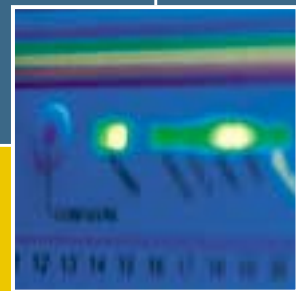
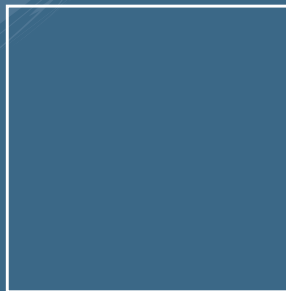
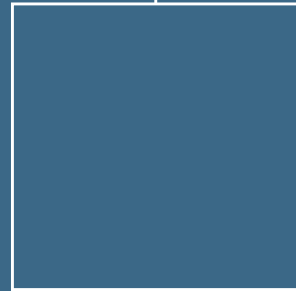


# NETWORK SERVICE MODULE

## QUICK INSTALL GUIDE



Network Service Module Quick Install Guide  
Document Number C613-04019-01 REV D.

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## Models Covered By This Guide

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This Quick Install Guide includes information on the following models:

- AT-AR040
- AT-AR041
- AT-AR042

Quick Install Guide updates can be found at [www.alliedtelesyn.co.nz/support/support.html](http://www.alliedtelesyn.co.nz/support/support.html).

## Package Contents

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The following items are included with each NSM. Contact your sales representative if any items are damaged or missing.

- One NSM.
- One NSM Quick Install Guide.
- One warranty card.

## Compatible Base Units

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NSMs can be installed in the following switches, switching routers, and routers:

### Rapier Switches

- Rapier 8/8MT
- Rapier 8/8SC
- Rapier 16F-FX/MT-RJ
- Rapier 16F-FX/SC
- Rapier 24

### Rapier *i* Switches

- Rapier 24*i*

### AR800 Modular Switching Routers

- AR816F-FX/MT-RJ
- AR816F-FX/SC
- AR824

### Routers

- AR740 Family

# Installing a Network Service Module

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There are two methods for installing and removing NSMs, the Standard Installation Method and the Hot Swap Installation Method. The software release running on your switch or router determines which of these two methods should be used.

If your switch or router is running Software Release 2.2.3 or earlier, follow the standard method to install or remove an NSM. If your switch or router is running Software Release 2.3.1 or later, you can use the hot swap method.

To find out which software release your switch or router is running, use the command:

```
SHOW RELEASE
```

## Standard Installation Method (for Software Release 2.2.3 or earlier):

Follow these steps to install or remove an NSM if the software release does not support hot swapping.

### 1. Before installing an NSM, read the safety information

See the Safety and Statutory Information booklet for your switch or router. A copy of this booklet can also be found on the CD-ROM that came with your switch or router, or at [www.alliedtelesyn.co.nz/support/support.html](http://www.alliedtelesyn.co.nz/support/support.html).

### 2. If connected, disconnect the switch or router from its redundant power supply

### 3. Disconnect the switch or router from the mains power supply



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*If using the Standard Installation Method, be sure to disconnect the main power supply and the redundant power supply before installing an NSM. Installing an NSM with this method when the switch or router is powered ON can damage the NSM.*

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### 4. Remove the switch or router NSM-bay face-plate or existing NSM

If the switch or router does not have an NSM installed, remove the blank NSM-bay face-plate by loosening the two M4 Phillips screws. See Figure 1 on page -5.

If an NSM is already installed, disconnect its network cables and TNV lines before removing it from the switch or router.

Remove the NSM by unscrewing both thumbscrews at the same time. As the thumbscrews are turned, they will push the NSM out of the bay.



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*When removing an NSM, take care to turn each thumbscrew by an equal amount to ensure that the NSM does not become misaligned. Forcing a jammed thumbscrew may damage the NSM card.*

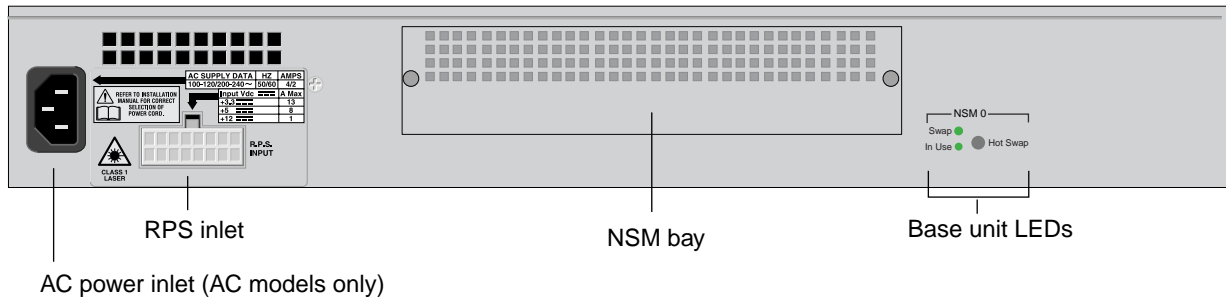
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If a thumbscrew becomes tight, it must not be forced. Instead, screw it in or out slightly to loosen it and then try again, taking care to unscrew both thumbscrews at the same rate.



