# Microsoft NetMeeting 3.0 Security Assessment and Configuration Guide

Systems and Network Attack Center (SNAC)

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# Warnings

- **Do not attempt to implement any of the settings in this guide without first testing in a non-operational environment.**

- This document is only a guide containing recommended security settings. It is not meant to replace well-structured policy or sound judgment. Furthermore this guide does not address site-specific configuration issues. Care must be taken when implementing this guide to address local operational and policy concerns.

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- Please keep track of the latest security patches and advisories at http://www.microsoft.com/technet/security/current.asp.

- This document contains possible recommended settings for the system Registry. You can severely impair or disable a Windows System with incorrect changes or accidental deletions when using a Registry editor (Regedt32.exe or Regedit.exe) to change the system configuration. Currently, there is no “undo” command for deletions within the Registry. Registry editor prompts you to confirm the deletions if “Confirm on Delete” is selected from the options menu. When you delete a key, the message does not include the name of the key you are deleting. Therefore, check your selection carefully before proceeding.

# Acknowledgements

The majority of this document is based upon work performed by the Mitre Corporation. Our thanks.

# Trademark Information

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**Section 1**

# Introduction

## 1.1 Purpose

The purpose of this document is to present the security assessment results of the Microsoft NetMeeting 3.0 collaboration tool (with the 3.01 service pack 1 applied), to review known issues and vulnerabilities associated with the earlier version of NetMeeting (Version 2.1), and discuss these issues and vulnerabilities in relation to NetMeeting 3.01. Finally, this paper provides a two-part Secure Configuration Guide. The first part focuses on individual installation and configuration of NetMeeting 3.01, and the second part focuses on enterprise-wide distribution using the NetMeeting Resource Kit 3.0.

## 1.2 Scope

In fiscal year 1998, MITRE conducted a review of NetMeeting 2.1 and found it to be lacking in the most basic security areas. While the focus of this document is on NetMeeting 3.01, the security assessment was performed within the context of the security afforded by the previous version of NetMeeting, version 2.1. As such, this document identifies the security issues and findings from prior work, and addresses information security issues associated with the new NetMeeting version 3.01 such as identification and authentication, access control, privacy and confidentiality, integrity, nonrepudiation, auditing, and availability. This is ***not*** an overall product assessment. Issues such as user interface design, system performance, product support, or infrastructure issues are not evaluated unless they relate to security concerns.

**Please note that the recommendations made in this document are valuable only in the context of a sound organizational security policy. The best use of this document is in helping to define that policy as it relates to NetMeeting. In simpler terms, just because this documents recommends a course of action that DOES NOT mean those recommendations are appropriate for all situations – this guidance must be tempered in light of local security needs.**

## 1.3 References

The following references are cited throughout this document.

- *NetMeeting Resource Kit 3.0*, Microsoft
- *NetMeeting Software Developer's Kit (SDK) Version 3.0*, Microsoft

**Section 2**

# NetMeeting Product Overview

NetMeeting is a collaborative computing tool designed to allow two or more people to enter a virtual meeting from geographically dispersed locations. NetMeeting provides a virtual space within which the participants can communicate via voice, video, Chat, or Whiteboard, and can share applications and documents.

This section provides a brief overview of the general requirements, features, and capabilities of NetMeeting. The vendor's product claims and features identified here are analyzed and tested for security vulnerabilities in Sections 4 and 5.

## 2.1 System Requirements

NetMeeting runs on Windows 95, Windows 98, and Windows NT/2000, platforms. It is used for communication and collaboration across the Internet or a local-area network (LAN) using Transport Control Protocol and Internet Protocol (TCP/IP). The user's physical connection to the network is irrelevant to the operation of NetMeeting, though there are user-adjustable settings for matching the conference bandwidth to the network medium.

Prior to loading NetMeeting, Microsoft's Internet Explorer, Version 4.0 or higher must be present on each user's computer. NetMeeting is not compatible with any other browser and requires Internet Explorer to install and operate properly.

## 2.2 Typical Collaboration Features

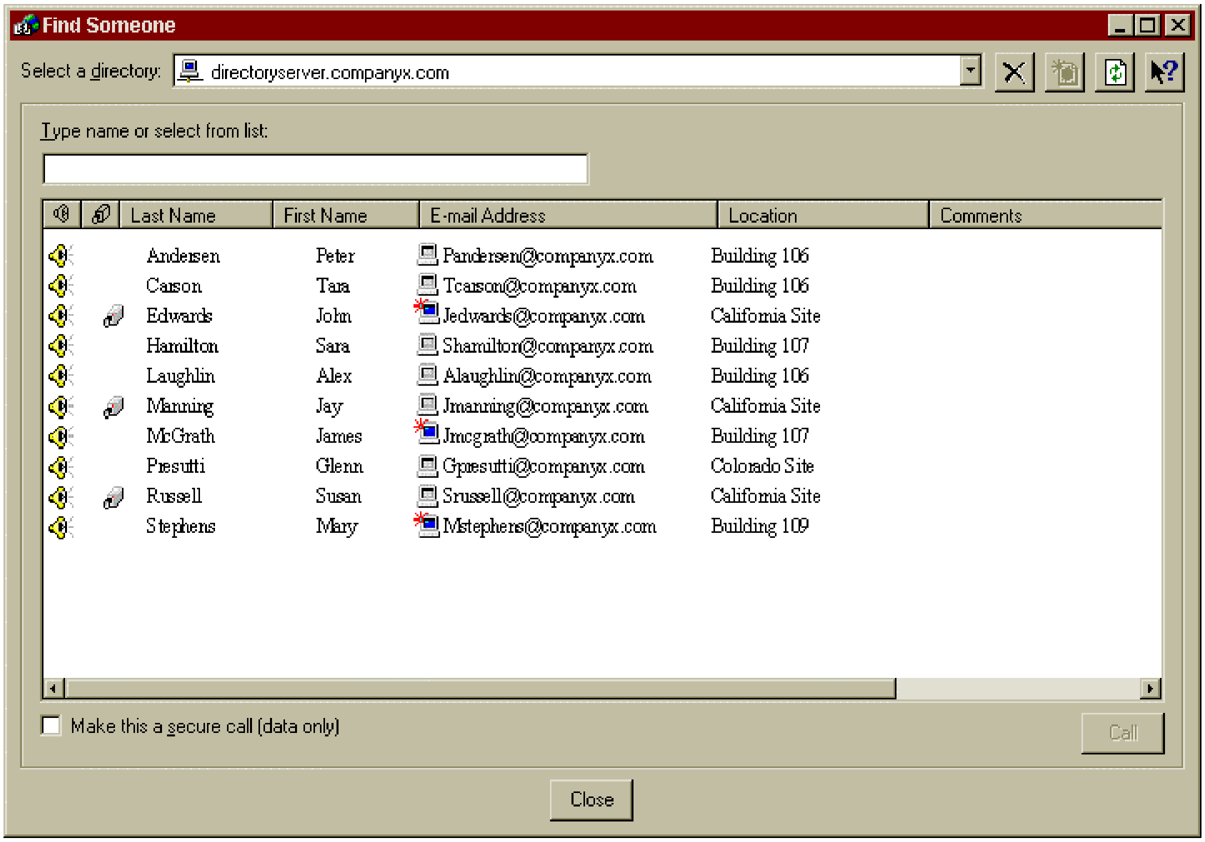
This section describes NetMeeting's collaboration features and provides context for the security assessment in Section 4.

### 2.2.1 Directory Services

Directory services allow a person to find the basic information required to connect to, and collaborate with, one or more persons. The minimum information typically required to complete a connection to someone is that person's network address. This can take the form of an e-mail address, Internet Protocol (IP) address, or user name on a particular Internet Service Provider (ISP). There are directory listings that can provide one or more of these pieces of information given the proper name of the person in question. Once the required address of each intended conference participant is obtained, the conference host can place a call to each and establish the conference. Communication and/or collaboration can then commence.

If users know the IP address of each other, they can connect point-to-point without having to log on to a directory server. However, many users today prefer to log on to a directory server that identifies all available users. Once they log on, they can select the user(s) they wish to communicate with without being required to know the Internet address beforehand.

An Internet Locator Service (ILS) is a component of the Microsoft Site Server, which creates a dynamic directory of NetMeeting users. This directory provides a list of all participants who are currently logged in to that directory. NetMeeting participants can then initiate calls and meetings directly from the directory server. ILS servers can be set up by any organization to provide directory services to their users. Many existing public ILS servers are available via the Internet as well. Figure 2-1 shows the interface for the NetMeeting directory service.



Select a directory: directoryserver.companyx.com

Type name or select from list:

| 🔊 | ☎ | Last Name | First Name | E-mail Address | Location | Comments |
|---|---|---|---|---|---|---|
| 🔊 | | Andersen | Peter | Pandersen@companyx.com | Building 106 | |
| 🔊 | | Carson | Tara | Tcarson@companyx.com | Building 106 | |
| 🔊 | ☎ | Edwards | John | Jedwards@companyx.com | California Site | |
| 🔊 | | Hamilton | Sara | Shamilton@companyx.com | Building 107 | |
| 🔊 | | Laughlin | Alex | Alaughlin@companyx.com | Building 106 | |
| 🔊 | ☎ | Manning | Jay | Jmanning@companyx.com | California Site | |
| 🔊 | | McGrath | James | Jmcgrath@companyx.com | Building 107 | |
| 🔊 | | Presutti | Glenn | Gpresutti@companyx.com | Colorado Site | |
| 🔊 | ☎ | Russell | Susan | Srussell@companyx.com | California Site | |
| 🔊 | | Stephens | Mary | Mstephens@companyx.com | Building 109 | |

□ Make this a secure call (data only)

**Figure 2-1. NetMeeting Directory Services via Internet Locator Service**

To be listed in the directory, users must log into a specified ILS server, (*"directoryserver.companyx.com"* in the example). The ILS server keeps track of the current Internet addresses of the registered users. To call someone on the list, the user double-clicks on the individual's name, and NetMeeting will place the call. This is convenient for users who are assigned a dynamic Internet address through their network providers.

### 2.2.2 One-to-One Audio/Video Conferencing

Audio services allow participants to communicate via audio (voice and multimedia material). To use these services, the participants must have multimedia capabilities in their computers (speakers and microphone or a telephone interface).

Video services allow participants to use video cameras to see each other during the conference. In order to transmit video, a participant must have a video camera connected to their computer.

The quality of both audio and video transmission is directly related to the bandwidth of the network medium used for the conference. In general, lower network bandwidth results in lower quality of audio. NetMeeting uses the typical bandwidth configurations, which are handled on a per-client basis for the following network types:

- 14.4 kilobits per second modems
- 28.8 kilobits or faster modems
- Cable, xDSL or Integrated Services Digital Network (ISDN)
- LAN

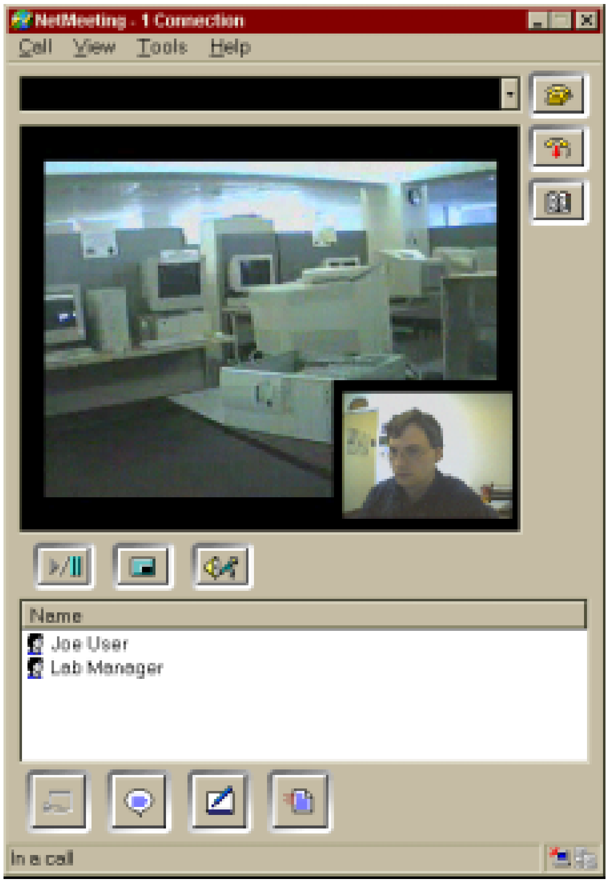
NetMeeting also utilizes other techniques to maximize performance and decrease network traffic:

- Caching graphical objects
  - Specialized bitmap compression
  - Sending graphical information as orders rather than sending actual graphical data and updating bitmaps
- Smart-order encoding: In Program Sharing, once an item is edited, only new data is sent to be displayed rather than sending the entire document.
  - Outgoing data queue: Items are queued in real-time so they are ready to be transmitted instantly rather than waiting to queue them all at once.
  - Smart spoiling: NetMeeting looks for existing output in the queue and deletes it before new output is queued.
  - Smart monitoring: Monitors information in the outgoing data queue and if it becomes too large, NetMeeting collects and transmits all information over the network at once.

The highest priority is given to audio in a NetMeeting call, then the data stream and finally the video stream. NetMeeting policies can be configured to set values for average audio and video throughput limits.

Collaboration tools generally have audio coder/decoders (codecs) built in to allow compression and decompression of the audio stream to accommodate bandwidth limitations. These aid NetMeeting in establishing low-bit rate connections, which are necessary for transmissions over the Internet.

NetMeeting allows many users in a call, but only two users are allowed to communicate using audio and/or video at one time, provided the users' computers are configured with the required multimedia hardware (sound cards, cameras, microphones) and drivers. Each user determines whether he/she will transmit/receive audio/video. Figure 2-2 shows the NetMeeting Audio/Video conferencing interface. The inset picture shows the local user, while the main picture shows the remote location.



Name
Joe User
Lab Manager

In a call

**Figure 2-2. Video Conferencing**

The audio/video feature in NetMeeting is automatically disabled for secure calls. NetMeeting uses data encryption to secure calls. The encryption applies to data only; therefore, audio and video functions are disabled.

### 2.2.3 Multi-point Data Conferencing

Multi-point data conferencing allows two or more conference participants to use Chat, Whiteboard, File Transfer, and Program Sharing tools to communicate and collaborate as a group in real-time.

#### 2.2.3.1 Chat

Chat services allow participants to have real-time two-way text communications in full duplex. This type of service is better, for example, than instant messaging because the Chat participants see each keystroke as it occurs, which feels more natural for users.

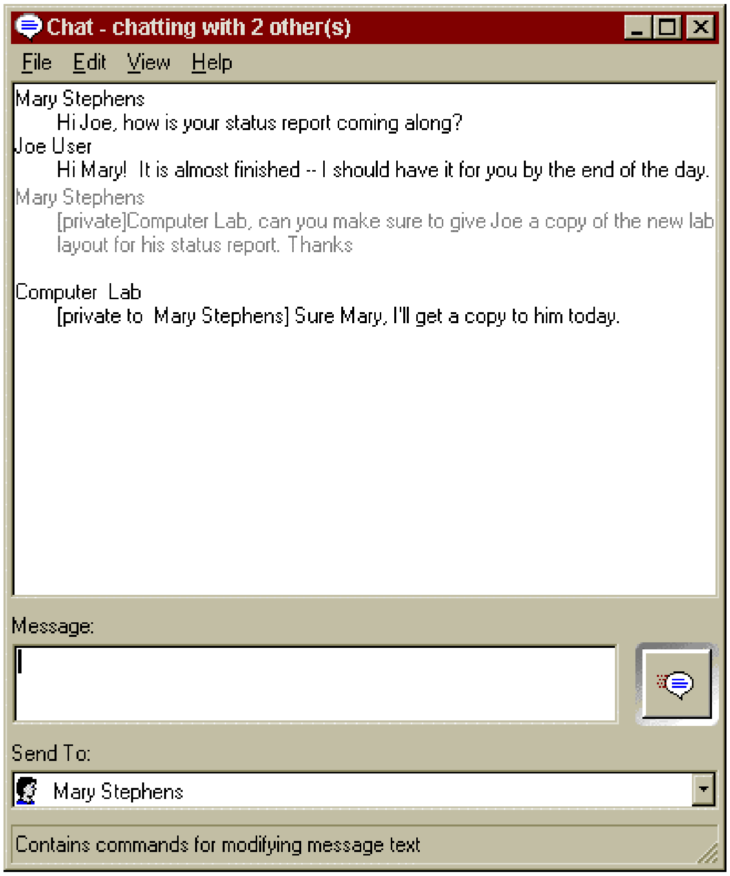
Participants in a meeting can use Chat to communicate in the absence of audio support, or when bandwidth constraints make audio support unusable. Chat is a text messaging feature that allows users to communicate in real-time, providing a written archive of this communication. Chat can be used between two or more participants. A special option allows two participants in a multi-point conference to have a private Chat within the group.

Figure 2-3 shows the NetMeeting Chat interface. Users can choose to send messages to a specific user or to everyone in the meeting.

#### 2.2.3.2 Whiteboard

The Whiteboard feature allows users to create, review, and modify text and graphical information in a collaborative way. Generally, all participants can add to or modify the contents of the Whiteboard at any time, though access control rules can be applied to restrict this. Information created or modified in this manner can be incorporated into other document types for final release.

Meeting participants can simultaneously review, create, and update graphical information displayed on a Whiteboard.



Mary Stephens
Hi Joe, how is your status report coming along?
Joe User
Hi Mary! It is almost finished -- I should have it for you by the end of the day.
Mary Stephens
[private]Computer Lab, can you make sure to give Joe a copy of the new lab layout for his status report. Thanks

Computer Lab
[private to Mary Stephens] Sure Mary, I'll get a copy to him today.

Message:

Send To: Mary Stephens

Contains commands for modifying message text

**Figure 2-3. Chat Interface**

NetMeeting's Whiteboard feature is object-oriented, rather than pixel-based, allowing users to select specific objects to highlight or modify. The NetMeeting Whiteboard claims to be T.126 compliant (T.126 is an Internet whiteboard protocol), which means it should be compatible and able to be used with other T.126-compliant whiteboard tools.

Figure 2-4 shows the Whiteboard interface.

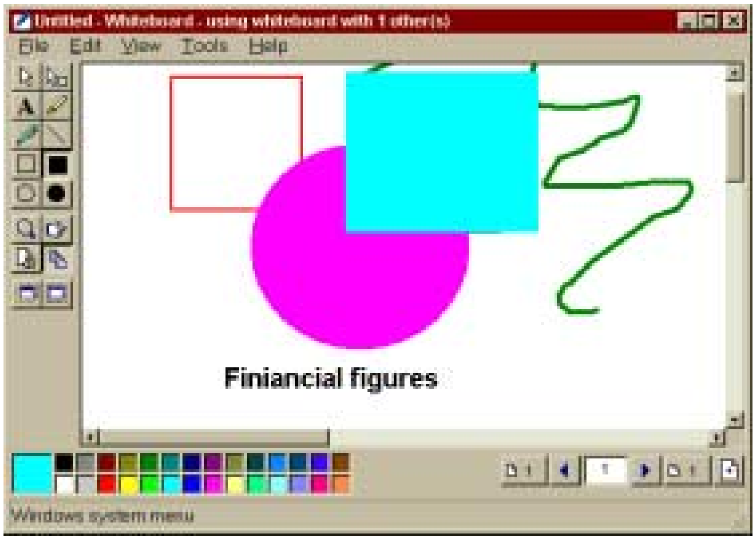

Untitled - Whiteboard - using whiteboard with 1 other(s)
File Edit View Tools Help
A
Finiancial figures
1
Windows system menu

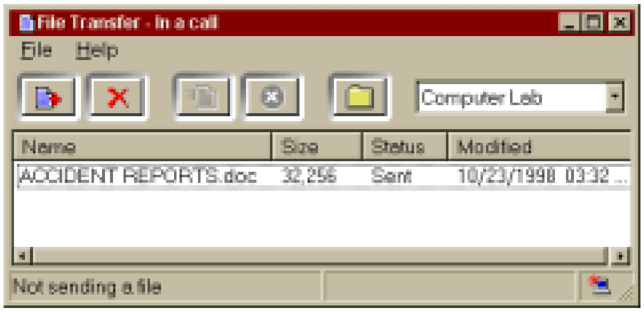
**Figure 2-4.  Whiteboard Interface**

### 2.2.3.3  File Transfer

The File Transfer feature allows users to send data files between one another.  Access controls can usually be established to limit the ability for others to access files on your computer.  Some collaborative tools also provide user-selectable constraints on the type and size of files that can be transferred.

The NetMeeting File Transfer capability claims to be T.127 compliant (T.127 is an Internet file transfer protocol), which should allow it to interoperate with other T.127-compliant file transfer tools.

Figure 2-5 shows how a File Transfer is initiated in NetMeeting.



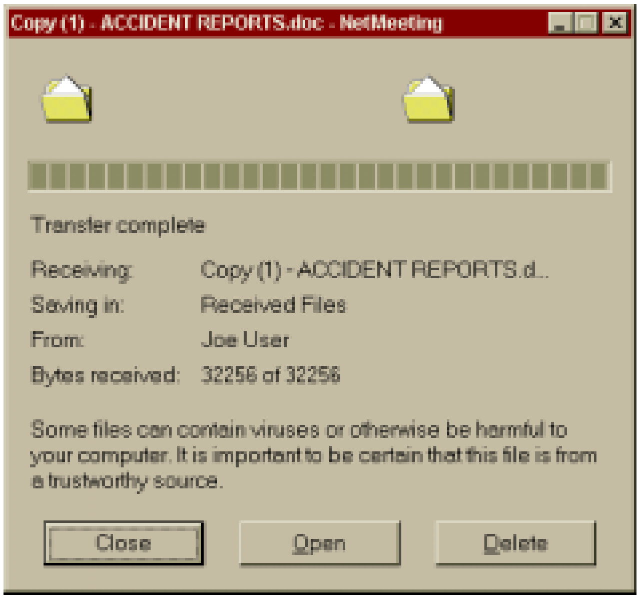
| Name | Size | Status | Modified |
|---|---|---|---|
| ACCIDENT REPORTS.doc | 32,256 | Sent | 10/23/1998 03:32 ... |

Not sending a file

**Figure 2-5.  File Transfer Interface**

The sender selects a file from the standard Windows file pull-down menu (such as *accident reports.doc*), selects the recipient(s) from the user name pull-down list (Mike in the Computer Lab), and clicks the Send button.  The transfer status (Sent) is displayed.

Each File Transfer recipient sees a pop-up window similar to the one displayed in Figure 2-6.



Copy (1) - ACCIDENT REPORTS.doc - NetMeeting

Transfer complete

Receiving: Copy (1) - ACCIDENT REPORTS.d...
Saving in: Received Files
From: Joe User
Bytes received: 32256 of 32256

Some files can contain viruses or otherwise be harmful to your computer. It is important to be certain that this file is from a trustworthy source.

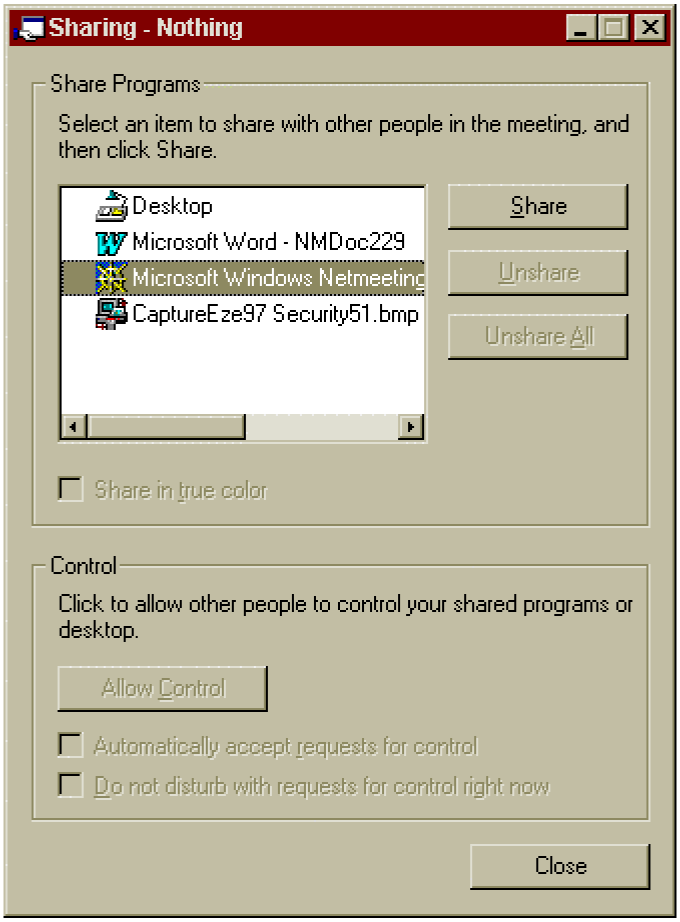
**Figure 2-6.  File Transfer Status**

The window shows the status of the incoming transfer, the name of the alleged sender (Joe User), and a warning about potentially malicious code.  Also, the receiver of the file has the option to close, open or delete the file either during the transfer or after the transfer.

### 2.2.3.4  Program Sharing

Program (or application) Sharing services allow a program on one participant's computer to be shared with other call participants.  The initiator can then pass control to another participant, allowing real-time modifications to be made by the second participant.  This feature is generally used to broadcast a presentation (such as Microsoft PowerPoint) to the participants for comments, enabling the initiator to make live modifications.  Program Sharing enables participants to share the software application loaded on a single machine, rather than requiring an individual installation on each computer as a prerequisite to viewing and modifying the material being presented.

Figure 2-7 depicts the Program Sharing interface.



Select an item to share with other people in the meeting, and then click Share.

□ Share in true color

Click to allow other people to control your shared programs or desktop.

□ Automatically accept requests for control

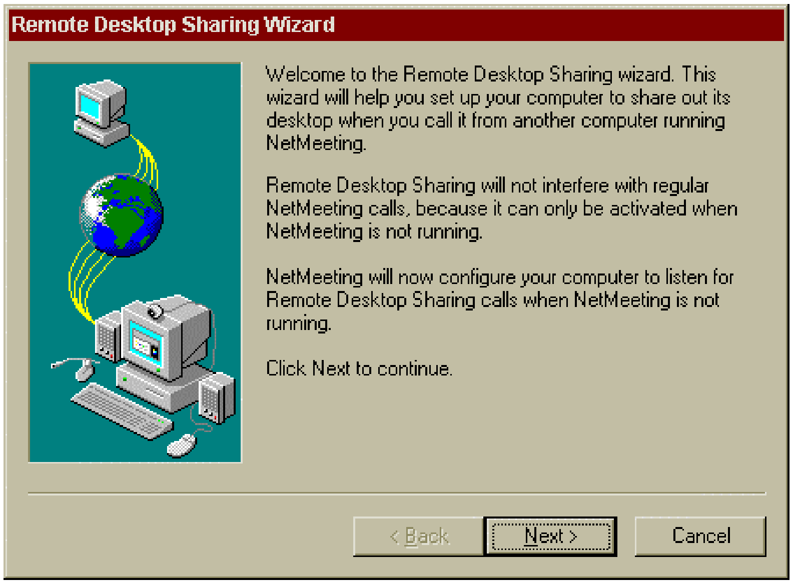
□ Do not disturb with requests for control right now

**Figure 2-7. Program Sharing**

The sharing machine initiates sharing and selects a program to share. Once a program is selected, the Sharing button activates and when clicked, the program is displayed on all participants' machines. If the sharing machine wants to give others the ability to modify the document, they do so by clicking on the Allow Control button. This is discussed further in Section 4.

#### 2.2.3.5 Remote Desktop Sharing

Remote Desktop Sharing (RDS) is tailored for people who need to access their computers from home or on travel. It allows users to access and work on remote computers that are running RDS. To protect the remote machine from being accessed by unauthorized users and to protect the information being transmitted, both password protection and data encryption should be enabled. Figure 2-8 depicts the Remote Desktop Sharing Wizard.



Remote Desktop Sharing Wizard

Welcome to the Remote Desktop Sharing wizard. This wizard will help you set up your computer to share out its desktop when you call it from another computer running NetMeeting.

