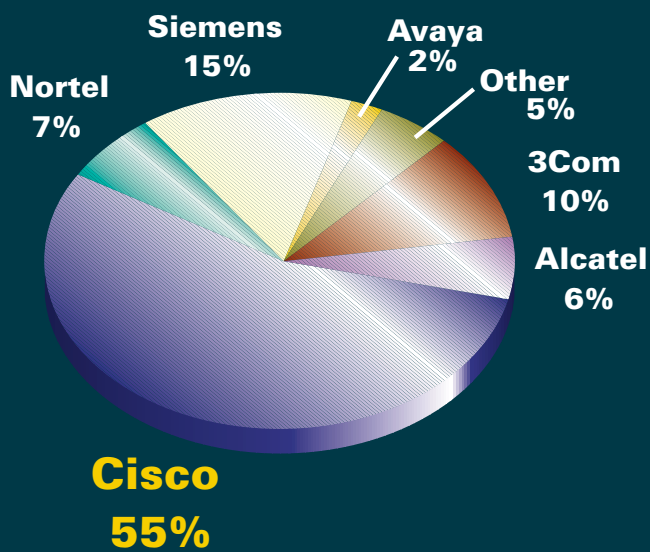




How does **network convergence** support
a business strategy?

As more and more organisations across Europe and the rest of the world make the move to a converged voice and data network, industry is learning about many new and innovative business benefits offered by network convergence. Perhaps the most interesting aspect is the level of impact it can have on an organisation's higher-level business processes. This underscores the fact that network convergence is more than just using a single integrated network to provide solutions that were previously performed by two or more separate networks.

At the beginning of 2003, around six thousand organisations world-wide had deployed a Cisco converged network. This equates to around 1.3 million handsets, with the expected number of shipped handsets reaching nearly two million by the end of the year. The following chart from IDC shows relative market share, in terms of handset shipments by revenue, for the first half of 2002:



Objective:

The purpose of this paper is twofold:

- To illustrate the various business benefits that can be realised via network convergence and identify the business processes most likely to be impacted.
- To recommend a representative approach to creating a business case, analysing the return on investment benefit and the consequent impact on profit & loss.

One vs. several networks - Why does this matter?

Historically, voice and data networks have developed in isolation. Businesses treated them as separate services and they were not expected or designed to integrate with each other. As network capabilities developed to meet more complex business solutions, this led to more and more complexity, making the integration process costly for businesses that were aware of the benefits that could flow from integrated applications.

It is now feasible and practical to implement business solutions on a single network that were previously too costly to deploy from a business and financial perspective on separate, non-converged voice and data networks. Some of these business solutions are described in this paper (e.g. telecoms cost reduction, unified messaging and call centre applications) with the discussion focussing on the business case for the particular capability required.

An example of a business solution that is far more costly to implement on separate networks than a converged network is the use of CTI (Computer Telephony Integration) to deliver call centre applications. The deployment of these applications on segregated, non-converged networks can only be financially justified in the high-end call centre environment. In a call centre the business benefits of shaving a few seconds off phone calls between customers and contact centre agents generally outweigh the equipment expense and ongoing costs of supporting and maintaining two or more network infrastructures (see diagram below).

Why has this same capability not found its way out of the call centre and into the conventional office telephony environment? Most office workers would agree there are productivity benefits to be gained from integrating their telephones with



their PCs. The principal obstacle to the deployment of call centre applications in the conventional office environment is the business benefits gained do not outweigh the costs associated with separate networks (see diagram below).

In many cases however, when this same capability is implemented on a single converged network, most of the integration complexities are reduced or even eliminated, thus reducing the overall cost and making the benefit over cost ratio positive.

The following diagrams illustrate the importance of assessing the benefit over cost ratio.

$$\left\{ \frac{\text{€ Business Benefit}}{\text{€} \sum (\text{data network} + \text{voice network} + \text{video network})} \right\} =$$

Lowering the cost of the network will improve the business case and will show a higher return on investment for the same business benefit

>1



when converged network cost is less than business benefit

<1



when sum of separate networks is more than business benefit

Key areas of business benefit

It can be seen that convergence is able to bring financial and business benefits from the integration of applications that deliver improved productivity. This paper has summarised below some of the key areas where significant savings of both time and cost can be realised. These are covered in detail within this paper.

