3Com®

Enterprise Management Engine Quick Start Guide

For the CoreBuilder® 9000 Enterprise Switch

Module Description

The 3Com CoreBuilder® 9000 Enterprise Management Engine (EME) is an SNMP-based network management module that enables you to configure and manage the 3Com CoreBuilder 9000 7-slot chassis, 8-slot chassis, and 16-slot chassis, and their modules. Use the EME (Model Number 3CB9EME) to:

- Manage the chassis through the EME command interface, which you access through the serial port or through SNMP (Simple Network Management Protocol).

- Gain access to the Administration Console of switching modules, switch fabric modules, and interface modules.

- Gain access to the Asynchronous Transfer Mode (ATM) Local Management Application (LMA) to manage cell-based ATM interface modules and ATM switch fabric modules. See the ATM Enterprise Switch documents on the CoreBuilder 9000 Documentation CD-ROM for more information.

An EME combines the functions of a management module and a controller module. You can install a second EME in the chassis as a redundant EME. The redundant, or secondary, EME provides standby management support if the first, or primary, EME fails or becomes unavailable for any reason. Or, for standby controller support, you can install an Enterprise Management Controller (EMC) module instead of a second EME.

This document provides the basic information that you need to install and use the EME.

Figure 1 shows the EME front panel.

Figure 1 The EME Front Panel
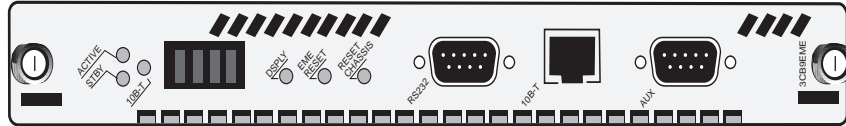
In the 7-slot chassis, you install the module horizontally as shown in Figure 1. In the 8-slot chassis and 16-slot chassis, you install the module vertically, with the LEDs at the top.

The EME module front panel is configured with the following:

■ Status LEDs

■ A four-character LED display with a display (DSPLY) button

■ One module reset (EME Reset) button

■ One chassis reset (Reset Chassis) button

■ Two RS-232 (serial) port connectors, which are used to connect the EME to a console terminal or a modem

■ One RJ-45 10BASE-T Ethernet port

Status LEDs

Table 1 lists the status LEDs and explains their modes. If one EME is installed in the chassis, you can install an EMC in the adjacent slot. If two EMEs are installed, you cannot install an EMC.

Table 1   EME Front Panel Status LEDs

LED	Mode	Description
Active	Off	No power
	Green	EME is the Primary
		EMC in the other slot is Active
Stby (Standby)	Off	No power
	Green	EME is the Secondary
		EMC in the other slot is in Standby mode
10B-T	Off	Port is disabled or there is no link
	Green	Port is active, enabled, and the link is OK
	Flashing green	Traffic activity (receive only)
	Yellow	Error

Character Display LEDs

The four-character display LEDs display alphanumeric information about:

- The current operating state of the module.

- The release number of the EME embedded software.

- Any environmental fault. For example, when a power supply, fan, or overheat fault occurs, the fault automatically appears in the character display.

When you press the DSPLY button, the character display LEDs default to the module's operating state.

Reset Buttons

The following three reset buttons reside on the front panel of the EME module. To press any of these buttons, use a pen tip or other nonmetallic tool.

- **DSPLY button** — Press this button to reset the four-character display LEDs on the EME front panel to zeroes (0000). The LEDs display alphanumeric characters that indicate which EME is the primary and which is the secondary.

- **EME Reset button** — Press this button to reset the EME. Resetting the EME prevents traffic from reaching the other modules in the chassis. Press the EME Reset button only if you suspect a problem with the EME that you cannot fix through management commands.

- **Reset Chassis button** — Press this button to reset all the modules that are installed in the chassis.