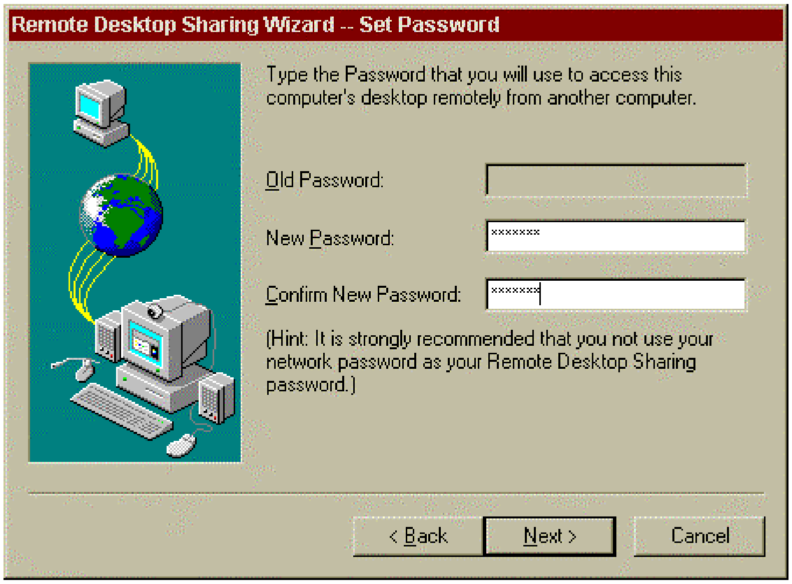
Remote Desktop Sharing will not interfere with regular NetMeeting calls, because it can only be activated when NetMeeting is not running.

NetMeeting will now configure your computer to listen for Remote Desktop Sharing calls when NetMeeting is not running.

Click Next to continue.

**Figure 2-8. Remote Desktop Sharing 1**

Once the wizard is initiated, if the computer is running Windows 95/98/Me, the user is required to enter a password that will be used to access the machine remotely. Figure 2-9 depicts this interface[1].



Remote Desktop Sharing Wizard -- Set Password

Type the Password that you will use to access this computer's desktop remotely from another computer.

Old Password:

New Password: *******

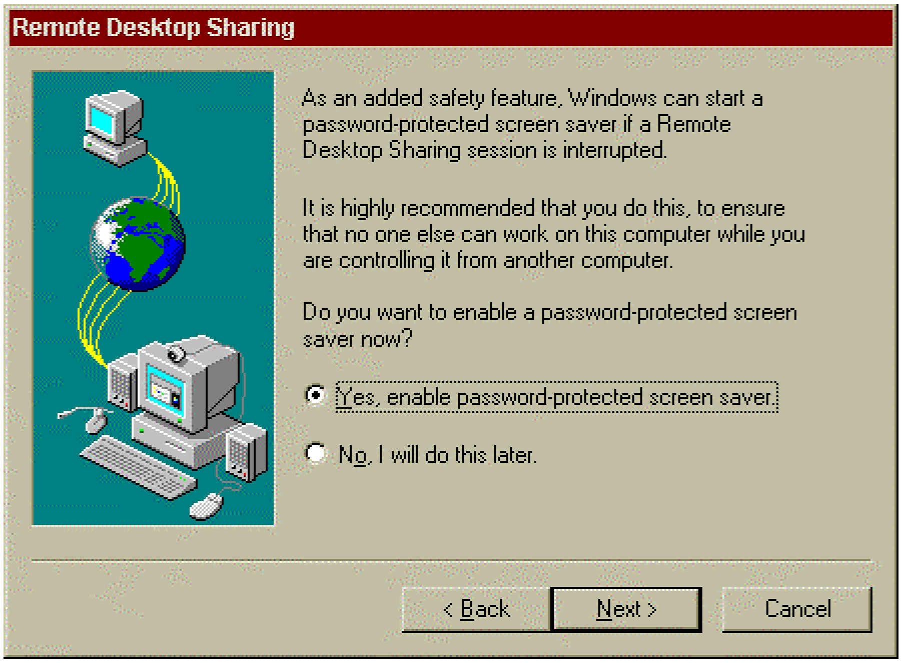
Confirm New Password: *******

(Hint: It is strongly recommended that you not use your network password as your Remote Desktop Sharing password.)

**Figure 2-9. Remote Desktop Sharing 2**

[1] Windows NT/2000 users gain access by virtue of their membership in a group called "NetMeeting RDS Users" which is created and populated by the administrator.

The user is then prompted to enable a password-protected screen saver. If the user chooses to enable one at this point, the settings window pops up and they are able to configure it immediately. The effectiveness of this feature is discussed in Section 4.4.1. Figure 2-10 illustrates the password-protected options.



Remote Desktop Sharing

As an added safety feature, Windows can start a password-protected screen saver if a Remote Desktop Sharing session is interrupted.

It is highly recommended that you do this, to ensure that no one else can work on this computer while you are controlling it from another computer.

Do you want to enable a password-protected screen saver now?

● Yes, enable password-protected screen saver.

○ No, I will do this later.

**Figure 2-10. Remote Desktop Sharing 3**

RDS is now activated and the machine is ready to be used.

**Section 3**

# NetMeeting 2.1 Known Issues and Vulnerabilities

This section provides a short review of identified security concerns in NetMeeting 2.1 and forms the foundation for the NetMeeting 3.01 assessment. The concerns center around the lack of security in NetMeeting 2.1. The most critical impacts of this lack of security are described below.

## 3.1 Lack of Authentication

NetMeeting 2.1 has no authentication mechanism.

### 3.1.1 Password Protection

There are no password protection capabilities in NetMeeting 2.1. As a result, anyone is allowed to join a meeting regardless of whether or not the person hosting the meeting wants that person included. Because of this, there is virtually no ability to control a meeting that you are hosting.

The lack of password protection also impacts all sharing and collaboration features. There is no ability to further limit access when giving others the ability to collaborate. Without fine-grained access controls, anyone in a meeting has the ability to access your machine. This access could include anything from nondestructive snooping to active data gathering to destructive activities and denial of service. Because of the lack of authentication, there is no way to verify the people in your meeting are who they say they are, and by allowing collaboration on your workstation you are at the mercy of the people in your meeting. With no level of trust established, this presents a potentially high level of risk.

In addition, there is no authentication at the directory server level. This means that anyone could log into the directory server and take on the identity of any user who is not already logged on. Because there is no way to verify these people are who they say they are, it puts all communications at risk.

## 3.2 Lack of Identification

Because NetMeeting 2.1 does not have any authentication mechanism, there is no way to uniquely and positively identify a participant. This poses a threat because there is no way to establish a level of trust between the callers.

## 3.3 Lack of Encryption Capability

Data encryption is especially important, when using collaboration tools, to protect the information that is being exchanged and ensure that it cannot be read by any unauthorized persons. Because there is no ability to encrypt data when using NetMeeting 2.1, there is a high risk that the information being exchanged during these meetings can be intercepted by an unauthorized party.

**Section 4**

# Security Assessment of NetMeeting 3.01

Due to the significant security issues described in Section 3, Microsoft released NetMeeting 3.01 with new security and administrative features to mitigate these shortcomings. The new features include password protection, user authentication, and data encryption. This section provides an empirical assessment of these features and their effectiveness.

## 4.1 Assessment Environment

The assessment environment consisted of a combination of Windows 95, 98, and NT 4.0 multimedia workstations running NetMeeting 3.0 software with the 3.01 service patch applied. At the time of testing, this was the latest release.

The test network included MITRE's own Intranet, the external extranet, and dial-up services. The MITRE-produced VTCP/Secure package, version 4.3, was also used to set up an encrypted tunnel allowing a connection to MITRE's secure network through a public ISP or sponsor network. VTCP/Secure provides a mechanism that lets a user establish a secure communications path over an untrusted network while allowing (with a few exceptions) applications on the user's computer to act as if they were running on a node of the secure network. A VTCP client establishes a connection with a trusted authentication server on the secure network and exchanges traffic with it using encrypted data (using a 56-bit key, which is renegotiated between the client and server every 40 minutes) encapsulated within a normal network packet. This reduces the probability that the contents of the packets can be made to yield usable information if intercepted by an unauthorized observer, and also protects against unauthorized modification or spoofing.[2] Figure 4-1 depicts VTCP/Secure connecting a user on the Internet to a MITRE's enterprise network.

[2] This information was paraphrased from the MITRE Information Infrastructure and VTCP Secure Pilot Test Persons Handout document.

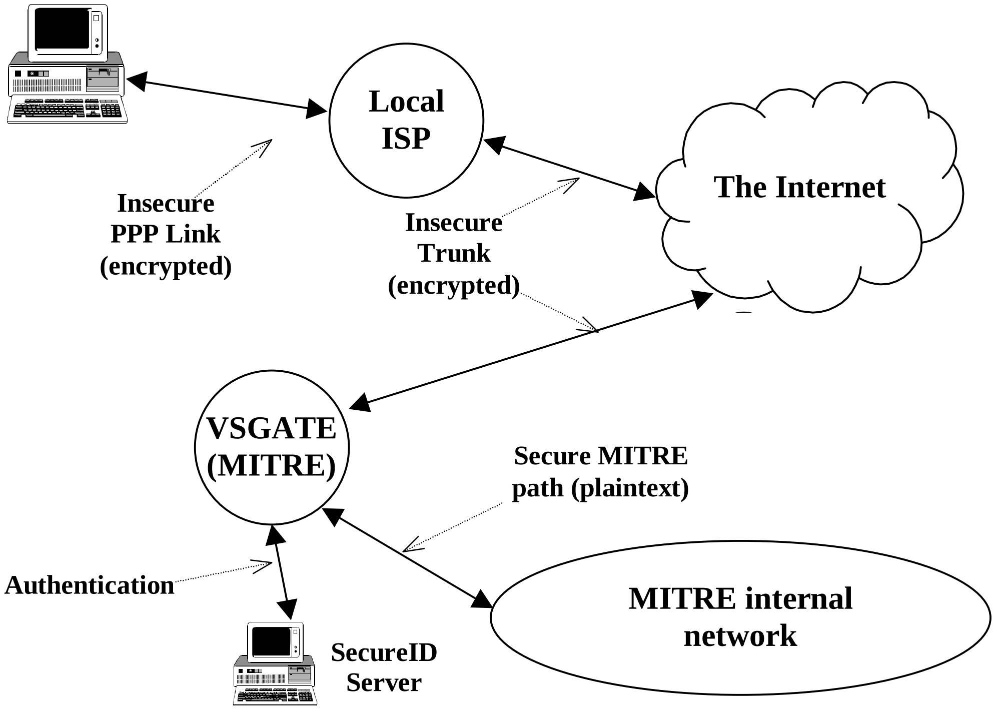


**Figure 4-1. VTCP Secure**

The workstations were loaded with Microsoft Internet Explorer 5.0 to process certificates. Both personal and MITRE-issued certificates were used in the testing.

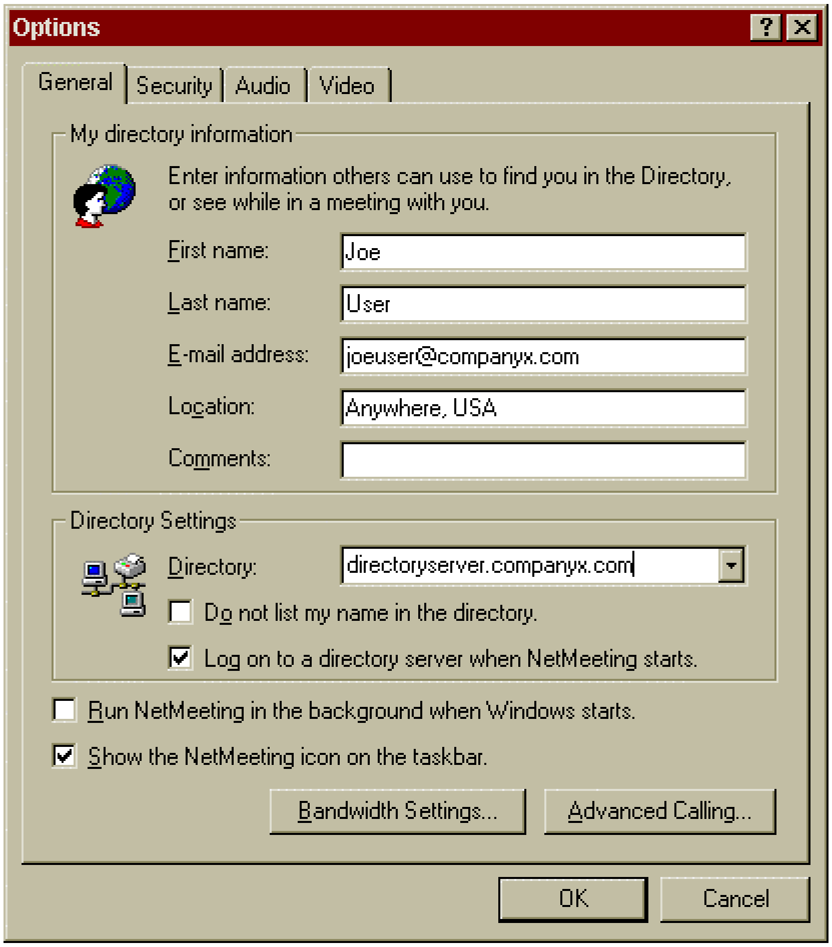
For directory services, MITRE used its own ILS server to locate and connect test personnel.

## 4.2 Identification and Authentication (I&A)

Identification mechanisms are intended to force users to identify themselves in some way to the other conference participants prior to joining the conference. Authentication mechanisms are intended to verify the identity of other conference participants, and to assure participants that transmissions are in fact from the sender who appears to be originating the transmission. This prevents someone from masquerading as a valid participant and intercepting transmissions. NetMeeting 3.01 now provides both, as described below.

### 4.2.1 Identification in NetMeeting 3.01

For identification purposes, NetMeeting 3.01 asks for certain information from the user when the software is loaded on the computer. The minimum required fields are First and Last name, and an e-mail address. This information is passed as identification to the other users in a conference or to a directory server when used as a locator service. Figure 4-2 shows the User Information Dialog Box used to enter this information.



My directory information

Enter information others can use to find you in the Directory, or see while in a meeting with you.

First name: Joe

Last name: User

E-mail address: joeuser@companyx.com

Location: Anywhere, USA

Comments:

Directory Settings

Directory: directoryserver.companyx.com

☐ Do not list my name in the directory.

☑ Log on to a directory server when NetMeeting starts.

☐ Run NetMeeting in the background when Windows starts.

☑ Show the NetMeeting icon on the taskbar.

**Figure 4-2. User Information Dialog Box**

**Caution: Identification**

**Though this user information is required, it is not validated, and can be easily forged by either the installer or by any subsequent user at any time. Thus, a user can assume the identity of anyone he/she chooses.**

NetMeeting provides two ways to initiate a conference with other users: direct calls or directory calls. In a *direct call*, conference participants call each other using point-to-point Internet (or IP) addresses. Calls can consist of two or more participants. In a multi-party (conference) call with three or more participants, a participant joins the conference when called by the person hosting the conference, or by calling any other participant already in the conference.

**Caution: Direct Calling**

**NetMeeting establishes a bond between the first two people in the conference. If either person hangs up during the conference, every meeting participant is instantly disconnected from the call without warning. Moreover, NetMeeting does not overtly identify this bond relationship. This may not be a problem in a small meeting where participants notice who connects first. However, in a large meeting, where the identity of the first two people is not established, the meeting could be disconnected and all information lost if one of the two key participants hangs up. The workaround is to ensure that all meetings are "hosted" (described in Section 4.2.2 below). In a hosted meeting, NetMeeting bonds only with the hosting party.**

In a *directory call*, the initiator first logs into a directory server, which lists all available users. Once logged into the directory server, the initiator can double click on the users he/she wishes to include in the conference, thus eliminating the need to know the specific Internet addresses of the other parties. The type of directory server used by NetMeeting is called an ILS, which is based on the Lightweight Directory Access Protocol (LDAP).

**Warning: Directory Server**

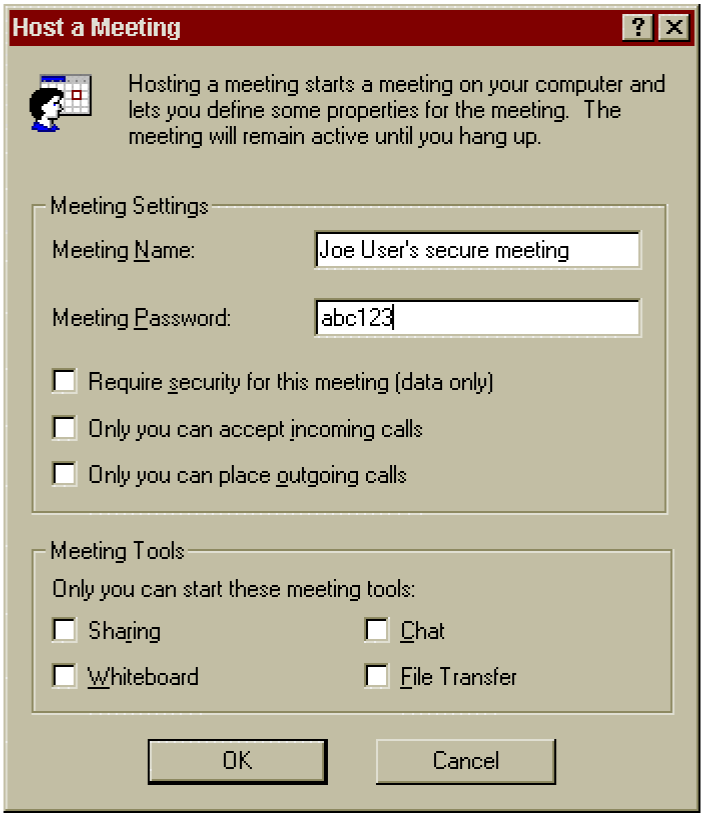
**There are two concerns when a using a directory server. First, the information used to log into the server is the same user information provided when the program was installed, which is static, is not authenticated, and, as stated earlier, can be forged quite easily. Because the validity of this information is in question, the actual identity of the listed users is not trustworthy. A second issue with ILS directory servers is a lack of log-in accounting. Every user who chooses to log into a directory server, must explicitly log off of the directory server before they exit NetMeeting. Otherwise, they will remain logged in indefinitely (or until they explicitly reopen the application and log off the directory server). This persistence has the unwanted and undesired effect of allowing the next user of the system to have the same identity and access controls as the previous user.**

### 4.2.2 User Authentication

NetMeeting 3.01 has added new features to help with authentication of its users. These features have also introduced a new term—meeting. Instead of calling everyone into a conference call, a host can now initiate a meeting and invite specified people to join it. These meetings can be initiated with or without security features at the discretion of the host. If the host enables certificate security features, then all participants are forced to do the same, or they will not be admitted to the meeting.

#### 4.2.2.1 Hosting a Password-Protected Meeting

The first level of security is available when a designated host initiates a password-protected meeting. Here, the meeting host chooses the participants and distributes the meeting password and time using tools such as e-mail, instant messaging, or pager. The host can also specify security restrictions for the meeting, including user authentication, encryption, and access control. Figure 4-3 shows the dialog box used to set up meeting options.



Host a Meeting

Hosting a meeting starts a meeting on your computer and lets you define some properties for the meeting. The meeting will remain active until you hang up.

Meeting Settings

Meeting Name: Joe User's secure meeting

Meeting Password: abc123

□ Require security for this meeting (data only)

□ Only you can accept incoming calls

□ Only you can place outgoing calls

Meeting Tools

Only you can start these meeting tools:

□ Sharing □ Chat

□ Whiteboard □ File Transfer

**Figure 4-3. Meeting Options**

Here, the minimal security setting would be to require password access to the meeting for all participants.

**Warning: Lack of Password Requirements**

**Lack of password restrictions, such as password length or characters used, make a brute force password guess a potential threat for such meetings.**

**Warning: Hosting A Meeting**

**The host must hang up from the call once the hosted meeting is over. Otherwise he/she will be unable to accept other calls until disconnected from the meeting.**

#### 4.2.2.2 Hosting a Meeting with Security

At the next level, the host can initiate a secure meeting by checking the box next to "*Require security for this meeting (data only)*" in the **Host a Meeting** dialog box, shown in Figure 4-3. To activate security for all future calls, the host can select either or both of the following from the **Options** dialog box shown in Figure 4-4:

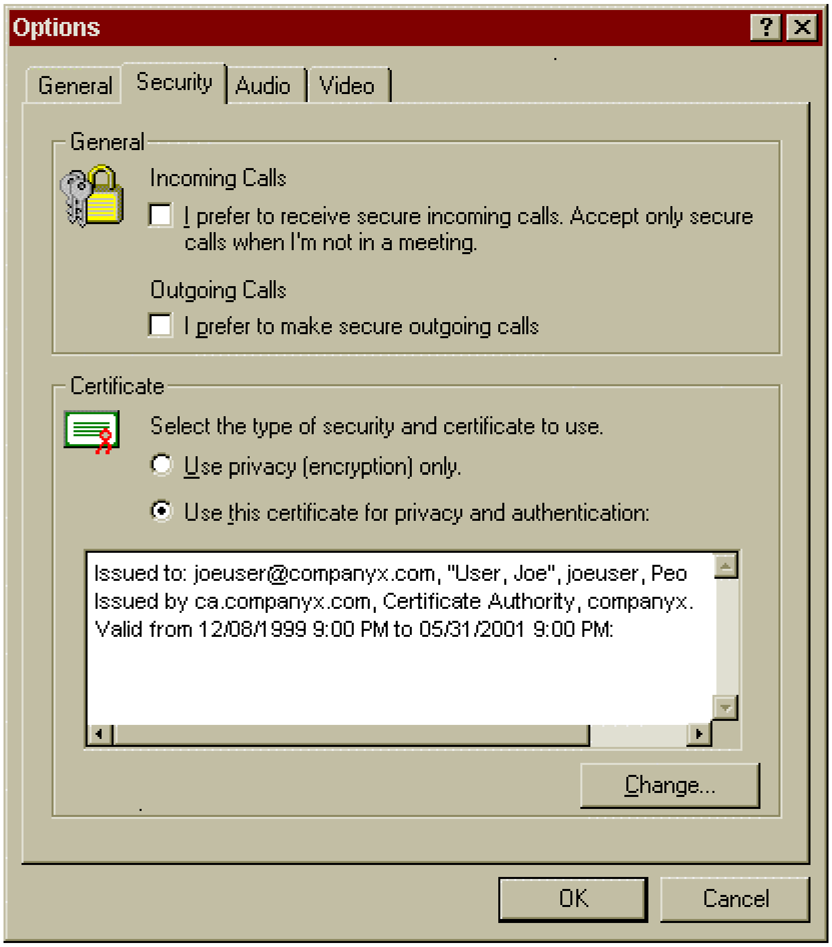
- "*I prefer to receive secure incoming calls. Accept only secure calls when I'm not in a meeting*"
- "*I prefer to make secure outgoing calls*"

When entering a secure meeting, participants are prompted for their digital certificate password first, followed by the meeting password. Digital certificates are further discussed in Section 4.2.2.2.1.

#### 4.2.2.2.1 Digital Certificates

NetMeeting uses digital certificates to verify the identity of a caller or meeting participant. These certificates bind the identity of the certificate owner to a set of digital keys that can be used to encrypt and/or digitally sign information shared in the meeting; however, it is important to note that the identity established in the General tab of NetMeeting is not bound to the digital certificate. Typically, each certificate contains the owner's name, the name and digital signature of the entity that issued the certificate, and the certificate expiration date. Additional attribute information, such as serial numbers and e-mail addresses may be included.

Meeting participants should view the properties of each user every time they connect to a meeting. Meeting participants whose certificates contain errors such as unknown root or signature verification failure should not be allowed to participate in a meeting. In addition, only those roots necessary for certificate validation should remain in the certificate store.



General

Incoming Calls

□ I prefer to receive secure incoming calls. Accept only secure calls when I'm not in a meeting.

Outgoing Calls

□ I prefer to make secure outgoing calls

Certificate

Select the type of security and certificate to use.

○ Use privacy (encryption) only.

● Use this certificate for privacy and authentication:

Issued to: joeuser@companyx.com, "User, Joe", joeuser, Peo
Issued by ca.companyx.com, Certificate Authority, companyx.
Valid from 12/08/1999 9:00 PM to 05/31/2001 9:00 PM:

**Figure 4-4. Security Options**

All users must provide a digital certificate to participate in a secure call. NetMeeting allows users to either provide their own personal certificate (encryption and authentication) or use the default NetMeeting certificate (encryption). The meeting host can view each caller's credentials before accepting the caller into a secure meeting. Once accepted into the secure meeting, each participant can view the credentials of any of the other participants. Figure 4-4 shows the **Security Options** dialog box for selecting the certificate type.

The default NetMeeting certificate is generated during setup and is installed in the Windows certificate store. This is shown in Figure 4-4 as "*Use privacy (encryption) only.*" This certificate provides encryption only—it does not provide user authentication by a trusted entity.

A NetMeeting user may utilize a personal certificate for user authentication and data encryption for "secure" calls. This is shown in Figure 4-4 as "*Use this certificate for privacy* *and authentication.*"  Personal certificates are considered more secure than default NetMeeting certificates, since they are theoretically issued by a trusted third-party Certificate Authority (CA).  To use a personal certificate, users must first import into Internet Explorer (IE) the Root Certificate for the issuing Certificate Authority.  Once the Root CA has been installed, the user imports their personal certificate into IE.  Once imported, XEnroll (an IE browser control) processes the certificate enrollment, and the certificate is then added to the Windows certificate store.  NetMeeting looks to the Windows certificate store when Security is activated and personal certificates are used.  If the Root CA's certificate is not imported first, authentication fails.

NetMeeting uses the Microsoft Crypto API (CAPI) to manage certificates and secure data channels.  The Crypto API, which is a core component of Windows 95, 98, NT 4.0, and 2000, provides a standard framework that programs can use to obtain cryptographic and certificate services.

Once the user has selected the call and certificate type to use, security is activated.  When using a personal certificate, each user must supply a personal certificate password when the application opens.

**Caution:  NetMeeting Exclusively Requires Internet Explorer**
**NetMeeting REQUIRES the Internet Explorer windows certificate store to manage digital certificates and enable security.  NetMeeting does not work with any other certificate store or browser.  This represents a problem for users where IE is not available.**

**Caution:  Erratic Behavior**
**NetMeeting operates erratically with security enabled.  At times, it does not recognize that security has been activated, while other times it instantly asks for a certificate password.  Users must exit and restart NetMeeting after making configuration changes to ensure the changes have been activated.**

When a secure call is initiated, audio and video options are automatically disabled (i.e., they are grayed out on the user interface).  Any remaining data shared in the conference (Chat, Whiteboard, File Sharing) is encrypted using Microsoft's Crypto API.

**Warning: Secure Calls**
**NetMeeting cannot differentiate between a secure encrypted call and a secure authenticated call. Each call participant must have security turned on to be able to participate in a secure call, but there is no way to tell if the participants are fully authenticated or not. Authentication can be forced by enabling the Do not allow connections with incomplete authentication option through the NetMeeting Resource Kit. Also, authentication using digital certificates can be forced by requiring a relative distinguished name (RDN) be specified for a CA, but in either case it does not mean that the user's digital certificate is bound to the NetMeeting user identity or that a trusted CA signed the certificate.**

## 4.3 Confidentiality

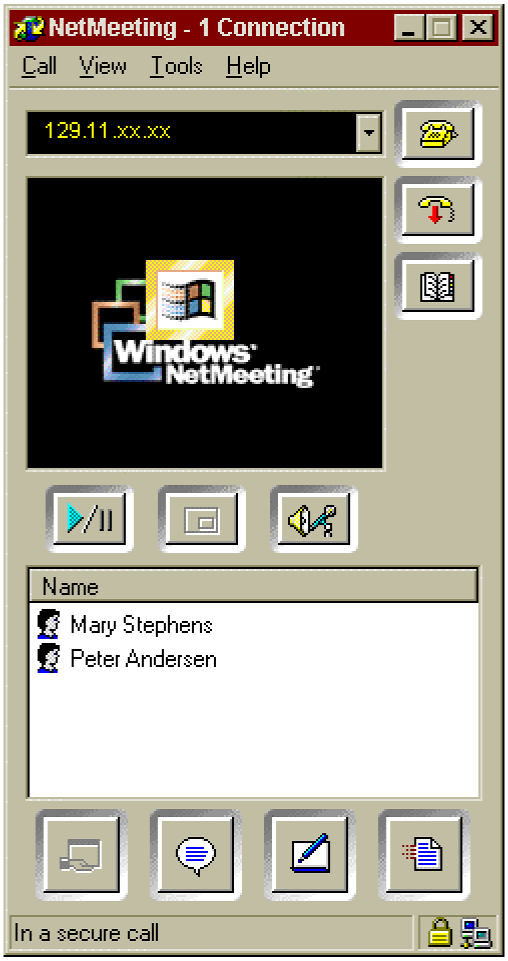
Confidentiality (or privacy) ensures that the information content passed between two or more parties in a conference is not susceptible to passive interception and analysis. Protection can be provided at either the stream level, which protects the end-to-end transmission medium, or at the individual message level, which protects user-specified portions of data, such as specific e-mail messages.

