



PC-Duo Master Guide

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This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>), cryptographic software written by Eric Young (eay@cryptsoft.com), and compression software from the ZLIB project (<http://www.zlib.net/>)

Table of Contents

PC-Duo Master Guide	1
Table of Contents	2
PC-Duo overview	10
What's New in PC-Duo 12.7	11
What's New in PC-Duo 12.6	15
What's New in Earlier Versions of PC-Duo 12	16
What's New in PC-Duo 11.5	16
PC-Duo solutions.....	18
PC-Duo Express Edition	18
PC-Duo Enterprise Edition.....	18
PC-Duo On-Demand Edition	18
PC-Duo applications.....	19
PC-Duo Host.....	20
PC-Duo Host for Remote Desktop Services (RDS).....	21
PC-Duo Host for VDI.....	22
PC-Duo Host on Demand	23
PC-Duo Master	24
PC-Duo Gateway	25
PC-Duo Web Console.....	26
PC-Duo Master on Demand	27
PC-Duo Deployment Tool.....	27
<i>PC-Duo technologies.....</i>	28
<i>PC-Duo services.....</i>	29
<i>PC-Duo connection types.....</i>	30
RDP session sharing: Follow the active session	30
Peer-to-peer connections	30
Gateway-managed connections	32
Firewall-friendly connections	33
Remote Desktop Services connections	33
Root Host for RDS sessions	34
Recording RDS Hosts	34
Limitations of Hosts for RDS	35
VDI connections.....	35
VNC connections	36
Host on Demand connections.....	36

<i>PC-Duo security features</i>	37
Authentication	37
Authorization	40
Auditing	40
Encryption	40
<i>PC-Duo networking features</i>	42
Network protocols	42
Network addressing schemas.....	42
Wake-on-LAN support	42
<i>PC-Duo documentation and technical support</i>	44
Typographical conventions in documentation	44
Technical support options	45
Master Installation	47
Requirements	48
Operating system requirements	48
Hardware requirements.....	48
Other requirements	48
Network requirements	49
Display considerations	50
Support for multiple monitors	50
Installation notes	51
Install via internet download.....	51
Install via PC-Duo Deployment Tool	51
MSIEXEC variables	51
Start options	53
Licensing	54
Add a license key before your trial period expires	54
Add a license key after your trial period expires	54
Upgrade your license	55
Master Operation	57
Host status icons	58
Tool bar options	59
Peer-to-Peer Hosts tab.....	60
Type the station or address.....	61
Select from automatic polling list	62
Search using custom polling list.....	63
Create a search for peer-to-peer Host computers	63

Create a UDP/IP search.....	64
Create a UDP/IP broadcast to IPv4 address	64
Create a UDP/IP scan IPv4 range of addresses	65
UDP/IP Polling Range - Scan IPv4 address range.....	66
Create a UDP/IP broadcast to IPv6 link-local multicast address	66
UDP/IP Polling Range - Broadcast to IPv6 link-local multicast address.....	67
Create a UDP/IP broadcast to IPv6 site-local multicast address.....	67
UDP/IP Polling Range - Broadcast to IPv6 site-local multicast address	68
Create a UDP/IP Poll single computer (at one IPv6 address)	68
UDP/IP Polling Range - Poll single computer (at one IPv6 address)	69
Group one or more saved searches	69
Manual polling	70
Gateway Hosts tab	72
Connect to a Gateway Host	73
Record screen activity on a Gateway Host.....	74
Host Recordings list	74
Begin recording	74
Adjust the time span for recording	76
Stop recording.....	76
Play a recording.....	76
Play a recording from the PC-Duo Gateway.....	76
Play a recording from a file	76
Delete a recording.....	76
Add a Gateway.....	77
Pre-defined (administrator-supplied) Gateways.....	79
Manage access rights to a Gateway Host	80
Send Wake-on-LAN Signal.....	80
Active Connections tab	82
Connection menu from the Active Connections tab.....	82
History tab	84
Favorites tab	86
Connection menu from the Favorites tab.....	86
Properties of favorite Host computers.....	87
Connection tab	87
Connect As tab.....	90
Cycling Monitor Hosts tab.....	92
Connection menu from the Cycling Monitor Hosts tab	93

Add Host computers.....	93
Sort Host computers	93
Connect to Host computers.....	93
Cycle through the Cycling Monitor Hosts list	93
Open Cycling Monitor.....	93
Remove Host computers.....	94
Clear all Host computers.....	94
VNC Hosts	95
Peer-to-Peer Connections to VNC Server	95
Command Line Support for VNC Hosts	97
Menu options.....	98
Connection	98
Connect	99
Connecting with different credentials	99
Enter Network Password window	100
Record.....	100
Stop Recording	100
Play Recording.....	100
Delete Recording	100
Export Recording	100
Add to Favorites	101
Save as Shortcut.....	101
Properties	102
Edit	104
View.....	104
User interface elements in the PC-Duo Master console window.....	105
Tabs in the PC-Duo Master console window	105
Icon viewing options.....	105
Gateway	106
Options	106
Master Settings	106
Peer-to-Peer Hosts	106
Gateway Hosts	107
History	108
Clipboard	109
Remote Printing	110
Keyboard Mapping	110

Commands.....	111
Accelerator and Special Hot Key	111
Remove	112
Restore Default	112
Restore All.....	112
To restore all key mappings to the default settings, click Restore All.....	112
Default Connection Window Settings.....	112
Connection	112
Startup.....	113
Remote Control	114
Effects	117
File Transfer	118
Cycling Monitor Settings	119
General.....	119
Cycling Monitor Settings	120
Default Playback Window Settings	121
Goto.....	123
Help	123
Help Topics	123
Vector Networks Home Page.....	123
Check for Updates and Maintenance Releases	124
Purchase Additional Licenses	124
Order Technical Support Contract	124
Connection Window Operation	127
Remote Control tab	128
Toolbar options	128
Copy information to the remote clipboard.....	130
Selection to transfer from local computer	130
Selection transferred to Host computer	131
Copy information from the remote clipboard	131
Operate your mouse on the remote Host computer	132
Fit-to-Window	132
Resize the PC-Duo Master Connection Window	133
Request/release input control	133
Open chat window	133
Capture a screen image from the Host computer display	133
Copy text from the Host computer display.....	134

