Remote Access Technologies:
A Comparison of GoToMyPC™ and Microsoft® Windows® XP
Remote Desktop
Contents:

Executive Summary ........................................ 1

Remote Control Overview .............................. 2
  Remote Control Solutions ................................... 2
  Intended Application ........................................ 2
  Revolutionary Solution:
    Citrix Online’s GoToMyPC ................................ 2

Comparison of Remote Desktop
  and GoToMyPC ............................................. 3
  Client Software Installation .............................. 3
  Configuration for Firewalls .............................. 4
  Ease of Establishing a Connection ..................... 5
  Security ...................................................... 6
  Connection Costs ........................................... 6
  Reporting ..................................................... 6
  Guest Invitation ........................................... 7
  Platform Compatibility .................................... 8

Conclusion .................................................... 9

GoToMyPC is a cost-effective way to roll out and manage a corporate remote-access plan for telecommuters, work extenders and mobile professionals.

When compared to Microsoft Windows XP Remote Desktop, GoToMyPC offers significant advantages. GoToMyPC is easier to set up, more available over networks with firewalls, and easier to use.
Executive Summary
Companies are looking for ways to provide cost-effective network access to their remote, mobile, and telecommuting employees. Remote control solutions such as GoToMyPC™ Corporate and Microsoft® Windows® XP Remote Desktop are one way to provide this access.

With GoToMyPC Corporate, you can roll out and manage a remote access plan in minutes. It is a highly secure and cost-effective way for employees to access their computers and network resources remotely. Employees simply access and work on their computers using any Web browser.

This white paper demonstrates that GoToMyPC has significant advantages over Microsoft Windows XP Remote Desktop. The advantages include:

- **Client Software.** GoToMyPC does not require that you install client software ahead of time. You can access and control your host computer from virtually anywhere. In most situations Windows XP Remote Desktop requires that you pre-install the client software.

- **Configuration for Firewalls.** GoToMyPC can transparently transit almost all firewalls, so no additional network configuration is necessary. Windows XP Remote Desktop requires that you establish an incoming TCP/IP connection, often dictating that the firewall be modified to allow this connection.

- **Ease of Establishing the Connection.** GoToMyPC establishes the connection to the remote computer easily with no configuration. Users only need to know their email address and password. Windows XP Remote Desktop requires that the user make decisions about their connection method to ensure optimum performance.

- **Security.** GoToMyPC is pre-configured for maximum security using the industry standard Advanced Encryption Standard (AES) 128-bit encryption. GoToMyPC connects through most firewalls, ensuring your data and network are secure. Because establishing a Windows XP Remote Desktop connection behind a firewall is complex, users may circumvent your network security by using modem connections.

- **Connection Costs.** Because Windows XP Remote Desktop users are more likely to connect using dial-up connections, higher telecommunications costs may result. GoToMyPC works securely across broadband Internet connections so no additional infrastructure or connection costs are necessary.

- **Reporting.** GoToMyPC has an online administration center that allows administrators to monitor current sessions or view detailed reports. Remote Desktop does not have reporting capabilities.

- **Guest Invitation.** GoToMyPC provides an easy method to invite guests to connect to your computer from a variety of Windows operating systems. Windows XP Remote Assistance involves several complicated steps to invite a guest. Remote Assistance requires that both computers are running Windows XP and have Windows Messenger installed.

- **Platform Compatibility.** GoToMyPC can be used across multiple Windows operating systems. Windows XP Remote Desktop can access host machines running Windows XP Professional only.

Overall, GoToMyPC is an easier solution for users than Remote Desktop, because users do not need to configure items such as security settings or the IP address. In addition, GoToMyPC is firewall friendly, making it an easier solution for network administrators.

GoToMyPC provides a cost-effective, easy-to-implement, fast and secure way to provide remote access to corporate network resources. Users find that GoToMyPC is convenient because it can be used from almost anywhere and requires no configuration.
Remote Control Overview
One of the major issues confronting information systems managers today is providing secure access to corporate IS resources to people who are physically located outside of the corporate network.

In today’s increasingly connected society, traveling salespeople, telecommuters and work extenders all need access to resources on corporate networks. These resources – such as databases, sales tools, email, etc. – are usually behind firewalls for security reasons and cannot be accessed from outside the corporation.

