

Part No. 303127-D Rev 00  
December 2000

600 Technology Park Drive  
Billerica, MA 01821-4130

# **V.34 Modem Adapter Module** ***Supplement***

**NORTEL**  
**NETWORKS™**

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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. The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

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## Canada Requirements Only *(continued)*

Repairs to certified equipment should be coordinated by a representative 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 electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

**Notice:** For equipment using loopstart lines, please note that the Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5. The REN is located on the "FCC Rules Part 68" label located on the bracket of the module, or on the back of the unit.

## Canada CS-03 -- Règles et règlements

**AVIS:** L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

**Avertissement:** L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

**AVIS:** Veuillez prendre note que pour tout appareillage supportant des lignes de type "loopstart," l'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5. Le REN figure sur l'étiquette "FCC Rules Part 68" située sur le support du module ou à l'arrière de l'unité.

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## FCC Part 68 Compliance Statement

This equipment complies with Part 68 of FCC Rules. All direct connections to telephone network lines must be made using standard plugs and jacks compliant with FCC Part 68. Please note the following:

1. You are required to request service from the telephone company before you connect the unit to a network. When you request service, you must provide the telephone company with the following data:
  - When you request T1 Service, you must provide the telephone company with
    - The Facility Interface CodeProvide the telephone company with all the codes below:
    - 04DU9-BN (1.544 MB, D4 framing format)
    - 04DU9-DN (1.544 MB, D4 framing format with B8ZF coding)
    - 04DU9-1KN (1.544 MB, ESF framing format)
    - 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)
    - 04DU9-1ZN (1.544 MB, ANSI ESF and ZBTISI without line power)The telephone company will select the code it has available.
    - The Service Order Code(s) (SOC): 6.0F
    - The required Universal Service Order Code (USOC) jack: RJ48C
  - When you request Primary Rate ISDN Service, you must provide the telephone company with
    - The Facility Interface Code: 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)
    - The Service Order Code(s) (SOC): 6.0F
    - The required Universal Service Order Code (USOC) jack: RJ48C
2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
3. If the unit causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
4. If you experience trouble with the unit, please contact the Nortel Networks Technical Solutions Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Nortel Networks.

United States	1-800-2LANWAN
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5740-1700
5. You are required to notify the telephone company when you disconnect the unit from the network.

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The V.34 Modem Adapter Module provides dial services capabilities at speeds ranging from 1200 b/s to 115,200 b/s.

## Before You Begin

This guide is intended for qualified service personnel who are installing the V.34 Modem Adapter Module in an Passport® ARN™, Passport 5430, or Passport 2430 for the first time or who need to install or replace any customer-replaceable unit (CRU). A qualified service person should have appropriate technical training and experience and be aware of the hazards involved in installing and replacing CRUs.

## How to Use This Supplement

This WAN adapter module can be used with several different platforms. Refer to the table below to find the chapter that contains the information appropriate for the platform you are using.

<b>Platform</b>	<b>Refer to</b>
Passport ARN	Chapter 1
Passport 5430	Chapter 2
Passport 2430	Chapter 3

## Text Conventions

This guide uses the following text conventions:

### **bold text**

Indicates command names and options and text that you need to enter.

Example: Enter **show ip {alerts | routes}**.

Example: Use the **dinfo** command.

### *italic text*

Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore.

Example: If the command syntax is:

**show at <valid\_route>**

*valid\_route* is one variable and you substitute one value for it.

## Acronyms

This guide uses the following acronyms:

BRI	basic rate interface
CRU	customer-replaceable unit
DTR	data terminal ready
ESD	electrostatic discharge
ISDN	Integrated Services Digital Network
LED	light-emitting diode
PROM	programmable read-only memory
RLSD	received line signal detection
WAN	wide area network



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Asia Pacific	(61) (2) 9927-8800
China	(800) 810-5000

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the [www12.nortelnetworks.com/](http://www12.nortelnetworks.com/) URL and click ERC at the bottom of the page.



