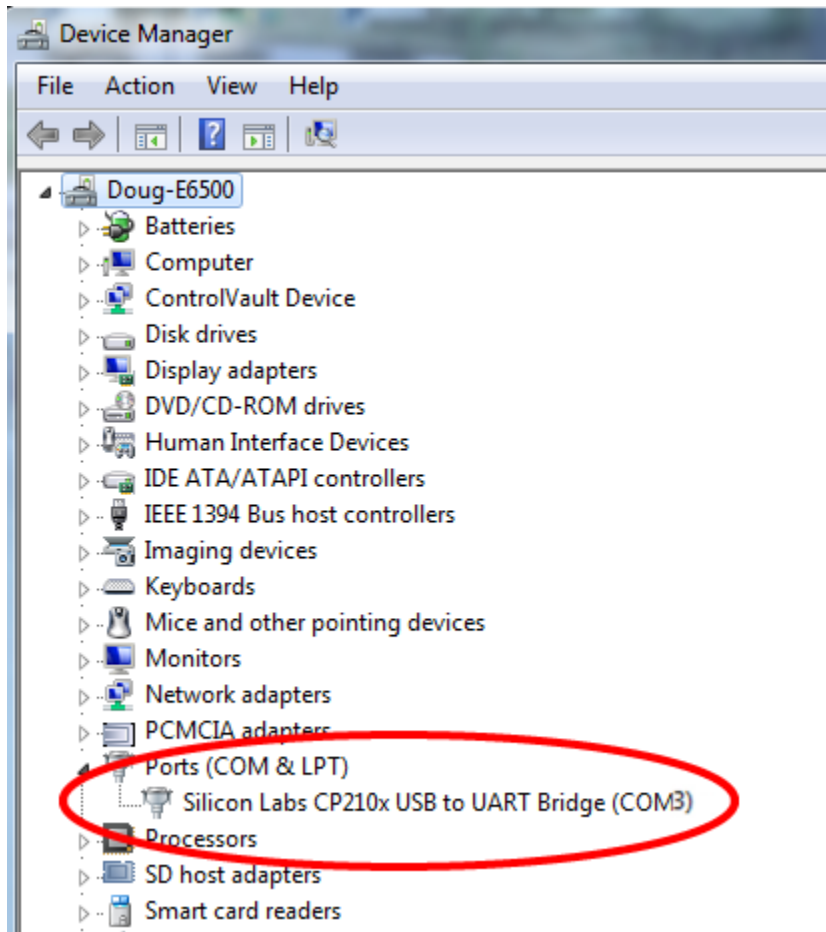
Mac OSX

The device associated with the system console is likely to show up as **/dev/cu.SLAB_USBtoUART**.

Linux

The device associated with the system console is likely to show up as **/dev/ttyUSB0**. Look for messages about the device attaching in the system log files or by running `dmesg`.

Note: If the device does not appear in **/dev/**, see the note above in the driver section about manually loading the Linux driver and then try again.

FreeBSD

The device associated with the system console is likely to show up as **/dev/cuaU0**. Look for messages about the device attaching in the system log files or by running `dmesg`.

2.2.4 Launch a Terminal Program

Use a terminal program to connect to the system console port. Some choices of terminal programs:

Windows

For Windows it is recommended to run *PuTTY in Windows* or SecureCRT. An example of how to configure Putty is below.

Warning: Do not use **Hyperterminal**.

Mac OSX

For Mac OSX it is recommended to run `screen`, or `cu`. An example of how to configure screen is below.

Linux

For Linux it is recommended to run `screen`, *PuTTY in Linux*, `minicom`, or `dterm`. An example of how to configure Putty and screen is below.

FreeBSD

For FreeBSD it is recommended to run `screen` or `cu`. An example of how to configure screen is below.