Use CTRL-ALT-DEL and other special keys on the remote computer	134
Automatically reconnect when a connection drops	135
File Transfer tab	135
Tool bar options	136
File transfer resume	137
File transfer resume - Confirm Copy Resume dialog	138
File transfer overwrite	138
Manipulate files and folders for file transfer	139
Remote Printing tab	140
Tool bar options	141
Configure Remote Printing settings on your local computer	142
Configure Remote Printing settings on a Host computer	143
Print from Host to one or more Masters	143
Print from Master to one or more Hosts	144
Printing to mixed Host and Master targets	145
Printing when there are no valid targets	145
Send a saved print job file over a remote printing connection	146
Tool bar options	149
Hardware Manager	149
BIOS	151
Bus	152
Cache Memory	154
CDROM Drive	156
CPU	158
Logical Disk	160
Logical Disk Changes	162
Memory Devices	164
Modem	166
Network Adapter Configuration	168
Network Adapters	170
PCMCIA Devices	172
Physical Disk	173
System Enclosure	180
Software Manager	185
System Manager	187
Computer System	188
Desktop	190

Event Log Files	191
Network Login Profile	193
Operating System	195
Operating System Updates (QFE)	197
Page File	198
Page File Usage.....	200
Tasks Scheduled.....	200
TCP/IP Settings.....	202
Time Zone	203
Shared Resource Manager.....	204
Shares.....	205
Account Manager.....	206
Groups.....	206
Service Manager.....	208
Services.....	209
Process Manager.....	211
Registry Manager.....	214
Event Manager.....	215
Event Logs	215
Event Records.....	216
Power Manager.....	217
Power Summary.....	218
Shutdown Manager.....	219
Commands.....	220
Power Scheme Manager - XP.....	220
Global Settings.....	221
User Account Settings - Not in Power Scheme	221
User Account Settings - Power Scheme.....	222
Commands.....	223
Power Scheme Manager - Vista/Win7	224
Power Scheme Settings.....	224
Commands.....	225
Menu options	226
Playback Window Operation	231
Tool bar options	232
Playback options	234
Play a recording from the PC-Duo Gateway.....	234

Play a recording from a local disk file	234
Play a recording from a web server	235
Play a recording using command line utility.....	236
Playback window settings	238
Recording properties.....	240
Gateway properties	241
Delete options	242
Recording format options	243
Menu options.....	244
Cycling Monitor Window Operation.....	247
Tool bar options	248
Menu options.....	250
Command Line Configuration	253
Command line options.....	254
<i>Command line option values and syntax</i>	254
<i>Command line syntax examples</i>	257
Table below describes a set of full command-line calls.....	257

PC-Duo overview

Thank you for selecting PC-Duo remote desktop solutions.

PC-Duo remote desktop solutions provide professional features that enable helpdesk technicians, network administrators, IT managers, and software trainers to deliver professional remote support for a fraction of the cost of hosted solutions.

Some selected features include:

- ◆ **Remote Access:** Reach anyone, anywhere, anytime using firewall- and NAT-friendly remote control connections.
- ◆ **Remote Control:** Diagnose and resolve support issues without having to physically visit remote computer.
- ◆ **Remote Management:** Repair remote computers and make configuration changes in real-time and without disturbing currently logged-on user.
- ◆ **Collaboration:** Enable two or more technicians to work on the same remote computer at the same time using chat, screen-sharing and easy-to-pass remote support.

NOTE: Before you use PC-Duo remote desktop solutions, you should be familiar with basic network concepts, such as protocols, encryption, IP addresses, ports, and subnets.

To learn more about PC-Duo remote desktop solutions, see:

- ◆ "What's New"
- ◆ "PC-Duo solutions"
- ◆ "PC-Duo applications"
- ◆ "PC-Duo technologies"
- ◆ "PC-Duo services"
- ◆ "PC-Duo connection types"
- ◆ "PC-Duo security features"
- ◆ "PC-Duo networking features"
- ◆ "PC-Duo documentation and technical support"

What's New in PC-Duo 12.7

Note: Some terminology was changed in PC-Duo v12.7 in order to keep current and to be more accurate. This included changing “Terminal Services” to “Remote Desktop Services (RDS)”. This Host is now referred to as, “Host for RDS”. “PC-Duo Remote Desktop” is now simply “PC-Duo Master” or “PC-Duo Master on Demand” if launched from the Web Console.

PC-Duo 12.7 introduces the following new features and capabilities:

- **Official support for Windows 10:** This release fully supports Microsoft's Windows version 10 and the new Edge browser.
- **All new Remote Printing:** The Remote Printing feature has been completely redesigned and re-written to remove all previous restrictions. Remote Printing no longer requires matching print drivers on Host and Master; can print both from Host to Master and from Master to Host; works on all Windows operating systems (desktop and server) and editions (x86 and x64) supported by PC-Duo v12.7.
- **Master on Demand for Macintosh:** Native Macintosh application that provides Connection Window and Recording Playback functionality on the Macintosh. This application is downloaded and installed from the Web Console, and is launched when a “connect” link is selected in the Web Console.
- **Ability to export data from the Web Console:** You can now export tables directly from the Web Console to a CSV or XLSX file.
- **Asynchronous notifications in Web Console:** The Web Console introduces a way for asynchronous notifications to be delivered to the user. When a notification is available, a new “Notification” icon appears in the top-level toolbar. Clicking on it provides details.
- **Security hardened Web Console:** The Web Console has undergone a major security review and overhaul. Issues addressed include enhanced protection against Cross Site Request Forgery (CSRF), Cross-Site Scripting (XSS) attack, and SQL injection attacks. (*Thanks to Ezenta A/S, ezenta.com, for working with us to improve security.*)
- **Password guessing lockout:** The PC-Duo Networking component now automatically locks out connection requests from any IP address that fails to authenticate after a certain number of attempts in a certain amount of time. This prevents scripted attempts to guess passwords.
- **Deploy and update pre-installed Master Gateway Configurations:** The Deployment Tool now allows you to define one or more Gateway configurations to deploy along with the installation of the Master. Also, there is now the ability to define a new or updated set of Gateway configurations and push them out to

existing installations of Master. Up until now, the installed Master was not ready for Gateway based connections until someone manually added a Gateway configuration.