NetMeeting 3.01 addresses confidentiality and privacy by encrypting the data stream between meeting participants, but only if the host explicitly initiates the meeting as a secure meeting. Data encryption using Microsoft's Crypto API applies to Whiteboard, Chat, shared programs, and transferred files. Audio and video communications are automatically disabled during encrypted meetings. When a secure call is in progress, a yellow safety lock icon is placed on the NetMeeting User Interface (UI) as illustrated in Figure 4-5.

**Caution: Data Encryption**
**Data is encrypted only if all meeting participants are using NetMeeting 3.01 or later, and they have established a secure meeting. If a user attempts to connect to a meeting with an earlier version of NetMeeting, or without having specified a secure call, then the call is automatically rejected.**

**Warning: Selecting Security Options**
**Calls are not secure if a user selects a certificate but does not select at least one secure call option.**

**To ensure that security is functioning properly during a call, observe the call status indicator on the bottom left side of the call window. It should say "In a secure call" and the yellow padlock at the lower right corner of the window should be in the closed position as illustrated in Figure 4-5. If the padlock is open, then the call is not secure.**



129.11.xx.xx

Mary Stephens
Peter Andersen

In a secure call

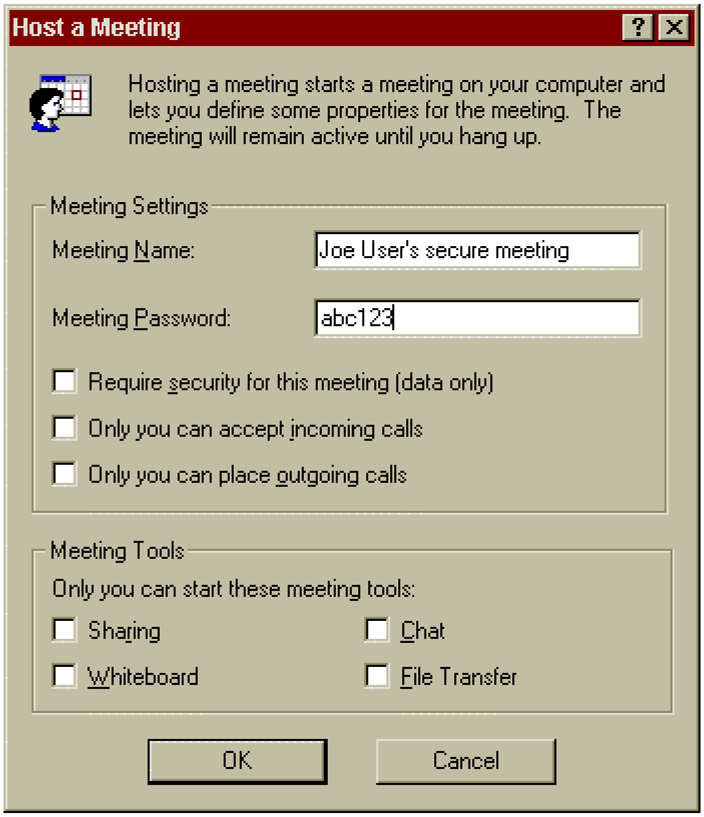
**Figure 4-5. Call Status Indicators**

## 4.4 Access Control

In the context of collaboration, access control provides the ability to limit and control access to conference audio, video, documents, and applications, based on the mechanisms used for identification and authentication.

NetMeeting provides several mechanisms for controlling access to various aspects of a meeting, as shown in Figure 4-6. The meeting host can choose to be the only person allowed to initiate outgoing calls and/or accept incoming calls while in a secure meeting.

Theoretically, this should prevent a “back door” condition where an unauthorized person can dial into a participant who is connected to a secure meeting (not requiring acceptance by the meeting host), and gain access to the secure meeting covertly. However, it may be possible for a meeting participant to use some other third party utility to allow unauthorized person access to the meeting.



Hosting a meeting starts a meeting on your computer and lets you define some properties for the meeting. The meeting will remain active until you hang up.

Meeting Settings

Meeting Name: Joe User's secure meeting

Meeting Password: abc123

□ Require security for this meeting (data only)

□ Only you can accept incoming calls

□ Only you can place outgoing calls

Meeting Tools

Only you can start these meeting tools:

□ Sharing □ Chat

□ Whiteboard □ File Transfer

**Figure 4-6. Access Control Options**

Referring again to Figure 4-6, the meeting host can also restrict access to conference features. For instance, the host can allow anyone in the conference to initiate Chat, Whiteboard, File Transfer, Program Sharing, or access to these features can be restricted to the meeting host. Testing revealed that these controls do indeed restrict access to the specified collaboration features.

Several tests were run to verify the ability to limit access to specific features. In each test scenario, the user was not able to access any feature that the meeting host overtly restricted.

### 4.4.1 Remote Desktop Sharing

NetMeeting has added the ability to enforce security on its RDS feature. To access a remote workstation, the user must set up a username and password when accessing a Windows 95/98/Me computer. The idea is to protect the workstation from being accessed by others who do not have the correct username and password. To manage access to a Windows NT or Windows 2000, place remote desktop sharing users into the NetMeeting RDS Users group. Users then supply his or her account name and password to gain access.

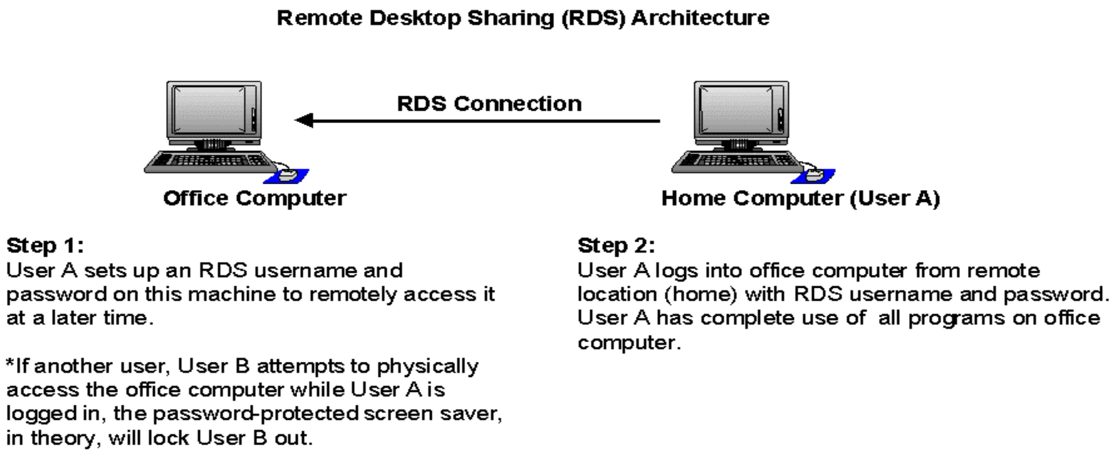
The second layer of security for RDS is data encryption. The user can set up RDS so that access to the workstation must be secure. This ensures that others cannot capture the data being transmitted. Finally, NetMeeting provides features which help protect the local access to remotely shared workstations.

Testing of the RDS feature revealed several items of note.

**Warning: Remote Desktop Sharing: Lack of Password Requirements**

**Passwords on RDS are case sensitive, but there are no other password restrictions or requirements.**

Once a user (User A) creates an RDS username and password on the remote workstation (or is a member of the NetMeeting RDS Users group), they can access that workstation from other locations. NetMeeting documentation states that if someone (User B) attempts to use the remotely shared workstation while the remote user (User A) is logged in, the password-protected screen saver immediately engages and locks User B out. Testing revealed that this is not a completely accurate characterization of this feature. The test was repeated on three different machines; the screen saver failed to engage each time someone tried to use the machine. While User B was prevented from being able to use the workstation, they could watch all of User A’s activity. There is an important caveat on this observation -- it is important to enable the screen saver password protection feature. Without doing so, User B is able to easily take control on the workstation provided he has physical access. In addition, there have been reports that it is possible for User B to take control of the workstation even with the screensaver feature enabled. Physical security for the computer being accessed via RDS is paramount.



**Step 1:**
User A sets up an RDS username and password on this machine to remotely access it at a later time.

*If another user, User B attempts to physically access the office computer while User A is logged in, the password-protected screen saver, in theory, will lock User B out.

**Step 2:**
User A logs into office computer from remote location (home) with RDS username and password. User A has complete use of all programs on office computer.

**Figure 4-7. Remote Desktop Sharing (RDS) Architecture**

**Caution: Remote Desktop Sharing Screen Saver Protection**

**The screen saver protection option in RDS does not lock the person out as advertised. While User B could not use the workstation, they could observe all remote activity of User A. Though this is not inherently a security risk, users should assume that the transactions are not private.**

**Warning: Hijacking of RDS Sessions**

**Although unconfirmed by the authors, there have been reports via the Internet that it is possible for User B to take control of the workstation even with the screensaver feature enabled. Physical security for the computer being accessed via RDS is paramount.**

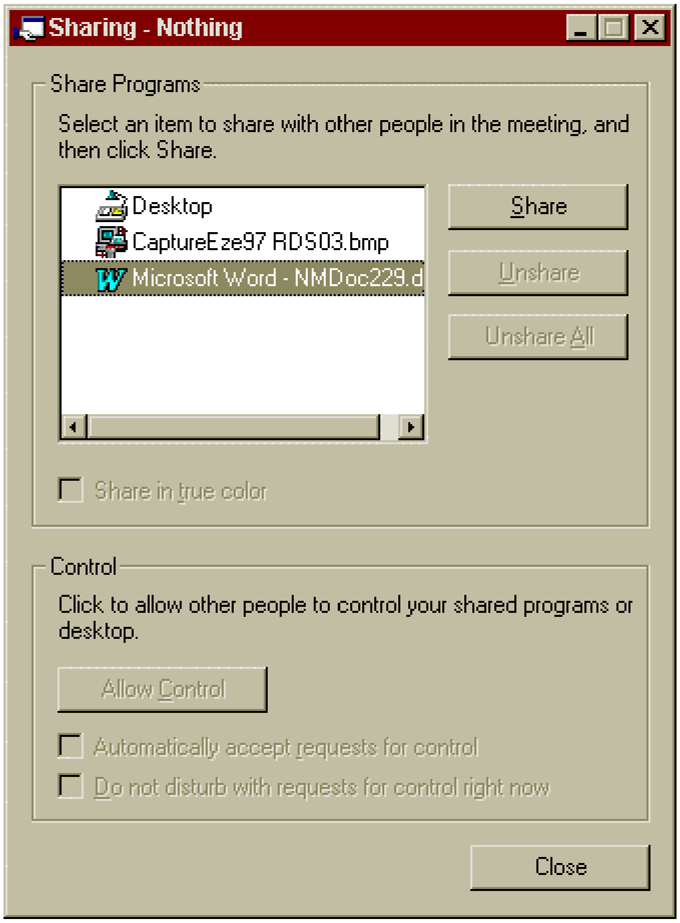
**Caution: Remote Desktop Sharing Remote Screen Saver Protection**

**When the remote user stops working, the password-protected screen saver on the remote workstation engages to protect the workstation from access. This will not work unless the screen saver is manually configured and a lockout time period is specified during RDS setup.**

### 4.4.2 Program Sharing

The program-sharing feature of NetMeeting allows users to collaborate on documents, briefings, spreadsheets, and similar items without requiring each participant to have the particular program installed on the workstation. The security enhancement in NetMeeting 3.01 is that the machine sharing the program now has better control with respect to the shared item.

A meeting participant who wants to initiate a document share opens the document in its native program (such as Microsoft Word, Excel, or PowerPoint) and then opens the **Sharing** dialog box, as shown in Figure 4-8, which lists all programs currently open on the initiator's machine. From the list, the initiator selects the program to share and clicks "*Share*".



Select an item to share with other people in the meeting, and then click Share.

□ Share in true color

Click to allow other people to control your shared programs or desktop.

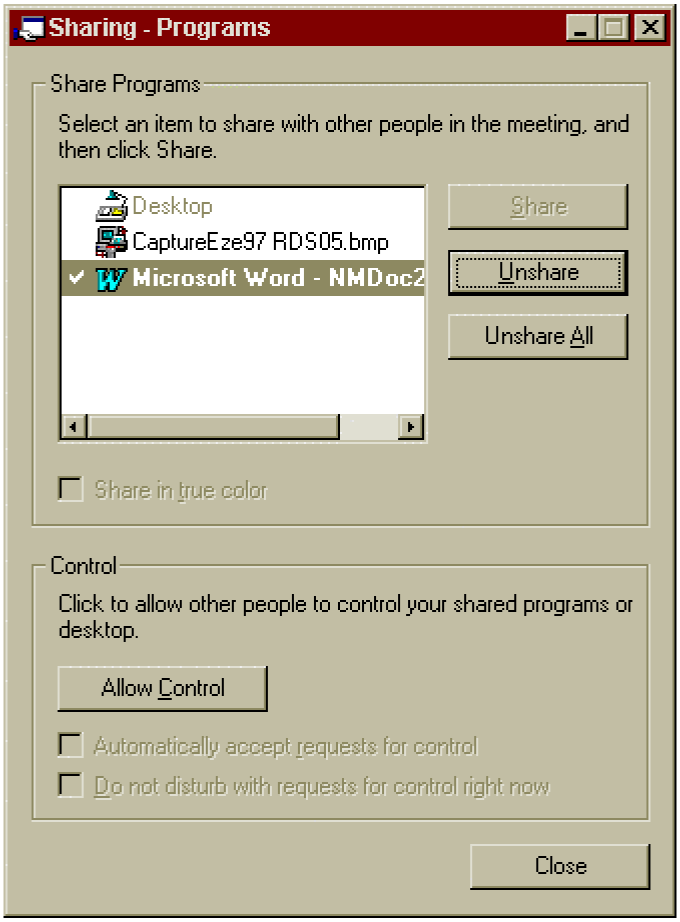
□ Automatically accept requests for control

□ Do not disturb with requests for control right now

**Figure 4-8. Sharing Dialog Box**

Once sharing is enabled, the document appears on the screen of each person in the call. The sharing initiator controls the shared program at this point. If the initiator scrolls through the document, the document then scrolls on everyone's machine simultaneously, albeit with some delay.

The participant with the sharing machine can select "*Allow Control*," shown in Figure 4-9, and then choose to "*Automatically accept requests for control*" which allows other participants to request control of the document. If the initiator does not automatically accept requests for control, then users who want to edit the document must double click on their copy of the document, select "*Request Control*" in the pop-up window, and wait for approval from the initiator. This gives the initiator the ability to retain some control over the document.



Sharing - Programs

Share Programs

Select an item to share with other people in the meeting, and then click Share.

Desktop

CaptureEze97 RDS05.bmp

✓ Microsoft Word - NMDoc2

□ Share in true color

Control

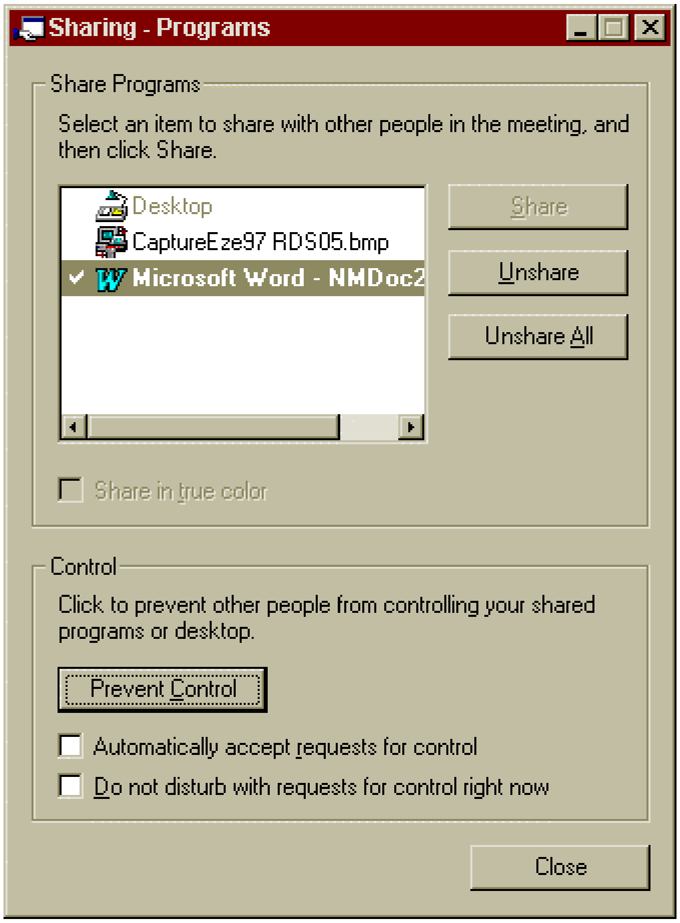
Click to allow other people to control your shared programs or desktop.

□ Automatically accept requests for control

□ Do not disturb with requests for control right now

**Figure 4-9. Access Control Dialog Box**

To stop someone from controlling the document at any time, the participant with the sharing machine can either press the <ESC> key, which immediately revokes all control privileges, or, if the **Sharing** window is open and accessible, the participant can click "*Prevent Control*," as shown in Figure 4-10. If the screen saver of the sharing machine turns on, it immediately revokes all control privileges and blacks out the file on the screens of all other machines in the meeting.



Sharing - Programs

Share Programs

Select an item to share with other people in the meeting, and then click Share.

Desktop
CaptureEze97 RDS05.bmp
✓ Microsoft Word - NMDoc2

□ Share in true color

Control

Click to prevent other people from controlling your shared programs or desktop.

□ Automatically accept requests for control
□ Do not disturb with requests for control right now

**Figure 4-10. Sharing and Control Options**

Although Program Sharing has more security in NetMeeting 3.01 than in earlier versions, it assumes that sharing and control always occur while the machine is in attended mode. However, interruptions and distractions are real-world occurrences, and should be expected.

**Warning: Program Sharing**

**Once a user sharing a machine has given control to someone else in the meeting, the second user assumes the sharing user's identity during the hand-off period and has the privileges for and access to the sharing user's entire hard drive. This includes any servers and/or private folders. If the sharing user is distracted for a moment and is not intently watching, the second user could copy and mail files to themselves, access private information, plant a virus, or delete files.**

**Program sharing assumes a level of trust that may not be realistic in some environments and, unless the sharing session always occurs in attended mode, regardless of distractions, use of the "*allow control*" feature is not recommended.**

## 4.5 Nonrepudiation

Nonrepudiation prevents the sender or receiver of data or a message from denying it later. It also allows the recipient to prove that the received information was actually sent by the alleged sender.

NetMeeting 3.01 provides no specific feature for nonrepudiation, but it does require users to use only personal certificates to encrypt and authenticate messages, so it can verify the identity of the sender and receiver.

## 4.6 Integrity

Integrity assures the recipients of transmissions that no data has been lost or tampered with en-route to them. As with confidentiality, this can be invoked at the stream level or at individual message level.

While NetMeeting provides encryption to secure data being transferred, it does not have a specific feature to directly address integrity.

## 4.7 Availability

Availability is a metric that describes the potential for a computer system or service to be ready when called upon by a user. The availability of computer systems can be critically reduced by denial-of-service attacks.

NetMeeting 3.01 provides no inherent means of protecting against a denial-of-service attack. If the computer system used is vulnerable to attack, then the conference is also vulnerable. Measures should be taken to protect the computer system from denial of service attacks by preventing malicious code from being loaded onto the system and by preventing suspicious network traffic from entering the system. This can be achieved through judicious use of intrusion detection products, firewalls, and system logging.

## 4.8 Auditing

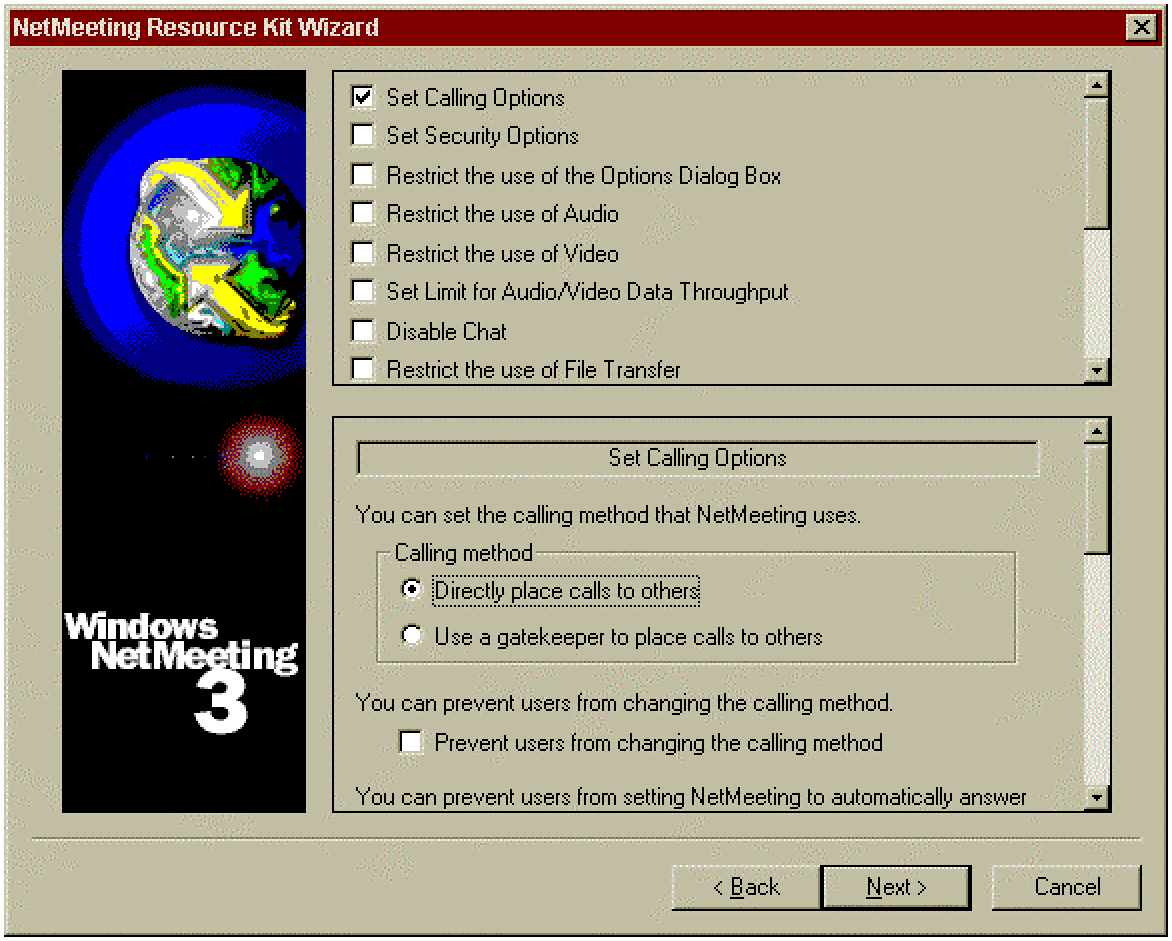
NetMeeting 3.01 provides no auditing features. It does allow individual users to save the contents of Chat sessions as a chronological record of events. Other than that, there is no record of calls made or attempted, calls received, or configuration changes made.

## 4.9 Administrator Support

NetMeeting 3.01 has a NetMeeting Resource Kit (NMRK) to aid system administrators in configuration control.

### 4.9.1 Resource Kit 3.0

The NMRK is available from the Microsoft web site to aid with enterprise-wide deployment, installation, configuration, usage, optimization, security, bandwidth, and web interface issues. The resource kit provides details on architecture, standards compliance, policies, and troubleshooting. Each company configures its resource kit based on specific organizational policies. Figure 4-11 is an example of some of the options in the Resource Kit Wizard. Several tests were conducted by creating policies and distributing them to test machines. Each time the policies were tested, they behaved as configured; for example, users could not change options, or certain menu items were dimmed to restrict control. Section 9 provides a recommended Secure Configuration of Resource Kit 3.0.



☑ Set Calling Options
□ Set Security Options
□ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Set Calling Options

You can set the calling method that NetMeeting uses.

Calling method
● Directly place calls to others
○ Use a gatekeeper to place calls to others

You can prevent users from changing the calling method.
□ Prevent users from changing the calling method

You can prevent users from setting NetMeeting to automatically answer

**Figure 4-11. NetMeeting Resource Kit 3.0 Wizard**

**Section 5**

# Security Cautions & Warnings Summary for NetMeeting 3.01

## 5.1 Summary of Cautions

### 5.1.1 No Backwards Compatibility

- For the security features to work properly, each participant must use NetMeeting 3.01 or higher. If someone uses an earlier version, they will not be allowed into a secure call.

### 5.1.2 Identification

- Although at NetMeeting startup users are asked to identify themselves to the application, there is no authentication to verify that they are who they say they are. This permits users to take on someone's identity and act maliciously.

### 5.1.3 Direct Calling

- If users do not host a meeting and instead initiate the meeting by dialing someone directly, NetMeeting establishes a bond between the first two persons in the call. NetMeeting does not identify the persons who are linked by this bond. If either of the two hang up, the entire call ends with no warning to the others in the call.

### 5.1.4 Windows Certificate Store

- NetMeeting requires IE's windows certificate store ONLY. It does not recognize certificates in any other certificate stores. This means users who do not have access to IE cannot use certificate security.

### 5.1.5 Erratic Behavior When Security is Activated

- NetMeeting behaves erratically when security is enabled. At times, it recognizes that security has been turned on, and other times, it does not recognize security. The application should be rebooted after security options have been selected to ensure that security has been activated properly.

### 5.1.6 Data Encryption

- Data encryption only occurs if all users are using NetMeeting 3.01 or later and if they have established a secure meeting. If users running an earlier version of NetMeeting attempt to connect to a secure call, they are rejected.

### 5.1.7 Remote Desktop Sharing Screen Saver Protection

- The screen saver protection option allows others to observe all activities on the remote machine. Although this is not an inherent security risk, users should be aware that their activities can be monitored and are not private.

### 5.1.8 Remote Desktop Sharing Remote Screen Saver Protection

- When the remote user stops working, the password-protected screen saver on the remote workstation engages to protect the workstation from access. This will not work unless the screen saver is manually configured and a lockout time period is specified.

## 5.2 Summary of Warnings

### 5.2.1 Hosting A Meeting

- The host must hang up from the call once the hosted meeting is over. Otherwise he/she will be unable to accept other calls until disconnecting from the meeting.

### 5.2.2 Secure Calls

- NetMeeting cannot differentiate between a secure encrypted call and a secure authenticated call. Users should verify that the call window displays the Status Bar on the bottom left-hand side of the window. Under “View” a check mark should appear beside the “Status Bar” option. This ensures that the call type displays.

### 5.2.3 Selecting Security Options

- In addition to selecting a certificate type, users must choose at least one calling option under the Security tab or the calls are not secure.

### 5.2.4 Password Protection

#### 5.2.4.1 Secure Password-Protected Call

In a password-protected secure call, the host must choose both of the following options to ensure that no one can place an outside call:

- “I prefer to receive secure incoming calls. Accept only secure calls when I’m not in a meeting.”
- “I prefer to make secure outgoing calls.”

#### 5.2.4.2 Lack of Password Requirements

There are no restrictions on the characters used for a password or on the length of the password, making brute-force password guessing a potential threat.

#### 5.2.4.3 Hijacking of RDS Sessions

Although unconfirmed by the authors, there have been reports via the Internet that it is possible for a person with physical access to take control of a workstation which is being accessed via RDS. Physical security for the computer being accessed via RDS is paramount.

### 5.2.6 Program Sharing

- The amount of control given to the users is not balanced by comparable ability to limit their actions. Because meeting participants assume the identity of the user sharing the program, they are given wide-open access to system resources. If the sharing user is distracted or does not work in attended mode, their hard drive can be accessed with their privileges, including all servers and private folders. Program Sharing assumes a level of trust that may not be realistic in some environments. Unless each session is in attended mode, Program Sharing is not recommended.

### 5.2.7 Directory Server

- The information used to populate the directory server is not authenticated and can be easily forged. Because of this, the actual identity of the users is not trustworthy.
- The second issue with directory servers is the lack of log-in accountability. Once logged into a directory, users remain logged in until they explicitly log out. This means that the list of users in a directory may not accurately reflect who is actually logged in at that time. Also, if someone else uses a logged-in user's workstation, they assume the identity of that user.

**Section 6**

# General Networking Issues

## 6.1 Firewalls

NetMeeting relies very heavily on the H.323 protocol which utilizes a large number of ports in order function. This can create a problem when attempting to operate through firewalls that are not capable of performing stateful inspection of NetMeeting packets. To use NetMeeting through a firewall with this limitation, the firewall must be configured to allow certain ports. Table 6-1 identifies these ports. As this tables shows, a large range of ports must remain open to support NetMeeting audio and video which is never desirable from a system security perspective.

