



Release Notes for Cisco MWR 1900 Mobile Wireless Edge Router for Cisco IOS Release 12.2(8)MC2c

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Cisco IOS Release 12.2(8)MC2c

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These release notes are for the Cisco MWR 1900 Mobile Wireless Edge Router for Cisco IOS Release 12.2(8)MC2c. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode and related documents.

For a list of the software caveats that apply to Cisco IOS Release 12.2(8)MC2c, see the [“Caveats in Cisco IOS Release 12.2\(8\)MC2c” section on page 8](#). To review the release notes for Cisco IOS Release 12.2, go to www.cisco.com and click **Technical Documents**. Select **Release 12.2** from the Cisco IOS Software drop-down menu. Then click **Cisco IOS Release Notes > Cisco IOS Release 12.2**.

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Introduction

The Cisco MWR 1900 Mobile Wireless Edge Router running Cisco IOS Release 12.2(8) MC2 or a later Cisco IOS Release 12.2 MC is a networking platform optimized for use in mobile wireless networks. It extends IP connectivity to the cell site and Base Transceiver Station (BTS), and through a Fast Ethernet interface to the BTS, provides bandwidth-efficient IP transport of voice and data bearer traffic, as well as maintenance, control, and signalling traffic, over the leased line backhaul network between the BTS and leased line termination and aggregation node via compression (cRTP/cUDP) and packet multiplexing (PPPMux and MLPPP). It supports a limited set of interfaces and protocols, but offers high performance at a low cost while meeting the critical requirements for deployment in cell sites, including small size, extended operating temperature range, high availability, and DC input power flexibility.

System Configuration Requirements

The Cisco MWR 1900 Mobile Wireless edge router requires the following system configuration:

- Cisco IOS 12.2(8) MC2 or a later Cisco IOS Release 12.2 MC Software be installed.
- Network Time Protocol (NTP)

Network Time Protocol must be configured. The Cisco MWR 1900 router uses NTP to maintain a clocking source for the proper time stamping of system messages and log files.

- Redundancy

When not using the Cisco MWR 1900 router in a redundant configuration, the standalone option must be configured from redundancy mode.

When using the Cisco MWR 1900 router in a redundant configuration, the keepalives under the FE must be set to 1.

Memory Recommendations

Table 1 *Memory Recommendations for the Cisco MWR 1900 Mobile Wireless Edge Router*

Platform	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco MWR 1900 Mobile Wireless Edge Router	mwr1900-i-mz	32 MB Flash	128 MB DRAM	RAM

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco MWR 1900 router, log in to the Cisco MWR 1900 and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 1900 Software (MWR1900-I-MZ), Version 12.2(8)MC2, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to Software Installation and Upgrade Procedures located at the following URL:

http://www.cisco.com/warp/public/130/upgrade_index.shtml

Upgrading to a New ROM Monitor Version

The MWR 1900 ROM Monitor (ROMMON) consists of two modules:

- A resident module that is not changed during the upgrade procedure.
- An upgradable module that is updated during the upgrade procedure. This is the only module that you will download from Cisco.com.



Note

Before performing this procedure, you must download the new ROMMON image from Cisco.com. The download procedure is the same as downloading Cisco IOS software images.



Note

In the event of a power outage, the ROM monitor download will not be successful.

To upgrade the ROMMON version on your Cisco MWR 1900 router, complete these steps from EXEC mode:

Step 1 Copy the new ROMMON image from a TFTP server to slot0.

Step 2 Verify that the new image has been copied:

```
Router#dir slot0:
Directory of slot0:/
 3 -rw- 871 Mar 01 1993 00:05:02 MWR1900-3-default.cfg
 4 -rw- 610704 Mar 01 1993 00:10:30 MWR1900_RM2.srec
```

Step 3 Upgrade the current configuration by entering the **upgrade rom-monitor** command as shown in the following example:

```
Router# upgrade rom-monitor file slot0:MWR1900_RM2.srec

Wilma-2#upgrade rom-monitor file slot0:MWR1900_RM2.srec.122-8r.MC3
This command will reload the router. Continue? [yes/no]:y
```

Step 4 Press **Enter** to continue. The router begins downloading the ROMMON image. The router automatically reboots.

```
ROMMON image upgrade in progress
Erasing boot flash
eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming boot flash pppp

Now Reloading
System Bootstrap, Version 12.2(20010915:181836) DEVELOPMENT SOFTWARE
Copyright (c) 1994-2001 by cisco Systems, Inc.

Running new upgrade for first time

System Bootstrap, Version 12.2(8r)MC3, RELEASE SOFTWARE (fc1)
TAC Support:http://www.cisco.com/tac
Copyright (c) 2002 by cisco Systems, Inc.
mwr1900 processor with 131072 Kbytes of main memory
Main memory is configured to 64 bit mode with parity disabled

Upgrade ROMMON initialized
rommon 1 >
```

New Features in the Cisco MWR 1900 Router with Cisco Release 12.2 MC Software

The software running on the Cisco MWR 1900 router consists of two components: Cisco IOS software running on the MIPS-based route processor portion of the router hardware, and microcode running on the Cisco network processor, also known as Parallel eXpress Forwarding (PXF). Because the Cisco MWR 1900 router is designed specifically for use in an IP-RAN in the BTS, it is customized for performance, high-availability, quality of service, and link efficiency.