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# Chapter 1

## Using the V.34 Modem Adapter Module in a Passport ARN Router

This chapter supplements *Installing and Operating Passport ARN Routers* (Chapter 4, “Installing a WAN Adapter Module”). Follow the hardware installation steps in that manual, then refer to this document for information specific to the V.34 Modem adapter module.

### Verifying ARN Router Requirements

Table 1-1 shows the minimum versions of boot and diagnostic programmable read-only memory (PROM) code required for a V.34 Modem adapter module.

**Table 1-1. PROM Diagnostic and Boot Code for ARN Routers**

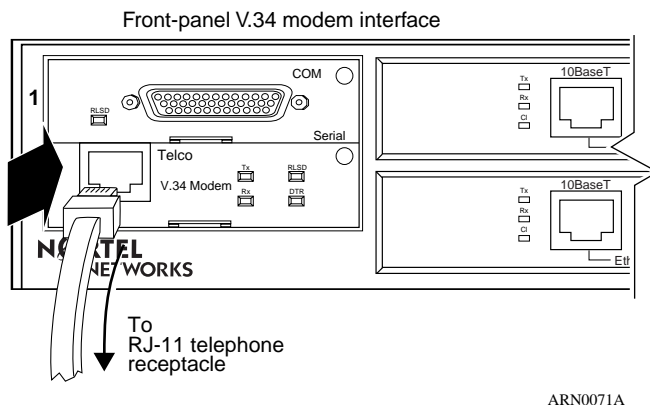
Code Type	Minimum Version	Directory	File Name
Boot	1.17	<i>arn_proms</i>	<i>arnboot.exe</i>
Diagnostic	1.30	<i>arn_proms</i>	<i>arndiag.exe</i>

For information on upgrading PROM code, see the BayRS™ *Upgrading Routers* guide.

## Attaching Cables

Connect the modem cable to the RJ-11 connector on the installed adapter module.

You install the V.34 Modem adapter module in one of the two front-panel WAN adapter module slots (Figure 1-1). See *Installing and Operating Passport ARN Routers* for complete installation instructions.



**Figure 1-1. ARN V.34 Modem Adapter Module Connector (Slot 2)**

## Completing Software Configuration

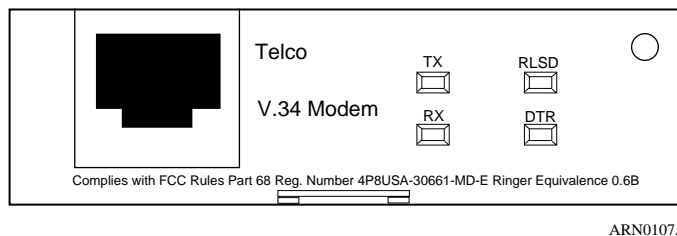
Once you have successfully installed the V.34 Modem adapter module, complete the following software configuration tasks using instructions found in your BayRS documentation:

Configuration Task	Location of Instructions
Connect the ARN to the network.	One of the following: <ul style="list-style-type: none"> <li>• <i>Installing and Operating Passport ARN Routers</i></li> <li>• <i>Configuring Remote Access for AN and Passport ARN Routers</i></li> </ul>
Modify the ARN configuration file to add the V.34 Modem adapter module and enable default software services.  When using Bay Command Console (BCC™) commands on an ARN router, note that the name for the V.34 Modem adapter module is <b>arnv34</b> .	Any of the following: <ul style="list-style-type: none"> <li>• <i>Configuring and Managing Routers with Site Manager</i></li> <li>• <i>Using the Bay Command Console (BCC)</i></li> </ul>
Configure V.34 modem services.	<i>Configuring Dial Services</i>

For the latest information, be sure to review the release notes and documentation change notice for your version of BayRS software.

## Interpreting LEDs

The V.34 modem adapter module has four LEDs, located to the right of the connector (Figure 1-2).



**Figure 1-2. V.34 Modem Adapter Module LEDs**

Table 1-2 describes the V.34 Modem adapter module LEDs.

