

# ForeFront<sup>™</sup> Routers **Model 6400 Edge/Access Routers Bundles**

## Quick Start Guide





- The Model 6400 ForeFront Router Bundles contains power modules and cards which may be removed to send for repair. However the individual modules and cards contain no user serviceable parts. The equipment shall be returned to Patton Electronics for repairs, or repaired by qualified service personnel.
- For DC powered units, an approved external power source that incorporates a disconnect device shall be used and positioned within easy reach of the operator.
- For AC powered units, the power cable used to connect the power supply shall meet all applicable standards for the country in which it is to be installed, and be connected to a wall outlet which has earth ground.
- Line voltages are present within the power supply when the power cords are connected. The mains outlet that is utilized to power the device shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker.
- Hazardous network voltages are present in WAN ports regardless of whether power to the unit is ON or OFF. To avoid electric shock, use caution when near WAN ports. When detaching the cables, detach the end away from the ForeFront chassis first.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.

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## 1.0 Powering up the ForeFront Router chassis

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The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

Your 6400 ForeFront Router bundle comes with AC or DC power supplies.

### 1.1 AC power supplies

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1. If your 6400 ForeFront Router bundle is equipped with a 6276 2U chassis, refer to section "Installing the power cables — AC unit" on page 37 of the *Model 6276 ForeFront Half-Pipe Chassis Assembly User Guide* available online at [www.patton.com/manuals/6276\\_UG.pdf](http://www.patton.com/manuals/6276_UG.pdf).
2. If your 6400 ForeFront Router bundle is equipped with a 6476 4U chassis, refer to section "Installing the power cables — AC unit" on page 36 of the *Model 6476 ForeFront Full-Pipe Chassis Assembly User Guide* available online at [www.patton.com/manuals/6476\\_UG.pdf](http://www.patton.com/manuals/6476_UG.pdf).

3. After reading all appropriate information in the ForeFront Chassis User Manual (including information on proper grounding techniques) continue on to section, 2.0 “Connecting to the ForeFront chassis” on page 3.

## 1.2 DC power supplies

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4. If your 6400 ForeFront Router bundle is equipped with a 6276 2U chassis, refer to section “Installing the power cables—DC unit” on page 37 of the *Model 6276 ForeFront Half-Pipe Chassis Assembly User Guide* available online at [www.patton.com/manuals/6276\\_UG.pdf](http://www.patton.com/manuals/6276_UG.pdf).
5. If your 6400 ForeFront Router bundle is equipped with a 6476 4U chassis, refer to section “Installing the power cables—DC unit” on page 36 of the *Model 6476 ForeFront FullPipe Chassis Assembly User Guide* available online at [www.patton.com/manuals/6476\\_UG.pdf](http://www.patton.com/manuals/6476_UG.pdf).
6. After reading all appropriate information in the ForeFront Chassis User Manual (including information on proper grounding techniques) continue on to section, 2.0 “Connecting to the ForeFront chassis”.

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## 2.0 Connecting to the ForeFront chassis

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With only a single Ethernet connection to the ForeFront chassis, you can manage all the cards in the chassis. After connecting, you may verify or change the configuration to function in your application.



The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

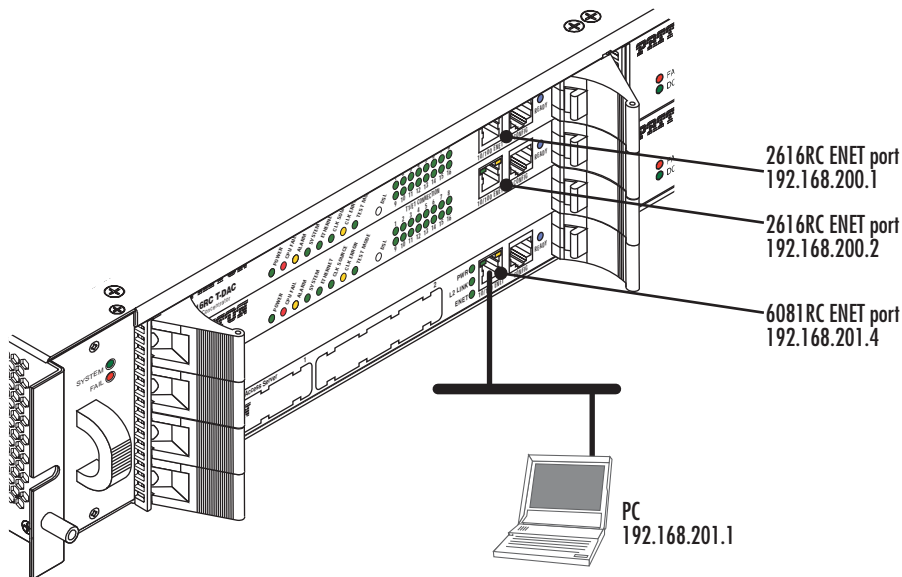
If your ForeFront router bundle is a Model 6423 Series, go to section 2.1 “Connecting to the 6081RC (Model 6423 Series)”.

