



Release Notes for Broadband Access Center for Cable 2.7

February, 2006

The release notes describe fixes to certain software issues and new features being implemented in Broadband Access Center for Cable 2.7.

Contents

- [Introduction, page 2](#)
- [New Features, page 5](#)
- [Bugs, page 7](#)
- [Known Software Problems, page 8](#)
- [Notices, page 11](#)
- [Obtaining Documentation, page 14](#)
- [Documentation Feedback, page 15](#)
- [Cisco Product Security Overview, page 16](#)
- [Obtaining Technical Assistance, page 17](#)
- [Obtaining Additional Publications and Information, page 20](#)



Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2005 Cisco Systems, Inc. All rights reserved.

Introduction

Broadband Access Center for Cable (BACC) is a provisioning application that is easy to install, configure, and maintain. It provides a simple and easy way to deploy high-speed data, voice technology, and home networking technology services.

You can use the BACC Java provisioning API for easy integration into an existing operations support system (OSS) environment.

Related Documentation

These related guides support this release of the BACC product:

- *Cisco Broadband Access Center for Cable Administrator's Guide (Release 2.7)*
- *Cisco Broadband Access Center for Cable Installation Guide (Release 2.7)*
- *Cisco Broadband Access Center for Cable Command Line Interface Reference (Release 2.7)*
- To support the Device Provisioning Engine (DPE) 590:
 - *DPE-590 Recovery CD-ROM Release Notes*
 - *Cisco Content Engine 500 Series Hardware Installation Guide.*
http://www.cisco.com/en/US/products/hw/contnetw/ps761/products_installation_guide_book09186a00800801e0.html
- To support the DPE-2115:
 - *DPE-2115 Recovery CD-ROM Release Notes*
 - *Installation and Setup Guide for the Cisco 1102 VLAN Policy Server.*
http://www.cisco.com/en/US/products/sw/secursw/ps2136/products_installation_and_configuration_guide_book09186a00801f0d02.html

**Caution**

Refer to the VLAN Policy Server guide for port and connector identification, and to perform hardware installation only. Do not attempt to perform any of the configuration instructions found in the VLAN Policy Server guide.

- *Cisco Network Registrar User's Guide (Release 6.0)*
- *Cisco Network Registrar CLI Reference (Release 6.0)*
- DOCSIS 2.0 Specification SP-RFIv2.0-I03-021218
- PacketCable MTA Device Provisioning Specification PKT-SP-PROV-109-040402
- CableHome CH-SP-CH1.0-I05-030801

System Components

The BACC product comprises:

- The regional distribution unit (RDU), which is software that you install on your server.
- The device provisioning engine (DPE), which is available in two versions:
 - A software DPE that is installed on a Solaris SPARC computer.
 - A rack-mountable DPE with the required BACC software already installed. Two such devices are currently in use: the original DPE-590 and the new DPE-2115.
- Extension points that must be installed on the Network Registrar DHCP servers.
- The Key Distribution Center (KDC), which is an authentication server used to authenticate PacketCable MTAs and grant security tickets.
- An administrator's user interface from which you can monitor and manage BACC.
- A sample user interface (SUI) that you can use to demonstrate BACC's power and flexibility.

System Requirements

You must have the Solaris 8 or 9 operating system, and Cisco Network Registrar installed on your system to successfully use the BACC software.

**Note**

The minimum Network Registrar version required to install BACC 2.7 is Network Registrar 5.5 although the recommended version is 6.1.2.3.

Hardware Considerations

The minimum hardware requirements needed to support a lab and a fully deployed network are completely described in the *Cisco Broadband Access Center for Cable Installation Guide*.

**Note**

Processing capacity, disk storage, and memory requirements depend on the size of the network deployment and the amount of log information needed.

Device Provisioning Engine 590

All installation and connection issues are discussed in the *Cisco Content Engine 500 Series Hardware Installation Guide* that accompanies this product.

Device Provisioning Engine 2115

All installation and connection issues are discussed in the *Installation and Setup Guide for the Cisco 1102 VLAN Policy Server*. You should refer to that guide to identify various ports and connectors, and to install the device.

Uninstallation Note

Before uninstalling BACC 2.7, ensure that no soft links are defined under the <BACC_HOME> directory. The <BACC_HOME> directory is the root installation directory, the one in which you install the BACC component or components; the default installation directory is */opt/CSCObpr*. Avoid defining soft links under <BACC_HOME> because you risk losing all the soft links, and the files and folders to which the soft links point. For more information, refer [Table 1, “BACC Known Software Problems,”](#) on page 8.