- **Export / Import of Deployment Tool settings:** You now have the ability to export and re-import important settings for the Deployment Tool via a JSON-formatted text file. This makes copying state from one machine to another much more straightforward.
- **Remote Printing module now available for download from the Web Console:** The Remote Printing Support installation file can now be downloaded directly from the Web Console. This is extremely useful if you want to enable Remote Printing for the Host on Demand or on any machine that the Remote Printing support has not previously been installed.
- **Forms Authentication:** In addition to Windows Authentication, the Web Console now supports Forms authentication. Basic authentication is no longer supported. This makes logout and “Login As” more robust and reliable. It also enables Apple products to work more reliably with the Web Console. From an end-user’s perspective, Forms and Basic authentication methods are functionally equivalent.
- **Master auto-connect for Remote Printing is now optional:** The installed Master now has an option to not auto-connect the Remote Printing service. This appears in the Options > Master Settings dialog, in a new tab “Remote Printing”. This feature is added primarily to ensure that administrators/supervisors can continue to connect to a user/agent in a “stealth” manner, without them being alerted.
- **Selectively install Remote Printing:** The Host and Master installers now make the Remote Printing feature optional. The installer dialog provides the option, with the default to install all components. The MSIEXEC command line also allows for this option.
- **Analytics default period now covers past 24 hours:** Instead of displaying a 24-hour period covering 12:00 AM of the current day to 12:00 AM of the following day, “Analytics” reports will now default to showing the past 24-hours based on your local time zone.
- **Improved and more intuitive searching in Web Console:** The global Find Host search box now behaves more like the extremely well received installed Master “filter” functionality. In addition, search boxes throughout the WC no longer require wildcard characters (“A*/G*/N”) to search for a partial name.
- **Host installation default settings improvement:** In an effort to improve the user experience just out of the box, a clean installation of the PC-Duo Host will now have a default Station Name configured with the macro %NAME% instead of the machine name at time of installation. This change will allow the Host’s Station Name to automatically be updated if

the machine name changes. Also, the IPX protocol will now be disabled by default.

- **Web Console's "Host Details" popup includes more information:** For convenience, and completeness, the "Host Details" dialog popup will now include the "Machine Name" and "User" information.
- **Gateway Server now verifies SPNs:** When the Gateway server service starts, it now does a check to verify the registered SPNs for the Gateway service and audit logs any issues or errors. Also, the CheckSPNs utility program now has improved messaging.
- **Re-enabled Firefox ClickOnce support:** Upon request to Vector Networks support team, a Web Console administrator can enable the Host on Demand and ClickOnce connection window to be available in the Firefox browser. Support for this browser had been halted when Microsoft withdrew their ClickOnce "addin". We can now enable use of this browser with certain caveats.
- **Improved Host status reporting logic for multiple Gateway entries:** Host logic to correctly report to a Gateway where multiple configurations refer to the same Gateway has been improved. Specifically the number of connections made by the Host to that Gateway have been reduced.
- **iOS app published to the Apple app store:** The "PROXY Remote" app for iOS has been published to the Apple app store. It includes support for Web Console Forms authentication mode, including credentials autofill. Minor defects have also been fixed around navigation and cancelation of Web Console validation while adding or editing a Web Console entry.
- **Web Console now has the option to display more rows per page:** The Web Console had previously been restricted to showing a maximum of 50 rows per page. This has been expanded to now allow for 100, 150 and 250 rows per page. The setting for this is in the Web Console "Settings" page.
- **Updated SSL/TLS support:** The latest OpenSSL libraries have been incorporated - (v1.0.2g). Customers with internet-facing Gateway Servers listening are encouraged to upgrade to this release.
- **Automatic reconnect to Hosts:** Upon an unexpected dropped connection to a Host, both the installed and Windows ClickOnce Master will automatically attempt to reconnect to the Host.
- **Host on Demand for Macintosh:** Host for Macintosh has many improvements, including improved Permission to Connect user experience and support for recording the Host.

- **Significantly smaller Host on Demand download package:** The download package for the Windows Host on Demand ClickOnce application has been reduced to almost a 3rd of its former size, allowing for much faster downloads.
- **iOS Master for iOS application:** The Master for iOS application is called, PC-Duo Master and is compatible with iOS 9. Both 32-bit and 64-bit binaries are now built. Included are various bug-fixes and enhancements to improve stability.

Note: Version 9.0.1106 (released October 26, 2015), or later, is required in order to connect to v12.7 of the Web Console and Gateway. Earlier versions of this application will fail trying to make Host or Playback connections.

- **Expanded Host-side “toast” notifications:** The “toast”, or popup, notifications seen on the Host will now contain more information including timestamps. The “pin” behavior has also been improved to be more intuitive.
- **Smarter installation defaults:** Installation defaults have been rethought and are now optimized to provide the best experience out of the box. This includes setting clipboard to auto-share, better Host settings for the Gateway’s recording override feature, locking the workstation on disconnect for Hosts running server class operating systems. Note that upgrades will NOT have any settings changed as this pertains to fresh installs only.
- **Enhanced SSL/TLS support:** The latest OpenSSL libraries have been incorporated and stronger cipher support is enabled by default. This enables support for Perfect Forward Secrecy, but PFS may require additional configuration steps (contact support for details).
- **Enhanced encryption:** non-SSL connections use stronger key agreement parameters.
- **Local cursor option:** This is an option to show a locally drawn cursor. This feature is intended to address performance problems on network connections with very high latency.
- **Host tray icon Tooltip:** Hovering over the PC-Duo Host icon in the Windows system tray now shows the station name of the Host.

What's New in PC-Duo 12.6

PC-Duo 12.6 introduces the following new features and capabilities:

- ◆ **Host on Demand:** New type of Host that can be launched from the Share My Desktop button on the Web Console landing page. Enables the desktop of any internet-accessible machine to be shared instantly. No local or network administrative privileges are required, and no reboot is necessary to run this new Host type. (see *PC-Duo Web Console Operating Guide*)
- ◆ **UAC Elevation (HOD Pin):** Master user can elevate Host on Demand process to high privilege level by providing administrator credentials to HOD remote desktop. This is now known as “Pinning” the HOD and will allow the HOD to survive logouts/reboots until explicitly exited. A Windows HOD instance will now launch as Pinned if the user has the necessary rights. (see *PC-Duo Web Console Operating Guide*)
- ◆ **View/Edit Host Settings from Web Console:** Host settings for any Host connected to the Gateway can be viewed and/or edited by Account Users with appropriate credentials through the Web Console. No connection window to Host desktop required (see *PC-Duo Web Console Operating Guide*)
- ◆ **WebSocket Transport (WS, WSS):** In addition to the UDP, TCP and SSL transports already available, the Gateway Server now supports WebSocket (binary WebSocket over HTTP) and Secure WebSocket (binary WebSocket over HTTPS) transports to facilitate connections through corporate firewalls (see *PC-Duo Gateway Guide*)
- ◆ **More Host Grouping Rules:** Additional grouping rules have been added to allow for more flexibility in creating custom collections of Hosts, especially when considering your AD (see *PC-Duo Gateway Guide*)
- ◆ **Support for LDAPS:** Encryption of connections between the PC-Duo Gateway and the domain controller(s) when doing Active Directory lookups.
- ◆ **Web Console support for Safari, Chrome and Firefox:** Web Console now supports Safari, Chrome and Firefox web browsers, in addition to Internet Explorer; helper apps may be required to enable Remote Desktop and other features (see *PC-Duo Web Console Installation Guide*)
- ◆ **Expanded Search for Recordings:** Web Console now provides a more robust search mechanism for identifying records on a particular Gateway.
- ◆ **Master Support for Selecting a Specific Monitor for View:** Both the installed Master and ClickOnce connection windows now have the ability to view either the entire remote desktop or to “zoom in” on just a single monitor of that remote desktop.
- ◆ **ClickOnce Connection Window can Suppress Host Mouse and Keyboard:** This mirrors the functionality previously available only with the installed Master.
- ◆ **Built-in Utility to Clear the Windows ClickOnce Cache:** The Windows operating system does not provide a convenient way to do this. We have now built this functionality into the Web Console itself.
- ◆ **Most Recent OpenSSL Library:** In order to provide the most secure SSL experience possible, the most recent (as of this release) OpenSSL library has been integrated. Hotfix releases will be made available as needed to provide even newer libraries as they become available.
- ◆ **Automatic Recording:** When this feature is enabled, all specified live Master connections to Hosts for remote control will be recorded. This is configurable in the Web Console.