**Table 6-1. Network Ports Used by NetMeeting**

| Port Number | Port Type | Protocol | NetMeeting Use |
|---|---|---|---|
| 389 | TCP, static | LDAP | Internet Locator Service (ILS) |
| 522 | TCP, static | ULP | User Location Service (obsolete after NM ver. 1.0) |
| 1503 | TCP, static | Imtc-mcs | T.120 data collaboration |
| 1720 | TCP, static | H323hostcall | H.323 call setup |
| 1731 | TCP, static | Msiccp | Audio call control |
| 1024 – 65535 | TCP, dynamic | H.245 | H.323 call control |
| 1024 – 65535 | UDP, dynamic | RTP/RTCP | H.323 audio/video stream |

System administrators have several options when allowing NetMeeting through firewall that do not support NetMeeting protocols. First, they can open all these ports and allow NetMeeting traffic unfettered through the firewall. Second, they can allow only text-based NetMeeting traffic. This will eliminate the need to leave a wide range of ports open; only ports 389, 522, and 1503 will be needed through the firewall. Of course, this considerably constrains NetMeeting functionality across the firewall. However, if NetMeeting's encryption capabilities are used, audio and video are already disabled. The final trans-firewall NetMeeting option entails the use of a virtual private network; this is the recommended approach and it is detailed further in the section that follows.

## 6.2 Virtual Private Networks (VPN)

The recommended trans-firewall NetMeeting configuration uses a Virtual Private Network (VPN). A VPN is an encrypted point-to-point "tunnel" from one system behind the firewall to another pre-determined system outside the firewall. As the data is encrypted and the remote end specified, VPN traffic is generally allowed unrestricted through a firewall. Using NetMeeting across a VPN, MITRE sought to answer the following questions: (1) Could the number of open firewall ports be reduced, and (2) would the application's audio and video work over this medium? The answers were YES and YES. Using Timestep VPNs, the MITRE team was successful in setting up a VPN using triple DES encryption and running NetMeeting 3.01 over the encrypted channel. The packages were filtered through a Linux box running ipchains as the firewall. Only port 49680 and protocol 50 (IPv6 crypt) needed to be opened through the firewall for the VPN to work. Both audio and video functions worked well over the VPN, proving that it is possible to securely use both the audio and video features of NetMeeting without using NetMeeting's packaged security.

MITRE also tested NetMeeting 3.01 using software-based VPNs (SSH, VTCP Secure); however, these tests were not as successful as the tests using the hardware-based Timestep VPN. Test results were inconsistent and revealed that the VPN did cause some erratic behavior for NetMeeting sessions. For instance, when logged into a server through a VPN, the user is typically assigned a new Internet (or IP) address that is specific to the enterprise. Therefore, the Internet address required for a NetMeeting session is the enterprise address, and not the user's address assigned by the service provider.

Determining the secondary address for use in placing a NetMeeting call may be a problem. Some enterprises, like MITRE, provide a lookup feature to indicate the user's current address. Others may not. This would force VPN users to use a directory service of some kind to find and connect to other users.

In summary, a Virtual Private Network provides the most secure means to use all NetMeeting collaboration options through a firewall. Only two ports need to be allowed through the firewall, and the audio and video capabilities can be used in a secure manner.

**Section 7**

# Summary Recommendations

Microsoft has added a level of I&A and privacy to NetMeeting 3.01 that enhances the security posture for sharing nonsensitive information. However, due to several identified security weaknesses in the tool’s design and implementation, NetMeeting 3.01 should not be used for sharing sensitive information without understanding the associated risks and taking the appropriate safeguards. The risk of exposure is high without peripheral safeguards in place to minimize such risk.

The following is a list of recommendations for secure collaboration when using NetMeeting:

- Require use of security
- Require use of personal certificates for both encryption and authentication
- Disable use of Audio and Video unless using it across a VPN
- Place restrictions on what programs can be shared using NMRK
- Require all collaboration take place in attended mode
- Disable use of Remote Desktop Sharing feature

Sections 8 and 9 detail how to securely install and configure NetMeeting for an individual workstation (Section 8) and for company-wide distribution (Section 9).

The NMRK is a vital component in establishing secure collaboration policies that should be followed in all environments. The NMRK allows system administrators to create profiles based on their company policies, configure the application to support those policies, and prevent users from changing and/or altering options.

The primary recommendation is to follow the Secure Configuration Guide for Resource Kit 3.0 provided in Section 9.

**Section 8**

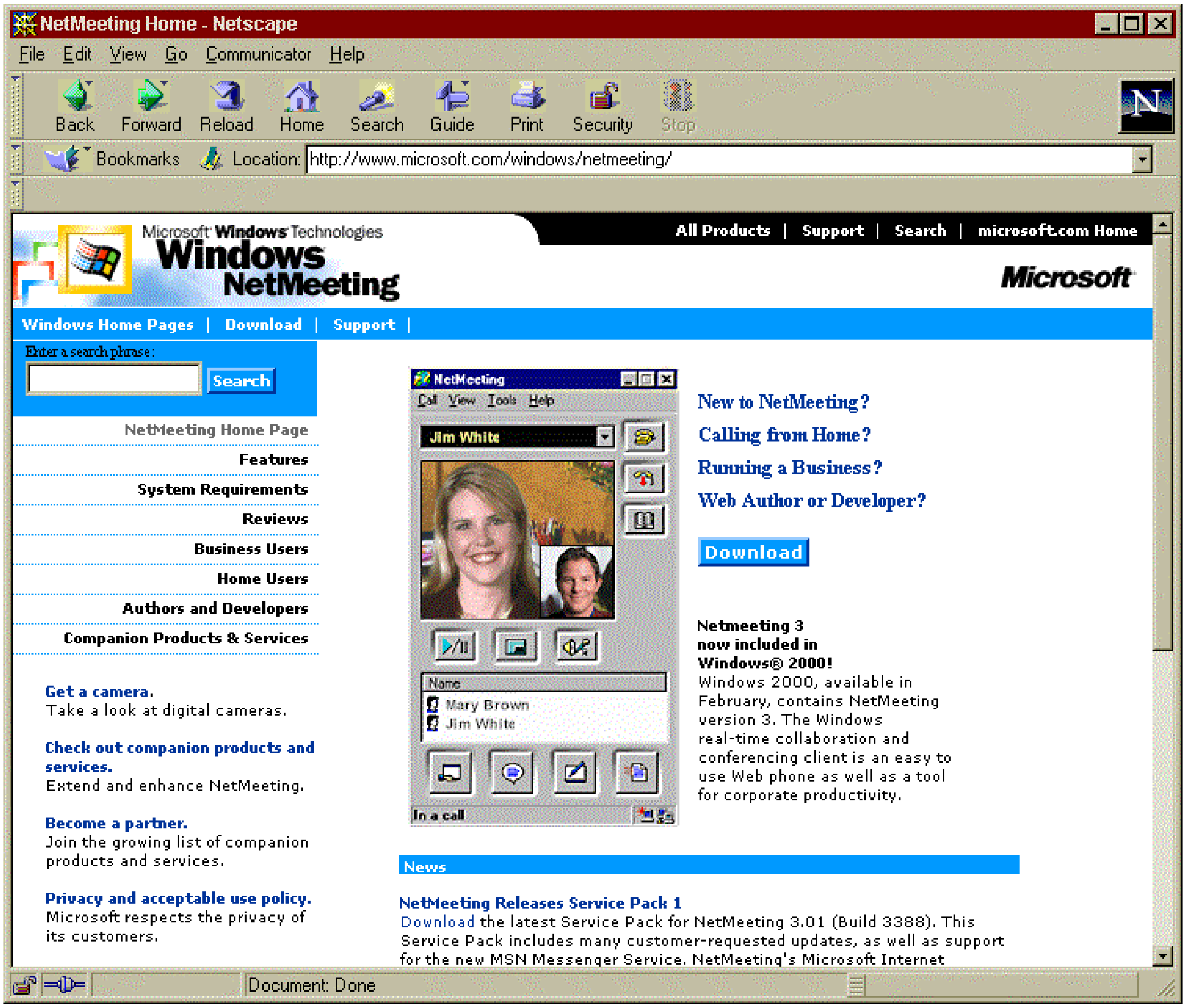
# Secure Installation and Configuration of NetMeeting 3.01

## 8.1 Installation

There are two means by which NetMeeting can be installed. One can install an uncustomized version of NetMeeting or an administrator can generate a restricted installation using the NetMeeting resource kit. The later is generally preferred as it allows the administrator to have control over numerous security related settings which are otherwise left up to the discretion of the user. In the interest of completeness, both installation approaches will be discussed. The direct install is detailed in this chapter with the use of the NetMeeting resource kit covered in the next chapter.

To install NetMeeting 3.01, go to the Microsoft NetMeeting web site located at: http://www.microsoft.com/windows/netmeeting and click on the Download button[3]. The Microsoft NetMeeting web page is displayed in Figure 8-1.

[3] Note that NetMeeting is provided with Windows 2000 – a download is not necessary.



**Get a camera.**
Take a look at digital cameras.

**Check out companion products and services.**
Extend and enhance NetMeeting.

**Become a partner.**
Join the growing list of companion products and services.

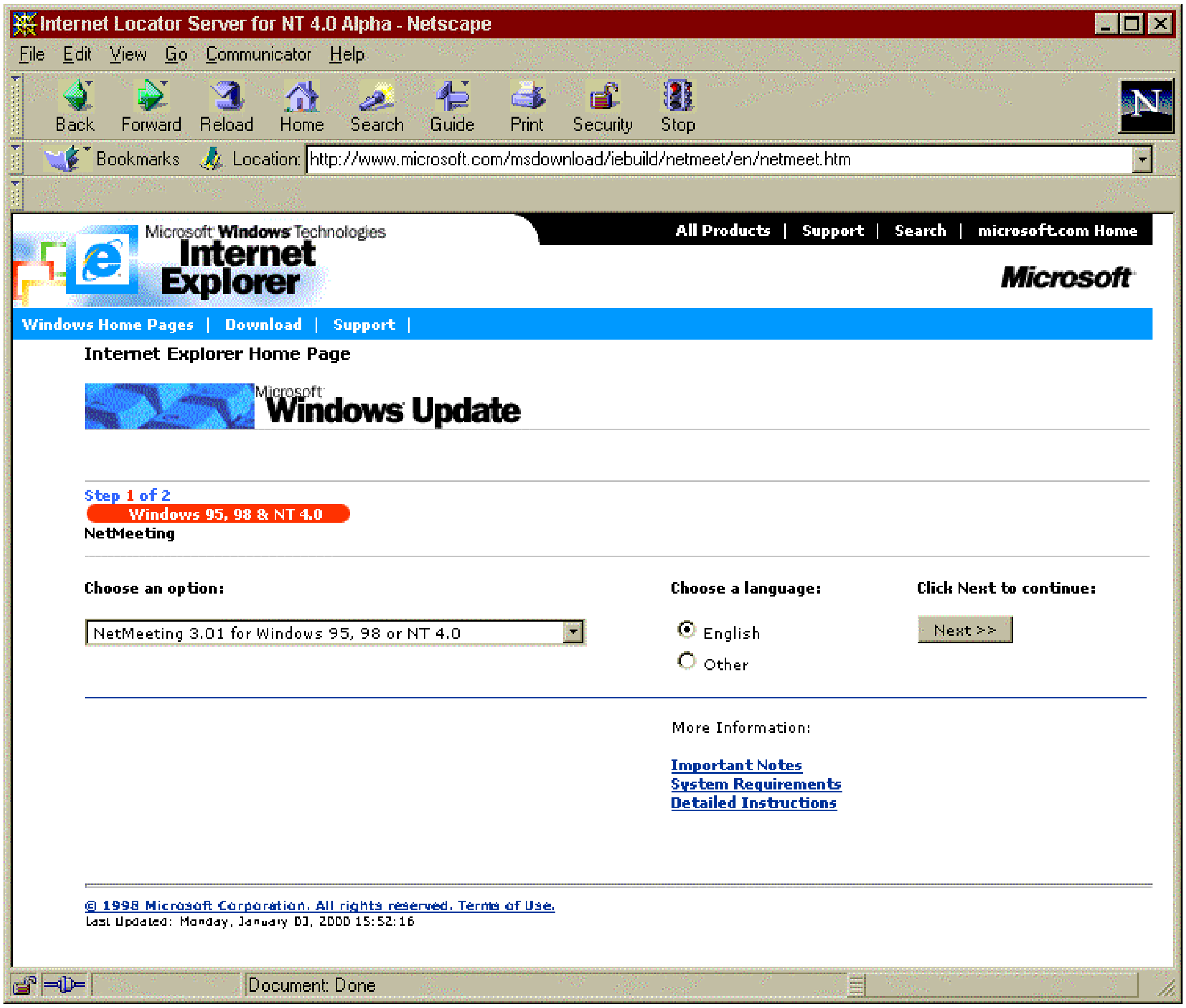
**Privacy and acceptable use policy.**
Microsoft respects the privacy of its customers.

**Netmeeting 3 now included in Windows® 2000!**
Windows 2000, available in February, contains NetMeeting version 3. The Windows real-time collaboration and conferencing client is an easy to use Web phone as well as a tool for corporate productivity.

**NetMeeting Releases Service Pack 1**
Download the latest Service Pack for NetMeeting 3.01 (Build 3388). This Service Pack includes many customer-requested updates, as well as support for the new MSN Messenger Service. NetMeeting's Microsoft Internet

**Figure 8-1. Microsoft NetMeeting Page**

The NetMeeting Download Page will be displayed, as illustrated in Figure 8-2. Identify your operating system and click on “Next”.


File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks
All Products | Support | Search | microsoft.com Home
Microsoft Windows Technologies Internet Explorer
Microsoft
Windows Home Pages | Download | Support |
Microsoft Windows Update

Internet Locator Server for NT 4.0 Alpha - Netscape

Location: http://www.microsoft.com/msdownload/iebuild/netmeet/en/netmeet.htm

Internet Explorer Home Page

Step 1 of 2
Windows 95, 98 & NT 4.0
NetMeeting

Choose an option: NetMeeting 3.01 for Windows 95, 98 or NT 4.0

Choose a language: ● English ○ Other

Click Next to continue: Next >>

More Information:

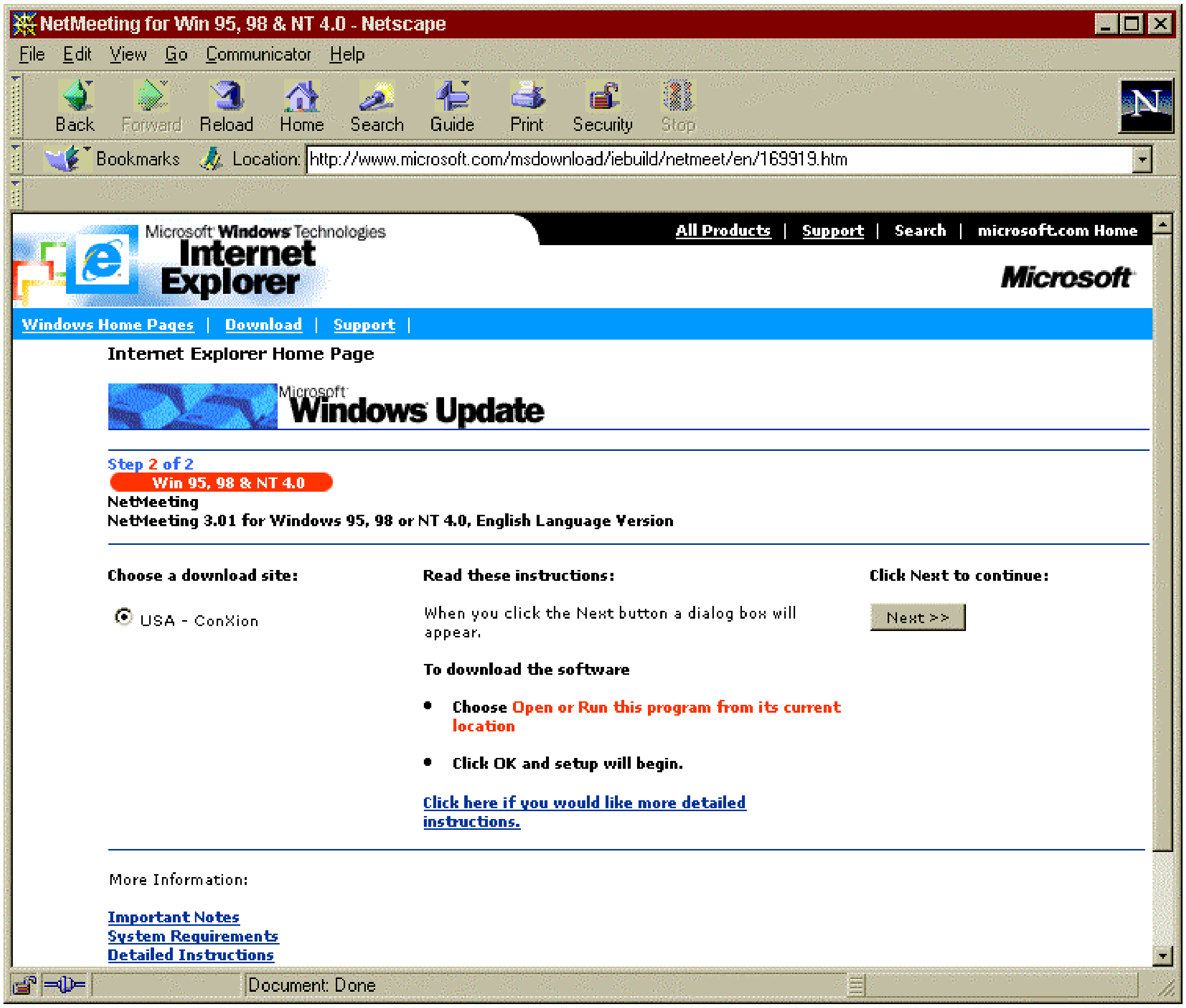
Important Notes
System Requirements
Detailed Instructions

© 1998 Microsoft Corporation. All rights reserved. Terms of Use.
Last Updated: Monday, January 03, 2000 15:52:16

Document: Done

**Figure 8-2. NetMeeting Download Page 1**

A page displaying the second and last step in the download process will be displayed as shown in Figure 8-3. Your operating system and the application you want to download, as well as a download site will be identified. Click on “Next”.


NetMeeting for Win 95, 98 & NT 4.0 - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks
All Products | Support | Search | microsoft.com Home
Microsoft Windows Technologies Internet Explorer
Microsoft
Windows Home Pages | Download | Support |
Microsoft Windows Update
Next >>
Document: Done

Location: http://www.microsoft.com/msdownload/iebuild/netmeet/en/169919.htm

Internet Explorer Home Page

Step 2 of 2
Win 95, 98 & NT 4.0
NetMeeting
NetMeeting 3.01 for Windows 95, 98 or NT 4.0, English Language Version

Choose a download site:

● USA - ConXion

Read these instructions:

When you click the Next button a dialog box will appear.

To download the software

- Choose Open or Run this program from its current location
- Click OK and setup will begin.

Click here if you would like more detailed instructions.

Click Next to continue:

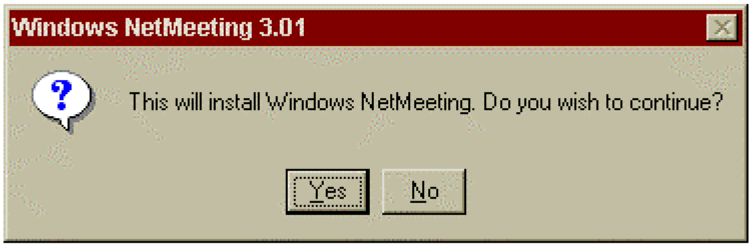
More Information:

Important Notes
System Requirements
Detailed Instructions

**Figure 8-3. NetMeeting Download Page 2**

The application will then be downloaded onto your system into a directory of your choice. Once the download has completed, the application can be installed.

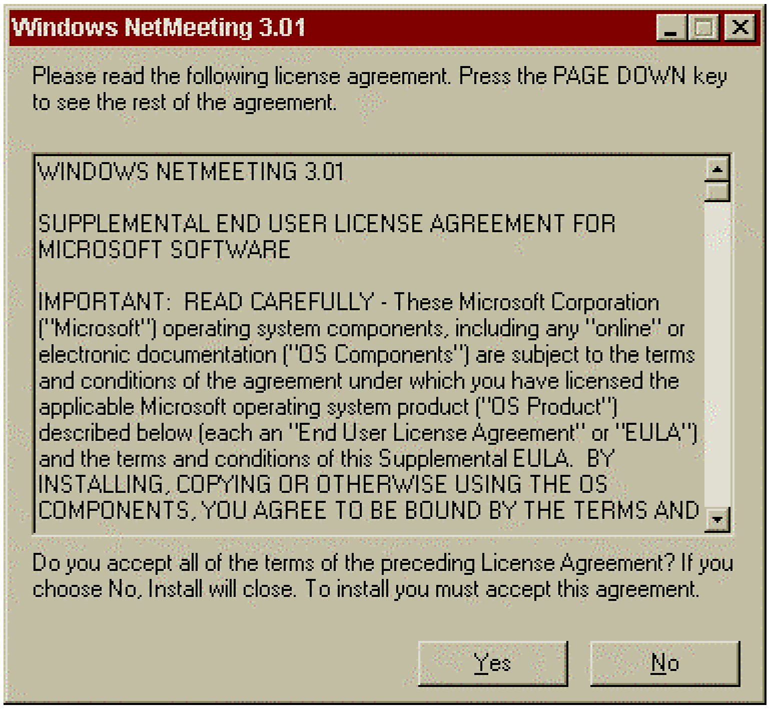
To begin installation, locate the folder where you directed the application to be downloaded and double-click on the Nm30 icon. The Windows NetMeeting 3.01 window, shown in Figure 8-4 will open and you will be asked if you want to install NetMeeting. Click “Yes.”



This will install Windows NetMeeting. Do you wish to continue?

**Figure 8-4. Windows NetMeeting 3.01 Install**

You will then be presented with the NetMeeting license agreement shown in Figure 8-5. After reviewing the license agreement and agreeing to the terms, click on "Yes."



Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement.

WINDOWS NETMEETING 3.01

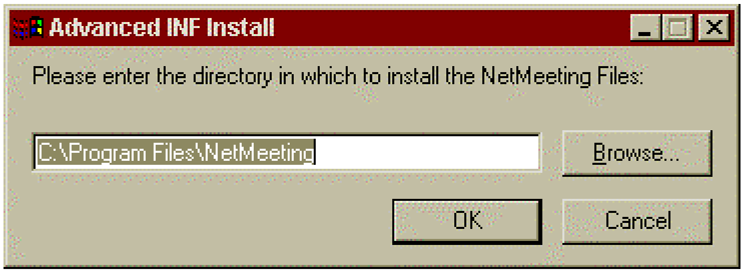
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE

IMPORTANT: READ CAREFULLY - These Microsoft Corporation ("Microsoft") operating system components, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of the agreement under which you have licensed the applicable Microsoft operating system product ("OS Product") described below (each an "End User License Agreement" or "EULA") and the terms and conditions of this Supplemental EULA. BY INSTALLING, COPYING OR OTHERWISE USING THE OS COMPONENTS, YOU AGREE TO BE BOUND BY THE TERMS AND

Do you accept all of the terms of the preceding License Agreement? If you choose No, Install will close. To install you must accept this agreement.

**Figure 8-5. NetMeeting License Agreement**

NetMeeting will then extract all of the files and prepare to install the application. Once the files have been extracted, NetMeeting will establish a directory to install the application. Users can either accept the default location, or click on "Browse" and redirect it to a folder of their choice, as illustrated in Figure 8-6. If the prompt says that the folder you have selected does not exist, click on "Yes" and allow NetMeeting to create one for you.

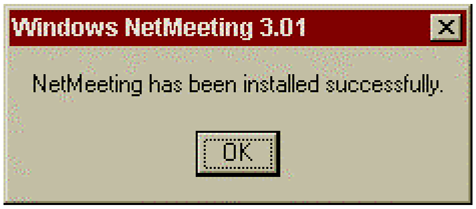

Advanced INF Install

Please enter the directory in which to install the NetMeeting Files:

C:\Program Files\NetMeeting

**Figure 8-6. Directory for NetMeeting**

When NetMeeting has finished installing, you will receive the following message illustrated in Figure 8-7.

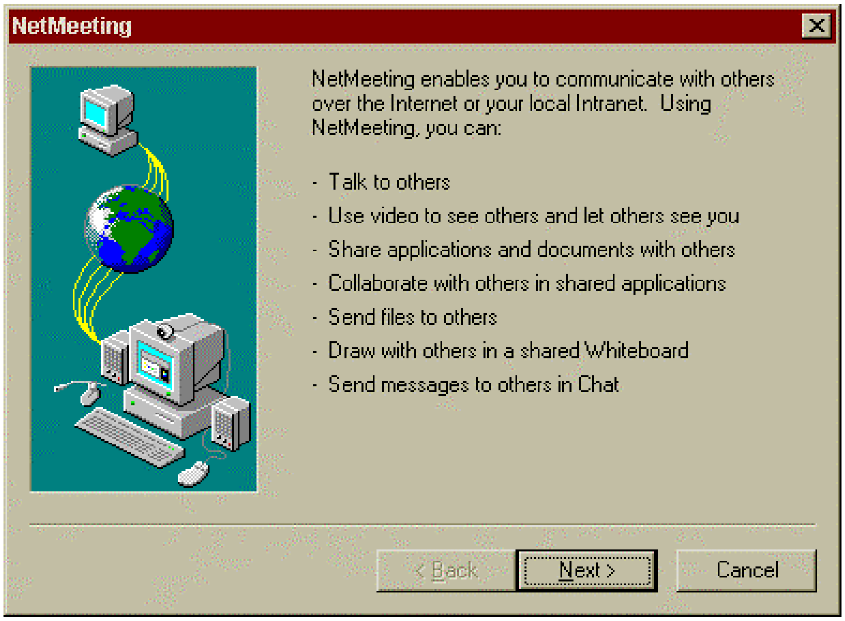

Windows NetMeeting 3.01

NetMeeting has been installed successfully.

**Figure 8-7. Installation Complete**

## 8.2 Secure Configuration of NetMeeting 3.01

Once NetMeeting has been installed, it can be configured by navigating to the NetMeeting directory and double-clicking on the *conf.exe* icon. Configuration begins with a brief description of the application, as depicted in Figure 8-8. After reading the description, click "Next."

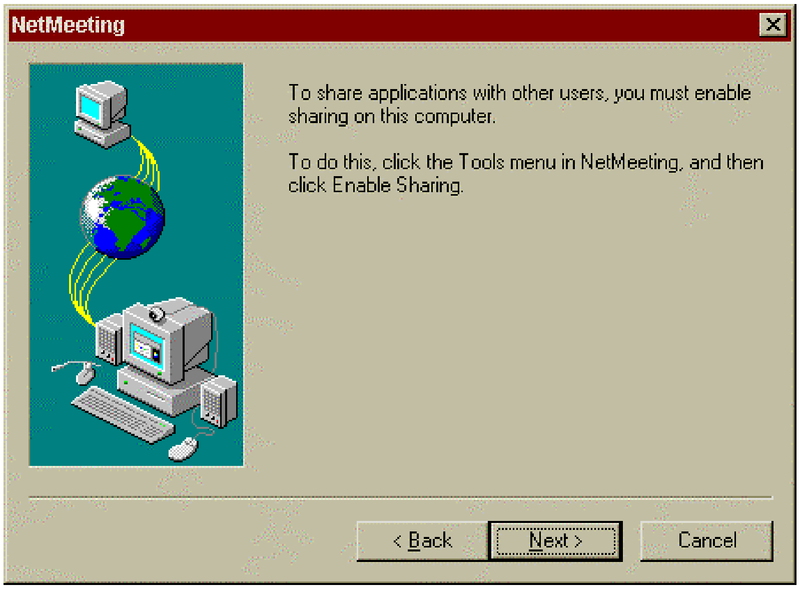


NetMeeting enables you to communicate with others over the Internet or your local Intranet. Using NetMeeting, you can:

- Talk to others
- Use video to see others and let others see you
- Share applications and documents with others
- Collaborate with others in shared applications
- Send files to others
- Draw with others in a shared Whiteboard
- Send messages to others in Chat

**Figure 8-8. NetMeeting Configuration 1**

The next window shown in Figure 8-9, briefly describes the application sharing function and the steps needed to enable it. Click on "Next."