Remote Control Solutions
A common method for allowing remote access to protected computing resources is to use remote control software, such as Windows XP Remote Desktop. Such solutions ship keyboard input, mouse input and display output data between the client and host computers. This functionality affords remote client users access to computers on the corporate LAN, allowing them to remotely access all applications while experiencing the same performance as if they were on the LAN itself.

This type of traditional remote control solution brings its own set of management and security challenges. This white paper compares the management and security issues of one remote control product, Windows XP Remote Desktop, with Citrix Online’s GoToMyPC.

Intended Application
Windows XP Remote Desktop is a software-based remote access program that allows users to connect to their computer with a Windows XP Professional operating system from another computer running a 32-bit Windows operating system.

With optional encryption, connection speeds to decide upon, software installation requirements, and the need to know the host computer’s name or IP address, the setup of Remote Desktop may call for more knowledge than that of the average computer user.

GoToMyPC was developed exclusively for people with telecommuting or remote access needs. In addition to providing easy to set up remote access to your computers, GoToMyPC includes many additional features such as Web-based user administration, collaboration tools, and straightforward guest access.

Revolutionary Solution: Citrix Online’s GoToMyPC
GoToMyPC is Web-based screen-sharing software that allows users to access and use a PC through the GoToMyPC Web site. With GoToMyPC, users can see their computer’s screen and access all of their programs, files and network resources as if they were sitting at and using their computer, even though they may be a thousand miles away.

All communications between the host and client computers are encrypted using 128-bit encryption. Only screen and keyboard updates are sent between the host and the client computer used to access it (unless the user initiates a file transfer), so bandwidth demands are minimal.

Any Internet-connected computer can be used as a client to control the host computer because there is no need to install any client software. The client and host computers both initiate outward TCP connections on well-known ports, so firewall changes are usually not necessary.
Comparison of Remote Desktop and GoToMyPC

Client Software Installation

Windows XP Remote Desktop: To connect to a computer using Windows XP Remote Desktop it is necessary to have Windows XP Professional (the Home edition will not work) installed on the computer that will serve as the host. The client machine must be a PC running Windows 95 or higher.

To run the Remote Desktop client software, you must usually pre-install the software that comes with the Windows XP CD-ROM. Even though the installation includes a Wizard to aid installation, there are several steps to complete.

Remote Desktop can use the Remote Desktop Web Connection to connect to the host using Internet Explorer. However, this method has several drawbacks. The host computer must be set up in advance with Internet Information Services, you can use only Internet Explorer, and the performance is not as fast as with a regular client software installation.

GoToMyPC: GoToMyPC allows users to control a host machine from any Internet-connected PC using a Web browser of choice, running Windows 95 or higher, and does not require any special client software to be installed ahead of time.

The client setup process with GoToMyPC is markedly easier than Remote Desktop. To install the client with GoToMyPC, the user visits the GoToMyPC Web site, enters their email address and password, and clicks Connect. The plug-in is automatically downloaded to the computer.

Figure 1: Remote Desktop generally requires client software installation

Figure 2: GoToMyPC requires no advance client software installation
**Configuration for Firewalls**

**Windows XP Remote Desktop:** To control a computer using Remote Desktop, it is necessary to establish an incoming TCP/IP connection to that computer using RDP (Remote Desktop Protocol), Microsoft's proprietary presentation protocol. The most convenient way to do this is over the network. This provides the best performance and quickest connection setup.

However, it also requires that the network allow the remote user to establish an incoming TCP/IP connection to the computer that is to be controlled. This is problematic in most corporate settings because the corporate firewall will almost certainly block incoming connections from the outside. Even if a company’s security policy allows such incoming connections, providing this capability requires significant administrative overhead in firewall management.

Even in a non-corporate setting, supporting incoming connections can be an issue. Many home computers use either personal firewall software or hardware or go through network address translation (NAT) either for their home network or their Internet service provider (ISP). Both of these must also be configured to allow incoming connections on the appropriate ports. If end users attempt this configuration, many will either inadvertently remove most or all the security the firewall provides or be unsuccessful in configuring the firewall. If the firewall or NAT belongs to their ISP, it will not possible to configure it for access.