Property utilisation and management

Assets such as property can be modified to provide better facilities for the employees that use them while reducing the organisation's commitment to property and help to address the potential difficulties arising from over-committed property portfolios.

Employee productivity

A converged voice and data solution boosts productivity by allowing employees to use a broader range of network accessibility options and information media. By providing all employees with the same access to tools such as conferencing, unified messaging and Web-based personal assistants, the employee's business objectives can be accomplished more effectively.

Cost reduction and cost management

The ability to consolidate two or more distinct network operations within an organisation naturally leads to cost reductions through the more efficient use of employees, technology, property/facilities (technology housing), fewer vendors and leasing contracts. In addition, having a single network operation allows better visibility of future costs and requirements for technology enhancements.

Organisational agility

A converged network increases business opportunities for the organisation by allowing faster expansion and adaptation. For example, actions taken to address new market opportunities, or moving resources to regions where labour and/or tax rates are lower are made simpler and less expensive with a converged network.

To create business advantages an organisation can deploy new business applications in less time by adopting a converged network. Thus interoperability issues are reduced if not eliminated as there is no longer a need to separately develop and test voice and data infrastructure elements for new applications.

Organisations should take the time to determine which of these business benefits are applicable and to explore how they might be applied. Depending on the results, many of the seemingly large costs associated with migrating to a converged

network (e.g. write-off of an un-depreciated PBX or LAN/WAN enhancement) could be quickly recovered by the cost savings and other benefits offered by a converged network.

Expected savings

There are several key transitional events that will help an enterprise determine whether or not to evaluate a converged voice and data network. These events can have the effect of accelerating the adoption of voice and data convergence in order to bring quicker financial benefits to the organisation. The following list is not intended to be exhaustive; rather it is intended to stimulate ideas where savings could be made.

A need to improve employee mobility and flexibility while retaining (secure) access to corporate information. Examples include:

- Increasing numbers of home office workers who still require access to corporate information.
- Mobile phone users.
- Itinerant workers - employees who regularly operate from several corporate locations.
- Campus roaming.
- Departmental relocations and moves.

A major European confectionery manufacturer expects to save €450k per annum on international mobile roaming charges and reduced telephony costs, through the intelligent use of PC-based softphone and Web-based personal assistant applications. In South Africa, an oil company is expected to save around Rand 185K per annum and has reduced the need for long distance (road based) travel for employees. This also has the additional benefit of reducing exposure to the risks of travelling on generally dangerous roads, a benefit achieved by using Cisco audio conferencing.

Voice and data convergence enables employees to be as productive out of the office as they are when they are in the office. Solutions like IP telephony, unified messaging and IP contact centres have been designed to provide an ideal foundation to support today's increasingly mobile workforce. This is especially important for salespeople, consultants and telecommuters who spend much of their time away from their office but still need access to the same network capabilities, regardless of where they are. IP telephony in particular provides significant benefits to telecommuters and people working at hotels, airports or other transitory locations.

More efficient space occupancy by building rationalisation and consolidation.

- New building commissioned.
- Facilities re-fit of existing building.
- Desire to reduce property commitment.

Many enterprises that are deploying IP telephony in 'greenfield' situations are realizing savings of approximately €100 per seat because they can now run a PC and an IP phone on the same Ethernet port. In its own IP telephony deployment, Cisco Systems saved just under €500k on wiring costs in its new London UK office location for 1,200 employees.

Non-PC workstation rich environments.

- A need to provide real time data and telephony in hazardous, insecure or dirty environments where a PC is unsuitable.
- A need to provide cheaper end user devices than PCs.

In hazardous environments, such as oil refineries, ships and some manufacturing processes there is often the need to provide voice and data communications, although the full functionality of a PC is generally unnecessary. A converged network providing a single handset device for both the voice and data display is a cost effective way to reduce the amount of equipment that has to be isolated from the hazardous risk.



IT infrastructure upgrade.