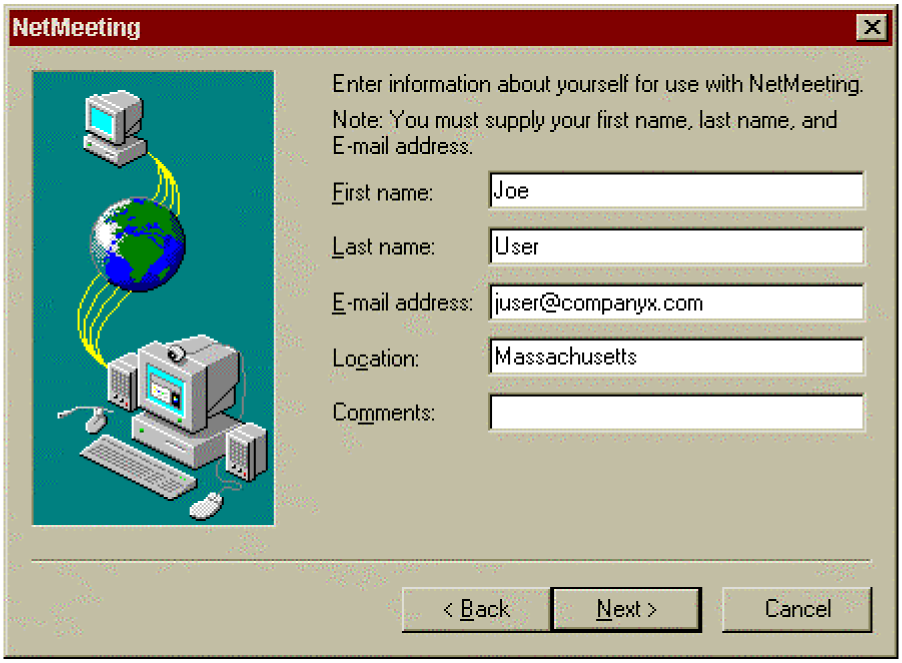


To share applications with other users, you must enable sharing on this computer.

To do this, click the Tools menu in NetMeeting, and then click Enable Sharing.

**Figure 8-9. NetMeeting Configuration 2**

The next screen in the configuration process is the user identification screen shown in Figure 8-10. Users must enter the required fields including, First Name, Last Name and E-mail address.  After entering the required information, click on "Next."



Enter information about yourself for use with NetMeeting.

Note: You must supply your first name, last name, and E-mail address.

First name: Joe

Last name: User

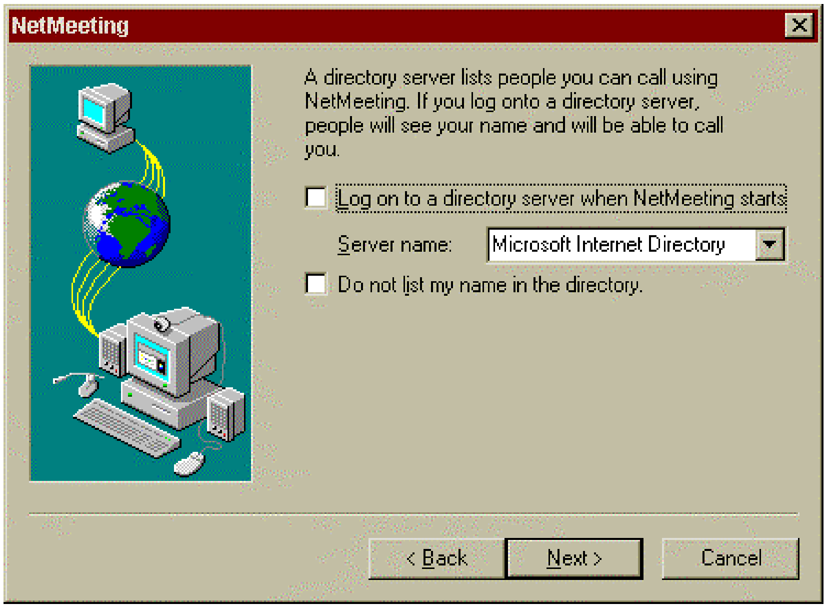
E-mail address: juser@companyx.com

Location: Massachusetts

Comments:

**Figure 8-10.  User Information**

Figure 8-11 depicts the next set of options in the NetMeeting configuration process.  It is recommended that the check mark in the box next to "Log on to a directory server when NetMeeting starts" be deselected, i.e., the check mark removed from this box. Because directory servers offer no authentication, information can be easily forged and identities can be stolen.  Therefore, it is more secure to place direct calls using IP addressing rather than using the information in the directory server.  Following completion of this action, click on "Next."



A directory server lists people you can call using NetMeeting. If you log onto a directory server, people will see your name and will be able to call you.

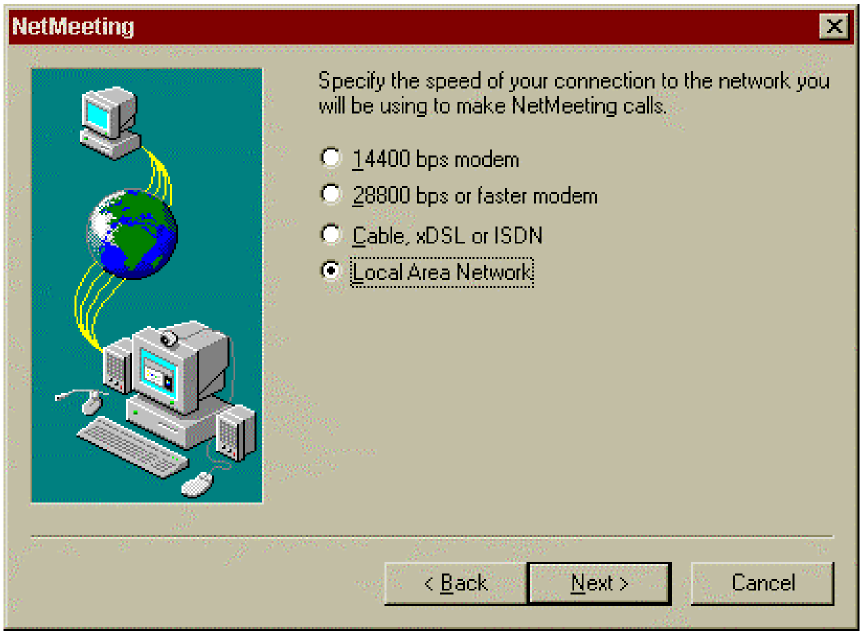
☐ Log on to a directory server when NetMeeting starts

Server name: Microsoft Internet Directory

☐ Do not list my name in the directory.

**Figure 8-11. Directory Server Logon**

A window listing network connection options will be displayed as shown in Figure 8-12. Select the speed of your connection and click "Next."

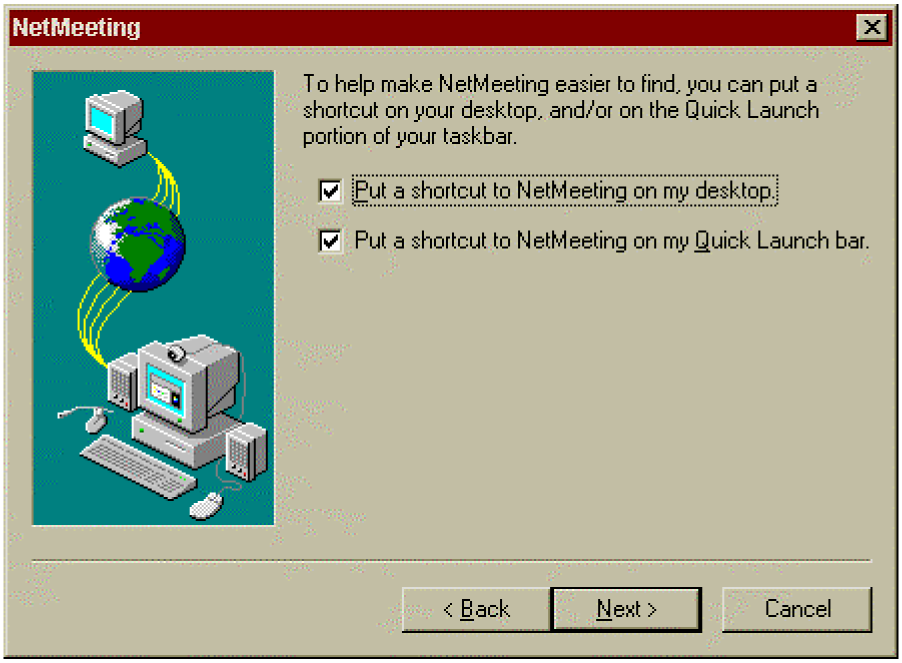


Specify the speed of your connection to the network you will be using to make NetMeeting calls.

○ 14400 bps modem
○ 28800 bps or faster modem
○ Cable, xDSL or ISDN
● Local Area Network

**Figure 8-12. Network Connection Type**

The window depicted in Figure 8-13 will be displayed. Place a check mark next to each option to put a shortcut to NetMeeting on your desktop and to add an icon in the quick launch bar. Click “Next.”



NetMeeting

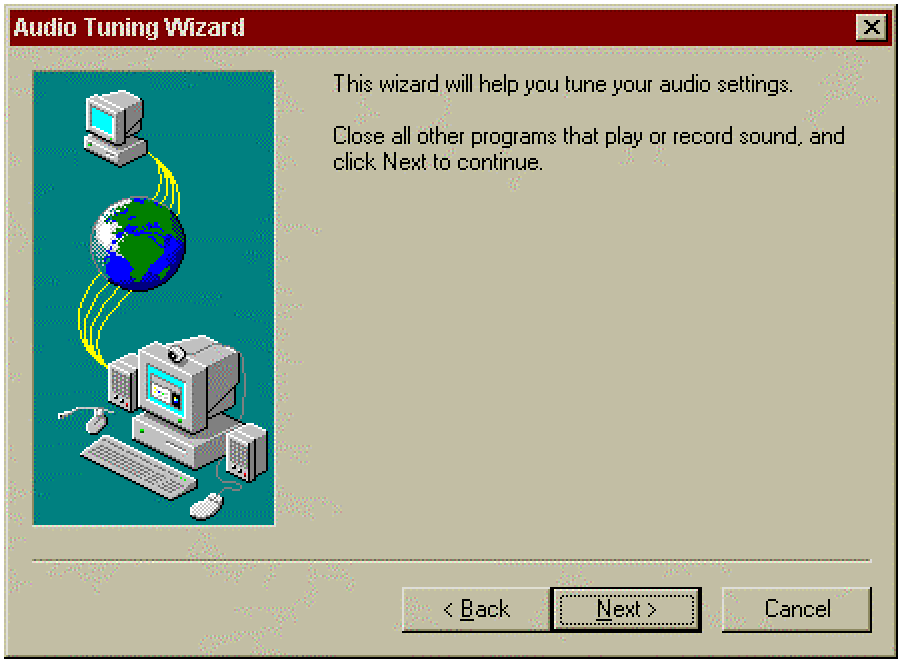
To help make NetMeeting easier to find, you can put a shortcut on your desktop, and/or on the Quick Launch portion of your taskbar.

☑ Put a shortcut to NetMeeting on my desktop.

☑ Put a shortcut to NetMeeting on my Quick Launch bar.

**Figure 8-13. Shortcuts & Quick Launch**

The Audio Tuning Wizard screen will be displayed as illustrated in Figure 8-14. Click “Next.”

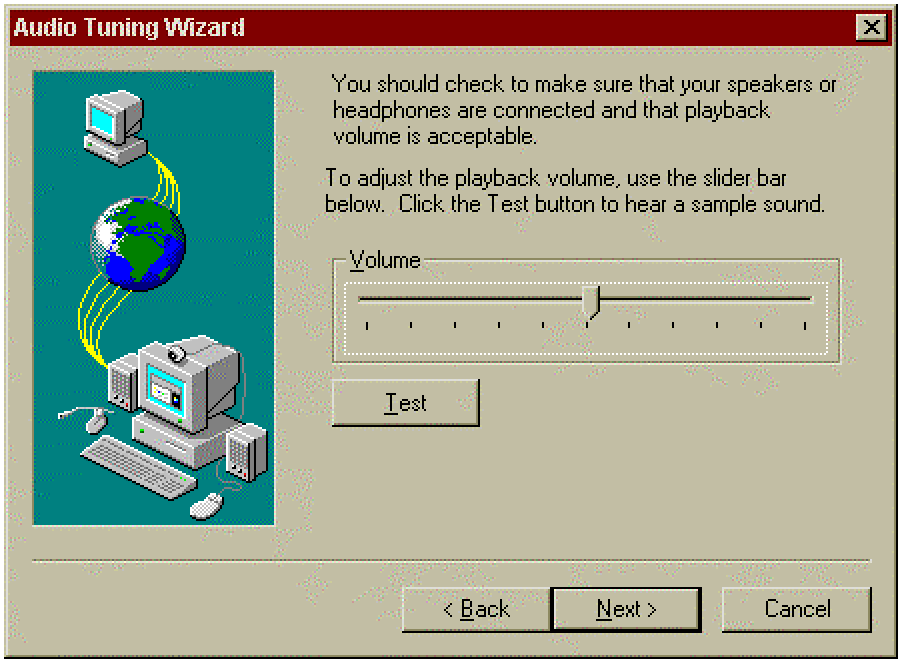


This wizard will help you tune your audio settings.

Close all other programs that play or record sound, and click Next to continue.

**Figure 8-14. Audio Tuning Wizard 1**

Figure 8-15 illustrates the next step in the audio tuning wizard. If you have speakers connected to your machine, make certain they are connected properly and click on the "Test" button. Adjust volume by moving the playback slidebar and then click "Next."

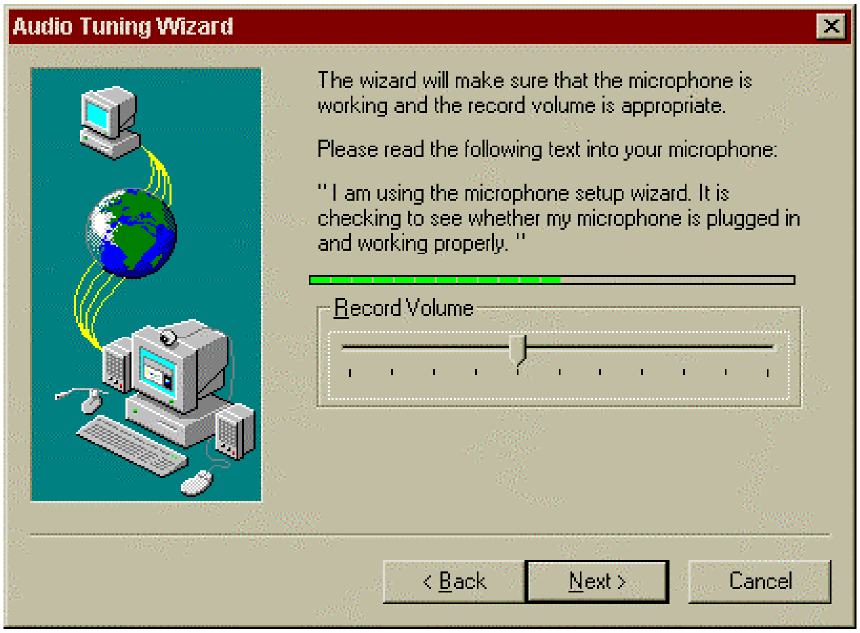


You should check to make sure that your speakers or headphones are connected and that playback volume is acceptable.

To adjust the playback volume, use the slider bar below. Click the Test button to hear a sample sound.

**Figure 8-15. Audio Tuning Wizard 2**

The next step is to set the volume on the microphone. As depicted in Figure 8-16 below, read the sentence into your microphone, then click "Next."



Audio Tuning Wizard

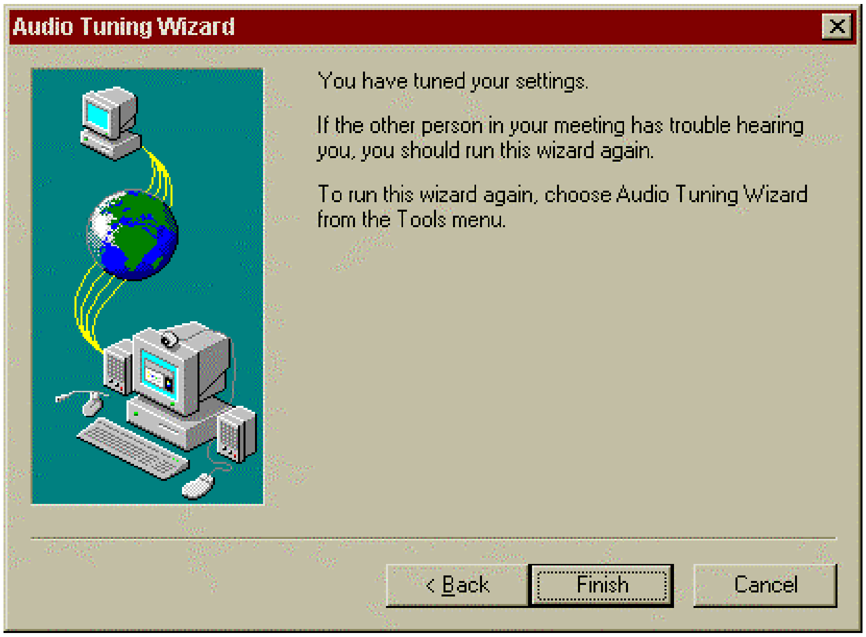
The wizard will make sure that the microphone is working and the record volume is appropriate.

Please read the following text into your microphone:

" I am using the microphone setup wizard. It is checking to see whether my microphone is plugged in and working properly. "

**Figure 8-16. Record Microphone Volume**

The final screen for the Audio Tuning Wizard will now be displayed as seen in Figure 8-17. Click on “Finish.”



Audio Tuning Wizard

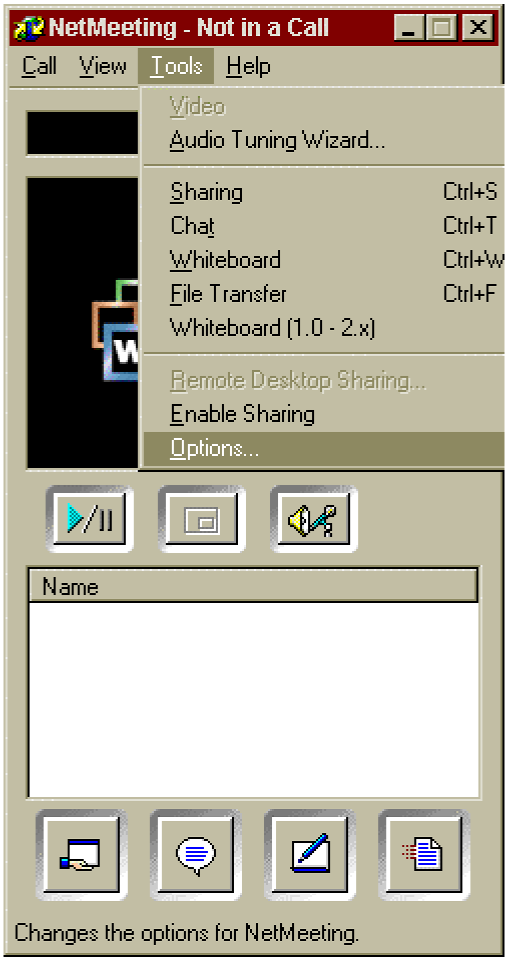
You have tuned your settings.

If the other person in your meeting has trouble hearing you, you should run this wizard again.

To run this wizard again, choose Audio Tuning Wizard from the Tools menu.

**Figure 8-17. Audio Tuning 3**

The NetMeeting application, as seen in Figure 8-18, will now open for the first time. Go under the Tools menu and select Options.



Changes the options for NetMeeting.

**Figure 8-18. Options Menu**

Figure 8-19 displays the General tab in the Options menu. Verify the following information. Under My directory information, verify:

- All information is entered correctly

Under Directory Settings, verify:

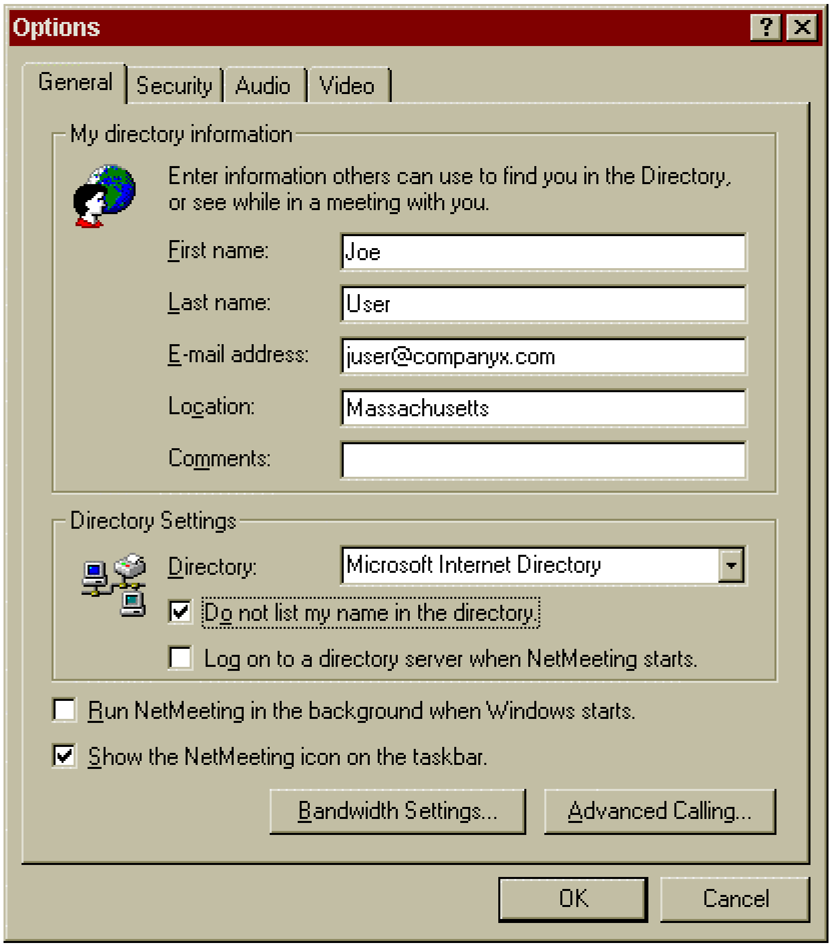
- There IS a check mark before “Do not list my name in the directory”
- There is NO check mark before “Log on to a directory server when NetMeeting starts”

Under General, verify:

- There is NO check mark before “Run NetMeeting in the background when Windows starts”

- There IS a check mark before “Show the NetMeeting icon on the taskbar”

There are no special options to be set under Bandwidth Settings or Advanced Calling.



Options

My directory information

Enter information others can use to find you in the Directory, or see while in a meeting with you.

First name: Joe

Last name: User

E-mail address: juser@companyx.com

Location: Massachusetts

Comments:

Directory Settings

Directory: Microsoft Internet Directory

☑ Do not list my name in the directory.

☐ Log on to a directory server when NetMeeting starts.

☐ Run NetMeeting in the background when Windows starts.

☑ Show the NetMeeting icon on the taskbar.

**Figure 8-19. General Tab**

The next step is to enable security. It is recommended that a third-party certificate be used to provide authentication and encryption. If you have a third-party personal certificate installed in Internet Explorer 5.x Windows Certificate Store, skip to the Security Tab section below. If not, click “OK” to close the Options/General window and proceed with the following instructions to import your certificate into IE 5.x.

### Importing the Root CA certificate into the Trusted Root Store

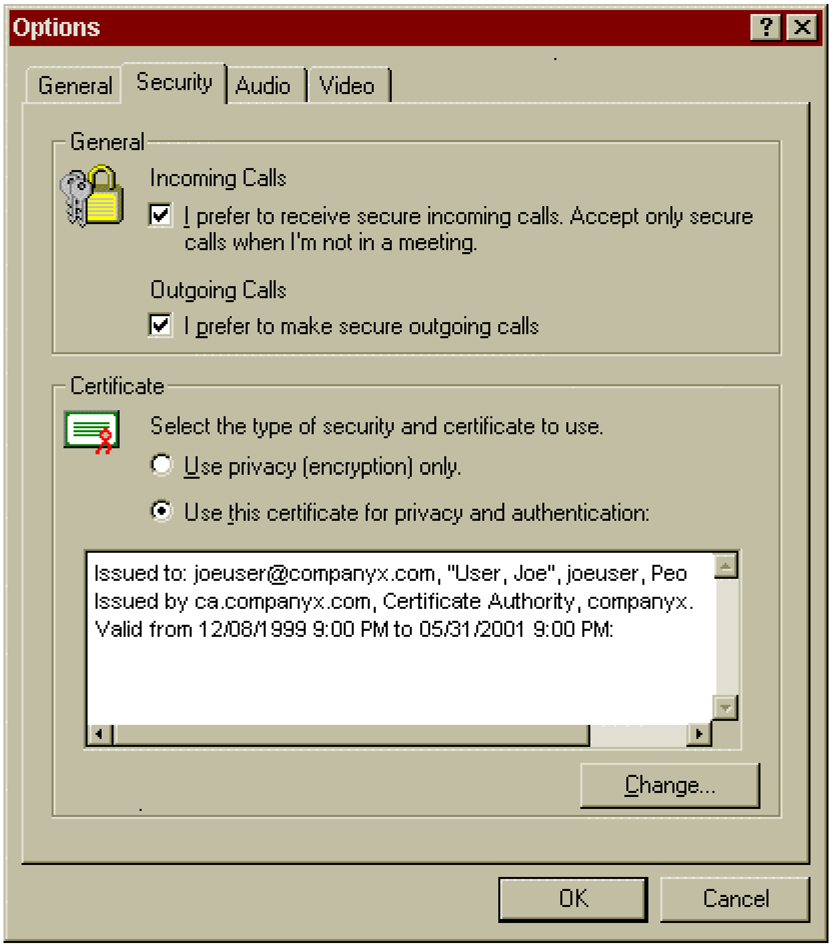
1. Download your Root CA certificate to your desktop (this will save as a file).
2. Make certain that the file has an extension of *.crt.
3. Double-click on this file to start the certificate import wizard.

4. Click on the Install Certificate button on the dialog box that appears.
5. Click "Next" when the Certificate Manager Import Wizard dialog appears.
6. Make sure that "Automatically select..." is selected, and click "Next."
7. Verify that the Certificate Store selected by the Wizard is listed as "Trusted Root Certification Authorities."
8. Click "Finish."
9. Verify the information in the dialog that appears, and click Yes to the question "Do you want to ADD the following certificate to the Root Store?"
10. If the import was successful, you will get a dialog box indicating this. Click "OK."
11. Close the Certificate window by clicking on "OK."
12. To verify that the import was successful, double click on the downloaded file. In the certificate window that appears, click on the Certification Path tab at the top. The Certificate status: box will state that "This certificate is OK."
13. You can now delete the certificate on your desktop.

*Importing your personal certificate into IE 5.0*

1. Insert the floppy disk containing your exported certificate file.
2. Double-click on the exported certificate file.
3. Once the Certificate Manager Import Wizard starts, click Next.
4. Click "Next" if the file to import is correctly displayed. If not, click Browse and select the appropriate file.
5. Enter the password used to secure the certificate when it was exported from another browser. If it was not exported, enter the certificate password.
6. Make sure both "Enable strong private key protection" and "Mark the private key as exportable" are checked. Click "Next."
7. Make sure "Automatically select ..." is selected, and click "Next."
8. Click "Finish."
9. Make sure the Security Level is set to High. (Click on "Set Security Level" and change the setting if it is not.)
10. Follow the instructions in the dialog about setting a password for the Private Key Container.
11. Enter the password that was just established. Make sure that Remember Password is NOT checked, and click "OK."
12. A dialog box indicating that the import was successful should be displayed.
13. Close out of Internet Explorer.

Open the NetMeeting application, go under Tools, Options and click on the Security tab.



General

Incoming Calls

☑ I prefer to receive secure incoming calls. Accept only secure calls when I'm not in a meeting.

Outgoing Calls

☑ I prefer to make secure outgoing calls

Certificate

Select the type of security and certificate to use.

○ Use privacy (encryption) only.

● Use this certificate for privacy and authentication:

Issued to: joeuser@companyx.com, "User, Joe", joeuser, Peo
Issued by ca.companyx.com, Certificate Authority, companyx.
Valid from 12/08/1999 9:00 PM to 05/31/2001 9:00 PM:

**Figure 8-20. Security Tab Secure Options**

**NetMeeting Security Tab:**

Figure 8-20 displays the Security Tab options. Here you will enable security. Select the following options on the Security Tab under the General section:

- I prefer to receive incoming calls. Accept only secure calls when I'm not in a meeting.
- I prefer to make secure outgoing calls.