⚠️ *CAUTION: Although resetting the chassis causes a temporary interruption of the data paths to all of the modules, in some instances this interruption can become permanent and result in the loss of traffic. Press the Reset Chassis button only if you suspect a problem with the chassis that you cannot fix through management commands.*

Ports

The following three ports reside on the EME module front panel:

- **RS-232 Port** — Shielded male DB9 connector for connecting an RS-232, two-channel cable for serial communication

- **10B-T Port** — RJ-45 10BASE-T connector for an RJ-45 10BASE-T Ethernet connection

- **AUX Port** — Shielded male DB9 connector for connecting a second RS-232, two-channel cable for serial communication

Audience Description   This guide is intended for *trained technical personnel* only. Do not attempt to install, remove, or replace a CoreBuilder 9000 EME if you have not had the proper training from 3Com. For training information in the United States and Canada, call 1-800-NET-3COM. For training information in other countries, visit the 3Com Web site:

http://www.3Com.com/

Safety Precautions   When you install or replace components in a CoreBuilder 9000 system, be sure that you follow all safety precautions. To avoid electric shocks, burns, or equipment damage, read and follow these warnings:

WARNING: Allow only trained service personnel to install, remove, or replace an EME.

WARNING: Hazardous energy exists within the system. Use extreme caution when you install, remove, or replace an EME. When the system is on:

- *Never insert metal objects such as a screwdriver or a finger with jewelry into open module slots.*

- *Do not touch any connections within the chassis with your hands or fingers.*

ESD Safety Information

Electrostatic discharge (ESD) can damage components of the system. ESD, which occurs when the EME is improperly handled, can cause complete or intermittent failures.

CAUTION: To prevent ESD-related damage:

- *Always wear an ESD wrist strap (not provided) when you handle a module, ensuring that the strap makes good skin contact and is properly grounded.*

- *Keep the EME in its antistatic bag until you are ready to inspect or install it.*

Handling Precautions   When you handle the EME, follow these precautions:

- Always handle the EME by the front panel only.
- Do not touch the components, pins, leads, or solder connections.
- When you insert the EME into the module guides, do not twist or otherwise force the module into the chassis.
- Before you push the EME module into the chassis, make sure that the module ejector handles are open.
- When you slide the EME module into a 7-slot chassis, match the left and right module guides. When you slide the EME module into the 8-slot chassis and 16-slot chassis, match the upper and lower module guides.

Unpacking Procedure   Use the following procedure when you unpack the EME module:

1 Verify that the EME is the correct model by matching the 3C number that is listed on the side of the shipping box to the 3C number that is listed on your order documentation (3CB9EME).

2 Remove the EME module, in its antistatic bag, from the shipping box.

3 Remove the EME from the antistatic bag and inspect it for damage.

⚠ *CAUTION: Handle the module by the front panel only. Do not touch any components, pins, leads, or solder connections.*

If the module appears to be damaged, replace it in the antistatic bag, place it back in the shipping box, and contact your local supplier.

4 Ensure that the box also contains:

- *CoreBuilder 9000 Release Notes for Management Modules*
- *Enterprise Management Engine Quick Start Guide for the CoreBuilder 9000 Enterprise Switch* (this guide)
- *CoreBuilder 9000 Enterprise Management Engine Command Quick Reference* booklet
- One 16-MB DRAM expansion memory card upgrade in its antistatic bag

ℹ *All shipping boxes are reusable. After you remove the contents, replace the packing materials and store the shipping box for future use.*

Installation Prerequisites

Before you install the EME module, comply with the following prerequisites:

- Verify that the chassis is properly installed in a rack, on a table, or on a shelf, according to the instructions in either of these guides:

  - *7-Slot Chassis Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch*

  - *Chassis Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch 8-slot Chassis and 16-slot Chassis*

- Have a flat-blade torque screwdriver available to secure the module to the chassis after you install it.

- Read the *CoreBuilder 9000 Release Notes for Management Modules* that is included in your module shipping box for important upgrade procedures for other modules in an existing chassis or in a new chassis.

⚠️ **CAUTION:** *All modules in a CoreBuilder 9000 chassis must operate at compatible software levels. You must verify the software release on all new and existing modules in your chassis and upgrade as necessary. See the* CoreBuilder 9000 Release Notes for Management Modules *for a module software compatibility requirements table, mandatory upgrade procedures, and other important information.*

Installing Expansion Memory

Follow these steps to install the expansion memory card:

1 Locate the expansion memory card slot on the EME module printed circuit board. See Figure 2.

2 Remove the expansion memory card from its antistatic bag.

⚠ *CAUTION: To avoid damage due to static discharge, handle the EME module by the front panel or edges only.*

3 Insert the memory card into the expansion memory card slot on the EME module. Press the memory card in place so that it is firmly seated.