New Features

The major features for this release are the troubleshooting MAC address feature, the Cisco KDC, and the improved RDU extension capability.

This section briefly describes new or modified features found in the BACC 2.7 release:

Automated Migration

The BACC 2.7 release supports the automatic migration of RDU datastore from BACC 2.6.x.

CableHome Support

This BACC version supports the CableHome home networking technology. With this support, WAN-Man and WAN-Data objects now operate in the promiscuous mode. In this way, a cable modem will have optional relationships with multiple promiscuous mode Class of Services and DHCP Criteria.

Dynamic DOCSIS Version Selection

BACC now can detect a cable modem's DOCSIS version from an incoming DHCP request. It can also detect the CMTS DOCSIS version from a customer-supplied source that provides a mapping of GIADDR to DOCSIS version numbers. You can select a different DOCSIS file based on the combined versions of the cable model and the CMTS.

DOCSIS 2.0 Support

BACC now supports this version.

Increased MIB Functionality

Unlike previous versions of this product, BACC 2.7 now supports a new set of management MIBs, which offer increased flexibility and functionality.

TACACS+ Authentication

This release introduces support for the TACACS+ authentication (login only) for the hardware DPE CLI. Coupled with two new user types: read-only (disabled mode) and read-write (enable mode), the use of TACACS+ is optional.

**Note**

BACC 2.7 does not support running TACACS+ on the same computer that is running the RDU, DPE, or Cisco Network Registrar.

Read-Only and Read-Write Users

BACC 2.7 now supports two new types of users to access the RDU for troubleshooting purposes. A read-only user, who is unable to make any sort of configuration change, and a read-write user, who can make configuration changes but lacks the administrator's flexibility.

IP Lease Reservation

Although this feature was supported in previous BACC releases, specifically through the use of custom RDU extensions, BACC 2.7 now supports lease reservation operations through the use of the BACC API and administrator's user interface.



Caution

This feature is only supported when Network Registrar, version 6.1.2.3 or later, is in use with the Regional CCM feature that is deployed.

The Lease Reservation feature in BACC 2.7 works only in scenarios involving a single Network Registrar DHCP server with no failover configured. This feature is not supported in cases involving failover DHCP servers. Cisco will add more functional use of this feature in a later version of BACC.

Improved DOCSIS Shared Secret Management

Unlike previous BACC releases, where only one DOCSIS shared secret (DSS) was supported, BACC 2.7 now supports the use of DSS on a per-DPE basis. Changing the DSS no longer requires the regeneration of devices using that DSS; the new value is available immediately.

You can use this feature to define multiple different DOCSIS shared secrets for devices belonging to different CMTSs. In this way, if the shared secret is compromised, only a limited number of CMTSs are compromised.

Troubleshooting Specific MAC Addresses

You can use this feature to troubleshoot a specific device (or a small set of devices) throughout the RDU, DPE, and Network Registrar extensions.

Bugs

For information on BACC bugs, see the *BACC27_BugList.html* file in the */docs* subdirectory of the BACC CD-ROM or electronic distribution.

Known Software Problems


Note

To obtain more information about known problems, access the Cisco Software Bug Toolkit at <http://www.cisco.com/cgi-bin/Support/Bugtool/home.pl>. (You will be prompted to log into Cisco.com.)

[Table 1](#) identifies software issues that are known to exist in this release of BACC.

Table 1 *BACC Known Software Problems*

| Number | Description | Resolution |
|---------------|--|---|
| CSCef90805 | You cannot delete a property by using the change property API call, and then add it back in the same call. | Delete and then add the property by using separate API calls. |
| CSCeg61170 | After upgrading from BACC 2.6.2 to BACC 2.7 it is possible for the rdu.properties file to be overwritten by the installation program. If this occurs, logging and tracing related properties will be lost. | You must manually configure logging and tracing by using the setLogLevel.sh tool after the upgrade is complete. |
| CSCeg87139 | When the TFTP server receives a bad ACK, for a previous data block but not the last one sent, it automatically resends the data block instead of waiting for the real ACK. It should NOT transmit the data block, instead it should wait to receive another ACK. | There is currently no workaround or resolution to this issue. |