If your ForeFront router bundle is a Model 6443/1S Series, go to section 2.2 “Connecting to the 6511RC (Model 6443/1S Series)” on page 4.

### 2.1 Connecting to the 6081RC (Model 6423 Series)

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1. Configure your PC as follows:
  - 192.168.201.1/24
  - Enter a route to the 192.168.200.0/24 subnetThe default IP address of the 6081RC, (bottom) slot #4, is 192.168.201.4/24.

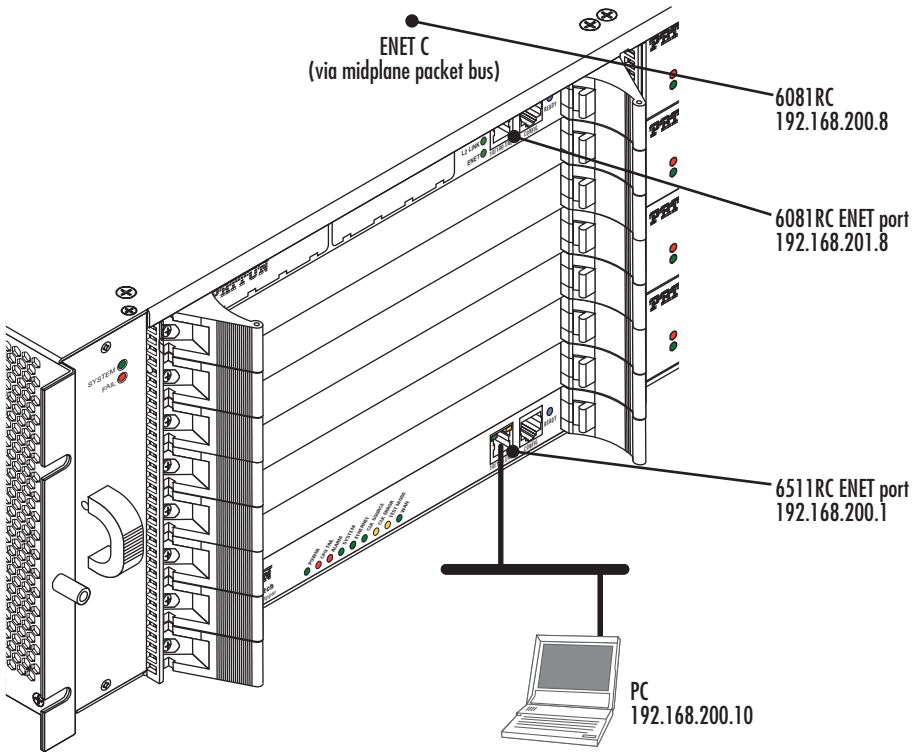


**Figure 1.** ForeFront Router bundle setup—Model 6423 Series

2. Connect the RJ45–RJ45 cable included with your ForeFront Router bundle between your PC and the Ethernet port on the front panel of the Model 6081RC (bottom slot) (see **figure 1**).
3. Enter the 6081RC’s IP address (192.168.201.4) into the browser. Type in the username (*superuser*) and password (*superuser*). You should see the Home Page of the 6081RC.
4. You can access the other cards’ management web pages by entering the card’s IP address using the same username and password.
  - 2616RC, (Top) Slot #1: 192.168.200.1/24 (All 6423 models)
  - 2616RC, Slot #2: 192.168.200.2/24 (Model 6423/32E only)
5. Refer to section 3.0 “Default clocking parameters” on page 6 for the default clocking configuration parameters.
6. For complete details in configuring the cards in the ForeFront chassis, consult the appropriate manual available online at <http://www.patton.com/manuals>.

## 2.2 Connecting to the 6511RC (Model 6443/1S Series)

1. Configure your PC as follows:
  - 192.168.200.10/24
  - Enter a route to the 192.168.201.0/24 subnet



**Figure 2.** ForeFront Router bundle setup—Model 6443 Series

2. Connect the RJ45–RJ45 cable included with your ForeFront Router bundle between your PC and the Ethernet port on the front panel of the Model 6511RC (see **figure 2**).
3. Enter the 6511RC’s IP address (192.168.200.1) into the browser. Type in the username (*superuser*) and password (*superuser*). You should see the Home Page of the 6511RC.
4. You can access the 6081RC’s management web pages by entering the card’s IP address using the same username and password.
  - 6081RC, Slot #8 (top slot): 192.168.200.8/24 (Ethernet C)

**Note** The 6081RC’s IP address of the front panel Ethernet port is 192.168.201.8/24. The Ethernet C port connects to the 6511RC via the high-speed IP packet bus on the midplane.

5. Refer to section 3.0 “Default clocking parameters” on page 6 for the default clocking configuration parameters.
6. For complete details in configuring the cards in the ForeFront chassis, consult the appropriate manuals available online at <http://www.patton.com/manuals>.

## 3.0 Default clocking parameters

Three tables provide the default configuration of the system clocking. The first table applies to Models 6423/4E, -/8E, -/12E, and -/16E which has a 6081RC card and a 2616RC card. The second table is for the Model 6423/32E having a second 2616RC card. The final table provides clocking for the Model 6443/1S, having one 6511RC card and one 6081RC card.