Client-Specific Examples

PuTTY in Windows

Open PuTTY and select **Session** under **Category** on the left hand side. Next, set the **Connection type** to **Serial**. Then, set **Serial line** to the console port that was located above, in *Locate the Console Port Device*, and the **Speed** to `115200` bits per second.

Click the **Open** button and the console screen will be displayed.

PuTTY in Linux

Open PuTTY from a terminal by typing **sudo putty**. Next, set the **Connection type** to **Serial**. Then, set **Serial line** to **/dev/ttyUSB0** and the **Speed** to `115200` bits per second.

Click the **Open** button and the console screen will be displayed.

GNU screen

In many cases `screen` may be invoked simply by using the proper command line, where `<console-port>` is the console port that was located above.

```
sudo screen <console-port> 115200
```

If portions of the text are unreadable but appear to be properly formatted, the most likely culprit is a character encoding mismatch in the terminal. Adding the `-U` parameter to the `screen` command line arguments forces it to use UTF-8 for character encoding:
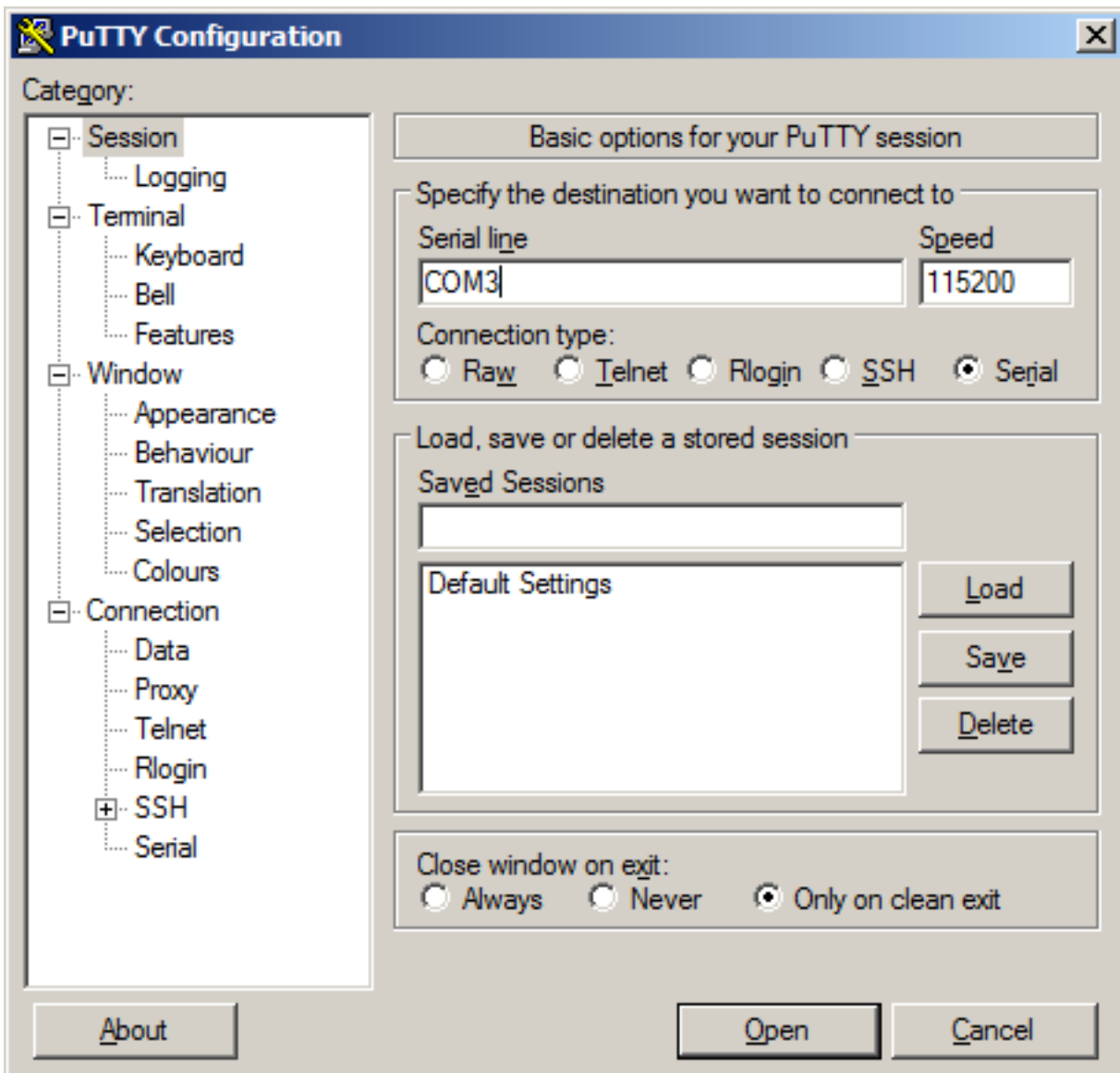
```
sudo screen -U <console-port> 115200
```