- Upgrading the existing LAN/WAN to accommodate building moves, higher traffic volumes, improve security requirements, increase storage capacity or other factors provides the definitive opportunity to converge the infrastructure and enable voice on the single network with minimum additional investment.

Recent studies with a major European mobile operator show potential savings of over €600K per annum through the use of a converged network. The infrastructure offers centralised voice services and management, allowing the organisation to remove several hundred PBXs from their retail outlets and obtain better voice tariff rates through aggregation of traffic.

A leading insurance organisation is using a converged network to realise expected benefits of €6 million over 5 years from reduced Featurenet charges, while saving 2,000 man hours per year through simplified cost centre management and billing systems.

Review of contact centre strategy.

- Desire to reduce agent turnover.
- Consideration of an alternative facility location to reduce agent costs.
- Optimisation of the technology platform to converge multiple systems.
- Sharper dynamic management of the technology/agent balance, e.g. the call flow between facilities or call flow between campaign teams ensuring peak agent utilisation at all times.
- Implementing efficient call forwarding technology to move the voice and the CRM data easily across to any point of an organisation.

A multi-channel contact centre allows an organisation to humanise the business relationship and make it easier to access critical data, making agents more productive, shortening handle-times and improving customer satisfaction. Multi-channel contact centres also give online customers the option of click-to-talk functionality; they can click a button on a Web site and be put in contact with a customer service agent immediately. Easy access to customer data can also lead to cross-sell and up-sell opportunities for an organisation.

Desire to optimise personnel and building security.

- CCTV network rationalisation/consolidation.
- Remote monitoring of facilities and security control.

Many businesses use a secure fibre optic network for CCTV security systems and a separate data network to monitor and control employee access. By converging the voice and data traffic onto the secure video network, the organisation can not only benefit from reduced costs but also implement security applications linking the CCTV system with the access monitoring system.



Requirement to improve cost management mechanisms.

- A converged network can reduce the number of resources and suppliers and provide a cost structure more closely related to the growth of the business.

Convergence serves to minimise expenditures associated with employee moves, adds and changes (MACs). MACs are estimated to cost an organisation between €20 to €30 for a 'soft change' and €85 to €140 for 'hard' changes. IP phones offering extension mobility allow organisations to significantly reduce this ongoing cost. For example, a typical enterprise with 5,000 employees that performs 2,000 moves per year at an average cost of €105 per move will save over €210K per year.

Desire to optimise business process.

- Travel reduction via enhanced remote collaboration.
- Uniformity of customer response.

Employees can reduce travelling time and expenses by the use of personal video conferencing and other collaboration tools for internal meetings.

Property utilisation and management.

Perhaps surprisingly, the traditional facilities management and property management departments can gain some of the most impressive and radical benefits created by converged networks. It is highly probable that the profound changes brought about by wide-scale deployment of converged networks will mean that the facilities management and property management industries will never be the same again. Some potential areas of benefit include:

- The reduction or elimination of much of the overhead and administration associated with moving people or groups within a building or campus environment.
- Minimisation or elimination of "swing space" or "churn space".

What is swing space?

Swing space is the extra space allowed by facilities teams that enables groups of employees to be moved without interruption to other areas of business. It serves as a buffer space where teams or departments can be temporarily located while the new location is being completed. This space commitment is made (typically 5 to 10 percent of total building space) only because moves take TIME and EFFORT. In many cases, the requirement for a building to have swing space can be traced to the inability of a traditional PBX to perform a move, add or change **in real time**, as the reconfiguration required for each user takes administrative intervention to make the change. In cases like this, swing space can be reduced or even eliminated with the implementation of Cisco's IP Telephony that uses an auto discovery mechanism to automatically recognise where a user's phone has moved to. Moving a phone no longer requires any administrative intervention.

As an example, a typical building of 25,000 m², at a cost of €800 per metre per year, represents an overall real estate cost of €20m per year. A reduction of 5% - 10% saves up to €1m to €2m per year. This could be an opportune time for an organisation to review its own swing space requirements with their facilities manager.