**Table 1.** Clocking defaults, Models 6423/4E, -/8E, -/12E, -/16E (<sup>1</sup>)

Slot Number	Slot #1 (2616RC) <sup>2</sup>	Slot #4 (6081RC)
Clock reference	Master	Slave <sup>3</sup>
Main reference	WAN-1	n/a <sup>4</sup>
Fallback reference	WAN-2	n/a <sup>4</sup>
Fallback active	Enabled	n/a
Fallback autorecover	Enabled	n/a

<sup>1</sup> 6276 2U chassis. <sup>2</sup> Top slot. <sup>3</sup> Automatically configured as slave. <sup>4</sup> Appears grayed out (Not configurable).

**Table 2.** Clocking defaults, Model 6423/32E (<sup>1</sup>)

Slot Number	Slot #1 (2616RC) <sup>2</sup>	Slot #2 (2616RC)	Slot #4 (6081RC)
Clock reference	Master	Secondary	Slave <sup>3</sup>
Main reference	WAN-1	WAN-1	n/a <sup>4</sup>
Fallback reference	WAN-2	WAN-2	n/a <sup>4</sup>
Fallback active	Enabled	Enabled	n/a
Fallback autorecover	Enabled	Enabled	n/a

<sup>1</sup> 6276 2U chassis. <sup>2</sup> Top slot. <sup>3</sup> Automatically configured as slave. <sup>4</sup> Appears grayed out (not configurable).

**Table 3.** Clocking defaults, Model 6443/1S (<sup>1</sup>)

Slot Number	Slot #1 (6511RC) <sup>2</sup>	Slot #8 (6081RC)
Clock reference	Master	Slave <sup>3</sup>
Main reference	WAN (STM-1)	n/a <sup>4</sup>
Fallback reference	WAN	n/a <sup>4</sup>
Fallback active	Enabled	n/a
Fallback autorecover	Enabled	n/a

<sup>1</sup> 6476 4U chassis. <sup>2</sup> Bottom slot. <sup>3</sup> Automatically configured as slave. <sup>4</sup> Appears grayed out (Not configurable).

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## 4.0 Additional Information

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Refer to the appropriate ForeFront manuals available online at <http://www.patton.com/manuals> for detailed information about:

- Installing, configuring, operating, and troubleshooting,
- Warranty, trademark, & compliance

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## A.0 Customer and Technical Support

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**Toll-Free VoIP support:** call [sip:support@patton.com](tel:sip:support@patton.com) with a VoIP SIP phone

**Online support:** [www.patton.com](http://www.patton.com)

**E-mail support:** [support@patton.com](mailto:support@patton.com) — answered within 1 business day

Telephone support:

- Standard: +1 (301) 975-1007 (USA), Monday–Friday: 8:00 am to 5:00 pm EST (1300 to 2200 UTC/GMT)
- Alternate: +41 (0)31 985 25 55 (Switzerland), Monday–Friday: 8:00 am to 5:00 pm CET (0900 to 1800 UTC/GMT)

**Fax:** +1 (253) 663-5693 (USA) or +41 (0)31 985 25 26 (Switzerland)

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## B.0 Compliance Information

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### B.1 Radio and TV Interference (FCC Part 15)

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This equipment generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. This equipment has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by disconnecting the cables, try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna, and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).



In order to comply with UL60950 leakage current requirements, it is recommended that the AC inputs be supplied from separate and isolated sources.

## B.2 EC Declaration of Conformity

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### Product Description: Model 6400 ForeFront Router Series

We certify that the apparatus identified above conforms to the requirements of Council Directive 1999/5/EC on the approximation of the laws of the member states relating to Radio and Telecommunication Terminal Equipment and the mutual recognition of their conformity.



The safety advises in the documentation accompanying the products shall be obeyed. The conformity to the above directive is indicated by the CE sign on the device.

The signed Declaration of Conformity can be downloaded from [www.patton.com/certifications/](http://www.patton.com/certifications/).



Users should not attempt to establish or modify ground connections themselves, instead they should contact the appropriate electric inspection authority or electrician.

## B.3 FCC Part 68 (ACTA) Statement

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This equipment complies with Part 68 of FCC rules and the requirements adopted by ACTA. On the bottom side of this equipment is a label that contains — among other information — a product identifier in the format US: AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

The method used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact our company. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.



## **B.4 Industry Canada Notice**

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This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

This Declaration of Conformity means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations. Repairs to some certified equipment should be made by an authorized maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the ground connections of the power utility, telephone lines and internal metallic water pipe system, are connected together. This protection may be particularly important in rural areas.





## Copyright statement

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## Trademark statement

The term *ForeFront Router* is a trademark of Patton Electronics Company. All other trademarks presented in this document are the property of their respective owners.

## Warranty, Trademark, & Compliance Information

For warranty, trademark and compliance information, refer to the appropriate manuals available online at <http://www.patton.com>.



In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.