*Keep the face-plate for future use. If you remove an NSM, replace the face-plate to prevent dust and debris from entering the switch or router and to maintain proper airflow.*

**Figure 1: The NSM bay on a Rapier Switch.**



### 5. Prepare the NSM

In an antistatic environment, remove the NSM from its packing material. Be sure to observe ESD precautions.



*Do not attempt to install an NSM without observing correct antistatic procedures. Failure to do so may damage the switch, router, or NSM. If you are unsure what the 'correct' procedures are, contact your authorised Allied Telesyn distributor or reseller.*

### 6. Slide the NSM into place

Slide the NSM into the NSM bay, making sure that the ends of the thumbscrews are aligned with the screw holes on the switch or router.

### 7. Secure the NSM

When the thumbscrews hit the threaded bushes, preventing the NSM from being pushed in further, turn the thumbscrews to engage their threads. Tighten both thumbscrews at the same rate to pull the NSM into position.

The screws will both tighten when the NSM panel is in its installed position, about .5mm proud of the switch or router rear panel. The thumbscrews should be firm, but not over-tight.

If one thumbscrew becomes tight before the other, loosen it slightly before proceeding.

### 8. Installing PICs in the AT-AR040 NSM

If you have PICs to install, install them now by following the *Port Interface Card Quick Install Guide*. If there are more PIC bays than PICs, use the bays on the switch or router base unit first, then fill the NSM PIC bays, starting with bay 0.

### 9. Apply power to the switch or router by re-attaching the power cord

Check that the switch or router power LED lights green.

### 10. If you disconnected a redundant power supply, reconnect it

## 11. Verify the installation

Check the In Use LED. The In Use LED (on the switch or router rear panel) lights to indicate that the NSM is installed, is receiving power, and is operational.

Check that the switch or router has recognised the NSM. Use the SHOW SYSTEM command. If there is no NSM entry in the output, the switch or router has failed to recognise the NSM.

If the In Use LED fails to light or Recognition fails, repeat the installation process, paying particular attention to steps 6 and 7.

If the reinstallation fails, see the *Network Service Module Hardware Reference*, which has further troubleshooting information.

### Hot Swap Installation Method (for Software Release 2.3.1 or later):



**WARNING:** Failure to follow this procedure when hot swapping an NSM will cause the router to crash, and may damage files stored in FLASH.



The AT-AR040 NSM can be hot swapped with PICs installed in its PIC bays. There is no need to remove the PICs before hot swapping. See the NSM Hardware Reference for information on the operational characteristics of hot swapped interfaces.

Follow these steps to hot swap an NSM.

#### 1. Prepare the NSM bay for hot swap

If the In Use LED (next to the NSM bay) is lit, use a pencil tip or similar object to press the recessed Hot Swap button. The In Use LED should go out and the Swap LED should light.

If the In Use LED remains lit, or if neither the In Use or Swap LED are lit, the router software release does not support hot swapping, and the Standard Installation Method must be used to install or remove the NSM.



**Do not attempt to hot swap while the contents of FLASH are being modified; for instance, during FLASH compaction or when files are being loaded onto the router. If the router crashes while FLASH is being modified, configuration files, software release files, feature licences and other files may be damaged.**

#### 2. Prepare the NSM

In an antistatic environment, remove the NSM from its packing material. Be sure to observe ESD precautions.



**Do not attempt to install an NSM without observing correct antistatic procedures. Failure to do so may damage the switch, router, or NSM. If you are unsure what the 'correct' procedures are, contact your authorised Allied Telesyn distributor or reseller.**

#### 3. Remove the switch or router NSM-bay face-plate or existing NSM

If the switch or router does not have an NSM installed, remove the blank NSM-bay face-plate by loosening the two M4 Phillips screws. See Figure 1 on page -5.

If an NSM is already installed, disconnect its network cables and TNV lines before removing it from the switch or router.

Remove the NSM by unscrewing both thumbscrews at the same time. As the thumbscrews are turned, they will push the NSM out of the bay.