- For companies that practice hot-desking, the potential to increase the hot-desking ratio without compromising any other parameters.
- The potential to halve network cabling requirements to the employee desk.
- If used with wireless LAN and Softphone technology, there is the potential to eliminate network cabling to the desk completely, while exploiting other fixed space assets providing employees with many additional work locations.
- Consequently, a reduction in the size and cost of office furniture as a result of the reduction or elimination of cabling.

Of these benefits, the “swing space” benefit is new and radical and is only now finding its way into the public mindset. In the business environments in which it can be applied, it has the potential to make all costs relating to implementation of the converged network be insignificant.

Productivity

Perhaps the most significant benefit of a converged network is the range of applications that can be integrated quickly into the network and rapidly deployed. These applications can enable organisations to increase employee productivity by streamlining administrative tasks and allowing them to focus on activities aligned with revenue generation, business objectives and customer satisfaction.

Voice mail, e-mail and the fax have greatly enhanced the ability to communicate within an organisation and with customers. However, they have also created inefficiency within the enterprise since employees can spend an average of 2.5 hours per day listening, reading and responding to voice mail, email and faxes. The key to improved productivity lies in identifying ways to manage these communication methods more efficiently.

A German bank has estimated that it will save time in management of desktop assets (phones, PCs etc.) equivalent to €48K per annum through productivity gains obtained through implementing a converged network.

Unified messaging

Unified messaging provides users with the ability to access and immediately respond to voice, fax and email messages from any phone or PC within the enterprise, reducing the time associated with accessing multiple devices. Employees can access voice, fax or email while travelling and respond to the appropriate person.

A European Cisco partner used unified messaging to address some existing voice mail access issues and reduce access costs. Employees who are travelling or are simply away from a desk phone, can now access the corporate network at a wireless hot spot or even from a customer site. Once online, they can synchronise their email clients with new voice mails. This allows them to listen at their convenience free of charge. In addition, the voice mail can be stored on the PC, forwarded and replied to as an email, all while away from the office.

Personal communications assistants

As employees typically have multiple contact points (desk phone, mobile phone, email, home office, etc.) it is increasingly difficult to know the appropriate number to call. This leads to “phone tag”, missed calls and multiple voicemails, rather than successful contact with the employee at the appropriate time. In addition, it is often necessary for workers to prioritise who can contact them at a given time. Personal communications assistants on a converged network resolve these issues by giving employees the ability to forward critical calls to their most important numbers and to screen and prioritise incoming calls. As a secondary benefit it is also easier to set up audio conference bridges without third party involvement.

IP video solutions

A converged network puts the power of videoconferencing into everyone’s hands by providing companies with a more cost-effective model that is also easier to deploy. The primary benefit of videoconferencing is its ability to save on travel costs, minimise non-productive travelling time and provide a richer form of communication between people at different locations. With a converged IP network, an organisation can provide videoconferencing and video-on-demand capabilities to the desktop. New uses for this technology include distance learning (where employees access video content at their leisure rather than travelling to a central training facility) and the dissemination of critical business communications (such as quarterly board meeting updates). IP video solutions also have the power to assist the mobile workforce further by providing employees in the field with a means of real-time, face-to-face interaction with office-bound colleagues.

IP phones and softphones

IP phones are intelligent devices capable of supporting new features that are designed to improve personal productivity. Many of these new IP phones use eXtensible Mark-up Language (XML) based applications allowing users to view, for example, employee directories, calendars and diaries, email messages and voice mail on PDA type displays. As organisations identify more ways to deliver customised information, new opportunities for this technology will develop.

A leading European confectionery manufacturer expects to save €10K per annum on directory enquiry charges by implementing directory applications over the converged network.

Converged voice and data communication applications allow users to eliminate their desk phones and use their PCs with a softphone for voice calls. In addition, because a softphone can travel with the user, telecommuters with high-speed access will be able to take their phone extensions home with them and make and receive calls as though they were in the office.

Cost reduction and management - reduced call costs

Traditional voice management and control

Telephone call charges can be a considerable component of an organisation's cost structure. Ironically, most organisations do not report, manage or optimise these call costs, primarily because they are implemented on disparate networks, reside in separate repositories and in the traditional environment are very difficult to correlate. Planning, reporting and control of these costs can be the first constructive step in reducing them.