◆ **Official Method and Support for Web Console Graphics Customization:**

Customization of the Web Console landing page and colors are now easier to put in place and will be maintained when the software is upgraded.

What's New in Earlier Versions of PC-Duo 12

◆ **Web Console:** A new server-side application that enables browser-based access to the Gateway Server for configuration and administration. If On-Demand Edition key is present, Web Console will also be enabled for Remote Desktop feature (see *PC-Duo Web Console Operating Guide*)

◆ **“Click Once” Web Desktop:** Ability to generate a window to a remote desktop directly from the Web Console (Master not required). No administrative rights needed and no reboot required. On-Demand Edition key required for activation (see *PC-Duo Web Console Operating Guide*)

◆ **Kernel-mode Screen Capture driver:** The kernel-mode screen capture driver is now available for Windows 7, Vista and Windows 2008 Server. In many situations, the kernel-mode screen capture driver will outperform the default user-mode screen capture driver (see *PC-Duo Host Guide*)

◆ **Input Suppression:** Ability to turn off keyboard and mouse input on the remote desktop machine for Windows 7, Vista and Windows 2008 Server (see *PC-Duo Master Guide*)

◆ **Address Bindings:** Ability to bind the SSL and TCP network protocols to all addresses or to select specific addresses on the Gateway Server (see *PC-Duo Gateway Administrator Guide*)

◆ **Concurrent User License Mode:** In this mode, the Gateway will monitor the number of simultaneous Gateway users according to account type (Administrative, Master, Personal) (see *PC-Duo Web Console Operating Guide*)

◆ **Inactivity Timeouts:** To free up concurrent user licenses when users are connected to the Gateway but not active, Web Console, Master and Gateway Administrator will be automatically disconnected from the Gateway, and input control will be automatically released from Remote Desktop or Connection Window (see *PC-Duo Gateway Administrator Guide*)

◆ **Automatic Grouping of Hosts:** Ability to configure Hosts to automatically report to custom Gateway group(s) according to custom or generic rules (see *PC-Duo Gateway Administrator Guide*)

◆ **Virtual Desktop support:** Enables virtual desktop images generated in environments such as Citrix XenDesktop to include Hosts, and to have the Hosts report to Gateway until the desktop image is discarded (see *PC-Duo Host Guide*)

What's New in PC-Duo 11.5

◆ **Windows 7 support:** PC-Duo 11.5 provides full support (remote access, remote control, remote management) for Windows 7 computers, including 32- and 64-bit platforms.

◆ **Windows Server 2008 R2 support:** PC-Duo 11.5 provides full support (remote access, remote control, remote management) for Windows Server 2008 R2 computers (64-bit platforms only).

◆ **Mac, Linux support:** PC-Duo 11.5 provides support (remote access, remote control) for Macintosh and Linux computers running VNC server software (standard on Macs).

- ◆ **Wake-on-LAN support:** PC-Duo 11.5 includes ability to turn on remote computers that are configured to listen for Wake-on-LAN signal.
- ◆ **Remote Power Scheme management:** PC-Duo 11.5 includes new remote management tools that allows Master user to view and change power scheme settings on remote computers.
- ◆ **Screen Recording Playback via URL:** PC-Duo 11.5 includes ability for Master to playback a PC-Duo screen recording from a standard web server over HTTP or HTTPS.
- ◆ **RDP compatibility:** If a remote computer is hosting an active RDP session, PC-Duo 11.5 Host will capture and provide input control to the RDP session.
- ◆ **Active Directory integration:** PC-Duo 11.5 Deployment Tool can now be used to discover computers and OUs in Active Directory domains, install new PC-Duo software, upgrade existing software, and/or push configuration changes to existing software.

PC-Duo solutions

Vector Networks provides three solutions for remote desktop support:

PC-Duo Express Edition

PC-Duo Express Edition is an easy-to-use remote desktop solution that uses simple peer-to-peer connections between helpdesk technicians and end-user remote computers. It is ideally suited for smaller companies and workgroups in which the number of remote computers being supported is small and manageable.

PC-Duo Enterprise Edition

PC-Duo Enterprise Edition is an enterprise-class remote desktop solution that uses a robust, scalable server to establish and maintain a secure network of connections to end-user machines. It leverages centralized administration, security and network access to simplify and automate the creation, management, and monitoring of this “network within a network”. PC-Duo Enterprise Edition is ideally suited for enterprises and corporate workgroups with large numbers of remote computers, multiple domains and/or employees with remote computers outside the network.

PC-Duo On-Demand Edition

PC-Duo On-Demand Edition is a web-enabled version of the Enterprise Edition, and includes Master on Demand for on-demand access to remote desktops in place of the installed Master application.

PC-Duo applications

The PC-Duo remote desktop solutions include some or all of the following applications:

PC-Duo Components	PC-Duo Express Edition	PC-Duo Enterprise Edition	PC-Duo On-Demand Edition
PC-Duo Host	Yes	Yes	Yes
PC-Duo Host for RDS	No	Yes	Yes
PC-Duo Host for VDI	No	Yes	Yes
PC-Duo Host on Demand	No	Yes	Yes
PC-Duo Master	Yes	Yes	No
PC-Duo Gateway	No	Yes	Yes
PC-Duo Web Console	No	Yes	Yes
PC-Duo Master on Demand	No	No	Yes
PC-Duo Deployment Tool	Yes	Yes	Yes

PC-Duo Host



PC-Duo Host runs as a Windows service on the machine on which it is installed, and supports both peer-to-peer connections as well as Gateway-managed connections. By installing PC-Duo Host on a computer in your network, you can:

- ◆ Allow technicians to make peer-to-peer remote control connections to the machine, whether someone is there or not. Each Host manages its own security settings and access rights.
- ◆ Allow or force technicians to make Gateway-managed remote support connections to the machine through a central server (PC-Duo Gateway), which will automatically enforce security settings and access rights according to policies set at the server.