**Table 1-2. V.34 Modem LEDs**

LED	Meaning
TX (Transmit)	Lights when the V.34 modem interface transmits data over the network.
RX (Receive)	Lights when the V.34 modem interface receives data from the network.
RLSD (Received Line Signal Detection)	Lights when the modem activates.
DTR (Data Terminal Ready)	Lights when the V.34 modem interface is ready to transmit data.



**Note:** Adapter module LEDs blink on and off during diagnostic testing, but the new V.34 Modem LEDs do not indicate data transfer until you have configured and enabled the software services.

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# Chapter 2

## Using the V.34 Modem Adapter Module in a Passport 5430 Multiservice Access Switch

This chapter supplements *Installing and Operating the Passport 5430 Multiservice Access Switch*. Follow the hardware installation steps in that manual, then refer to this document for information specific to the V.34 Modem adapter module.

### WAN Adapter Module Placement Considerations

When installing WAN adapter modules in the Passport 5430 Module slots, note the following:

- Each WAN adapter module you install is automatically assigned a circuit, even if the WAN adapter module has not been configured. This prevents disruption of active circuits if you reconfigure the the module at a later time.
- ISDN BRI adapter modules can use two circuits (one for each of the 2 B channels).
- You can configure a total of 4 circuits.
- Circuit allocations are prioritized according to which Module slot is being used by the WAN adapter modules. Module slot 3 has priority over Module slot 4, and Module slot 4 has priority over Module slot 5.
- When there are more than the 4 possible circuits to be configured, for example if there are 2 ISDN BRI adapter modules and a serial adapter module (5 circuits in all), circuit allocation becomes an issue.

In the example above, the first ISDN BRI module (in Module slot 3) has the resources to bring up a second B channel (thus using 2 circuits). The serial adapter in Module slot 4 uses a third circuit. The second ISDN BRI adapter module (in Module slot 5), can have only 1 B channel configured because the serial adapter module (in Module slot 4) has priority and is allocated a circuit over anything in Module slot 5. In this case, there are not enough circuits left to utilize the second B channel on the ISDN BRI adapter in Module slot 5. In this example, if you wanted to have both B channels on both ISDN BRI adapters configured, you would have to remove the serial card from Module slot 4.

Table 2-1 lists examples of valid WAN adapter module combinations.



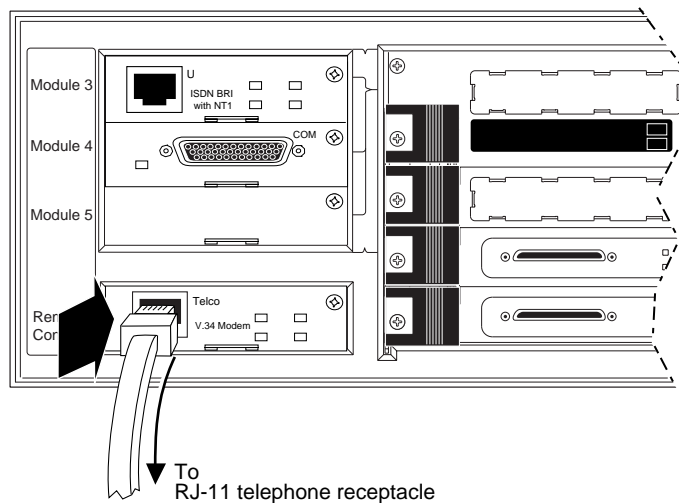
**Table 2-1. Example WAN Adapter Module Combinations**