Dynamic IP addresses are often used in corporations to make administration easier, but they play havoc with incoming connections. Even if the user writes down their IP address before they leave, it may change when it is renewed and they won’t know how to access their computer. Home users are not immune either, as most ISPs provide dynamic addresses, and firewalls and NATs used in a home network do as well.

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**GoToMyPC:** With GoToMyPC, both the host and client computers receive all communications through an outgoing TCP connection, using protocols and ports that can transparently transit almost all firewalls. Thus, in general, no firewall changes are required, and all the problems with incoming network connections that are an issue with the use of Remote Desktop are effectively avoided.

![Diagram of GoToMyPC communication](image_url)

**Figure 3:** GoToMyPC provides access across most firewalls
Ease of Establishing a Connection

Windows XP Remote Desktop: Configuring a Remote Desktop client can be complex for some users because they must know connection information such as the correct IP address. There are two connection choices with Remote Desktop that effectively require the user to choose between convenience and performance. If the user wants optimum performance, the client machine must have the Remote Desktop client software installed and configured on it.

If you forget your installation CD, or are in at a public terminal like at an airport and cannot install the client software, Remote Desktop Web Connection allows you to access the host machine via the Internet using Internet Explorer. The convenience of connecting through the browser however, is offset by degraded performance such as long waits and slow mouse/keyboard input. In addition, you must also install and configure the Microsoft Internet Information Services Web server on the host machine beforehand, which is often a security risk allowing possible viruses or worms such as the Code Red Worm.

GoToMyPC: GoToMyPC is more convenient because it was designed to function at its full speed through a Web browser and is effectively self-configuring. GoToMyPC is extremely portable because no software or pre-planning is needed to establish a connection. The user logs in to www.gotomypc.com and is presented with a list of all computers the user has registered and can securely connect to and control.

GoToMyPC

Secure Log In

Email Address: 
Password: 
Log In

Check this option if you prefer to log in automatically the next time you come to GoToMyPC from this computer. Do not check this if you are using a shared or public computer.

Figure 5: GoToMyPC allows easy remote access without configuration

These host computers notify the GoToMyPC communication servers of their availability on a real-time basis through outgoing connections to avoid any possible firewall, NAT or dynamic addressing problems using the industry standard Advanced Encryption Standard (AES) encryption (Windows XP uses a proprietary technology). Users need only remember their email address and password and the access code of the computer that they wish to connect to.
**Security**

**Windows XP Remote Desktop:** Because establishing network-based connections to a host behind a firewall is difficult, many users opt to establish connections by attaching a modem to their host PC.

However, using a modem completely circumvents the corporate firewall and security policies and makes preventing unauthorized access wholly dependent on the security of the PC. Frequently, such “backdoor” modem connections are exploited as a means for hackers to invade a corporate network.

Users can apply optional proprietary 128-bit encryption, but the encryption provides slower performance. Network administrators generally want to retain control of encryption standards in their organization to ensure that data is not compromised.

**GoToMyPC:** GoToMyPC’s security is built in and not optional. GoToMyPC traffic is encrypted with AES 128-bit encryption using a secure challenge-response password authentication protocol.

Because network-supported connections are much easier to make and more reliable, even in a secure environment with firewall protection, GoToMyPC eliminates the motivation for users to install a non-secure modem on their PC.

**Connection Costs**

**Windows XP Remote Desktop:** One way that companies mitigate the difficulty and security risks of individual modems is to establish modem pools so that dial-in users can establish Remote Desktop connections. In addition to the security implications of this approach, this technique can result in very high telecommunications costs. The user is either forced to pay for a long-distance call or the company must establish a toll-free number and pay for incoming calls in addition to allocating administrative overhead for provisioning and maintaining the correct number of extra phone lines.

**GoToMyPC:** By making network-supported connections secure, reliable and functional, even in an environment with firewall protection, GoToMyPC allows users to confidently connect using any broadband method. No extra infrastructure is required at the company, affording significant cost savings.