The PC-Duo Host requires a Host license key.

For more information about configuring and operating PC-Duo Host, please see the *PC-Duo Host Guide*.

PC-Duo Host for Remote Desktop Services (RDS)



PC-Duo Host for Remote Desktop Services, formerly called “Terminal Services”, is a server-side version of the PC-Duo Host designed to support Remote Desktop sessions.

The PC-Duo Host runs on the Windows Server with the Remote Desktop role, which may also include software support from Citrix. It is configured to support one or more concurrent Remote Desktop sessions. Each time a new Remote Desktop session is started, the Host injects a copy of itself into the session. This session Host will include instructions for reporting to one or more Gateways. When the Remote Desktop session is discarded, the session Host instance will also be discarded and will be automatically removed from the Gateway(s).

The PC-Duo Host for RDS requires a special Host license key that will specify the maximum number of concurrent RD sessions that can be supported on that Server.

For more information about configuring and operating PC-Duo Host, please see the *PC-Duo Host Guide*.

PC-Duo Host for VDI



PC-Duo Virtual Desktop Image Host is a special version of the PC-Duo Host designed to support the transient nature of virtual desktops.

The PC-Duo Host for VDI can be included as part of a virtual desktop template; when one or more virtual desktop sessions are generated using this template (often to create a pool of virtual desktop images), the sessions will include a Host with all the features of the installed Host but not the permanent nature. When the virtual desktop session is discarded, the Host will also be discarded and will be removed automatically from the Gateway(s).

The PC-Duo Host for VDI requires a special Host license key that will specify the maximum number of concurrent VDI sessions that can be supported in the virtual desktop environment.

For more information about configuring and operating PC-Duo Host, please see the *PC-Duo Host Guide*.

PC-Duo Host on Demand



PC-Duo Host on Demand (HOD) is a streamlined version of the Host that can be launched from the Share My Desktop button on the Web Console landing page. It enables the desktop of any internet-accessible machine to be shared instantly. No local or network administrative privileges are required, and no reboot is necessary to run this special Host type.

The PC-Duo Host on Demand is hosted by the Gateway Server and is enabled by a special license key installed in the Gateway Server. When enabled, the Share My Desktop button on the Web Console landing page will light up, and end users will be able to install as many instances of HOD as they like. Each instance will report back to and be accessible through the Gateway Server from which it was served.

For more information about configuring and operating PC-Duo Host on Demand, please see the *PC-Duo Web Console Operating Guide*.

PC-Duo Master



PC-Duo Master is a console application that technicians can use to establish remote support connections to one or more Host computers. With PC-Duo Master, you can:

- ◆ Make one or more peer-to-peer remote support connections to Host computers in your network.
- ◆ Connect to PC-Duo Gateway and make one or more Gateway-managed remote support connections to Host computers from a directory of available Hosts.
- ◆ View the entire screen of the remote computer or just a single monitor.
- ◆ Take complete control of a Host computer using the local keyboard and mouse.
- ◆ Share control of the Host computer with its end-user.
- ◆ Passively monitor the Host computer without exercising control.
- ◆ Use the clipboard transfer feature to transfer portions of text, bitmaps, and other objects between your Host and Master computers.
- ◆ Use the PC-Duo file transfer feature to copy files between your Host and Master computers.
- ◆ Use the PC-Duo remote printing feature to print locally from applications running on a remote computer or vice-versa.
- ◆ Record screen activity on the Host and play back the recording on the Master.
- ◆ Chat with end-user and any other technicians connected to the same Host.

For more information about configuring and operating PC-Duo Master, please see the *PC-Duo Master Guide*.

PC-Duo Gateway



PC-Duo Gateway is an enterprise class server, which provides centralized administration, security and management for a network of remote support connections to Host computers in your environment.

With PC-Duo Gateway configured as the hub of your remote support network, you can:

- ◆ Organize large numbers of Host computers into logical groups for easier access and management.
- ◆ Reach remote computers outside the network, behind firewalls or NAT-devices.
- ◆ Utilize SSL for certificate-based authentication.
- ◆ Create custom access rights policies and apply them to groups to make configuration changes more quickly and efficiently.
- ◆ Monitor and manage remote support activity in real-time.
- ◆ Keep detailed records of all remote support activity in your network with comprehensive audit logs.
- ◆ Record screen activity on one or more remote computers simultaneously using PC-Duo Gateway's screen recording feature.

PC-Duo Gateway includes the PC-Duo Gateway Administrator, a tool for configuring the Gateway and for monitoring, managing and auditing remote support activity in your network.

For more information about configuring and operating PC-Duo Gateway, please see the *PC-Duo Gateway Server Guide*.

PC-Duo Web Console

PC-Duo Web Console is a web application that provides browser-based access to the PC-Duo Gateway Server for administration and configuration. It is effectively a web-based version of the Gateway Administrator.

The Web Console also includes an optional feature called the Master on Demand, which allows on-demand access to remote desktops directly from the Web Console. It is effectively a web-based version of the Master application.

With PC-Duo Web Console:

- ◆ Administrators can access and edit all the configuration information on the Gateway Server, including Groups, Security, Permissions, etc. The Administrative web account can be used in conjunction with or instead of the standalone Gateway Administrator application.
- ◆ If the Master on Demand is enabled, Helpdesk technicians can view and access remote desktops connected to the Gateway.

For more information about configuring and operating PC-Duo Web Console, please see the *PC-Duo Web Console Operating Guide*.

For more information about installing PC-Duo Web Console, please see the *PC-Duo Web Console Installation Guide*.

PC-Duo Master on Demand

The Master on Demand is a feature of the Web Console, which allows on-demand access to remote desktops directly from the Web Console. It is effectively a web-based version of the Master application.

With PC-Duo Master on Demand:

- ◆ Helpdesk technicians can view and access remote desktops connected to the Gateway.
- ◆ Employees can view and access their computers at work, even if they are on the road or at home. The Personal web account offers convenient, secure, reliable alternative to VPN.

To enable the Master on Demand, a special key must be entered into the Gateway Server.

For more information about configuring and operating PC-Duo Master on Demand, please see the *PC-Duo Web Console Operating Guide*.

PC-Duo Deployment Tool

PC-Duo Deployment Tool is an easy-to-use software distribution utility that automates the deployment and installation of PC-Duo applications to remote computers in your network.

With PC-Duo Deployment Tool, you can:

- ◆ Automatically deploy an image of PC-Duo Host, Master or Gateway to one or more computers or groups of computers in your network and avoid manual effort of going to each machine.
- ◆ Create an image of PC-Duo Host, Master or Gateway with custom configuration options that can be mass deployed on large numbers of computers in your environment.
- ◆ Create and push custom configuration options for PC-Duo Host, Master or Gateway, without having to reinstall underlying software.
- ◆ Use Active Directory to find remote computers and push software and configuration settings to them.