Under the Certificate section if you do not have a third party personal certificate, place a radio button before:

- Use privacy (encryption) only

If you do have a third-party personal certificate, place a radio button before:

- Use this certificate for privacy and authentication

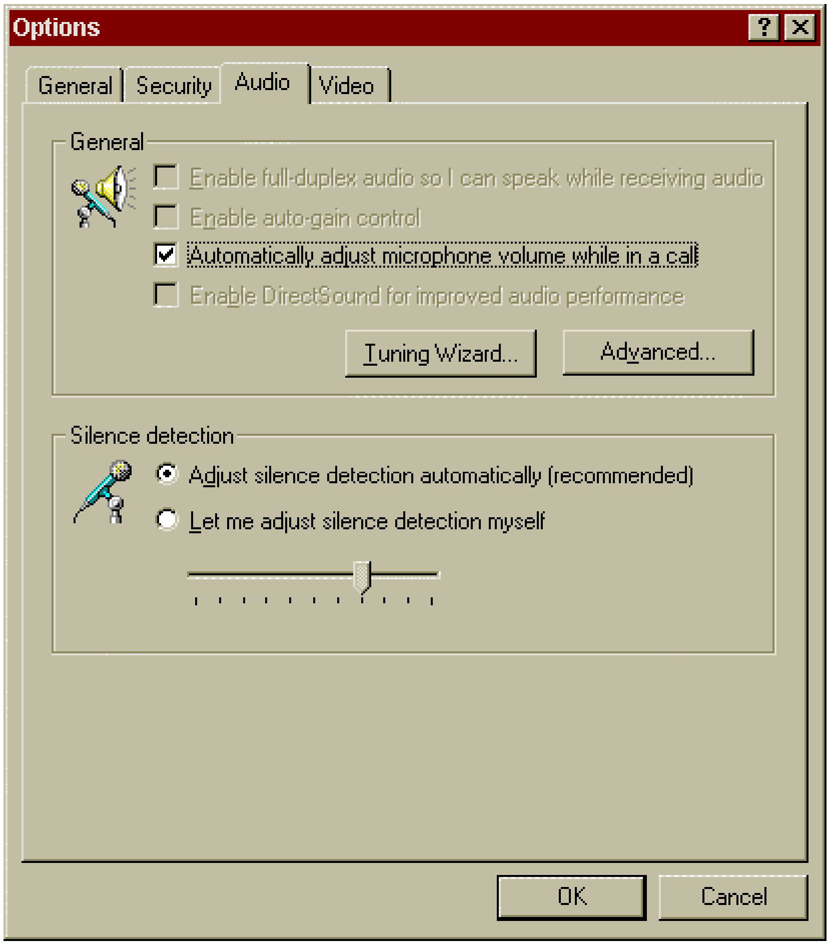
Once options are chosen, click OK.

**NOTE:** It is highly recommended to use a third party certificate, which provides both authentication and encryption.

Next, click on the Audio tab depicted in Figure 8-21. Ensure that the following options have check marks:

- Automatically adjust microphone volume while in a call
- Adjust silence detection automatically (recommended)

While audio and video features are disabled in all secure calls, if a person was to inadvertently place an insecure call, it would be prudent to have these options checked.



General

☐ Enable full-duplex audio so I can speak while receiving audio
☐ Enable auto-gain control
☑ Automatically adjust microphone volume while in a call
☐ Enable DirectSound for improved audio performance

Silence detection

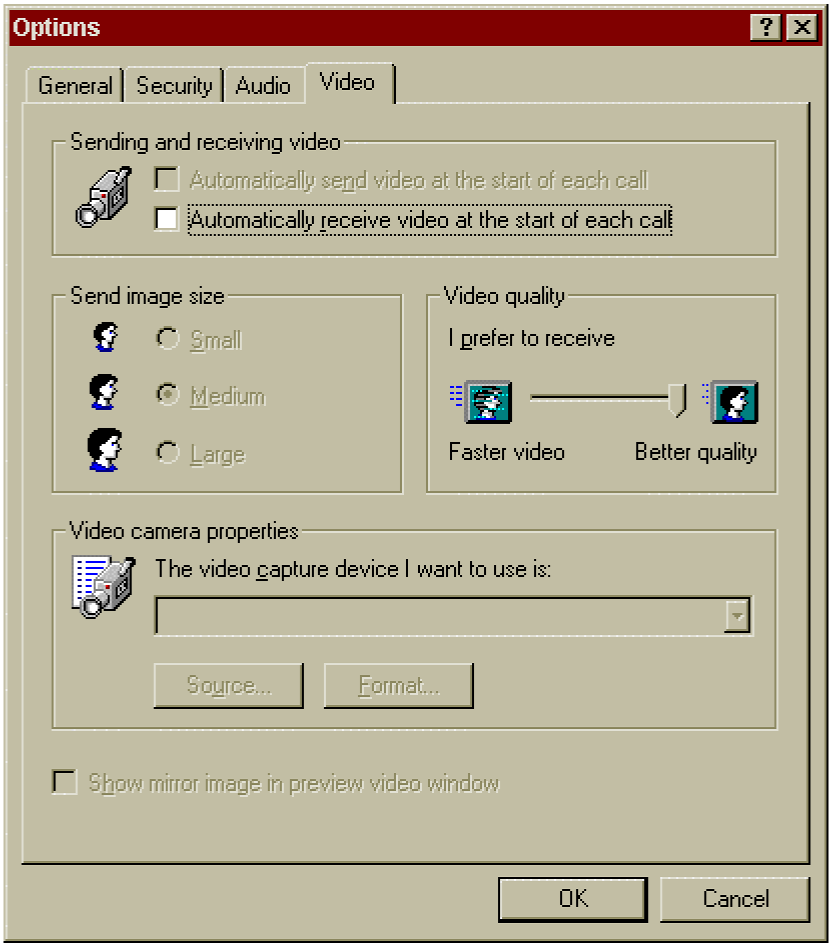
● Adjust silence detection automatically (recommended)
○ Let me adjust silence detection myself

**Figure 8-21. Audio Tab Secure Options**

Under the Video Tab, make certain there are no check marks before:

- Automatically send video at the start of each call
- Automatically receive video at the start of each call

This is shown in Figure 8-22.



Options

Sending and receiving video

□ Automatically send video at the start of each call

□ Automatically receive video at the start of each call

Send image size

○ Small

● Medium

○ Large

Video quality

I prefer to receive

Faster video — Better quality

Video camera properties

The video capture device I want to use is:

□ Show mirror image in preview video window

**Figure 8-22.  Video Tab Secure Options**

Once you have verified all of the options above, click OK.  Next, close out of the NetMeeting application.  This will ensure that security is enabled and functioning properly. The next time you open the application, you will be prompted for your personal certificate password before you are allowed to use the application.

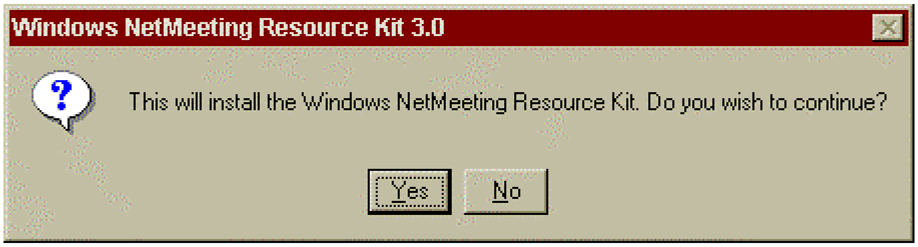
**Section 9**

# Secure Installation and Configuration of NetMeeting Resource Kit 3.0

## 9.1 Installation

The NetMeeting resource kit allows the administrator to generate a custom installation package for NetMeeting that can preclude end users from manipulating various security related settings. In general this is preferred as it allows the administrator to implement policies for the use of NetMeeting across the organization[4].

To install NetMeeting Resource Kit, go to the Microsoft NetMeeting web site located at: http://www.microsoft.com/windows/netmeeting/corp/reskit/default.asp?RLD=52 and click on the "Download" button. This will download NM3RK.exe onto your computer. Once the file is finished downloading, close out of your browser. Locate the file called NM3RK and double-click on it. This will begin the installation process. Figure 9-1 depicts the beginning of the installation process.

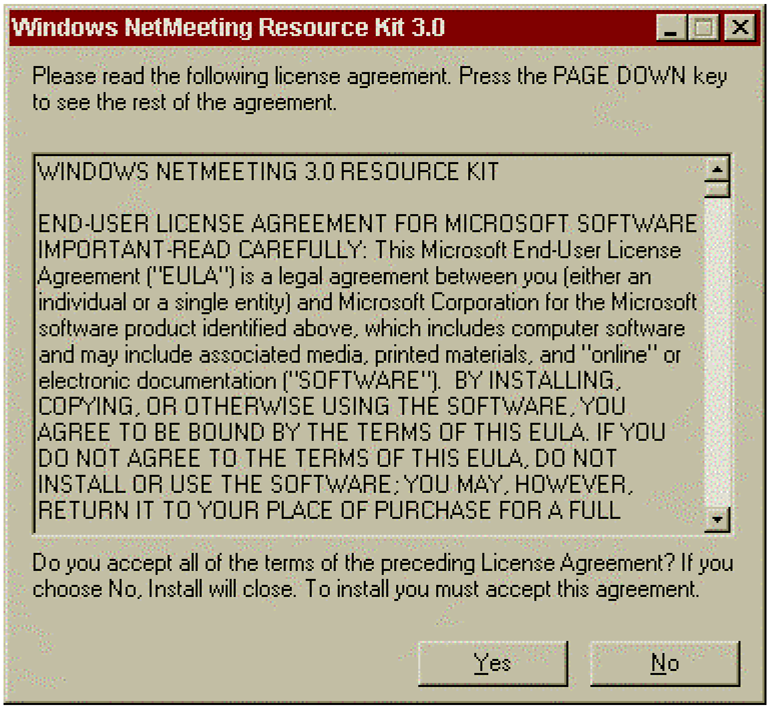


This will install the Windows NetMeeting Resource Kit. Do you wish to continue?

**Figure 9-1. NetMeeting Resource Kit 3.0 Installation**

Click "Yes," and the license agreement will be displayed as shown in Figure 9-2. Review and click on "Yes."

[4] Windows 2000 networks can utilize Group Policy to effect many of the recommendations contained in this section.



Windows NetMeeting Resource Kit 3.0

Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement.

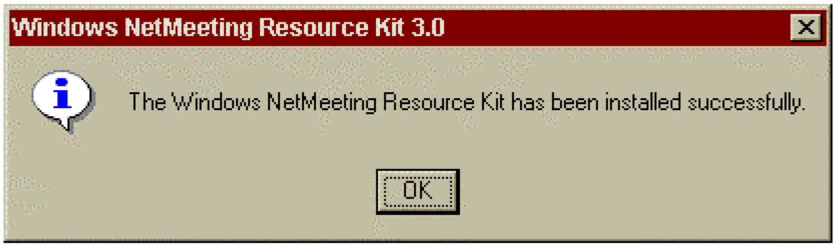
WINDOWS NETMEETING 3.0 RESOURCE KIT

END-USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE
IMPORTANT-READ CAREFULLY: This Microsoft End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Microsoft Corporation for the Microsoft software product identified above, which includes computer software and may include associated media, printed materials, and "online" or electronic documentation ("SOFTWARE"). BY INSTALLING, COPYING, OR OTHERWISE USING THE SOFTWARE, YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, DO NOT INSTALL OR USE THE SOFTWARE; YOU MAY, HOWEVER, RETURN IT TO YOUR PLACE OF PURCHASE FOR A FULL

Do you accept all of the terms of the preceding License Agreement? If you choose No, Install will close. To install you must accept this agreement.

**Figure 9-2. License Agreement**

Next, the resource kit files will be extracted and you will be prompted for a directory in which to install the files. Accept the default location C:\ProgramFiles\NetMeeting Resource Kit and click “OK.” All files will now be copied into that location in preparation for installation. Once the copy has completed you will receive a message stating the resource kit was successfully installed, as depicted in Figure 9-3.



Windows NetMeeting Resource Kit 3.0

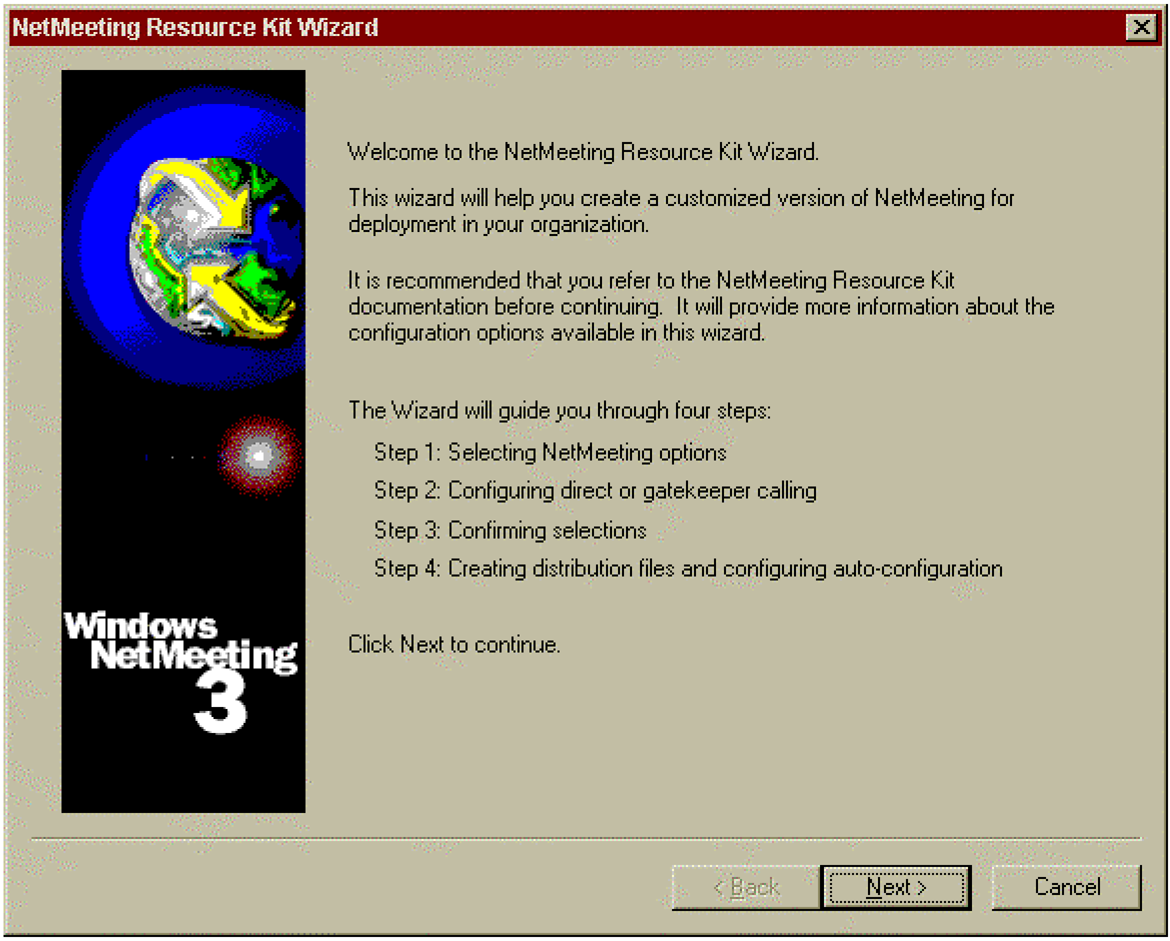
The Windows NetMeeting Resource Kit has been installed successfully.

**Figure 9-3. Successful Install**

The NetMeeting Resource Kit is now installed and ready for secure configuration.

## 9.2 Secure Configuration

To launch the NetMeeting Resource Kit 3.0, go to your Start Menu, Programs, NetMeeting Resource Kit 3.0, and select the NetMeeting Resource Kit Wizard. You will see the following window as depicted in Figure 9-4, click "Next."



Welcome to the NetMeeting Resource Kit Wizard.

This wizard will help you create a customized version of NetMeeting for deployment in your organization.

It is recommended that you refer to the NetMeeting Resource Kit documentation before continuing. It will provide more information about the configuration options available in this wizard.

The Wizard will guide you through four steps:

Step 1: Selecting NetMeeting options

Step 2: Configuring direct or gatekeeper calling

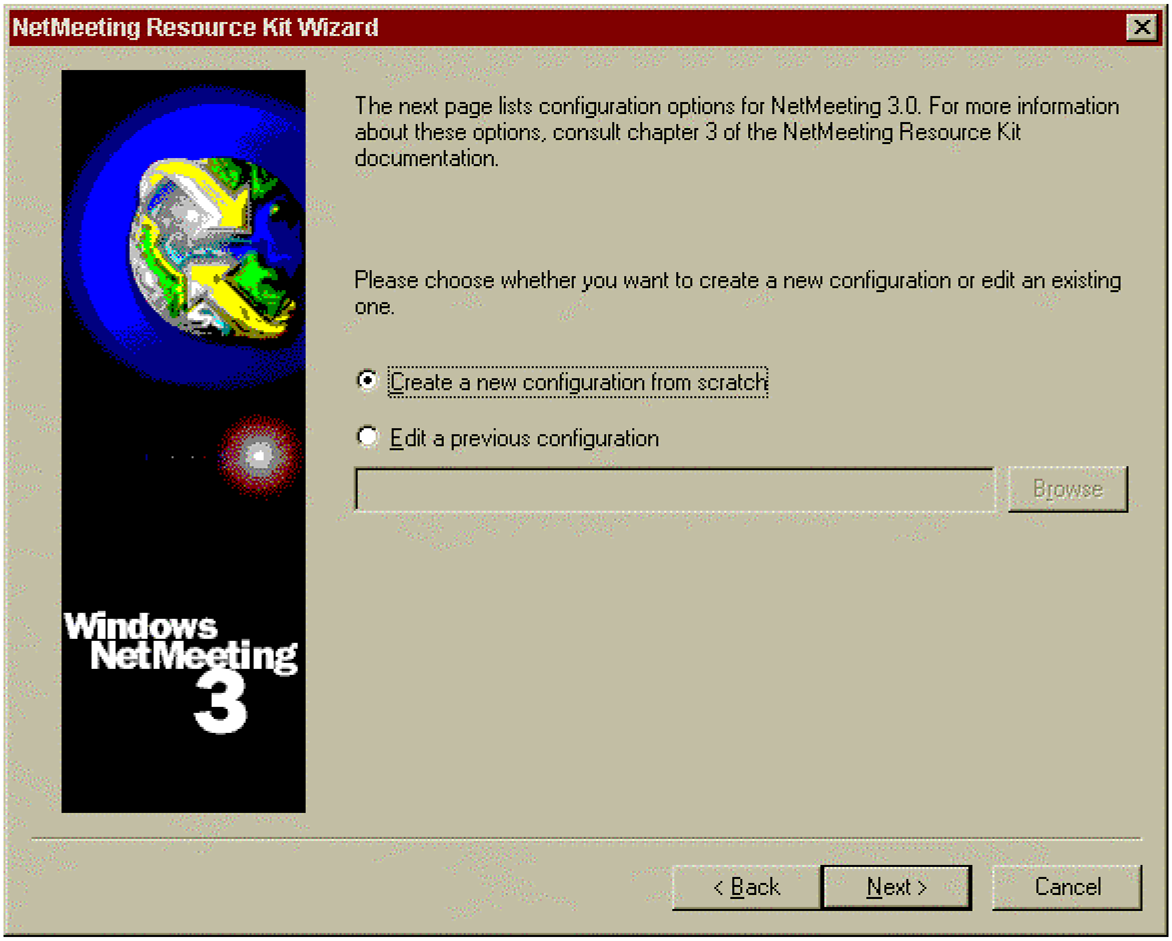
Step 3: Confirming selections

Step 4: Creating distribution files and configuring auto-configuration

Click Next to continue.

**Figure 9-4. NetMeeting Resource Kit 3.0 Wizard**

In the next window, shown if Figure 9-5, click on "Create a new configuration from scratch" and click "Next."



NetMeeting Resource Kit Wizard

The next page lists configuration options for NetMeeting 3.0. For more information about these options, consult chapter 3 of the NetMeeting Resource Kit documentation.

Please choose whether you want to create a new configuration or edit an existing one.

● Create a new configuration from scratch

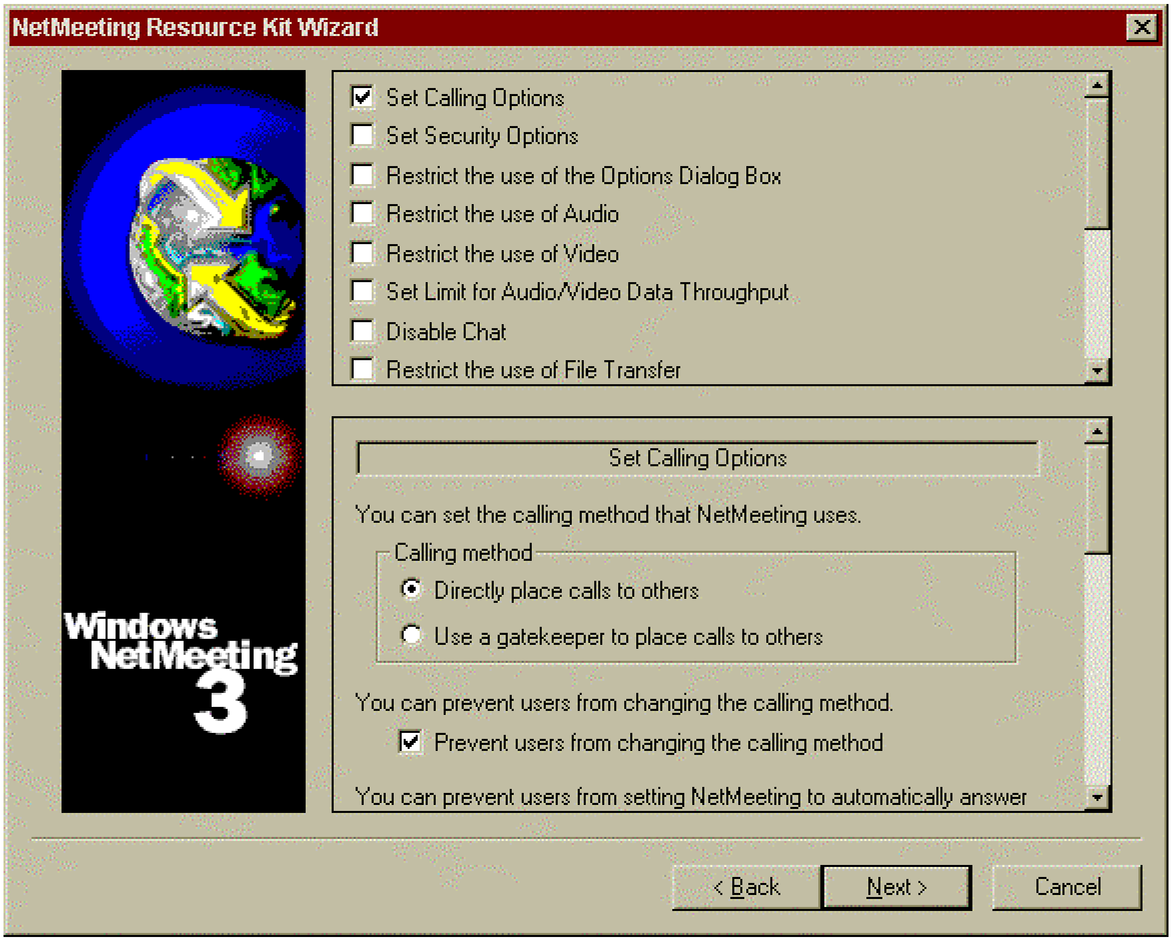
○ Edit a previous configuration

**Figure 9-5. Configuration Options**

NetMeeting will now display all available options.

**Set Calling Options:**
Place a check mark in the “Set Calling Options” box. NetMeeting will display the Set Calling Options, as depicted in Figure 9-6 below. Place a radio button before “Directly place calls to others[5]” and a check mark before “Prevent users from changing the calling method” options. Use the right scroll bar to view more Set Calling Options.

[5] This recommendation is made simply because the other option – use of a gateway for call placement -- was not evaluated under this task.



☑ Set Calling Options
□ Set Security Options
□ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Set Calling Options

You can set the calling method that NetMeeting uses.

Calling method

● Directly place calls to others

○ Use a gatekeeper to place calls to others

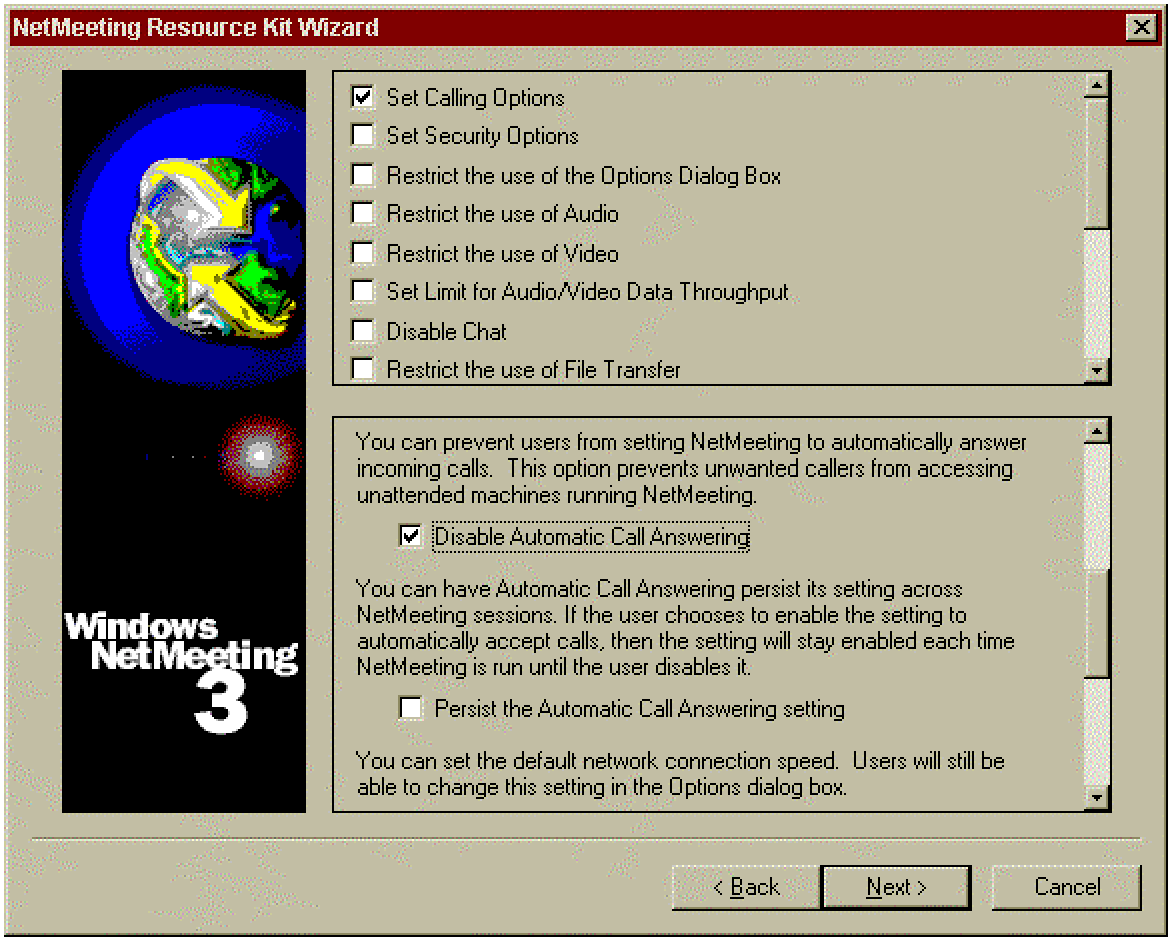
You can prevent users from changing the calling method.

☑ Prevent users from changing the calling method

You can prevent users from setting NetMeeting to automatically answer

**Figure 9-6. Set Calling Options 1**

Place a check mark before "Disable Automatic Call Answering" as illustrated in Figure 9-7 and continue to scroll down to select the network speed as depicted in Figure 9-8.



☑ Set Calling Options
□ Set Security Options
□ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

You can prevent users from setting NetMeeting to automatically answer incoming calls. This option prevents unwanted callers from accessing unattended machines running NetMeeting.