ℹ️ *The memory card is keyed to ensure that you insert it correctly.*

Figure 2 The Expansion Memory Card Slot

Expansion memory card slot

EME front panel
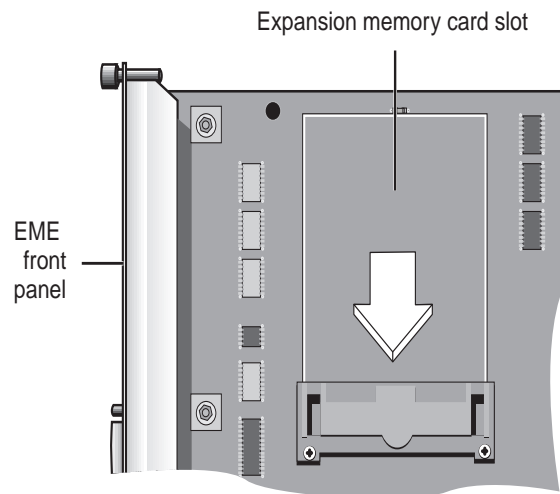
Installing the EME   Install at least one EME (Model Number 3CB9EME) in each
CoreBuilder 9000 chassis. Each chassis has two slots that are dedicated
for EME installation (slot 8 and slot 9 in the 7-slot chassis, slot 9 and slot
10 in the 8-slot chassis, and slot 17 and slot 18 in the 16-slot chassis).
You can install the first EME in either slot. You can only install one of the
following modules in the second slot:

- A second EME for standby management support

- An EMC for standby controller support

You do not need to power off the CoreBuilder 9000 chassis to install,
remove, or replace the EME module. You can insert the module while the
chassis is operating. (This is called a *hot swap*.)

To install an EME module:

1 Before you start the installation process, read "Safety Precautions" and
"Handling Precautions" earlier in this guide.

2 To expose a slot for the module, remove a blank faceplate from slot 8 or
slot 9 in the 7-slot chassis, from slot 9 or slot 10 in the 8-slot chassis, or
from slot 17 or slot 18 in the 16-slot chassis.

⚡ *WARNING: Hazardous energy levels exist inside the chassis. Do not place
hands or objects into the chassis or touch any components on an installed
module.*

3 Open the module ejector handles (Figure 3).

4 Insert the module into the module guides:

- For a 7-slot chassis, hold the module horizontally with the LEDs at the
left. The module guides are on the left and right of the slot.

- For the 8-slot chassis and 16-slot chassis, hold the module vertically
with the LEDs at the top. The module guides are at the top and
bottom of the slot.

⚠ *CAUTION: Be careful not to twist or bend the EME module while you
insert it into the chassis.*

5 Slide the EME module into the chassis by pressing firmly on the front
panel. Figure 3 shows how to install the module into a 16-slot chassis.

Figure 3 Installing the EME into the CoreBuilder 9000 16-slot Chassis

Ejector handle

Spring-loaded screw

EME module

Spring-loaded screw
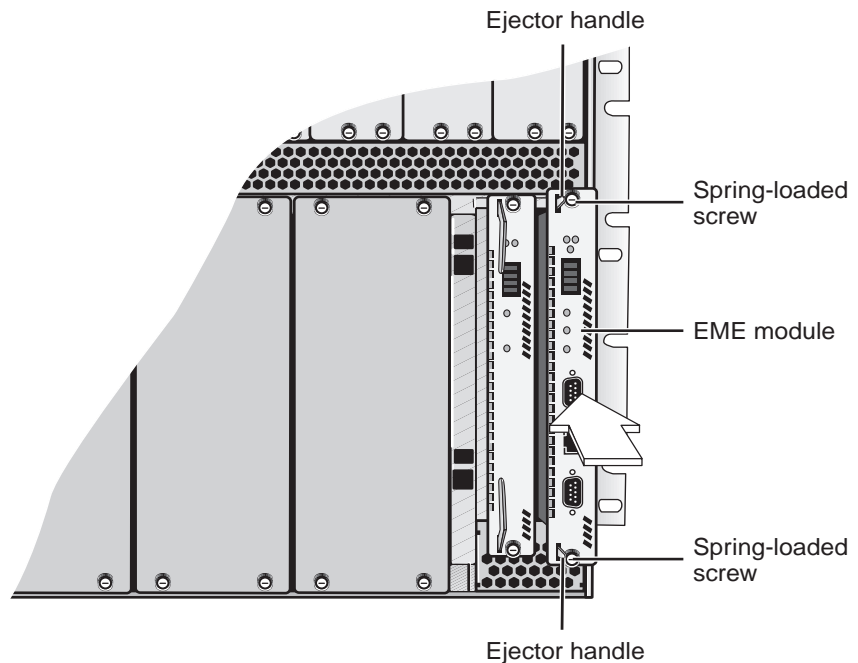
Ejector handle

6 To engage the EME connectors and backplane connectors, apply pressure to the module front panel with both hands while you push the ejector handles inward toward the front panel with your thumbs. You feel a slight resistance as the connectors engage.