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*When removing an NSM, take care to turn each thumbscrew by an equal amount to ensure that the NSM does not become misaligned. Forcing a jammed thumbscrew may damage the NSM card.*

---

If a thumbscrew becomes tight, it must not be forced. Instead, screw it in or out slightly to loosen it and then try again, taking care to unscrew both thumbscrews at the same rate.



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*Keep the face-plate for future use. If you remove an NSM, replace the face-plate to prevent dust and debris from entering the switch or router and to maintain proper airflow.*

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#### 4. Slide the NSM into place

Slide the NSM into the NSM bay, making sure that the ends of the thumbscrews are aligned with the screw holes on the switch or router.

#### 5. Secure the NSM

When the thumbscrews hit the threaded bushes, preventing the NSM from being pushed in further, turn the thumbscrews to engage their threads. Tighten both thumbscrews at the same rate to pull the NSM into position.

The screws will both tighten when the NSM panel is in its installed position, about .5mm proud of the switch or router rear panel. The thumbscrews should be firm, but not over-tight.

If one thumbscrew becomes tight before the other, loosen it slightly before proceeding.

#### 6. Installing PICs in the AT-AR040 NSM

If you have PICs to install, install them now by following the *Port Interface Card Quick Install Guide*. If there are more PIC bays than PICs, use the bays on the switch or router base unit first, then fill the NSM PIC bays, starting with bay 0.

#### 7. Return the NSM bay to use

Press the recessed Hot Swap button. The Swap LED will go out and the In Use LED will light.

If the In Use LED lights only briefly and the Swap LED then lights continuously, the NSM is of a type that the software release does not support.

#### 8. Verify the installation

Check that the switch or router has recognised the NSM. Use the SHOW SYSTEM command. If there is no NSM entry in the output, the switch or router has failed to recognise the NSM.

If the In Use LED fails to light or Recognition fails, repeat the installation process, paying particular attention to steps 4 and 5.

If the reinstallation fails, use the Standard Installation Method or see the *Network Service Module Hardware Reference*, which has further troubleshooting information.

## LEDs and What They Mean

### AT-AR040

The AT-AR040 NSM unit does not have independent LEDs. See Table 2 on page -9 for information about related LEDs found on the base-unit switch or router.

### AT-AR041 and AT-AR042.

**Table 1: AT-AR041 and AT-AR042 LEDs.**

LED	State	Function
Active	Green	Lit when the BRI has successfully completed the exchange of INFO 1 and INFO 2 signals, and INFO 3 and INFO 4 signals are present on the link. This means that the ISDN interface is correctly connected to a working NT device.
	Off	There is no connection to the ISDN, or the ISDN has deactivated the connection.
Data	Amber	For on-demand ISDN, lit when there is a call up over the respective B channel. For permanent circuits, lit when HDLC packets are being exchanged between the switch or router and another TE end system device (normally another switch or router) over the respective B (data) channel.
	Flashing Amber	For on-demand ISDN, flashing when data is being exchanged.
	Off	For on-demand ISDN, Off when there is no active connection or when continuous data exchange is occurring. For permanent ISDN circuits, Off when no data exchange is occurring.

## Switch and Router LEDs related to NSMs

The following table may be helpful when diagnosing possible NSM faults. Switches and routers with NSM bays have these LEDs built into their chassis.

**Table 2: NSM LEDs (on switches or routers with NSM bays).**

LED	State	Function
In use (Rear panel)	Green	An NSM is installed, is receiving power, and is operational. The NSM and its PICs are not ready for hot swap
	Off	No NSM is installed, or the NSM is not installed correctly (the switch or router has not recognised the NSM)
Swap (Rear panel)	Green	The NSM and its PICs are ready to be hot swapped
	Off	The Hot Swap button must be pressed before the NSM or its PICs can be hot swapped, or the software release does not support hot swapping <sup>1</sup>

1. Hot swapping is supported by Software Release 2.3.1 or later.

## PIC LEDs

Descriptions of PIC LEDs can be in the *Port Interface Card Hardware Reference*, which can be found on the CD-ROM bundled with your switch or router, or at [www.alliedtelesyn.co.nz/support/support.html](http://www.alliedtelesyn.co.nz/support/support.html).

## Where To Find More Information

Sources of further information.

### For further information on NSMs:

- The *Network Service Module Hardware Reference*, which provides detailed information on NSMs.

### For information on base-units (switches and routers):

- The Installation Guide or Reference Manual for your switch or router, which provide information on related hardware and software features.

### For information on PIC expansion options:

- The *Port Interface Card Quick Install Guide*, which outlines the procedure for installing PICs; and the *Port Interface Card Hardware Reference*, which provides detailed information on PICs.

These documents can be found on the CD-ROM bundled with your switch or router, or at [www.alliedtelesyn.co.nz/support/support.html](http://www.alliedtelesyn.co.nz/support/support.html).