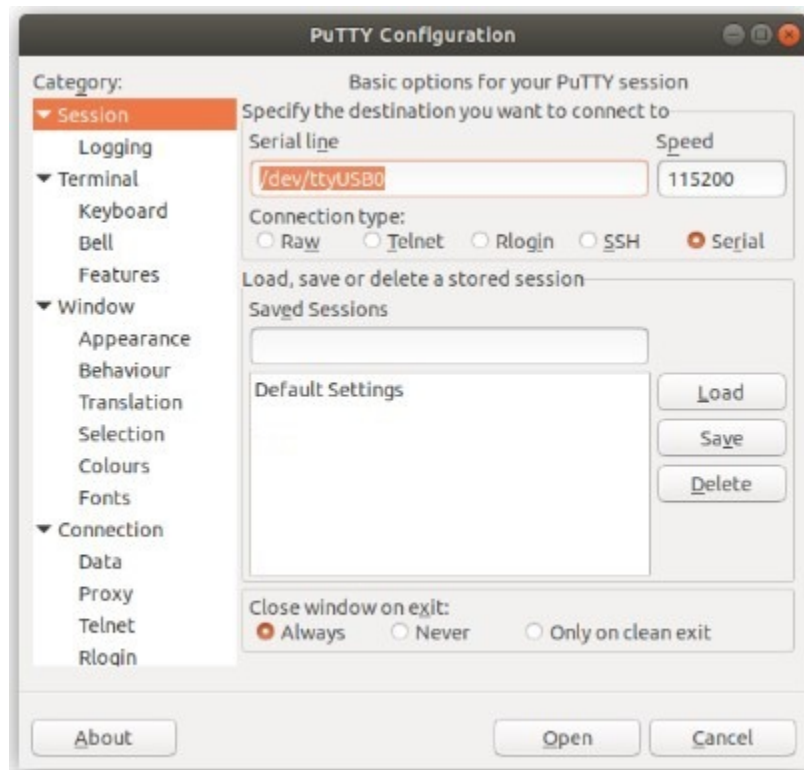Fig. 6: An example of using PuTTY in Windows.

Fig. 7: An example of using PuTTY in Linux.

Terminal Settings

The settings to use within the terminal program are:

Speed 115200 baud, the speed of the BIOS

Data bits 8

Parity none

Stop bits 1

Flow Control **Off** or **XON/OFF**. Hardware flow control (RTS/CTS) must be **disabled**.

2.2.5 Troubleshooting

No Serial Output

If there is no output at all, check the following items:

- Ensure the cable is correctly attached and fully inserted

- Ensure the terminal program is using the correct port

- Ensure the terminal program is configured for the correct speed. The default BIOS speed is **115200**, and many other modern operating systems use that speed as well. Some older operating systems or custom configurations may use slower speeds such as **9600** or **38400**.

- Ensure the operating system is configured for the proper console (e.g. `ttyS1` in Linux). Consult the various operating install guides on this site for further information.