⚠ *CAUTION: If the resistance is too great, the EME connectors and backplane connectors may not be aligned. Forcing the EME inward can damage the module's connectors or the backplane connectors. If necessary, remove and reinsert the EME, ensuring that the connectors are properly aligned. Do not tighten the spring-loaded screws to seat the module.*

Ensure that the module remains fully seated in the backplane connector while you close the ejector handles. Push the end of each ejector handle inward toward the front panel until the ejector handle is parallel with the front panel.

7 To secure the module to the chassis, use a flat-blade screwdriver to tighten the two spring-loaded screws (Figure 3) to Torque Specification 3 to 5 inch-pounds.

To ensure that you tighten screws to Torque Specification, use a torque screwdriver.

CAUTION: *To ensure adequate cooling airflow, install blank faceplates over all empty slots.*

Verifying EME Operation

To verify that your EME is operating correctly, watch the LED status display during system power-on. Table 2 shows the sequence of characters that appears in the LED character display during a successful system power-on.

Table 2   LED Character Display During Power-on

Characters in Display	Indicate
random characters	Power-on has begun
none (blank display)	Power-on continues
Diag	EME is running self-diagnostic tests
Cksm	EME is calculating the checksum value
Stby	EME is in standby mode, if it is a Secondary
Rdy	EME is active and ready, if it is a Primary

Connecting to a Terminal or Modem

You need to connect a PC, terminal, or modem to the EME console port to enter commands to configure and monitor your chassis and EME. You can manage your system locally through a terminal connection or remotely using a Telnet or modem connection.

To connect the EME to a terminal or modem, use either the RS-232 Console Port (RS-232) or the RS-232 Auxiliary Port (AUX) connectors that are located on the EME front panel.

> *The EME uses male 9-pin connectors. For information about pin connector assignments and the cable, see Chapter 2 of the* CoreBuilder 9000 Enterprise Management Engine User Guide.

Table 3 describes the access types and what each access type allows you to do.

Table 3 Access Types

Access Type	Allows you to	Using
Terminal	Connect directly to the command interface.	RS-232 serial port
Modem	Access the command interface from remote sites.	Auxiliary RS-232 serial port (AUX)
IP	Access the command interface using the `rlogin` or `telnet` commands. Or use an external SNMP management application to communicate with the CoreBuilder® 9000 SNMP agent.	10BASE-T Ethernet port assigned to an IP interface

Troubleshooting the EME

If the EME character display shows CARD when you power on the EME, one of these error conditions exists:

- The expansion card is incorrectly installed.

- The on-board DRAM failed.

If one of these error conditions exists, remove and reinstall the expansion memory card.

Configuring the EME   Table 4 lists the steps to configure the EME initially.

> *Configure your terminal to default EME communication settings. See your terminal vendor's documentation.*

Table 4   EME Configuration Steps

	Procedure*	Command
1	Configure your terminal to default EME communication settings.	See your terminal vendor's documentation
2	Configure EME Terminal Settings.	set terminal console hangup set terminal console prompt set terminal timeout system set terminal timeout session
3	Configure the EME.	set eme contact set eme diagnostics set eme location set eme name
4	Set the time and date.	set clock
5	Set user login functions.	set login password set login administer show login clear login
6	Set SNMP parameters to enable network access.	set ip ip_address set ip subnet_mask set ip default_gateway set community set authentication set eme trap_receive

* The order of configuration is important in some networks. Read the appropriate sections for more information.

To gain access to the Administration Console of switching modules, switch fabric modules, and interface modules, use the command:
connect <slot.subslot>

Redundancy   Adding a second EME in slot 9 in the 7-slot chassis, slot 10 in the 8-slot chassis, and slot 18 in the 16-slot chassis establishes Redundancy. Redundancy provides standby support in case the first, or *primary*, EME fails for any reason. The standby, or *secondary*, EME learns configuration information from the primary EME and takes over management and controller responsibility if the primary EME fails.