For detailed descriptions of each of these features, see the *Cisco MWR 1900 Mobile Wireless Edge Router Software Configuration Guide*.

- Cisco IOS Software Features

Cisco IOS software function added for the Cisco MWR 1900 router IP-RAN application include:

- Redundancy logic
- Failover logic
- Relay control
- Diagnostic functions

Standard Cisco IOS software features supported in this release include:

- IP Fragmentation
- IP Multicast
- IGMP
- MLP, PPP Control Path (IPCP, NCP, LCP, CLNS)
- HSRP
- OSPF
- DHCP
- CDP
- NTP
- SNMP

- Network Processor Software

The following features are supported in the network processor:

- MAC Classify
- ICMP
- FIB (CEF)
- Load-balancing
- MAC Rewrite
- QoS Matching
- QoS Actions
- Statistic maintenance
- IPv4
- MLPPP, MLP, PPP Data Path (MLP LFI is not supported)
- PPPMux
- cRTP/cUDP

- Redundancy support
- Cisco Hot Standby Router Protocol (HSRP) support
- MIB support

New Feature in Cisco IOS Release 12.2(8)MC2b Software

The following new feature is introduced in Cisco IOS Release 12.2(8)MC2b.

Traffic Recovery Over MLP After T1 Failure

When a T1 failure occurs, traffic recovers over the MLP link within 6 seconds.

This caveat is a feature enhancement to the **keepalive** interface configuration command. With this enhancement, you can also configure a maximum number of retries before a link is declared down by issuing the command as follows:

```
keepalive [interval] [retries]
```

where:

- *interval* is the keepalive interval (in seconds). Valid value is a number greater than 0. The default is 10.
- *retries* is the number of times a link will be tried again before being declared down. Valid value is a number between 1 and 255. The default is 5.

For implementation in an IP RAN solution, the recommended configuration is as follows:

On the MWR 1900:

```
interface Serial0/0:0
no ip address
encapsulation ppp
keepalive 1 2
no cdp enable
ppp multilink
multilink-group 1
end
```

On the MGX-RPM-1FE-CP back card;

```
interface Virtual-Template2
bandwidth 1536
no ip address
keepalive 1 2
no peer default ip address
ppp multilink
multilink-group 101
end.
```



Note

In the MGX-RPM-1FE-CP backcard configuration example, only the **keepalive** interface command and configuration recommendation is specific to implementation in an IP RAN solution.

This new feature is identified by CSCdy78207.

New Features in Cisco IOS Release 12.2(8)MC2c Software

These sections describe the new features in Cisco IOS Release 12.2(8)MC2c.

ACFC and PFC Support on PPP Interfaces

By default, Address and Control Field Compression (ACFC) and Protocol Field Compression (PFC) are enabled on PPP interfaces. Both features are always enabled and will be negotiated on all serial interfaces.



Note

If upgrading for this support, ensure that you upgrade the MGX-RPM-1FE-CP backcard images first. After doing so, immediately upgrade all MWR 1900 routers connected to the MGX-RPM-1FE-CP back card.

This new feature is identified by CSCdz15365.

Ignore IP ID Field Delta in cUDP Packet Flows Support

By default, the ability to ignore IP ID field delta in cUDP traffic flows is enabled. This ability eliminates the need to send information about the IP header ID field in compressed packets. The decompressor saves the original ID field from the full header packet and generates an ID field by incrementing it by one for each decompressed packet.

This feature improves processing efficiency; helping to minimize dropped packets and link saturation.

This feature is identified by CSCdz00521.

Limitations, Restrictions, and Important Notes



Caution

The Cisco MWR 1900 router does not support online insertion and removal (OIR) of WAN interface cards. Any attempt to perform OIR on a card in a powered up router might cause damage to the card.



Caution

Removing the compact flash from the Cisco MWR 1900 router during a read/write operation might corrupt the contents of the compact flash, rendering it useless. To recover from an accidental removal of or corruption to the compact flash, a maintenance spare with the appropriate bootable Cisco IOS software image might be needed.