PuTTY has issues with line drawing

PuTTY generally handles most cases OK but can have issues with line drawing characters on certain platforms.

These settings seem to work best (tested on Windows):

Window Columns x Rows = *80x24*

Window > Appearance Font = *Courier New 10pt* or *Consolas 10pt*

Window > Translation Remote Character Set = *Use font encoding* or *UTF-8*

Window > Translation Handling of line drawing characters = *Use font in both ANSI and OEM modes* or *Use Unicode line drawing code points*

Window > Colours Indicate bolded text by changing = The colour

Garbled Serial Output

If the serial output appears to be garbled, binary, or random characters check the following items:

- Ensure the terminal program is configured for the correct speed. (See *No Serial Output*)

- Ensure the terminal program is configured for the proper character encoding, such as **UTF-8** or **Latin-1**, depending on the operating system. (See *GNU Screen*)

Serial Output Stops After the BIOS

If serial output is shown for the BIOS but stops afterward, check the following items:

- Ensure the terminal program is configured for the correct speed for the installed operating system. (See *No Serial Output*)

- Ensure the installed operating system is configured to activate the serial console.

- Ensure the installed operating system is configured for the proper console (e.g. `ttyS1` in Linux). Consult the various operating install guides on this site for further information.

- If booting from a USB flash drive, ensure that the drive was written correctly and contains a bootable operating system image.

2.3 Reinstalling pfSense Plus Software

1. Please open a support ticket to request access to the factory firmware by selecting **Firmware Access** as the **General Problem** and then select **Netgate 6100** for the platform. Make sure to include the serial number in the ticket to expedite access.

   Once the ticket is processed, the latest stable version of the firmware will be attached to the ticket, with a name such as:

   ```
   pfSense-plus-memstick-serial-21.05.1-RELEASE-amd64.img.gz
   ```

   Note: pfSense® Plus is preinstalled on Netgate appliances, which is optimally tuned for our hardware and contains some features that cannot be found elsewhere, such as the AWS VPC Wizard.

   ---

2. Write the image to a USB memstick. Locating the image and writing it to a USB memstick is covered in detail under Writing Flash Drives.

3. *Connect to the console port* of the Netgate device.

4. Insert the memstick into an open USB port and boot the system.

5. After a minute the pfSense® Plus loader menu will be displayed with a 3 second timer. Either allow the menu to timeout or press 1 (the default) to continue.
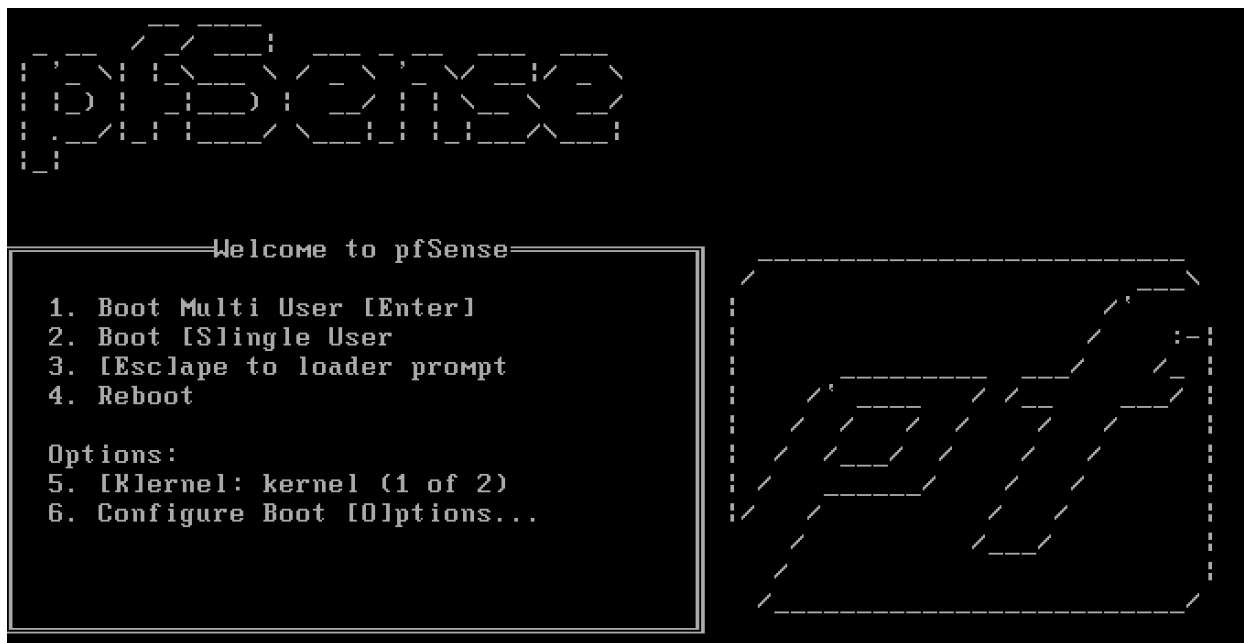
6. Console options are presented for serial console installation. The default option is **vt100**.

```
Please choose the appropriate terminal type for your system.
Common console types are:
    ansi     Standard ANSI terminal
    vt100    VT100 or compatible terminal
    xterm    xterm terminal emulator (or compatible)
    cons25w  cons25w terminal
```