<b>Module 3</b>	<b>Module 4</b>	<b>Module 5</b>
T1/FT1 or E1/FE1	T1/FT1 or E1/FE1	T1/FT1 or E1/FE1
T1/FT1 or E1/FE1	T1/FT1 or E1/FE1	Serial or V.34 modem
T1/FT1 or E1/FE1	Serial or V.34 modem	Serial or V.34 modem
T1/FT1 or E1/FE1	T1/FT1 or E1/FE1	ISDN 2 B-channels plus 1 D-channel
T1/FT1 or E1/FE1	ISDN BRI 1 B-channel plus 1 D-channel	Serial or V.34 modem
T1/FT1 or E1/FE1	Serial or V.34 modem	Serial or V.34 modem
Serial or V.34 modem	Serial or V.34 modem	Serial or V.34 modem
Serial or V.34 modem	Serial or V.34 modem	ISDN BRI 1 B-channel plus 1 D-channel
Serial or V.34 modem	Serial or V.34 modem	ISDN BRI 2 B-channels plus 1 D-channel
Serial or V.34 modem	ISDN BRI 2 B-channels plus 1 D-channel	ISDN BRI 1 B-channel plus 1 D-channel
ISDN BRI 2 B-channels plus 1 D-channel	ISDN BRI 2 B-channels plus 1 D-channel	Empty
ISDN BRI 2 B-channels plus 1 D-channel	ISDN BRI 1 B-channel plus 1 D-channel	Serial or V.34 modem
ISDN BRI 2 B-channels plus 1 D-channel	ISDN BRI 1 B-channel plus 1 D-channel	T1/FT1 or E1/FE1
ISDN BRI 2 B-channels plus 1 D-channel	Serial or V.34 modem	ISDN BRI 1 B-channel plus 1 D-channel
ISDN BRI 2 B-channels plus 1 D-channel	T1/FT1 or E1/FE1	ISDN BRI 1 B-channel plus 1 D-channel

## Attaching Cables

Connect the modem cable to the RJ-11 connector on the installed adapter module.

You may install the V.34 Modem adapter module in the front-panel Remote Console slot (Figure 2-1), or in any of the three front-panel Module slots. See *Installing and Operating the Passport 5430 Multiservice Access Switch* for the complete installation procedure.



FBR0065A

**Figure 2-1. Passport 5430 V.34 Modem Adapter Module Connector**

## Completing Software Configuration

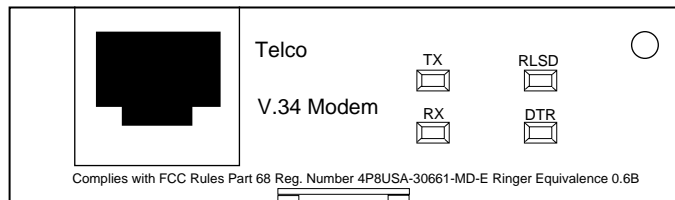
Once you have successfully installed the V.34 Modem adapter module, complete the following software configuration tasks using instructions found in your BayRS documentation:

Configuration Task	Location of Instructions
Modify the Passport 5430 configuration file to add the V.34 Modem adapter module and enable default software services.  When using Bay Command Console (BCC) commands on a Passport 5430 router, note that the name for the V.34 Modem adapter module is <b>arnv34</b> .	One of the following: <ul style="list-style-type: none"> <li>• <i>Configuring and Managing Routers with Site Manager</i></li> <li>• <i>Using the Bay Command Console (BCC)</i></li> </ul>
Configure V.34 modem services.	<i>Configuring Dial Services</i>

For the latest information, be sure to review the release notes and documentation change notice for your version of BayRS software.

## Interpreting LEDs

The V.34 modem adapter module has four LEDs, located to the right of the connector (Figure 2-2).



ARN0107A

**Figure 2-2. V.34 Modem Adapter Module LEDs**

Table 2-2 describes the V.34 Modem adapter module LEDs.

**Table 2-2. V.34 Modem LEDs**

LED	Meaning
TX (Transmit)	Lights when the V.34 modem interface transmits data over the network.
RX (Receive)	Lights when the V.34 modem interface receives data from the network.
RLSD (Received Line Signal Detection)	Lights when the modem activates.
DTR (Data Terminal Ready)	Lights when the V.34 modem interface is ready to transmit data.



**Note:** The V.34 modem adapter module LEDs blink on and off during diagnostic testing, but the LEDs do not indicate data transfer until you have configured and enabled the software services.