**Reporting**

**Windows XP Remote Desktop:** Most companies want detailed reporting about users making remote connections. For example, you might want the employee names and the length of time they were connected. Obtaining this information with Remote Desktop requires that you configure and utilize log files to track this information. In addition, you may need to use of third party software to import and analyze the log files. Configuring Remote Desktop for administrative reporting requires technical expertise.

**GoToMyPC:** Monitoring current sessions in progress or reviewing user connection history is a simple process with GoToMyPC. A monitor function displays everyone who is currently online along with his or her related connection information. The administrator can also end an employee’s current session immediately using a link. An additional reporting section allows the manager to view detailed reports by individual or the whole company for any time frame in either HTML or Excel format.
Guest Invitation

Windows XP Remote Desktop: Remote Assistance for Windows XP is a tool that allows a user running a Windows XP operating system to take control of another user’s computer through an invitation feature as long as the other computer is also running the Windows XP operating system. Another requirement of Remote Assistance is that both computers have Windows Messenger installed.

Because Remote Assistance requires Windows XP on both ends of the connection, a user cannot take advantage of the invite feature for presentations or product demonstrations to a friend, coworker, or perspective client who is running a different operating system such as Windows NT.

Remote Assistance could present connection issues for some users, especially those connecting through a Network Address Translation (NAT) device.

Inviting a guest to your PC with GoToMyPC is easy. An invitation can be sent by right-clicking on the GoToMyPC icon in the system tray and selecting Invite Guest to PC. You then fill in the email address of the invitee, and enter your email address and password. The person you invite receives an email with a link that launches our website and starts the screen sharing session.

GoToMyPC: The GoToMyPC Guest Invite feature will not only enable users on your operating system to connect to your PC, it will also work with a range of Windows operating systems including Windows 95, 98, NT, ME and 2000. In addition, GoToMyPC is firewall friendly and doesn’t require any firewall configuration or setup unlike Windows XP. This can be extremely useful when an important sales opportunity presents itself with a client running a firewall and using a different operating system than on the host PC.
**Platform Compatibility**

**Windows XP Remote Desktop:** With Remote Desktop, you can access host computers running only Windows XP Professional. The client can be running any Microsoft Windows operating system, but this host limitation restricts your available configurations. Windows XP will represent a small portion of the installed Windows operating system base for some time to come.

**GoToMyPC:** GoToMyPC has the competitive advantage of being able to provide remote access capabilities both to and from multiple operating systems. GoToMyPC can be used from and to Windows 95, Windows 98, Windows Me, Windows 2000, Windows NT 4.0, Windows XP Professional, and Windows XP Home Edition. In addition, the client can be running Linux, Solaris, and Macintosh.

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Conclusion

In contrast to other remote control products such as Windows XP Remote Desktop, GoToMyPC provides a cost-effective, flexible, and secure method for remote access to corporate computing resources. With GoToMyPC, there is no downside in terms of extra management, loss of security or loss of performance.

GoToMyPC is also far more convenient for users than other solutions because it does not require any client software, is accessible from any Web browser and does not require technical expertise to use.

Summary Comparison of GoToMyPC vs. Windows XP Remote Desktop

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<td>Client Software Installation</td>
<td>No client software installation.</td>
<td>Need to install software on client computers or use reduced-performance Web client.</td>
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<tr>
<td>Configuration for Firewalls</td>
<td>Outgoing connection only. No configuration of firewall.</td>
<td>Network and firewall must be configured to allow incoming connections.</td>
</tr>
<tr>
<td>Ease of Establishing a Connection</td>
<td>Self-configuring.</td>
<td>Need to configure both host and client machines prior to use.</td>
</tr>
<tr>
<td>Connection Costs</td>
<td>Can securely use local Internet access anywhere in the world, eliminating any extra dial-in costs.</td>
<td>In many cases must use direct dial-in lines to get around firewalls, incurring extra communications costs.</td>
</tr>
<tr>
<td>Reporting</td>
<td>Real-time reporting information available for any period; detailed reporting easily exported to Excel.</td>
<td>Limited reporting capability; Requires administration experience to configure and utilize log files.</td>
</tr>
<tr>
<td>Guest Invitation</td>
<td>Simple and works on many operating systems. No confusing menus. No files to download in the email.</td>
<td>Multi-step process with strict requirements limiting it to Windows XP operating systems.</td>
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