Note: Choosing the default vt100 will work, but using cons25w on the Netgate 7100 will be easier to read.

7. The installer will automatically launch and several options will be presented. On Netgate firewalls, choosing Enter for the default options will complete the installation process.

Note: Options such as the type of disk partition can be modified through this installation if required.

8. The installer will then prompt to choose the type of system being installed, which pre-configures device-specific defaults. Choose the option that exactly matches the unit being reinstalled. If the model is unknown, check the sticker on the bottom of the unit.

9. Once the installer is finished, choose No and press Enter to skip going to a shell.

10. The installer will then prompt to Reboot the system. Select **Reboot** and press Enter. The system will shutdown and reboot.

```
Dec 21 22:41:37 Waiting (max 60 seconds) for system process `vnlru` to stop... d
one
Waiting (max 60 seconds) for system process `syncer` to stop...
Waiting (max 60 seconds) for system process `bufdaemon` to stop... done
All buffers synced.
Uptime: 5m43s
umass0: detached
```

11. **Remove the USB drive** from the USB port. pfSense® Plus will restart automatically. If the USB drive remains attached, the system will boot into the installer again because by default the system firmware is configured so that a device plugged into the USB port will be booted with a higher priority.

Note: For information on restoring from a previously saved configuration, go to Backup and Restore.

REFERENCES

3.1 Additional Resources

3.1.1 Netgate Training

Netgate training offers training courses for increasing your knowledge of pfSense® Plus products and services. Whether you need to maintain or improve the security skills of your staff or offer highly specialized support and improve your customer satisfaction; Netgate training has got you covered.

https://www.netgate.com/training

3.1.2 Resource Library

To learn more about how to use your Netgate appliance and for other helpful resources, make sure to browse our Resource Library.

https://www.netgate.com/resources

3.1.3 Professional Services

Support does not cover more complex tasks such as CARP configuration for redundancy on multiple firewalls or circuits, network design, and conversion from other firewalls to pfSense® Plus software. These items are offered as professional services and can be purchased and scheduled accordingly.

https://www.netgate.com/our-services/professional-services.html

3.1.4 Community Options

If you elected not to get a paid support plan, you can find help from the active and knowledgeable pfSense community on our forums.

https://forum.netgate.com/

3.2 Warranty and Support

- One year manufacturer's warranty.

- Please contact Netgate for warranty information or view our Product Lifecycle page.

- All Specifications subject to change without notice

For support information, view our support plans.

See also:

For more information on how to use pfSense® Plus software, see the pfSense Documentation and Resource Library.