Within a converged network a review of the components could be as follows:

- Management and Reporting.
 - Consider all communications costs - mobile telephony spend, calling cards, home office PSTN and on-site PSTN spend are all elements for evaluation.
 - Take an holistic view of all these media.
 - PSTN and ISDN lines can be consolidated - often many of the lines are unused.

Then implement rules aimed at controlling those identified costs:

- Real time control and refining of traffic flow.
 - Dynamic call barring - essential part of cost management.
 - Dynamic business process implementation - i.e. out-of-hours telephone handset use restriction (excluding essential numbers such as emergency service and security).

As with large assets such as property and facilities, the enterprise should re-examine costs and go beyond the standard view of cost reduction. Offering key employees mobile communication tools is no longer complex and does not have to be multi-vendor and expensive. By examining the applications, devices and processes that support this key 21st century requirement, the enterprise should be able to reduce its costs.

With points of presence or voice network nodes located around an organisation's geographic reach, travelling employees can dial into a local network node whilst working in a non-home country location and simply carry their conversation across the corporate voice network. Typical roaming charges can represent between 10% and 60% of a mobile bill. This is a significant amount when the average mobile bill for an employee is in the region €2000 per annum. With personal assistant services provided by a converged network, the organisation can work toward reducing this cost by 10% and 30%.

In addition, roaming charges and local (in-country) charges can also be reduced, either through the IP-based desk phone or the use of a softphone application on an employee's PC, rather than using a mobile phone or a hotel phone. By using a softphone the potential cost savings and benefits are:

- Home office PSTN costs can be reduced by using Broadband and a secure VPN.
- Connection to audio conferencing services from virtually any location by use of conference connection.
- Calls from hotel rooms, airport lounges, coffee houses and customer or partner locations - all of these scenarios can cost money. By offering a secure connection, an organisation's voice network can reach out and service any employee in virtually any location or situation.

Organisational agility

UNIVERSITY HOSPITAL OF ICELAND

The University Hospital of Iceland was established following a merger between the National Hospital and the City Hospital in the beginning of 2001. After the merger, the hospital had two incompatible PBX systems that were up to 15 years old and needed replacing. These two PBX's supported 22 hospital locations with over 2,600 phones. Instead of buying their own PBX system, the hospital decided to outsource the telephony services for the next seven years. Proposals for a new telephony system were requested from vendors in which the main criteria were security, reliability, functionality and the ability to meet as yet unknown future capabilities. The last criterion was the cost of the solution. All vendors responded with a PBX-based offer, with the exception of Cisco, who proposed a converged network solution.

The Cisco solution was designed to be highly redundant and reliable, and at the same time, flexible and extensible. After a detailed and thorough first evaluation phase where much emphasis was placed on the security and reliability aspects of the solution, the hospital decided that the Cisco IP Telephony solution fulfilled all the requirements and demands of the hospital environment.

In the next phase, where functionality and extensibility were evaluated, the Cisco solution was placed first in all categories, both because of the existing features and also because of the extensive interface capabilities which will make it possible to integrate the telephony solution with the hospital's own internal applications.

In the final phase, where pricing was examined, the Cisco solution was the lowest one, even when adding the cost of enhancing the customer's network to support redundancy, power requirements and Quality of Service. In addition, the resilience and agility of the implemented Cisco solution exceeds the capabilities of the competitive solutions proposed.

The hospital has deployed applications that can be easily managed, enhanced, scaled and easily measured in financial terms, for example, employee time management.

- Most entrances to the hospital facilities have an IP phone attached to the wall where an XML application on the phone allows employees to clock-in and clock-out.
- The application links seamlessly into HR and payroll applications for real-time reports and payments
- This use of a converged infrastructure will save the hospital 28 million Icelandic Krona.

Having discussed the business and financial benefits that are possible from implementing a converged network and how these may be realised in an organisation it is important to review how the business case for the converged network is constructed. The model below was used by Cisco for its own converged network implementation and has also been used with many Cisco customers in Europe.