Table 1 *BACC Known Software Problems (continued)*

| Number | Description | Resolution |
|---------------|--|--|
| CSCeh03452 | <p>The syntax used in conjunction with the runCfgUtil.sh tool does not allow a way to generate options where it could have nested sub-options.</p> <p>When using DOCSIS 2.0 for example:</p> <pre>41. 41.1 41.1.1 30 41.1.1.2 10000000 41.1 41.1.1 30 41.1.2 20000000 41. 41.2 41.2.1 30 41.2.2 30000000</pre> | <p>The only workaround to this problem is to break multiple suboptions into multiple groups.</p> <p>According to the DOCSIS 2.0 RF spec, this definition achieves the same result:</p> <pre>41. 41.1 41.1.1 30 41.1.2 10000000 41. 41.1 41.1.1 30 41.1.2 20000000 41. 41.2 41.2.1 30 41.2.2 30000000</pre> |
| CSCeh25095 | <p>You cannot upgrade the DPE or Network Registrar Extension Points by using the setup.bin package. However, if you attempt to do this, there is no error message to specifically indicate this restriction.</p> | <p>Use the upgrade scripts supplied with BACC to upgrade these components.</p> |

Table 1 *BACC Known Software Problems (continued)*

| Number | Description | Resolution |
|---------------|--|---|
| CSCeh49666 | The /snmp/mibs/mibList property is used to expand the list of MIBs to be loaded into RDU. This property set in rdu.properties file overrides the internal default MIB list in RDU. This might result in configuration generation failure if the property is not populated to include both the default MIB list and the custom ones that must be added by the user. | Populate the value of the property to include the default MIB list and the custom lists. |
| CSCei01669 | BACC 2.7 installer (setup.bin) fails to detect and upgrade the BACC 2.6.x KDC installed on the box. | Uninstall the 2.6.x KDC and then install the new KDC from BACC 2.7 distribution. |
| CSCei31988 | KDC upgrade from BACC 2.6.x to BACC 2.7 fails. The bprAgent fails to start the KDC properly. | Install BACC 2.7 KDC from the install program instead of upgrading from an earlier version. |
| CSCsd23070 | When you run the uninstaller, the uninstallation program removes the soft links under the <BACC_HOME> directory, and the files and folders to which the soft link points. Note The <BACC_HOME> directory is the root installation directory, the one in which you install the BACC component or components; the default directory is /opt/CSCObpr. | There is currently no workaround or resolution to this issue. |

Notices

The following notices pertain to this software license.

OpenSSL/Open SSL Project

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

License Issues

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

OpenSSL License:

Copyright © 1998-2007 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment: “This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)”.

4. The names “OpenSSL Toolkit” and “OpenSSL Project” must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called “OpenSSL” nor may “OpenSSL” appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:

“This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)”.

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes cryptographic software written by Eric Young (ey@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License:

Copyright © 1995-1998 Eric Young (ey@cryptsoft.com). All rights reserved.

This package is an SSL implementation written by Eric Young (ey@cryptsoft.com).

The implementation was written so as to conform with Netscapes SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the

SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used. This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

“This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)”.

The word ‘cryptographic’ can be left out if the routines from the library being used are not cryptography-related.

4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: “This product includes software written by Tim Hudson (tjh@cryptsoft.com)”.

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG “AS IS” AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,

OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The license and distribution terms for any publicly available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution license [including the GNU Public License].

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

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

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

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

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML

documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .PDF versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at tech-doc-store-mkpl@external.cisco.com or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can submit comments about Cisco documentation by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories, security notices, and security responses for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you have identified a vulnerability in a Cisco product, contact PSIRT:

- For Emergencies only—security-alert@cisco.com

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For Nonemergencies—psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

**Tip**

We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

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

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>



Note

Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests, or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—An existing network is down, or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of the network is impaired, while most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

<http://www.cisco.com/go/guide>

- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

<http://www.cisco.com/go/marketplace/>

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

<http://www.ciscopress.com>

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

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

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help

solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

<http://www.cisco.com/go/iqmagazine>

or view the digital edition at this URL:

<http://ciscoiq.texterity.com/ciscoiq/sample/>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

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

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

<http://www.cisco.com/en/US/products/index.html>

- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

<http://www.cisco.com/discuss/networking>

- World-class networking training is available from Cisco. You can view current offerings at this URL:

<http://www.cisco.com/en/US/learning/index.html>

CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0711R)

© 2006 Cisco Systems, Inc. All rights reserved.

 Printed in the USA on recycled paper containing 10% postconsumer waste.