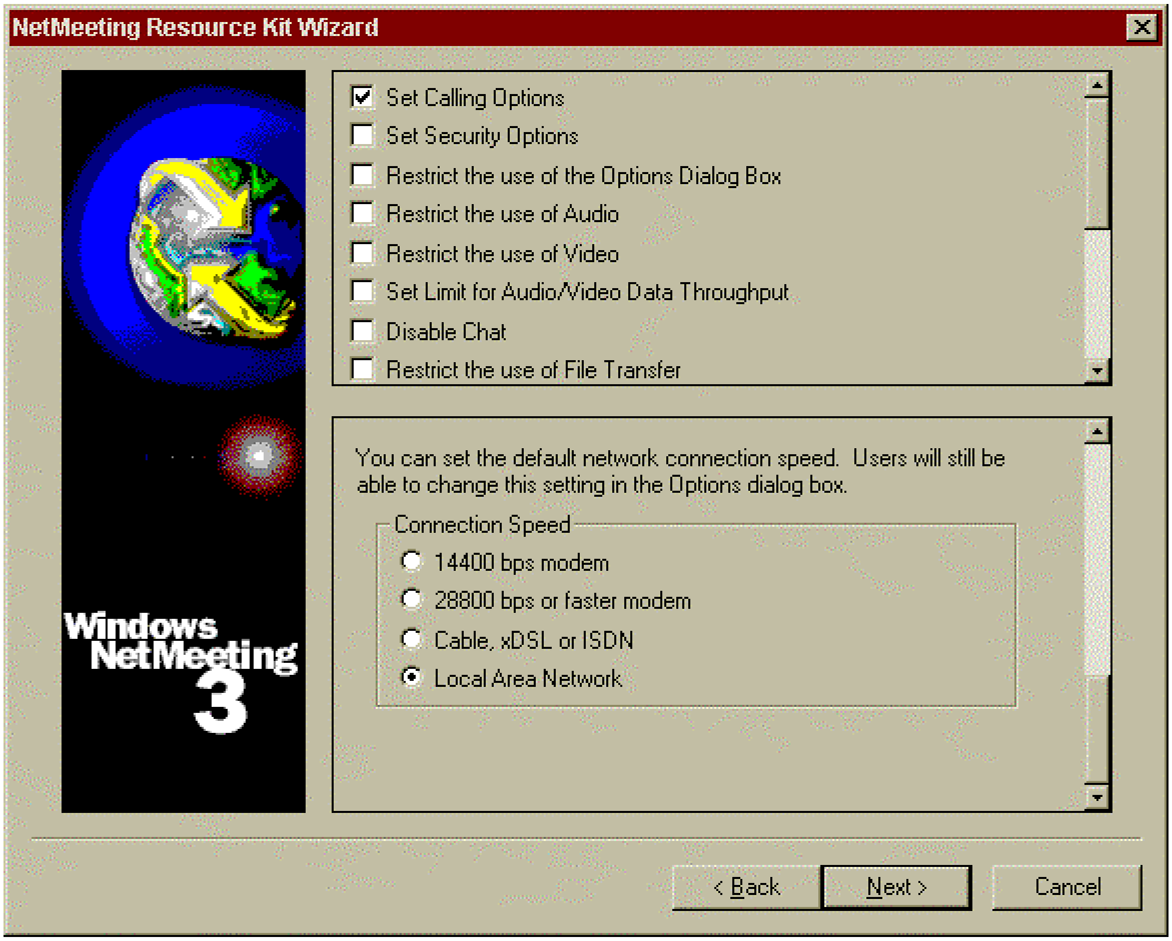
☑ Disable Automatic Call Answering

You can have Automatic Call Answering persist its setting across NetMeeting sessions. If the user chooses to enable the setting to automatically accept calls, then the setting will stay enabled each time NetMeeting is run until the user disables it.

□ Persist the Automatic Call Answering setting

You can set the default network connection speed. Users will still be able to change this setting in the Options dialog box.

**Figure 9-7. Set Calling Options 2**



NetMeeting Resource Kit Wizard

- ☑ Set Calling Options
- □ Set Security Options
- □ Restrict the use of the Options Dialog Box
- □ Restrict the use of Audio
- □ Restrict the use of Video
- □ Set Limit for Audio/Video Data Throughput
- □ Disable Chat
- □ Restrict the use of File Transfer

You can set the default network connection speed. Users will still be able to change this setting in the Options dialog box.

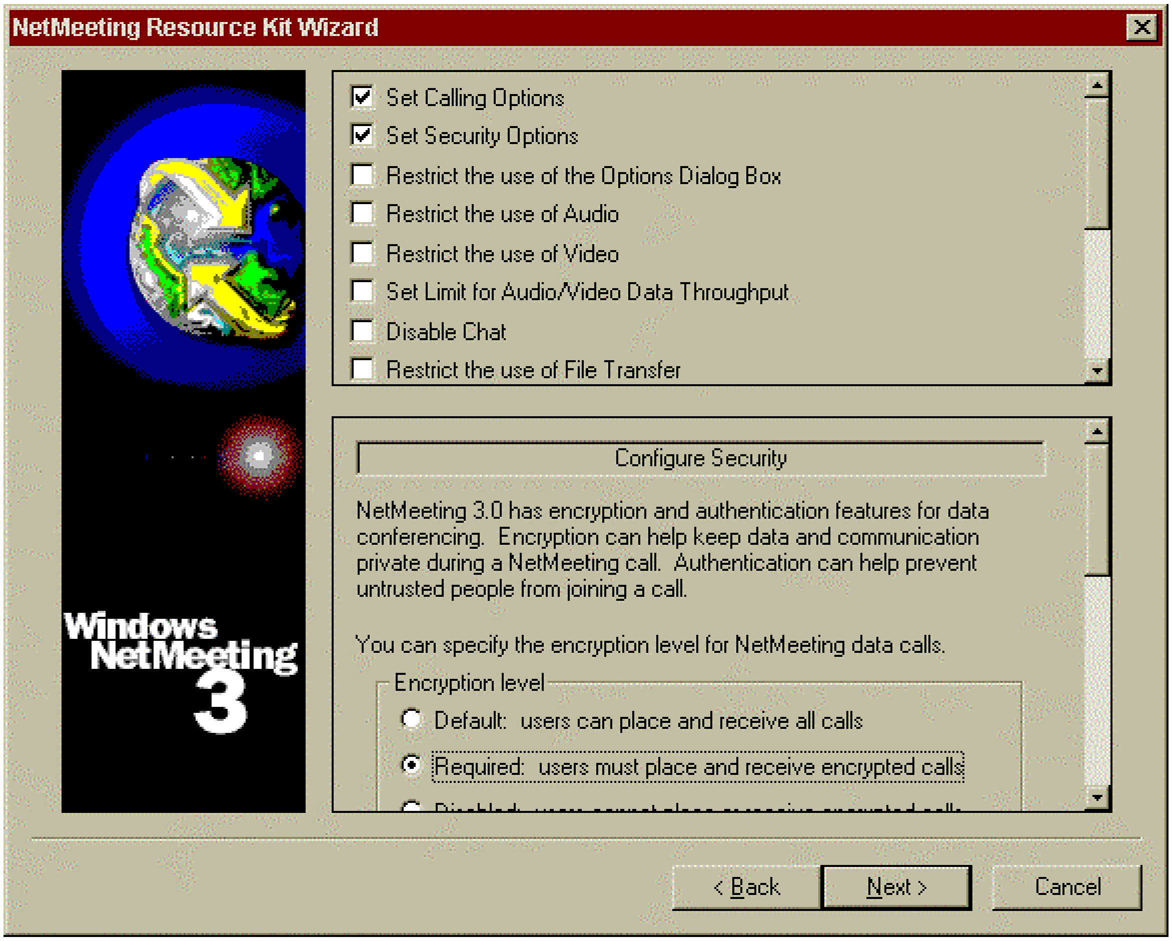
Connection Speed

- ○ 14400 bps modem
- ○ 28800 bps or faster modem
- ○ Cable, xDSL or ISDN
- ● Local Area Network

**Figure 9-8. Set Calling Options 3**

Place a radio button next to your correct network connection speed and continue with the Set Security Options section below.

**Set Security Options**:
Place a check mark in the Set Security Options box. NetMeeting will now display the "Configure Security" options as shown in Figure 9-9 below.



☑ Set Calling Options
☑ Set Security Options
□ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Configure Security

NetMeeting 3.0 has encryption and authentication features for data conferencing. Encryption can help keep data and communication private during a NetMeeting call. Authentication can help prevent untrusted people from joining a call.

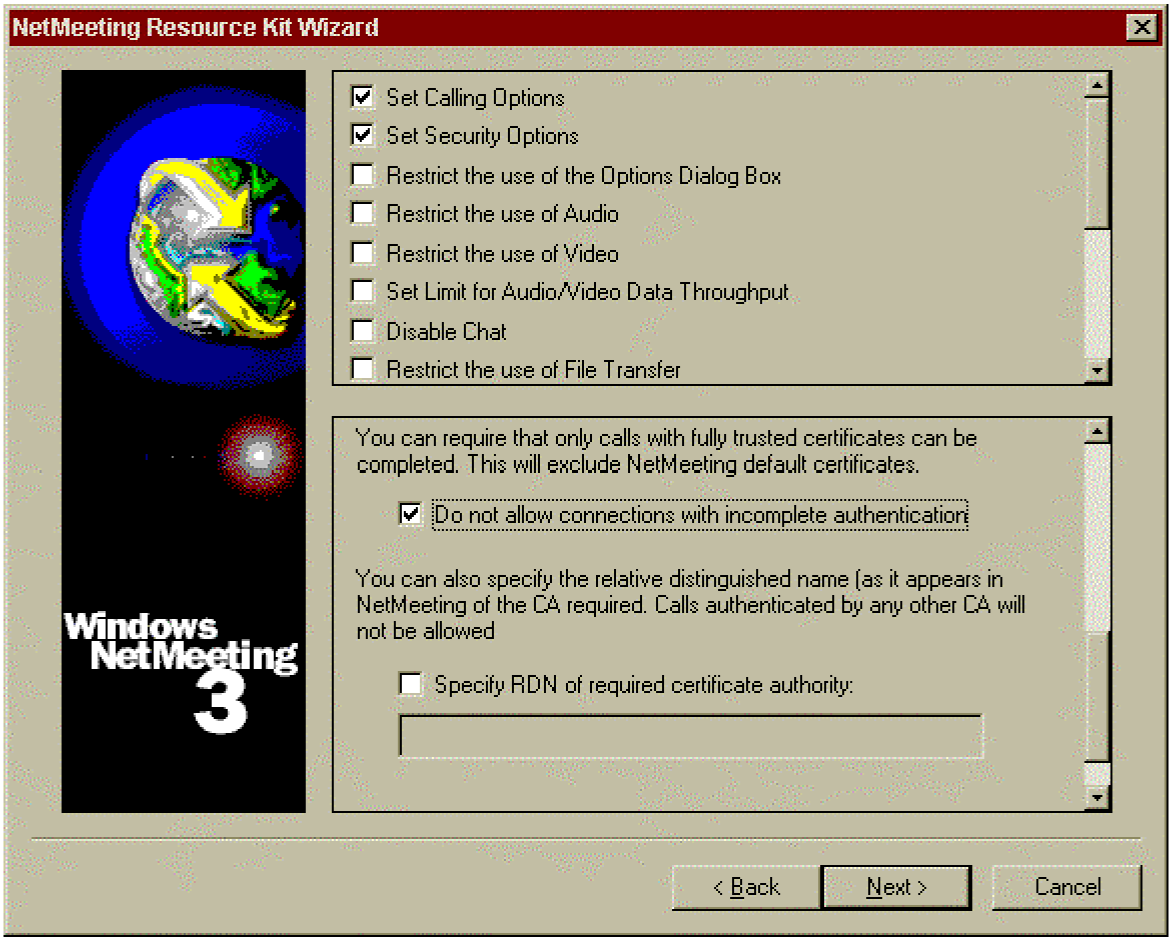
You can specify the encryption level for NetMeeting data calls.

Encryption level

○ Default: users can place and receive all calls
● Required: users must place and receive encrypted calls
○ Disabled: users cannot place or receive encrypted calls

**Figure 9-9. Set Security Options 1**

Place a radio button next to “Required: users must place and receive encrypted calls” and scroll down to next section. Enforce using personal certificates to provide authentication by placing a check mark next to the “Do not allow connections with incomplete authentication” option depicted in Figure 9-10. Although not checked, the “Specify RDN of required certificate authority:” box should be checked when possible. This will force the use of digital certificates and not allow the use of a user’s NetMeeting Certificate. As stated before, the digital certificate is not necessarily bound to the NetMeeting identity.



☑ Set Calling Options
☑ Set Security Options
□ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

You can require that only calls with fully trusted certificates can be completed. This will exclude NetMeeting default certificates.

☑ Do not allow connections with incomplete authentication

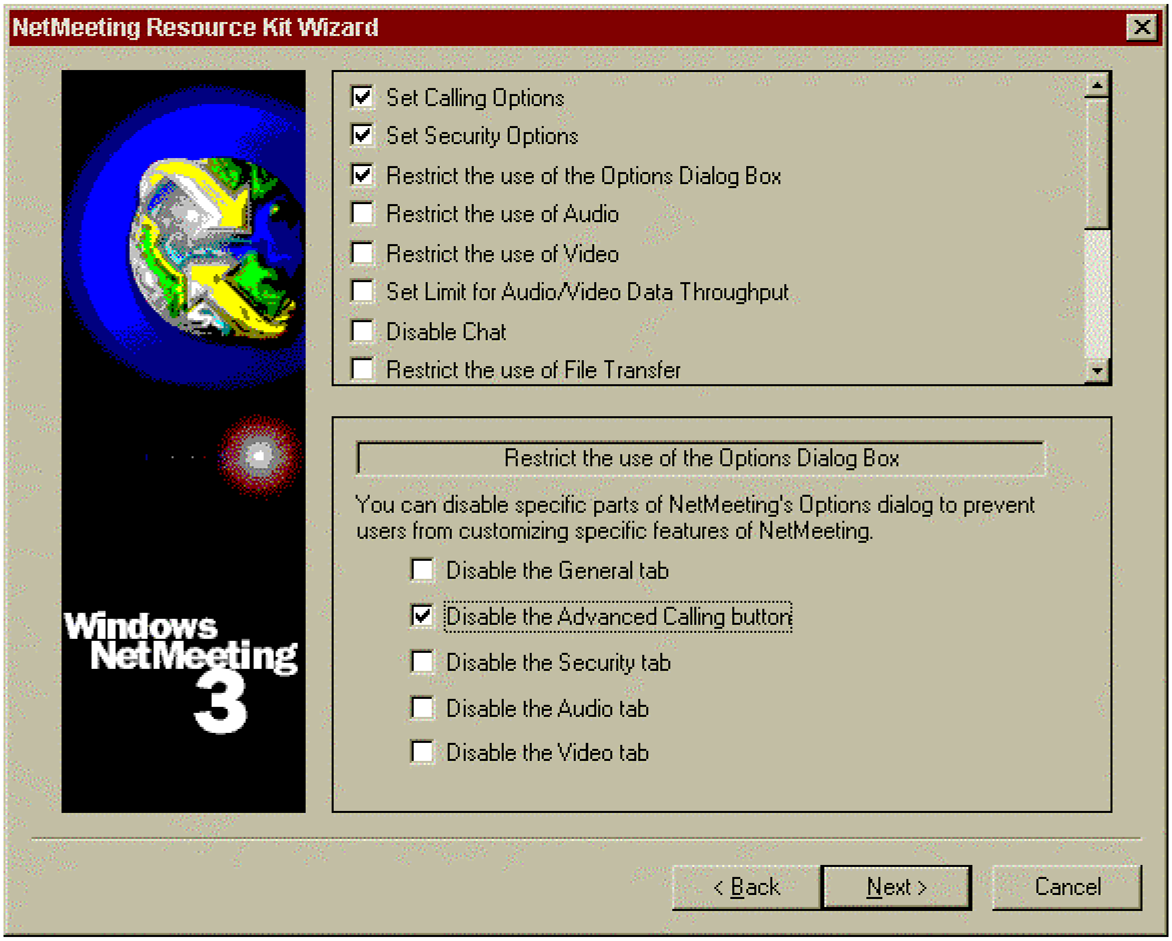
You can also specify the relative distinguished name (as it appears in NetMeeting of the CA required. Calls authenticated by any other CA will not be allowed

□ Specify RDN of required certificate authority:

**Figure 9-10. Set Security Options 2**

### Restrict the use of the Options Dialog Box:

Place a check mark in the box preceding the “Restrict the use of Options Dialog Box” as illustrated in Figure 9-11. Next, place a check mark in the box before “Disable the Advanced Calling Button.”



NetMeeting Resource Kit Wizard

☑ Set Calling Options
☑ Set Security Options
☑ Restrict the use of the Options Dialog Box
□ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Restrict the use of the Options Dialog Box

You can disable specific parts of NetMeeting's Options dialog to prevent users from customizing specific features of NetMeeting.

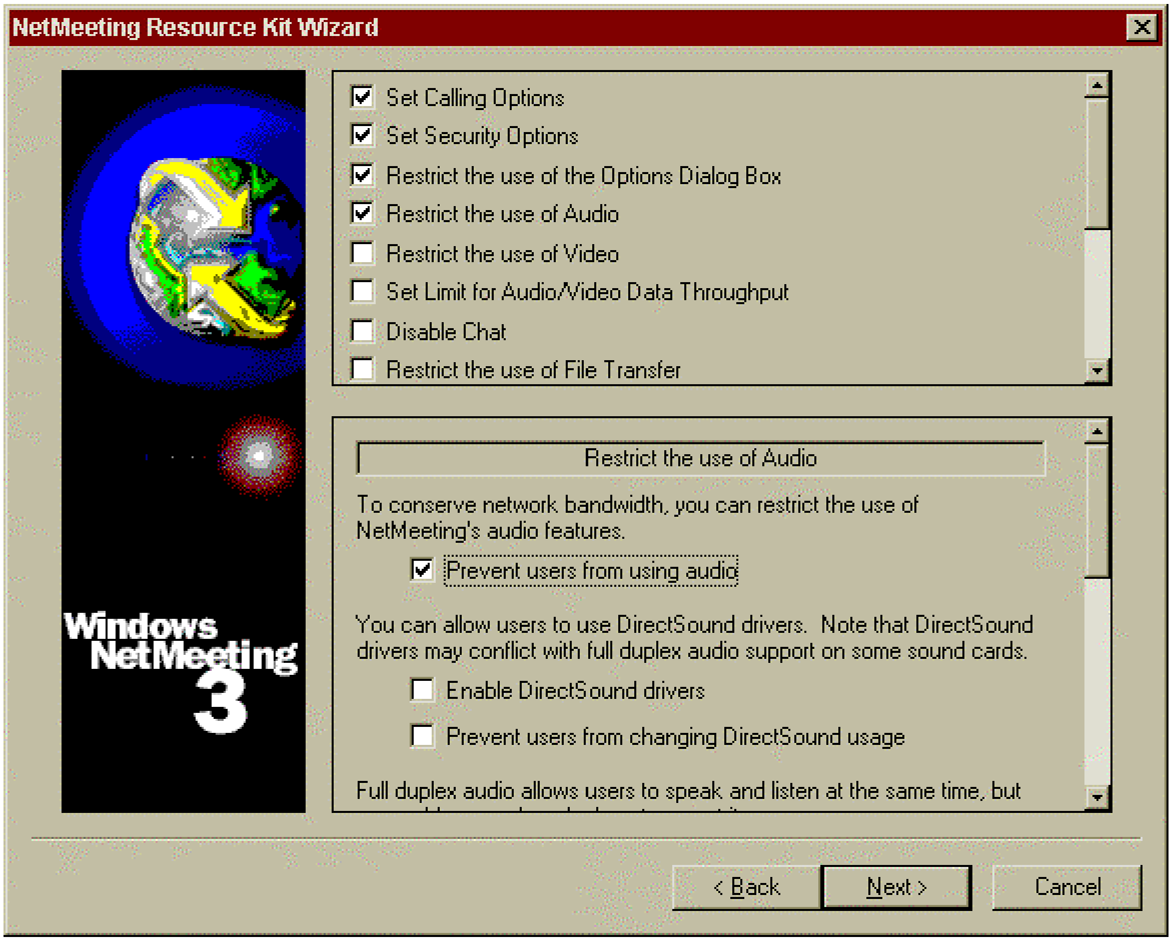
□ Disable the General tab
☑ Disable the Advanced Calling button
□ Disable the Security tab
□ Disable the Audio tab
□ Disable the Video tab

**Figure 9-11. Restrict the use of the Options Dialog Box**

### Restrict the Use of Audio:

Place a check mark before "Restrict the use of Audio" box to display options as illustrated in Figure 9-12[6]. In the section below, place a check mark before "Prevent users from using audio," and click on "Next."

[6] This recommended is made inasmuch as NetMeeting encryption capabilities do not work for audio and video connections. Alternately, VPN technology can be used to provide this functionality.



☑ Set Calling Options
☑ Set Security Options
☑ Restrict the use of the Options Dialog Box
☑ Restrict the use of Audio
□ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Restrict the use of Audio

To conserve network bandwidth, you can restrict the use of NetMeeting's audio features.

☑ Prevent users from using audio

You can allow users to use DirectSound drivers. Note that DirectSound drivers may conflict with full duplex audio support on some sound cards.

□ Enable DirectSound drivers

□ Prevent users from changing DirectSound usage

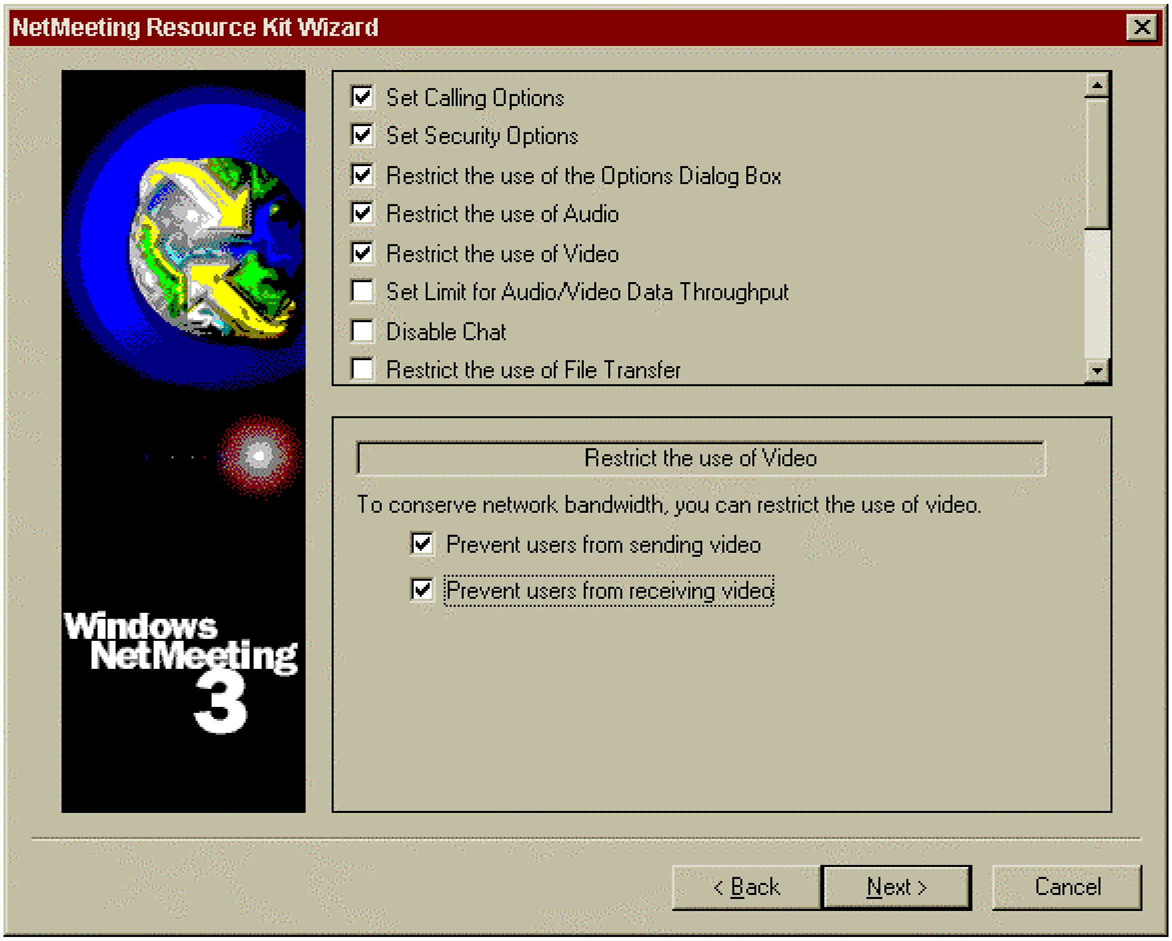
Full duplex audio allows users to speak and listen at the same time, but

**Figure 9-12. Restrict the use of Audio**

### Restrict the use of Video:

Place a check mark before “Restrict the use of Video” option. In the next section, place a check mark before “Prevent users from sending video” and “Prevent uses from receiving video” box as depicted in Figure 9-13[7].

[7] These recommendations are made inasmuch as NetMeeting encryption capabilities do not work for audio and video connections. Alternately, VPN technology can be used to provide this functionality.



NetMeeting Resource Kit Wizard

☑ Set Calling Options
☑ Set Security Options
☑ Restrict the use of the Options Dialog Box
☑ Restrict the use of Audio
☑ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer

Restrict the use of Video

To conserve network bandwidth, you can restrict the use of video.

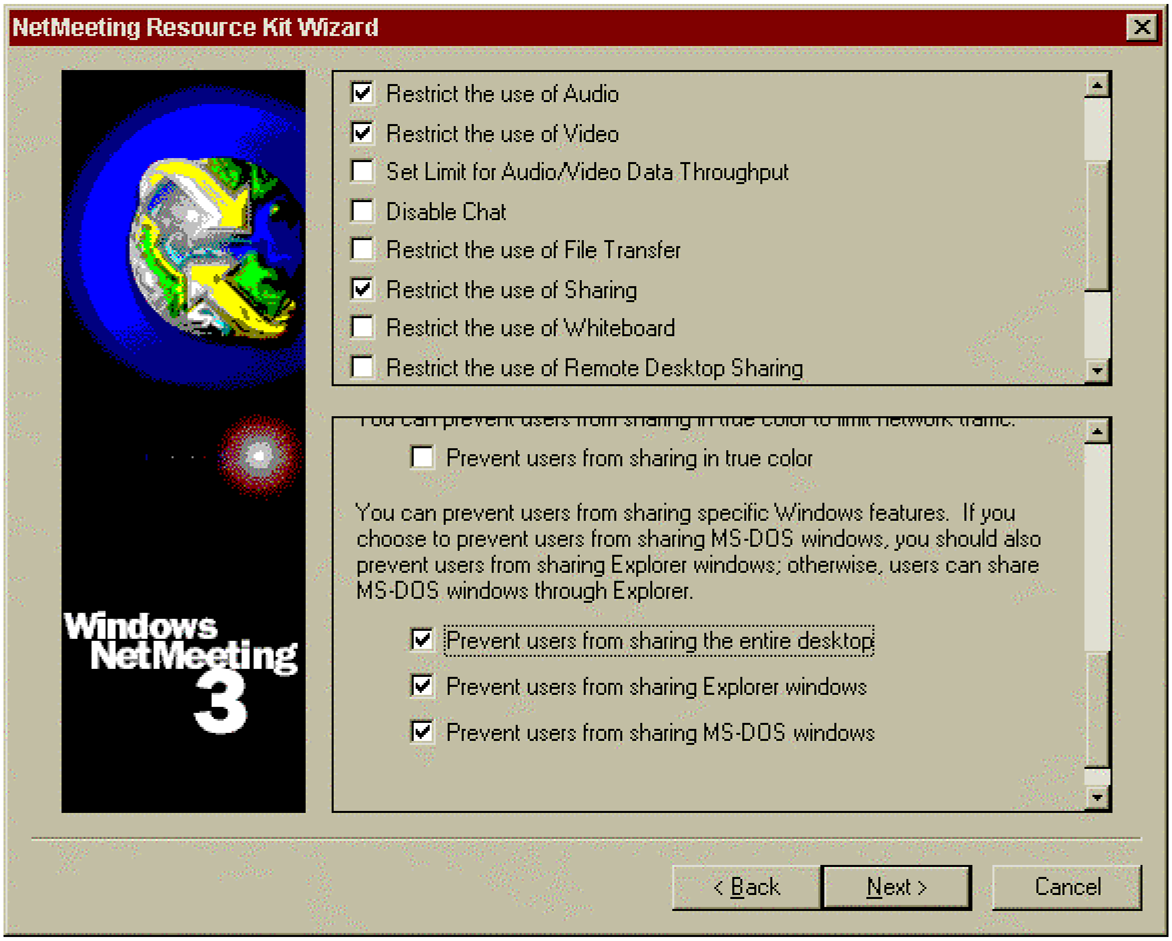
☑ Prevent users from sending video
☑ Prevent users from receiving video

**Figure 9-13. Restrict the use of Video**

There are no security settings for Set Limit for Audio/Video Data Throughput, Disable Chat, or Restrict the use of File Transfer. Go to:

### Restrict the use of Sharing:

Place a check mark in the box before the "Restrict the use of Sharing" option. In the section below, scroll down to the end and place check marks before all three of these options: "Prevent users from sharing the entire desktop," "Prevent users from sharing Explorer windows," and "Prevent users from sharing MS-DOS windows" as illustrated in Figure 9-14.



☑ Restrict the use of Audio
☑ Restrict the use of Video
□ Set Limit for Audio/Video Data Throughput
□ Disable Chat
□ Restrict the use of File Transfer
☑ Restrict the use of Sharing
□ Restrict the use of Whiteboard
□ Restrict the use of Remote Desktop Sharing

You can prevent users from sharing in true color to limit network traffic.