Unsupported Cisco IOS Software Features

The Cisco MWR 1900 router requires a special version of Cisco IOS software. Not all Cisco IOS software features can be used with the Cisco MWR 1900 router as the core routing is handled by the network processor. The following standard Cisco IOS software features are not supported on the Cisco MWR 1900 router:

- Security Access Control Lists
- MPLS
- 802.1Q VLANs

- Frame Relay (FR)
- MLP LFI
- ATM

Upgrading the VWIC-2MFT-T1-DIR Microcode

When upgrading the image on your Cisco MWR 1900 router, power cycle the router or perform a microcode reload on the VWIC-2MFT-T1-DIR to ensure that the firmware for the VWIC-2MFT-T1-DIR is updated during the upgrade.

Disabling PPP Multiplexing

To fully disable PPP multiplexing (PPPMux), issue the **no ppp mux** command on the T1 interfaces of the routers at both ends of the T1 link. If PPP multiplexing remains configured on one side of the link, that side will offer to receive PPP multiplexed packets.

MLP LFI Support

MLP LFI is not supported by the Cisco MWR 1900 router. Therefore, MLP LFI must be disabled on peer devices connecting to the Cisco MWR 1900 router T1 MLP connections.

ACFC and PFC Support on PPP Interfaces

If upgrading to Cisco IOS Release 12.2(8)MC2c or later for the ACFC and PFC support on PPP interfaces, ensure that you upgrade the MGX-RPM-1FE-CP backcard image first. After doing so, immediately upgrade all MWR 1900 routers connected to the MGX-RPM-1FE-CP back card.

Caveats in Cisco IOS Release 12.2(8)MC2c

The following sections list and describe the open and closed caveats for the Cisco MWR 1900 router running Cisco IOS Release 12.2(8)MC2c. Only severity 1 through 3 caveats are included.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels.

Caveats in Cisco IOS Releases 12.2 and 12.2 T are also in Cisco IOS Release 12.2(8)MC2c. For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*. For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*. These two documents list severity 1 and 2 caveats and are located on CCO and the Documentation CD-ROM.



Note

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, Login to Cisco.com and click **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go directly to <http://www.cisco.com/support/bugtools>.

Open Caveats

The caveats listed in this section are open in Release 12.2(8)MC2c.

- CSCdw34503

When using an extended ACL with the **access-group** command to define traffic using the **class** policy-map configuration command, the Cisco MWR 1900 router crashes to ROMmon. This condition happens because extended ACLs are currently not supported.

Workaround: The **access-group** command is not part of the IP-RAN configuration. However, if using the command, use only with standard ACLs.

- CSCdw56881

When traffic shaping is applied to an MLP output interface, the shaped output rate might be slightly higher than that defined. This condition occurs because the data rate to that interface is greater than the shaping rate.

Workaround: There is currently no workaround.

- CSCdx85735

When the class-default queue is used with other class-based queues, the class-default queue's committed information rate (CIR) and the excess information rate are not configured correctly.

Workaround: Manually configure the committed information rate using the **shape** class-map configuration command. The excess information rate cannot be manually configured, therefore, there is no workaround for it not configuring correctly.

- CSCdy09568

QoS class-based WFQs configured with a low percentage of bandwidth are unable to use the unused bandwidth from queues assigned a high percentage of the bandwidth.

Workaround: Deconfigure QoS on the output interface.

- CSCdy23636

When IOMEM is low, a PXF memory leak occurs when processing multicast traffic (into the FE and out the MLP interface).

Workaround: Use the **memory-size iomem** command to allocate, at minimum, 20 percent of the DRAM memory to I/O memory (for example, **memory-size iomem 20**).

- CSCdy28494

During periods of heavy multicast traffic (approximately 5000 pps), some multicast packets are dropped at the MWR 1900 MLP interface.

Workaround: Reduce the rate of multicast traffic.

- CSCdy31030

Entering or modifying the **shape** class-map configuration command to a policy map that has already been applied to an interface has no effect. Therefore, there will be no change to the traffic flow for that class of traffic. In addition, specifying certain values using the **shape** command might generate the message "Shape rate too low for *interface*."

Workaround: Remove the policy map from the interface and then reapply it, or save the new configuration and reload the router to get the changes to take effect. If the "Shape rate too low for *interface*" message displayed before, the value will be accepted and applied when one of the above methods is used.

- CSCdz23375
When PPPMux and cUDP are configured, UDP fragmentation at traffic rates of 600 pps or more causes conditions such as dropped packets at the receiving MLP interface and tail drops at the receiving FE interface.
Workaround: There is currently no workaround.
- CSCdz37497
When PPPMux and cUDP are configured, during periods of sustained multicast traffic at a rate of 100 pps or more causes a periodic “out-of-sequence” condition in the MWR 1900 IOS decompression.
Workaround: Reduce the rate of multicast traffic.
- CSCdz45713
Tail drops and output queue drops occur at traffic rates of mixed traffic of 6000 pps over a 4 T1 WAN link.
Workaround: Reduce the UDP multicast packet rate to no more than 300 pps.