For more information about configuring and operating PC-Duo Deployment Tool, please see the *PC-Duo Deployment Tool Guide*.

PC-Duo technologies

PC-Duo remote desktop solutions utilize highly optimized technologies to deliver speed, performance and reliability, including:

- ◆ **Highly efficient screen capture algorithms.** PC-Duo utilizes two kinds of screen capture technology:
 - ◆ Kernel-mode screen capture. This technology utilizes the PC-Duo mirror driver, which reproduces graphics drawing commands from the remote Host on the PC-Duo Master user's screen quickly and efficiently.
 - ◆ User-mode screen capture. This technology works without a mirror driver and is designed to adjust automatically to the amount of CPU and bandwidth available on the remote Host machine.
- ◆ **Streamlined communication protocol.** The PC-Duo protocol has been honed over 15 years for efficiency and reliability when sending screen capture data to another computer in real-time and receiving keyboard/mouse input.

Using these technologies, PC-Duo remote support solutions enable technicians to find and fix problems on remote computers faster and easier than ever before.

PC-Duo services

PC-Duo remote desktop solutions offer technicians a number of professional-quality services for investigating and solving problems on Host remote computers, including:

- ◆ **Remote Control:** ability to view screen activity on an end-user's remote machine, and with proper authorization, take control of and send keyboard/mouse inputs to the remote machine in real-time
- ◆ **Remote Clipboard:** ability to copy selected items on the screen of a remote machine into the clipboard on the remote machine and transfer the contents to the clipboard on the technician's machine, and vice versa
- ◆ **File Transfer:** ability to drag-and-drop files or directories on the remote machine to the technician's machine, and vice versa
- ◆ **Host-based Chat:** ability to chat with the end-user on a remote machine, and any other technicians connected to that machine
- ◆ **Remote Printing:** ability to print selected items from the remote machine to a printer attached to the technician's machine, and vice versa
- ◆ **Host Administration:** ability to view and edit configuration settings of the PC-Duo Host installed on the remote machine
- ◆ **Remote Management:** ability to generate inventory of hardware and software assets on remote machine, and to query and change certain system settings. See "Remote Management features" for more information about tools available through this service.

PC-Duo connection types

PC-Duo services are performed over service connections between a PC-Duo Master (with appropriate access rights) and a PC-Duo Host. Service connections are established on demand, when a PC-Duo Master requests a service from a PC-Duo Host.

PC-Duo supports several different types of remote access connections:

PC-Duo Connection Types	PC-Duo Express Edition	PC-Duo Enterprise Edition	PC-Duo On-Demand Edition
RDP session sharing	Yes	Yes	Yes
Peer-to-peer connections	Yes	Yes	Yes
Gateway-managed connections	No	Yes	Yes
Firewall-friendly connections	No	Yes	Yes
RDS connections	No	Yes	Yes
VDI connections	No	Yes	Yes
VNC connections	Yes	Yes	No
Host on Demand connections	No	Yes	Yes

RDP session sharing: Follow the active session

PC-Duo connections can be used to share an active RDP session in real-time.

If PC-Duo Host is running on a desktop-class operating system (e.g. Windows 7), and there is an active/connected RDP session being hosted on that computer, then the Host will automatically capture and provide input control to that RDP session. In essence, the Host will capture what the remote RDP session user is seeing, not what the local physical console on that machine is showing (probably the Windows login screen).

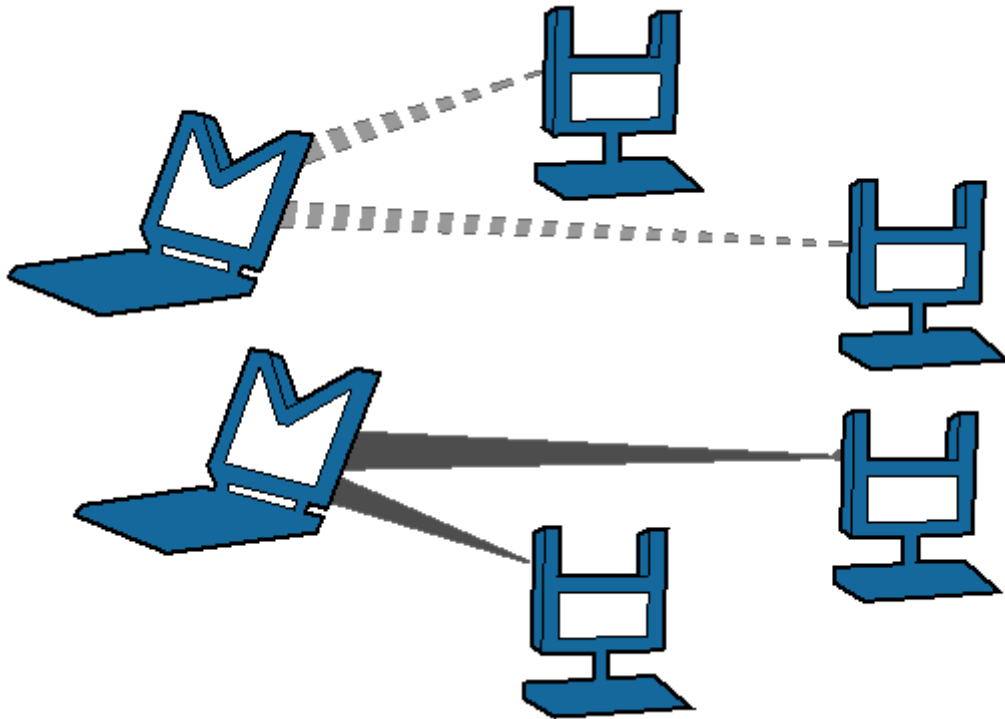
When there is no active/connected RDP session being hosted on that computer, or if an active/connected RDP session is stopped, the Host will automatically capture and provide input control to the session running on the computer and being displayed on the local console. The Host will follow the active session as it moves from RDP user back to the local console.

Note: feature only applies to desktop-class operating systems, which support only one active session at a time. Server-class operating systems (e.g. Windows Server 2008, 2012 or 2016) can support multiple sessions simultaneously via Remote Desktop Services; use the Host for RDS to capture and/or provide input control to one or more sessions on server-class OS.

Peer-to-peer connections

When a computer with PC-Duo Master establishes a direct connection to a computer with PC-Duo Host, the connection that is established is a **peer-to-peer connection**.

By default, PC-Duo Master searches the network for Host computers when it starts up. Any Host computers it finds are listed on the **Peer-to-Peer Hosts** tab of the PC-Duo Master window.