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## Chapter 3

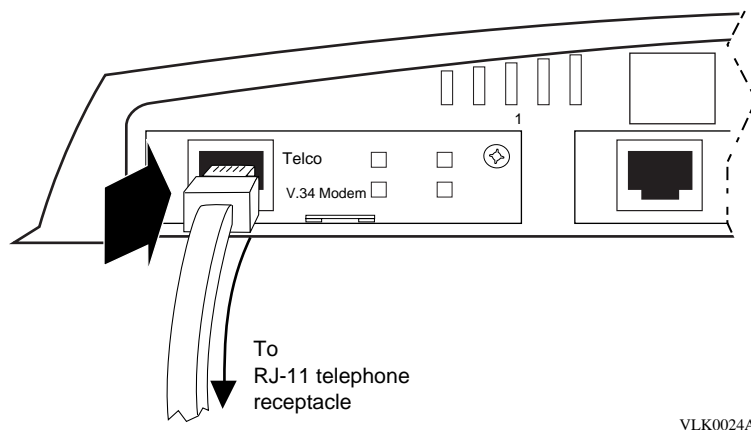
# Using the V.34 Modem Adapter Module in a Passport 2430 Multiservice Access Switch

This chapter supplements the *Installing and Operating the Passport 2430 Multiservice Access Switch*. Follow the hardware installation steps in that manual, then refer to this document for information specific to the V.34 Modem adapter module.

## Attaching Cables

Connect the modem cable to the RJ-11 connector on the installed adapter module.

You install the V.34 Modem adapter module in one of the two rear-panel WAN adapter module slots (Figure 3-1). See *Installing and Operating the Passport 2430 Multiservice Access Switch* for the complete installation procedure.



**Figure 3-1. Passport 2430 V.34 Modem Adapter Module Connector**

## Completing Software Configuration

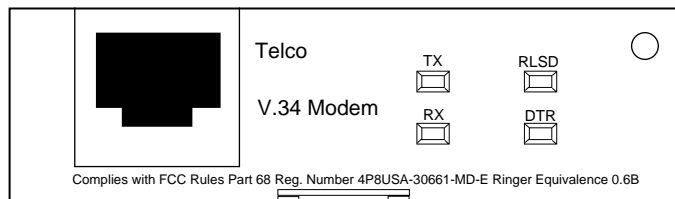
Once you have successfully installed the V.34 Modem adapter module, complete the following software configuration tasks using instructions found in your BayRS documentation:

Configuration Task	Location of Instructions
Modify the configuration file to add the V.34 Modem adapter module and enable default software services.  When using Bay Command Console (BCC) commands on a Passport 2430, note that the name for the V.34 Modem adapter module is <b>arnv34</b> .	Any of the following: <ul style="list-style-type: none"> <li>• <i>Configuring and Managing Routers with Site Manager</i></li> <li>• <i>Using the Bay Command Console (BCC)</i></li> </ul>
Connect the Passport 2430 to the network.	One of the following: <ul style="list-style-type: none"> <li>• <i>Installing and Operating the Passport 2430 Multiservice Access Switch</i></li> <li>• <i>Configuring Remote Access for AN and Passport ARN Routers</i></li> </ul>
Configure V.34 modem services.	<i>Configuring Dial Services</i>

For the latest information, be sure to review the release notes and documentation change notice for your version of BayRS software.

## Interpreting LEDs

The V.34 modem adapter has four LEDs, located to the right of the connector (Figure 3-2).



ARN0107A

**Figure 3-2. V.34 Modem Adapter Module LEDs**

Table 3-1 describes the V.34 Modem adapter module LEDs.

**Table 3-1. V.34 Modem LEDs**

LED	Meaning
TX (Transmit)	Lights when the V.34 modem interface transmits data over the network.
RX (Receive)	Lights when the V.34 modem interface receives data from the network.
RLSD (Received Line Signal Detection)	Lights when the modem activates.
DTR (Data Terminal Ready)	Lights when the V.34 modem interface is ready to transmit data.



**Note:** Adapter module LEDs blink on and off during diagnostic testing, but the new V.34 Modem LEDs do not indicate data transfer until you have configured and enabled the software services.

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