The show module all command lists the status of the management modules in the chassis (EMEs and EMCs), including which EME is the *primary* and which EME is the *secondary*.

EME Redundancy   The slot location for each EME determines the redundancy status. If you
Status   install the first EME in slot 8 of the 7-slot chassis, slot 9 of the 8-slot chassis, or slot 17 of a 16-slot chassis, its status is displayed as primary after you enter a show module all command. The *primary* EME has configuration control, management responsibilities, and fault detection capabilities for the entire CoreBuilder 9000 Enterprise Switch.

After you install a second EME in the adjacent slot in each chassis, its status is displayed as secondary after you enter a show module all command.

3Com recommends that you always install the first EME in the lower-numbered slot, then install the second EME in the adjacent slot after the first EME has initialized.

Verifying an Interface   If the interface does not function after a connection is made, view the
status of the interface using the `show interface` command. If the
interface is indicated as down, bring the interface up using the `set
interface index` command.

The `set interface index` command options are:

- **Enable** — You can enable the interface.

- **Disable** — You can disable the interface.

Examples:

```
CB9000> show interface


                    Admin Oper  MAC
Idx Network      Type State State Address          Slot
--- ------------- ----- ----- ----------------------------
  2 serial_port SLIP  DOWN  DOWN N/A              17.02
  3 ethernet_portETH  DOWN  DOWN 08-00-8f-30-d6-69 17.02
```

To bring the ETHERNET (ETH) interface up, enter:

```
CB9000> set interface index enable
```

**Initial Management
Access**   Initially, you access the system through the RS-232 serial port connector.
To communicate with the EME serial port after you successfully connect
to the RS-232 connector, configure your PC or terminal to the following
default settings:

- 9600 baud

- 8 data bits

- no parity

- 1 stop bit

The following message appears on the terminal screen after you properly
connect a terminal to the RS-232 port:

```
CoreBuilder 9000 Enterprise Management Engine (vX.XX)
Copyright (c) 1999 3Com Corporation.
Login:
```

You can change the EME terminal settings after you successfully access
the module by entering the `set terminal console` command.

Configuring Network Access to the EME

With network access you can manage the CoreBuilder 9000 chassis from a remote terminal or SNMP manager. See Chapter 6 in the *CoreBuilder 9000 Enterprise Management Engine User Guide* for more information about using the EME for network access.

To configure the EME for network access:

1 Connect a terminal to the RS-232 serial port.

2 Press Enter to display the `login:` prompt.

3 At the `login:` prompt, enter the default login name: **admin**

Use all lowercase. When the system prompts you for a password, press Enter.

For example:

```
login: admin
Password: [press Enter]
```

4 Set the IP address for the EME Ethernet port using the `set ip ip_address <ip address> ethernet_port` command.

For example:

```
CB9000> set ip ip_address 155.104.10.2 ethernet_port
```

5 Set the IP subnet mask for the EME Ethernet port using the `set ip subnet_mask <subnet mask> ethernet_port` command.

For example:

```
CB9000> set ip subnet_mask 255.255.0.0 ethernet_port
```

6 Set the EME Ethernet port IP default gateway using the `set ip default_gateway <default gateway> ethernet_port` command.

For example:

```
CB9000> set ip default_gateway 155.104.10.7 ethernet_port
```

7 To verify the IP address and subnet mask, enter:
show ip

8 If you plan to use an SNMP manager to manage the CoreBuilder 9000 chassis, use the `set community` command to create an entry for the manager in the EME Community Table.

The following example creates a community named *mgt*. This community provides all access privileges for an SNMP manager with the IP address 122.104.10.9:

```
CB9000> set community mgt 122.104.10.9 all
```

9 To display the EME in each management slot and to determine which is the primary or the secondary EME, enter:
```
show module all
```

10 To set a login password for access to the EME, enter:
```
set login password
```

For example, to set yourself as having normal administrative access to the EME, enter the following command and respond to the password prompt:

```
CB9000> set login password
Enter current password for user admin: [Enter]
New Password: xxxxxx
Admin password changed.
```

11 If you want to log in to the Administration Console of a switching module, a switch fabric module, or an interface module, use the `connect <slot.subslot>` command.