Peer-to-peer connections from Master (M) to Host (H)

The dotted and solid lines, shown in above depict two different sets of peer-to-peer connections between PC-Duo Masters to PC-Duo Hosts. PC-Duo's peer-to-peer connections enable the following:

- ◆ PC-Duo Master users with proper credentials can securely access Host computers within the network.
- ◆ When you permit full access to a Host computer, the PC-Duo Master user can monitor all activity on the Host computer. In addition, PC-Duo Master users with full access rights can exercise complete control over that computer.
- ◆ When the Host and Masters are in the same domain, PC-Duo Host can be configured to use the Microsoft Windows authentication service to check credentials of any PC-Duo Master users. An access control policy can allow (or deny) full or partial access for authenticated PC-Duo Master users to access services on a Host computer.

Although PC-Duo's peer-to-peer connections provide a secure solution for remote support, this solution is not recommended for large and/or highly distributed networks; instead, consider using PC-Duo Gateway for centrally managed remote support connections.

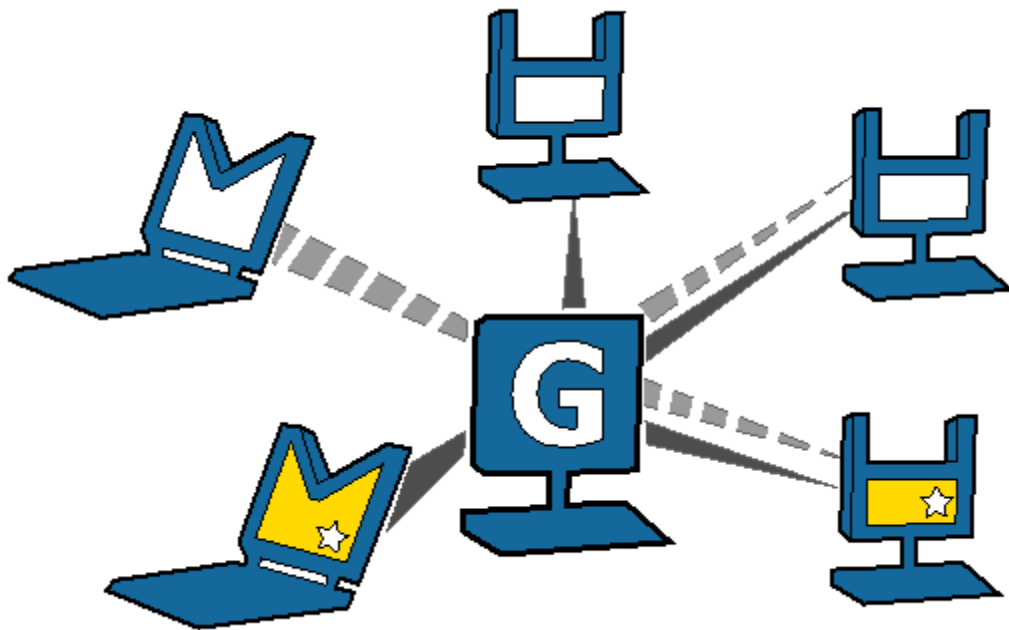
Gateway-managed connections

When a computer with PC-Duo Master establishes a connection to a computer with PC-Duo Host through a central server (i.e. PC-Duo Gateway), the connection that is established is a **Gateway-managed connection**. In this way, the Gateway serves as a central location for managing and monitoring connections, configuration, security and reporting. Any Host computers found by the Gateway are listed on the **Gateway Hosts** tab of the PC-Duo Master window.

In large networks, the PC-Duo Gateway can be configured to manage connections with hundreds or thousands of Hosts simultaneously, enabling Masters to find and take control of Hosts instantly.

Gateway-managed connections utilize the same strong authentication and authorization that is available with PC-Duo's peer-to-peer connections. In addition, PC-Duo Gateway provides the following capabilities:

- ◆ Seamless connections from Master computers to Host computers through a PC-Duo Gateway. To the PC-Duo Master user, the connection appears as if it were a peer-to-peer connection to the Host computer, even if the Host is outside the domain and/or behind a firewall or NAT device.
- ◆ Centralized management of access rights to remote computers in your network. Once you configure your Host computers to report to the PC-Duo Gateway, you can achieve global management through a single security policy that you configure using PC-Duo Gateway Administrator.
- ◆ User-based access policies. Customize and apply access policies to individual PC-Duo Master users or groups in your network. Allow full remote access to one or more Host computers for some PC-Duo Master users, while restricting access rights for others.
- ◆ Comprehensive logging and auditing of all remote control activity within your network. With this feature, you can keep records of all remote support connections.
- ◆ Continuous screen recording. PC-Duo Gateway allows you to record screen activity on any remote Host. Efficient file compression makes 24x7 recording economical and manageable.



Gateway (G)-managed connections from Master (M) to Host (H)

Firewall-friendly connections

When PC-Duo Master users need access to Hosts that are outside the domain, and/or behind a firewall or NAT-device, normal peer-to-peer or Gateway-managed connections will not work. In these cases, it is difficult to find and maintain a secure remote support connection because of dynamic port assignments and other network challenges.

For these situations, PC-Duo Gateway builds special firewall-friendly connections to these Hosts. When Hosts are outside the domain, the Hosts are programmed to automatically initiate contact with the Gateway. The Gateway will use this initial contact to build a firewall-friendly connection to the Host. In this way, the remote Host outside the domain will appear just like any Host inside the domain.

Remote Desktop Services connections

PC-Duo provides server-side support (screen capture, input control, screen recording) for session-based virtual desktops hosted by Remote Desktop Services, formerly called "Terminal Services", on Windows Server 2008, Windows Server 2012 and Windows Server 2016. Windows Server creates and hosts the Remote Desktop Services (RDS) sessions like virtual machines. A presentation technology using a display protocol such as RDP from Microsoft or ICA from Citrix is typically used to remote the session display, as well as the keyboard and mouse input, to and from an end user device (such as a thin client computer like a Wyse terminal).

PC-Duo allows technicians to capture (and if desired, record) the session presentation information at the Windows Server before it is remoted to the end user device over the RDP or ICA display protocol. PC-Duo is able to do this by injecting a Host instance into each server-side RDS session, which in turn captures and sends presentation information directly to PC-Duo Gateway for recording and/or further transmission to a PC-Duo Master.

Note: Because RDS sessions are captured at the Windows Server (and not at the end user device), PC-Duo Host effectively bypasses the technology used to remote the sessions to the end users, and will therefore be compatible with Microsoft Remote Desktop Services clients as well as Citrix Presentation Server (now known as XenApp) clients.

Note: PC-Duo only supports RDS sessions created on server-class Windows operating systems such as Windows Server 2008, Windows Server 2012 and Windows Server 2016.