Building the business case of a converged network

Four steps to building the business case

1. Understand the business benefits that converged networks can offer:

- Cost reduction and management.
- Property and facilities utilisation and management.
- Organisational agility.
- Employee productivity.

2. Understand the operational aspects of the target business environment:

- Business strategy and business objectives.
- General operations environment.
- Organisational structure and governance model.
- High-level and low-level business processes across departments and functions.
- Corporate culture and propensity to change business processes in order to realise maximum benefit.



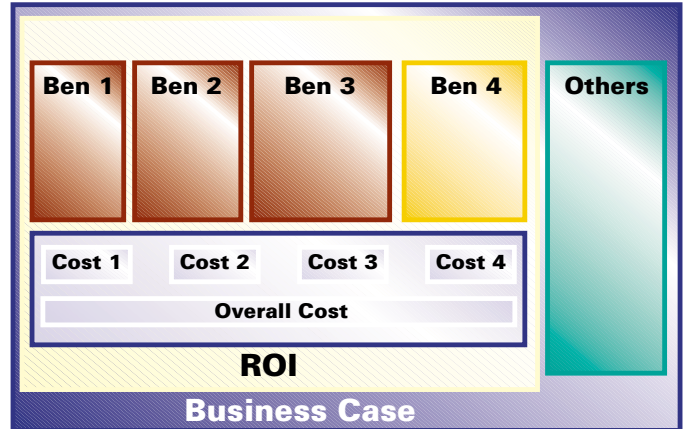
What are the benefits of network convergence?

3. Apply relevant business benefits to business processes:

- Perform a mapping exercise of business benefits to business processes.
- Consider the business benefit effect on the whole business.
- Consider cross-functional interaction with all groups affected by the converged network (i.e. IT, Telecoms, Facilities, Finance and Business Engineering/Applications).

4. Create a business case framework:

- Compare costs to the relevant benefit to determine the most beneficial for the organisation. Compare the overall benefit to the overall cost. Then perform the calculations, assumptions in developing a business case.



A business case framework for a converged network

Conclusion and recommendation

The debate around network convergence is over. It's happening now. Over 1,000 companies in EMEA and over 6,000 worldwide have deployed a Cisco converged network. Many organisations are now seeing excellent performance and reliability from their deployments and are also rolling out business process enhancing applications, such as employee time management and daily business condition monitoring services.



Key lessons from these adopters of a converged network are:

- In the right business environment, a converged network can deliver lower operational costs and greater employee productivity on an infrastructure capable of scaling as new business applications are developed.
- It is essential to look at the full picture rather than just the telecom infrastructure, as relatively small costs can be a barrier to realising greater cost savings and benefits.
- A converged network provides greater visibility and control of costs.
- A greater potential to realise future business benefits. To gain the future possibilities of a converged network requires organisations to view the asset in different ways.
- Industry studies have shown that 80% to 85% of the enterprises that have already implemented a converged network show that the quality, resiliency and scalability that this technology delivers either meets or exceeds expectations.

Network convergence is a viable technology that can be implemented today. By converging existing voice, video and data networks onto a single IP-based network, an enterprise can lower its total cost of network ownership by reducing expenditures associated with equipment and maintenance, network administration and network carrier charges. A converged network also enhances an organisation's productivity and communications capabilities by facilitating employee mobility and providing a solid foundation for the deployment of advanced, feature-rich services and solutions. IP telephony, unified messaging and multi-channel contact centre applications are just a few examples of such solutions.



CISCO SYSTEMS



Corporate Headquarters

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

www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems Europe
11 Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9

France
www.cisco.com
Tel: +31 1 58 04 60 00
Fax: +31 1 58 04 61 00

Americas Headquarters

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

www.cisco.com
Tel: 305 718-2600
Fax: 305 718-2699

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912

www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the **Cisco.com Web site at www.cisco.com/go/offices.**

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic
Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy
Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal
Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden
Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Copyright © 2002, Cisco Systems, Inc. All rights reserved. Aironet, Catalyst, Cisco, Cisco IOS, Cisco Systems, the Cisco Systems Verified logo, EtherChannel, and GigaStack are registered trademarks or trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site 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. (0206R)