For example:

```
CB9000> connect 4.1

Menu Options (CoreBuilder 90000-FF0B00):------------------
   module     - Administer module-level functions
   ethernet   - Administer Ethernet ports
   bridge     - Administer bridging/VLANs
   snmp       - Administer SNMP
   disconnect - Disconnect and return to Management Console


Type ? for help.


CB9000@slot 4.1 [20-E/FEN-TX-L2] ():
```

Configuring Access to the EME Using the RJ-45 Port

You can manage the chassis from a network management station (NMS) that is connected to the EME RJ-45 port.

⚠️ *CAUTION: Do not change the IP address of an EME that is already up and running from a network connection. Doing so will terminate the session.*

To manage the chassis from the NMS, assign IP connectivity values to the EME using the commands in the following example:

```
CB9000> set ip ip_address 141.1102.3.131 ethernet_port
CB9000> set ip subnet_mask 255.255.0.0 ethernet_port
CB9000> set ip default_gateway 141.102.3.2 ethernet_port
```

You can now access the EME from the NMS. You can also send SNMP and RMON requests to the EME.

The set interface index **command**

If the interface does not function after a connection is made, use the show interface command to view the status of the interface. If the interface is indicated as down, use the set interface index command to bring it up.

The set interface index command options are:

- **Enable** — You can enable the interface.
- **Disable** — You can disable the interface.

Finding More Information   For detailed information about using this module, see the *CoreBuilder 9000 Enterprise Management Engine User Guide.*

You can view this document online or print it from the CoreBuilder 9000 Documentation CD-ROM.

Table 5 lists locations of further configuration information in the *CoreBuilder 9000 Enterprise Management Engine User Guide*.

Table 5   Tasks in the EME User Guide

Management Task	User Guide Reference
Configure the EME management connection	Chapter 2
Download software	Chapter 3
Configure the CoreBuilder® 9000 chassis	Chapter 4
Configure power supplies	Chapter 5
Administer the network	Chapter 6
Manage redundant EMEs	Chapter 7
Troubleshoot EME problems	Chapter 8

3Com Corporation LIMITED WARRANTY

CoreBuilder® 9000 Enterprise Management Engine (3CB9EME)

HARDWARE	3Com warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for one (1) year from the date of purchase from 3Com or its authorized reseller.
	3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.
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	3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.
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Advance Replacement is provided for ninety (90) days, after which time it may be available for a specified fee. 3Com will make commercially reasonable efforts to ship the replacement product not later than five (5) business days after receiving the request for advance replacement, but may be delayed due to product availability or export or import procedures. The shipment of advance replacement products is subject to local legal requirements and may not be available in all locations. When an advance replacement is provided and Customer fails to return the original product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement, at list price. This advance replacement is different from the fee-based Advance Hardware Replacement Service, which is available as a contracted service offering.

INCLUDED SERVICES:

Telephone Support, with coverage for basic troubleshooting only, will be provided for ninety (90) days from the date of purchase, on a commercially reasonable efforts basis. Please refer to the Technical Support appendix in the Getting Started Guide for telephone numbers.

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EMISSIONS COMPLIANCE STATEMENTS FOR CLASS A PRODUCTS

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class A 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 commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

Canadian Emissions Requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI Class A Compliance

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

EMC DIRECTIVE STATEMENT

EMC Directive Compliance

This equipment was tested and found to conform to the Council Directive 89/336/EEC for electromagnetic compatibility. Conformity with this Directive is based upon compliance with the following harmonized standards:

EN 55022	Limits and Methods of Measurement of Radio Interference
EN 50082-1	Electromagnetic Compatibility Generic Immunity Standard:
	Residential, Commercial, and Light Industry

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case you may be required to take adequate measures.

LOW VOLTAGE DIRECTIVE STATEMENT

Low Voltage Directive Compliance

This equipment was tested and found to conform to the Council Directive 72/23/EEC for safety of electrical equipment. Conformity with this Directive is based upon compliance with the following harmonized standard:

| EN 60950 | Safety of Information Technology Equipment |

GENERAL APPROVAL STATEMENT FOR UK

UK General Approval Statement

This equipment is manufactured to the international Safety Standard EN60950 and is approved in the UK under the General Approval Number NS/G/12345/J/100003 for indirect connection to the public telecommunication network.

AUSTRALIAN EMC FRAMEWORKS STATEMENT

Australian EMC Frameworks Compliance

This product conforms to the EMC Frameworks and meets the Class A limits of AS3548.

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