□ Prevent users from sharing in true color

You can prevent users from sharing specific Windows features. If you choose to prevent users from sharing MS-DOS windows, you should also prevent users from sharing Explorer windows; otherwise, users can share MS-DOS windows through Explorer.

☑ Prevent users from sharing the entire desktop
☑ Prevent users from sharing Explorer windows
☑ Prevent users from sharing MS-DOS windows

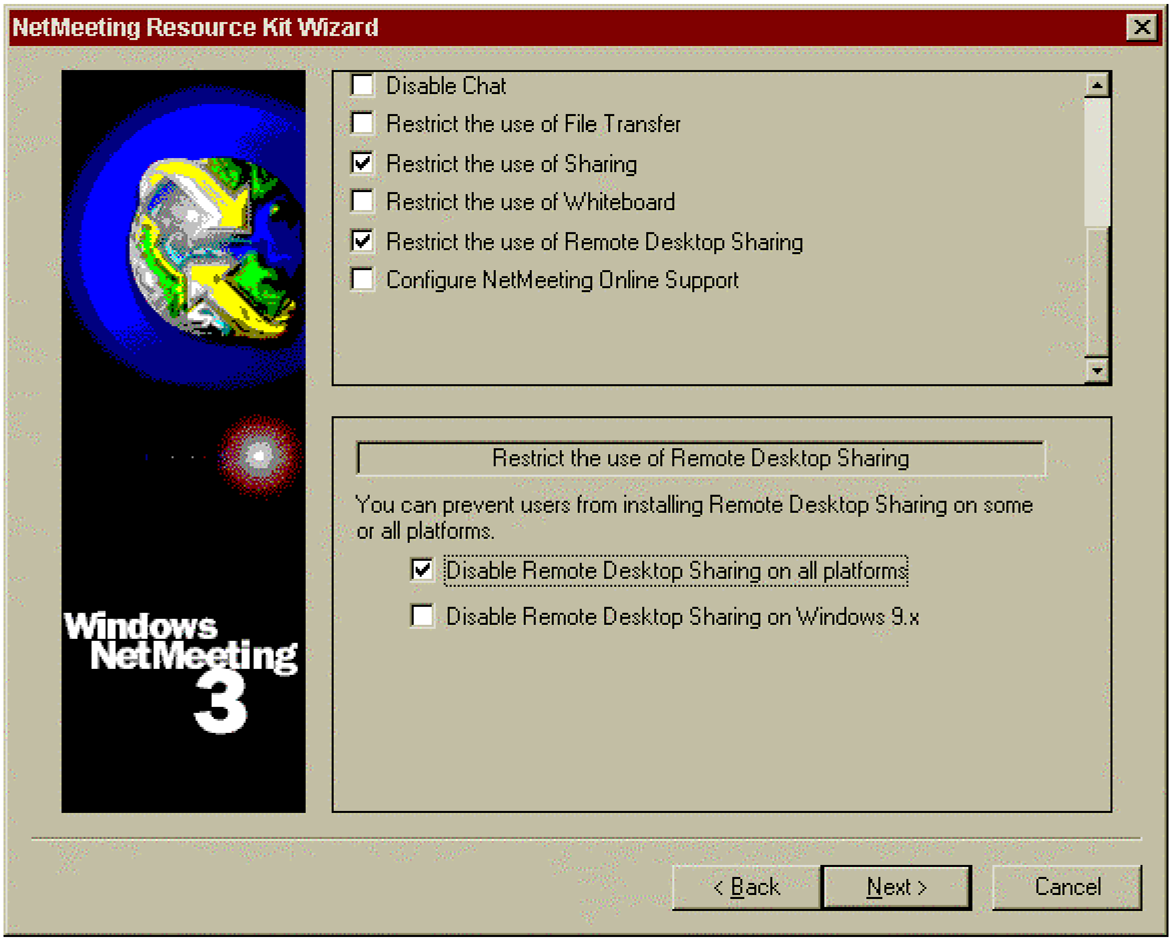
**Figure 9-14. Restrict the use of Sharing**

There are no restrictions on the Whiteboard; go to:

**Restrict the use of Remote Desktop Sharing:**

It is strongly recommended to disable RDS.

Place a check mark before "Restrict the use of Remote Desktop Sharing." In the section below, place a check mark in the box before "Disable Remote Desktop Sharing on all platforms" as depicted in Figure 9-15.



NetMeeting Resource Kit Wizard

☐ Disable Chat
☐ Restrict the use of File Transfer
☑ Restrict the use of Sharing
☐ Restrict the use of Whiteboard
☑ Restrict the use of Remote Desktop Sharing
☐ Configure NetMeeting Online Support

Restrict the use of Remote Desktop Sharing

You can prevent users from installing Remote Desktop Sharing on some or all platforms.

☑ Disable Remote Desktop Sharing on all platforms

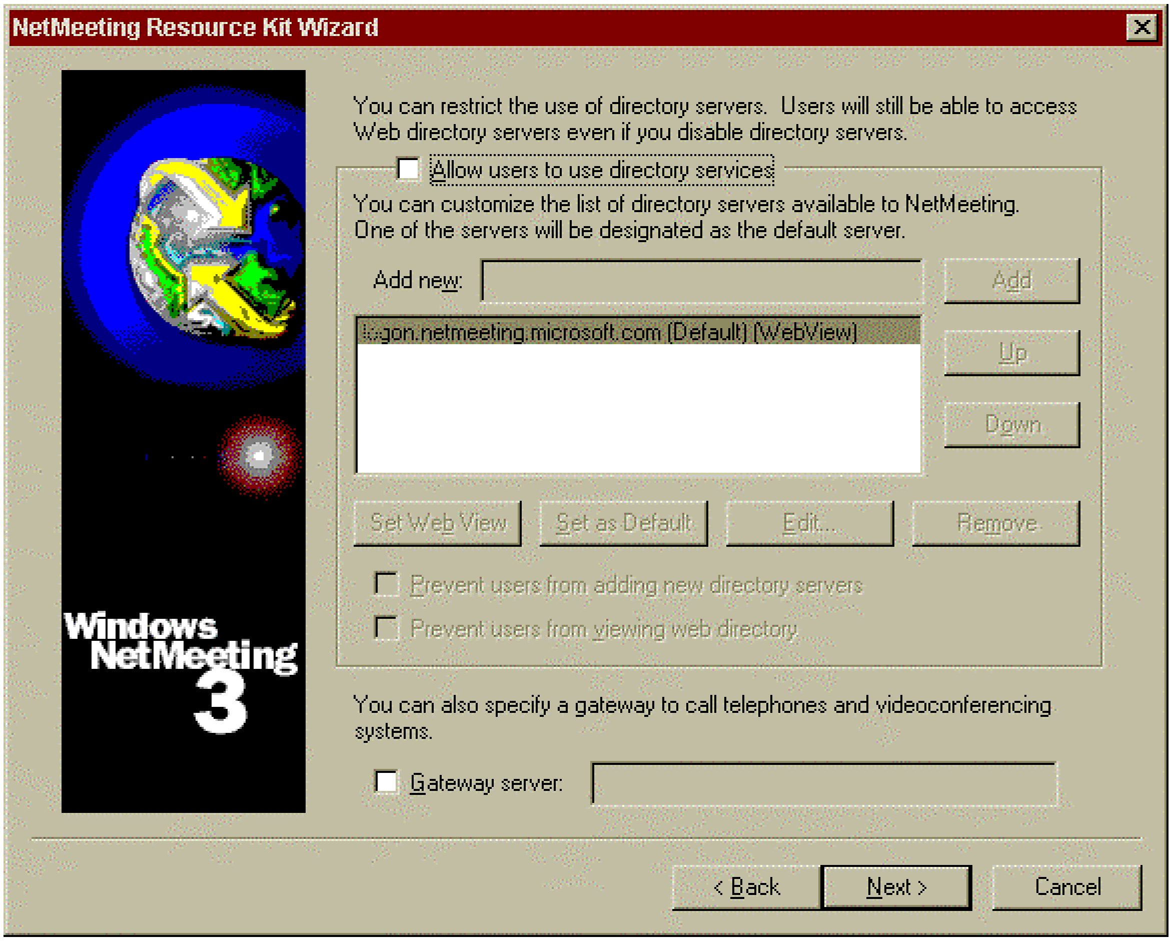
☐ Disable Remote Desktop Sharing on Windows 9.x

**Figure 9-15. Restrict the use of Remote Desktop Sharing**

Do not put a check mark before “Configure NetMeeting Online Support,” click on “Next.”

**Restrict the use of Directory Servers:**

Deselect the check mark in the “Allow users to use directory services” box and click “Next” as depicted in Figure 9-16.



You can restrict the use of directory servers. Users will still be able to access Web directory servers even if you disable directory servers.

□ Allow users to use directory services

You can customize the list of directory servers available to NetMeeting. One of the servers will be designated as the default server.

Add new:

logon.netmeeting.microsoft.com (Default) (WebView)

□ Prevent users from adding new directory servers

□ Prevent users from viewing web directory

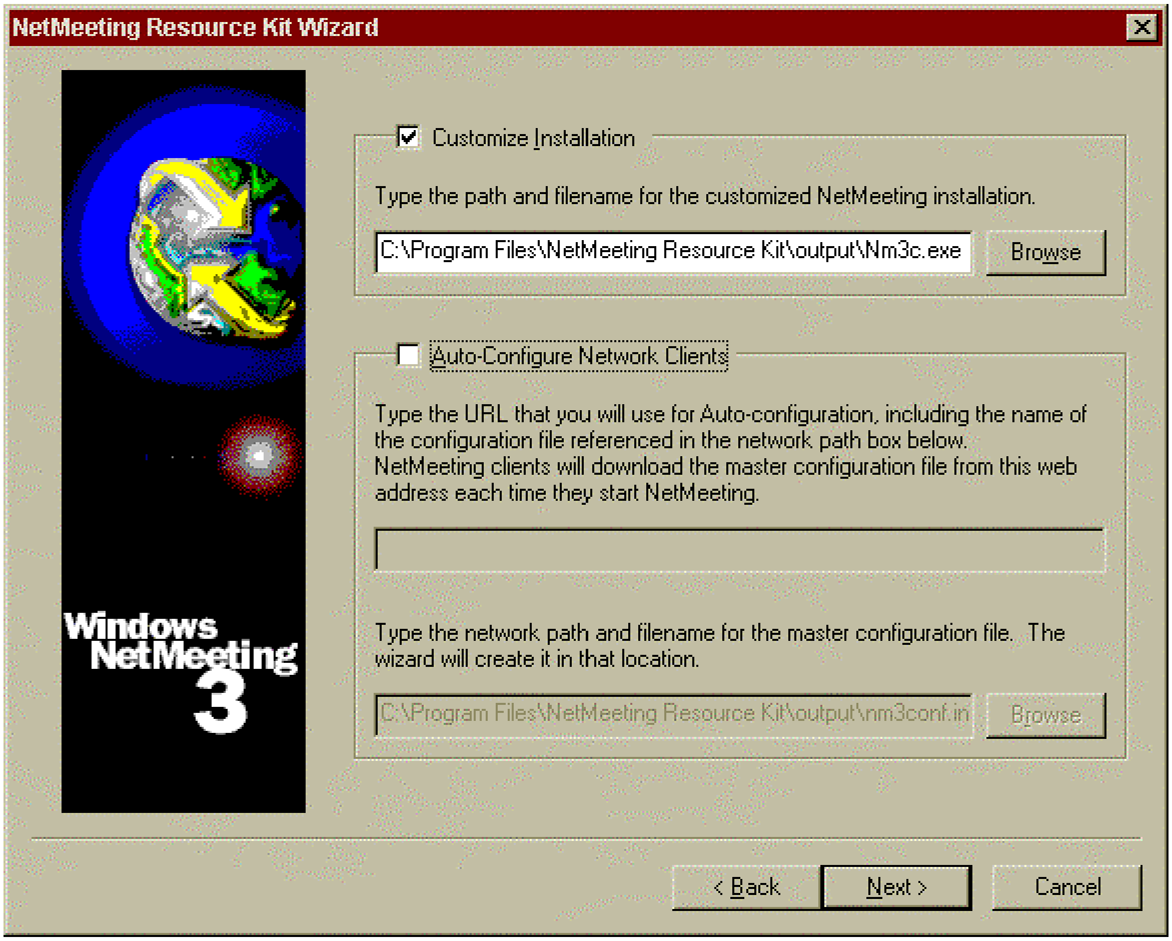
You can also specify a gateway to call telephones and videoconferencing systems.

□ Gateway server:

**Figure 9-16. Restrict the use of Directory Servers**

### Customize Installation:

At this point, the Resource Kit prompts you for a directory to save this profile. Verify there is a check mark in the box before "Customize Installation" and accept the default directory for the installation as illustrated in Figure 9-17. Click "Next." You will be prompted saying the output file does not exist, do you want to create it? Click "Yes."



NetMeeting Resource Kit Wizard

☑ Customize Installation

Type the path and filename for the customized NetMeeting installation.

C:\Program Files\NetMeeting Resource Kit\output\Nm3c.exe

□ Auto-Configure Network Clients

Type the URL that you will use for Auto-configuration, including the name of the configuration file referenced in the network path box below. NetMeeting clients will download the master configuration file from this web address each time they start NetMeeting.

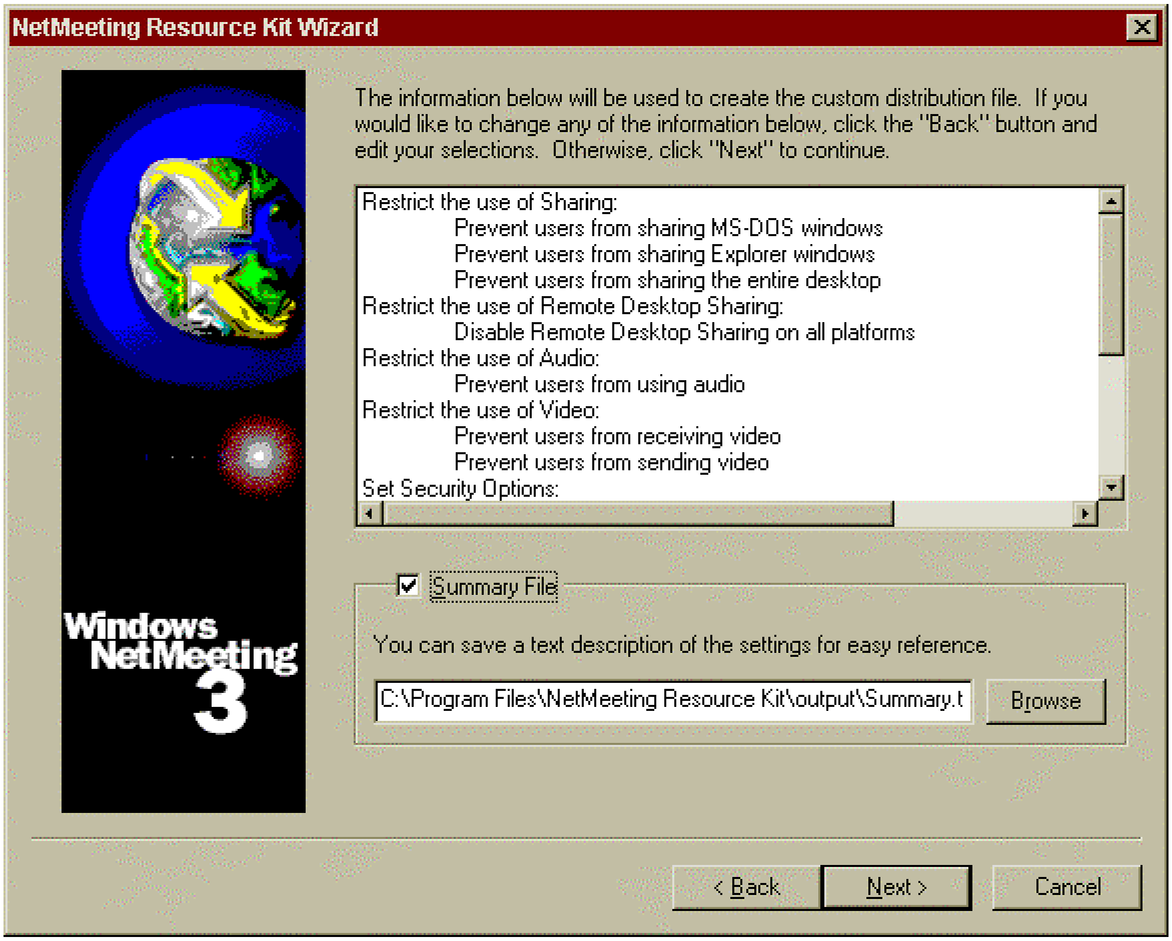
Type the network path and filename for the master configuration file. The wizard will create it in that location.

C:\Program Files\NetMeeting Resource Kit\output\nm3conf.in

**Figure 9-17. Saving Customized Profile**

### Custom Distribution File:

Figures 9-18 and 9-19 illustrate the custom distribution file window consisting of all options **you have selected** for this profile. Review their contents and make certain there is a check mark before "Summary File," click "Next." You will be prompted that the output file does not exist, click "Yes" to create one. The summary file provides an easy-reference text document of all selected options in the newly created profile. Its purpose is to provide a quick reference document, which lists all options selected for that particular profile. When multiple profiles are created to give more access to one group of employees, a system administrator would save the summary file with more specific names, for example, SummaryTechStaff versus SummaryManagers.



The information below will be used to create the custom distribution file. If you would like to change any of the information below, click the "Back" button and edit your selections. Otherwise, click "Next" to continue.

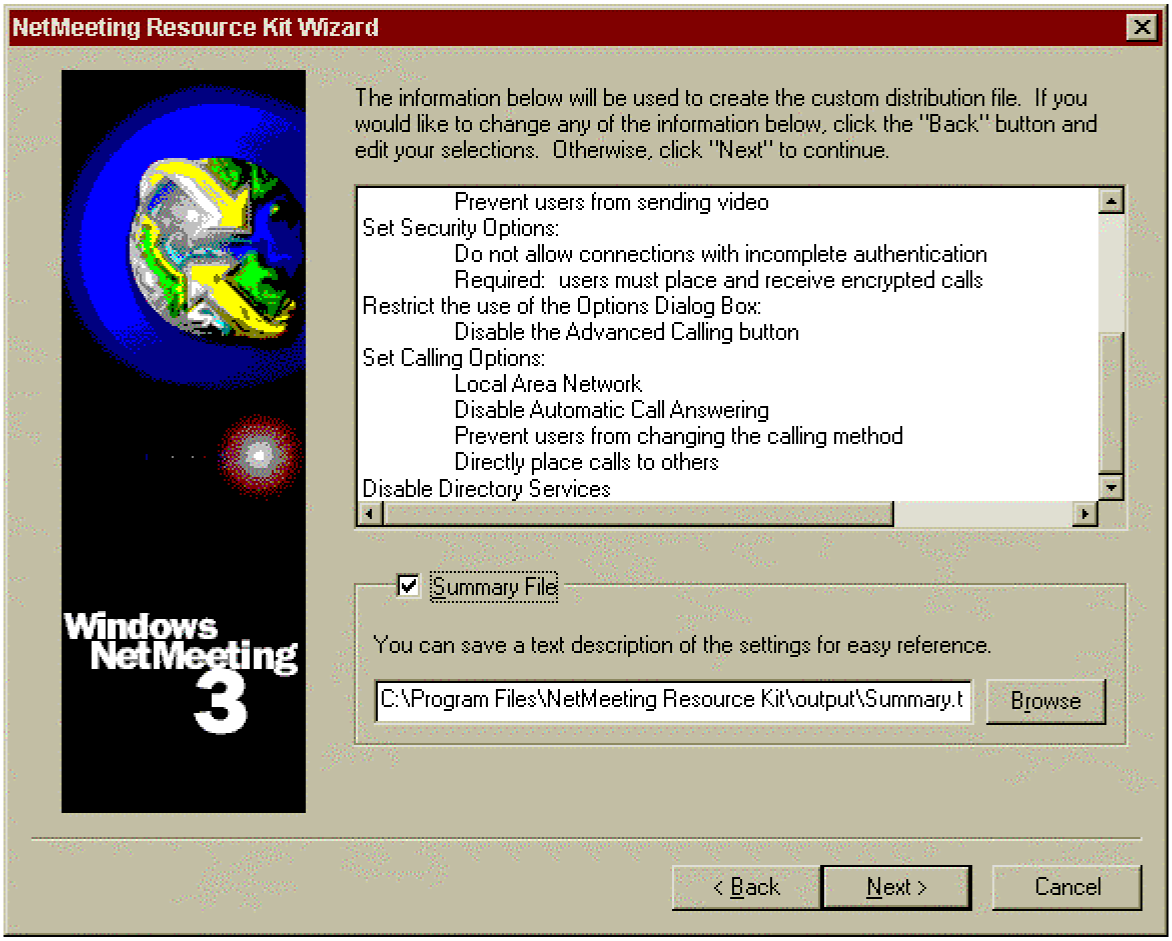
```
Restrict the use of Sharing:
        Prevent users from sharing MS-DOS windows
        Prevent users from sharing Explorer windows
        Prevent users from sharing the entire desktop
Restrict the use of Remote Desktop Sharing:
        Disable Remote Desktop Sharing on all platforms
Restrict the use of Audio:
        Prevent users from using audio
Restrict the use of Video:
        Prevent users from receiving video
        Prevent users from sending video
Set Security Options:
```

☑ Summary File

You can save a text description of the settings for easy reference.

C:\Program Files\NetMeeting Resource Kit\output\Summary.t

**Figure 9-18. Custom Distribution File 1**



NetMeeting Resource Kit Wizard

The information below will be used to create the custom distribution file. If you would like to change any of the information below, click the "Back" button and edit your selections. Otherwise, click "Next" to continue.

```
        Prevent users from sending video
Set Security Options:
        Do not allow connections with incomplete authentication
        Required:  users must place and receive encrypted calls
Restrict the use of the Options Dialog Box:
        Disable the Advanced Calling button
Set Calling Options:
        Local Area Network
        Disable Automatic Call Answering
        Prevent users from changing the calling method
        Directly place calls to others
Disable Directory Services
```

☑ Summary File

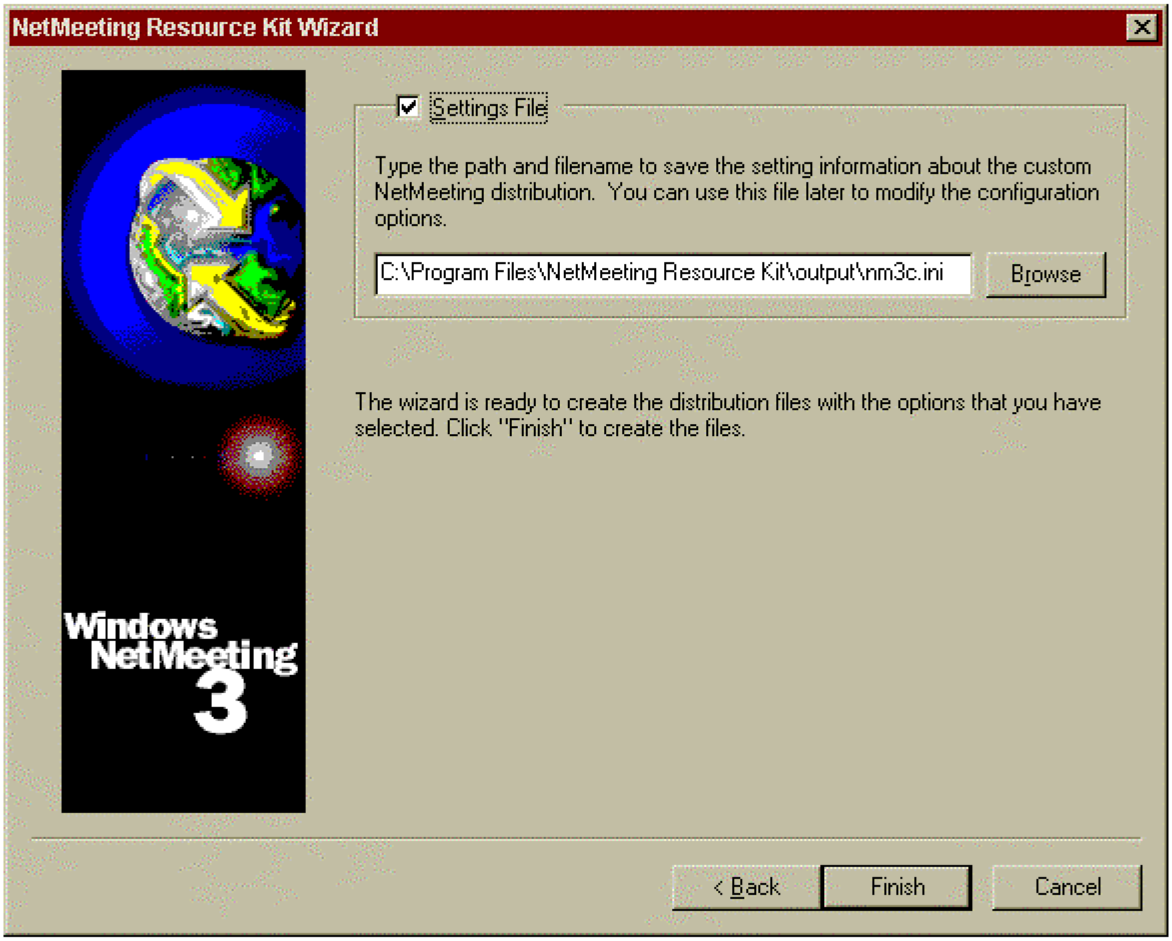
You can save a text description of the settings for easy reference.

C:\Program Files\NetMeeting Resource Kit\output\Summary.t

**Figure 9-19. Custom Distribution File 2**

### Settings File:

The final step is creating the settings file as depicted in Figure 9-20. Verify there is a check mark before the “Setting File” option, and click “Finish” to create the file. If you are prompted that the file does not exist, click “Yes” to create it.



☑ Settings File

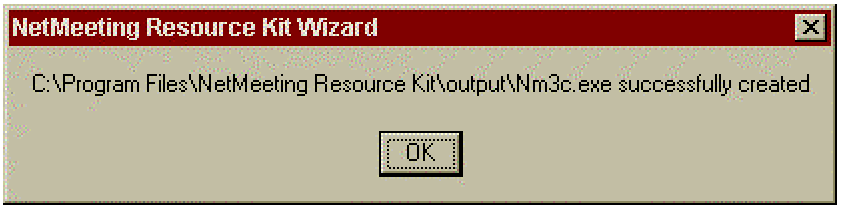
Type the path and filename to save the setting information about the custom NetMeeting distribution. You can use this file later to modify the configuration options.

C:\Program Files\NetMeeting Resource Kit\output\nm3c.ini

The wizard is ready to create the distribution files with the options that you have selected. Click "Finish" to create the files.

**Figure 9-20. Settings File**

The final screen in the NetMeeting Resource Kit Wizard is depicted in Figure 9-21. Click on "OK."



C:\Program Files\NetMeeting Resource Kit\output\Nm3c.exe successfully created

**Figure 9-21. Successfully Created**

The distribution profile should either be distributed to all users or placed in a folder where they can access it for installation.  Once they download the Nm3c.exe, they need to double-click on it to install the profile.

# Glossary

| | |
|---|---|
| **CA** | Certificate Authority |
| **CAPI** | Crypto API |
| **COIs** | Communities of Interest |
| **I&A** | Identification and Authentication |
| **IC** | Intelligence Community |
| **IE** | Internet Explorer |
| **ILS** | Internet Locator Service |
| **IP** | Internet Protocol |
| **ISDN** | Integrated Services Digital Network |
| **ISP** | Internet Service Provider |
| **LAN** | Local-Area Network |
| **LDAP** | Lightweight Directory Access Protocol |
| **NMRK** | NetMeeting Resource Kit |
| **RDS** | Remote Desktop Sharing |
| **SDK** | Software Developer’s Kit |
| **TCP/IP** | Transport Control Protocol and Internet Protocol |
| **UI** | User Interface |
| **VPN** | Virtual Private Network |

# Revisions

**Version 1.11.** Added warnings and trademark sections.

**Version 1.12**. Provided detail regarding the use of the NetMeeting RDS Users Group for controlling access to Windows NT/2000 computers via the Remote Desktop Sharing feature and mentioned how Windows 2000 group policy can be utilized to control various NetMeeting settings.

**Version 1.13.** Corrected a problem with page numbering and removed a superfluous entry from the table of contents.

**Version 1.14.**

- Clarified that the document was written based upon the service pack 1 release
- Expanded on the need for enabling the screen saver password protection option when using RDS
- Added a warning concerning the need for physical security for workstations being accessed by RDS
- Modified the cover page