Resolved Caveats

This section lists the caveats resolved in Release 12.2(8)MC2c.

- CSCdy60894
The MWR 1900 router incorrectly flushes Type 5 link-state advertisements (LSAs). This condition might occur when the MWR 1900 is acting as a OSPF not-so-stubby area (NSSA) translator and autonomous system border router (ASBR). If a route that is being redistributed gets overwritten by an NSSA external route, then the MWR 1900 generates a Type 5 LSA and immediately flushes it.
- CSCdz05622
When the BTS advertises reachability to a logical IP address over a physical IP address for which the MWR 1900 router does not have resolved ARP entry, the ARP request for the physical next hop address takes approximately 25 to 30 seconds to be generated. During this period of time, the MWR 1900 drops packets and the mobile call is dropped.
- CSCdz34149
When cUDP is enabled on an MGX-RPM-1FE-CP and the RPM contains multiple multilink bundles, if some or all of the multilink interfaces flap, when they come up, the wrong IP and UDP headers might get placed on one or more of the cUDP traffic flows that were present before the interface went down.

Troubleshooting

Collecting Data for Router Issues

To collect data for reporting router issues, issue the following command:

- **show tech-support**—Displays general information about the router when it reports a problem.

Collecting Data for Redundancy Issues

To collect data for redundancy-related issues, issue the following commands while in EXEC mode:

- **show redundancy**—Displays current or historical status and related information on redundant Dial Shelf Controllers (DSCs).
- **show controllers**—Displays information that is specific to the hardware.
- **show standby**—Displays Hot Standby Router Protocol (HSRP) information.
- **show ip interface**—Displays the usability status of interfaces configured for IP.

Collecting Data for ROMmon Issues

To collect data for ROMmon issues, issue the following command while in EXEC mode:

- **showmon**— Displays currently selected ROM monitor.

Collecting Data for Router Rebooting to ROMmon

If a router reboot to ROMmon occurs, issue the **dir device ID** command where *device ID* is slot0:, and look for the router processor or network processor exception file (crashinfo* or pxf_crashinfo* respectively). Once you have located one of these files, you can email the file along with a description of the problem to your Cisco representative.

Documentation Updates

This section contains information that was not included or was documented incorrectly in the *Cisco MWR 1900 Software Configuration Guide*. The heading in this section corresponds with the applicable section title in the documentation.

Configuring RTP/UDP Compression

The maximum number of RTP header compression connections per MLP bundle is documented as 600 when in fact, up to 1000 connections are supported on an interface. This amendment also applies to the **ip rtp header-compression** command description.

The show ip rtp header-compression Command

The **detail** keyword is not supported in the **show ip rtp header-compression** command. Therefore, output does not display for the **detail** keyword if specified in command.

Related Documentation

The following sections describe the documentation available for the Cisco MWR 1900 Mobile Wireless Edge Router. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents.

Platform-Specific Documents

These documents are available for the Cisco MWR 1900 Mobile Wireless Edge Router on Cisco.com and the Documentation CD-ROM:

- Cisco MWR 1900 Mobile Wireless Edge Router
 - *Cisco MWR 1900 Hardware Installation Guide*
 - *Cisco MWR 1900 Software Configuration Guide*
 - *Cisco MWR 1900 Rack Mounting Instructions*
 - *Cisco MWR 1900 Regulatory Compliance and Safety Information*
- *VWIC-2MFT-T1-DIR, VWIC-2MFT-E1-DIR Installation Instructions*
- *MGX-RPM-IFE-CP Back Card Installation and Configuration Note*

On Cisco.com at:

Technical Documents: Cisco Product Documentation: Fixed and Mobile Wireless Solution: Cisco Mobile Wireless IP-RAN: Cisco Mobile Wireless IP-RAN Version 1.0

On the Documentation CD-ROM at:

Cisco Product Documentation: Fixed and Mobile Wireless Solution: Cisco Mobile Wireless IP-RAN: Cisco Mobile Wireless IP-RAN Version 1.0

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2 MC and are updates to the Cisco IOS documentation set. A feature module consists of an overview of the feature, configuration tasks, and a command reference.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in Release 12.2 MC: New Features in Release 12.2 MC2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in Release 12.2 MC: New Features in Release 12.2 MC2

Obtaining Documentation

These sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com>

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. In the Cisco Documentation home page, click the **Fax** or **Email** option in the “Leave Feedback” section at the bottom of the page.

You can e-mail your comments to bug-doc@cisco.com.

You can submit your comments by mail by using the response card behind the front cover of your document or by writing to the following address:

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 Attn: Document Resource Connection
 170 West Tasman Drive
 San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

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- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

If you want to obtain customized information and service, you can self-register on Cisco.com. To access Cisco.com, go to this URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://www.cisco.com/register/>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

This document is to be used in conjunction with the documents listed in the [“Related Documentation”](#) section.

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