See the **RDS tab** in PC-Duo Host Guide for more specific configuration and setup information.

Root Host for RDS sessions

The "Remote Desktop Services" feature of Windows Server editions allows multiple virtual desktop sessions to be active simultaneously. PC-Duo provides remote access and remote control to these sessions on the Windows Server by injecting a separate instance of the Host service into every new RDS session. A special version of the Host called the "root" Host must be loaded on the RDS server (a "root" Host is a standard Host with a special PC-Duo Host for RDS license key - see **About tab** in the *PC-Duo Host Guide* for more information); it will automatically spawn new Host instances every time a new RDS session is created.

Transient Hosts

Each RDS session's instance of the Host will have its own unique workstationID and must be configured to report to a Gateway. When it first reports to the Gateway Server, it will be automatically managed and added to the "All Hosts" group. The Hosts for RDS are considered transient, since they go away when the RDS user logs out of his/her session. In order to keep track of transient RDS Hosts, the PC-Duo Gateway will create a new Group called "Host for RDS on <Servername>", and automatically insert transient Hosts into this Group. They are automatically deleted from the Gateway when the RDS session ends. The main purpose of this Group is to allow security to be assigned to the Hosts and RDS sessions that belong to this Group, and to provide the correct and appropriate access to the RDS-based Host instances.

Note: PC-Duo Host for RDS works on Windows Server editions, and requires a Gateway Server v6.10 or later.

Recording RDS Hosts

Recordings are normally deleted from the Gateway database when their associated workstation record is deleted. Transient Host for RDS workstation records are automatically deleted from the Gateway when the RDS user logs out of his/her session. However, to prevent recordings of Host for RDS from being automatically deleted when the RDS session ends, the RDS session recordings are reassigned to an artificial permanent workstation record called "Recordings of Host for RDS". All recordings of all RDS Hosts on a given RDS server will be associated with this one record. This approach has the following advantages:

- ◆ Recordings are not orphaned
- ◆ All recordings can be kept in one place,
- ◆ RDS recordings can be kept separate from console (root Host) recordings

- ◆ Security can be configured separately for each recording.

Limitations of Hosts for RDS

Due to technical limitations and the nature of Remote Desktop Services sessions, the following Host features are not supported.

- ◆ Keyboard and mouse suppression (requires kernel-based input stack intercept)
- ◆ Screen blanking (requires kernel-based support and physical display to blank)
- ◆ Peer-to-peer connections: all protocols are disabled, and the only connections that can be made are through a configured Gateway Server
- ◆ Kernel-mode screen capture (requires kernel-mode display support)

VDI connections

PC-Duo provides a special version of the Host to run inside of virtual desktop images (VDI) created from virtual desktop templates in environments such as Citrix XenDesktop. If the regular Host is specified in the template, then the Host will automatically be installed when the virtual desktops are created using this template.

This works fine with Peer-to-Peer connections to the Host in the VDI, but has some complications when the Host is configured to report to one or more Gateway Servers:

- ◆ The GWS must be configured to “automatically manage new Hosts” to have the Host become available without any manual intervention.
- ◆ If the virtual desktop is discarded when the user logs out, the Host is effectively destroyed as well, but the Gateway doesn’t know this. The Host remains known to the Gateway (and managed, using a Managed Hosts license) until it is manually cleaned up by an administrator, or until the **Delete Hosts older than** feature kicks in and deletes it. (But note that setting is measured in days, default is set to 120, and setting that to a low value runs the risk of deleting conventional installed Hosts that are simply offline for a while.)

To address both of these problems, the Gateway Server supports a special version of the Host for VDI that is “transient” in nature (similar to a Host for RDS session); when the VDI Host is specified in the template, the following will occur:

- ◆ A new group, “Host for VDI”, is automatically created at the Gateway when a Host of this type first reports. All Hosts of this type are automatically managed (independent of the “automatically manage Hosts” setting), and are added to this group.
- ◆ If the virtual desktop is discarded when the user logs out, the VDI Host, because of its transient nature, will automatically be disconnected and removed from the Gateway, freeing up a Managed Host license.
- ◆ Similar to what happens when recording Host for RDS sessions, a new pseudo-host, “Recordings of Host for VDI”, is created when any of these Hosts is recorded. The recording of the VDI Host is associated with this pseudo-Host instead of with the Host workstation, and will remain in there even after the virtual desktop is discarded
- ◆ If the Gateway is in Managed Hosts licensing mode, a new license key that limits the maximum number of VDI Hosts that can be connected to the Gateway concurrently is required

VNC connections

PC-Duo provides remote access and remote control to computers running a standard version of VNC (Virtual Network Computing) server. A VNC server is built into recent versions of the Mac OS X operating system from Apple Computer, and is also available on many versions of the Linux operating system. When properly configured, technicians can use PC-Duo Master on Windows to connect to and take control of Mac and Linux computers running standard VNC server.

PC-Duo currently supports peer-to-peer connections to VNC servers.

See "VNC Hosts" in the *PC-Duo Master Guide* for more information on configuring and connecting to VNC servers.

Supported Platforms

PC-Duo Master can interoperate with standard VNC servers on following platforms:

- ◆ Mac OS X
- ◆ Red Hat Linux Fedora

Host on Demand connections

PC-Duo provides remote access and remote control to computers running a streamlined version of the Host called "Host on Demand" (HOD). The Host on Demand can be accessed from the Web Console landing page by any internet-accessible machine and will enable end user to share his/her desktop instantly through the Gateway Server.

Supported Web Browsers

PC-Duo Host on Demand is supported on following web browsers:

- ◆ Internet Explorer
- ◆ Edge
- ◆ Firefox
- ◆ Chrome
- ◆ Safari

Note that helper apps may be required to run certain features of the Web Console for browsers other than Internet Explorer or Edge.

See the *PC-Duo Web Console Operating Guide* for more information on enabling and configuring Host on Demand.

PC-Duo security features

One of the most valuable aspects of PC-Duo remote desktop solutions is the ability to create and enforce fine-grained access control policies, and to easily modify them to reflect changes in your organization.

PC-Duo security features include the following:

- ◆ “Authentication”
- ◆ “Authorization”
- ◆ “Auditing”
- ◆ “Encryption”

Authentication

In the PC-Duo model, PC-Duo applications that request information and services are considered “clients” and those that provide information and services are considered “servers”. For example, the PC-Duo Master is considered a client when it connects to and requests a list of Hosts from a PC-Duo Gateway. In turn, the PC-Duo Gateway is considered a client when it connects to and requests information from a PC-Duo Host in the same domain.

Connection	Client	Server
Peer-to-peer	Master	Host
Gateway-managed (Gateway & Host are in same domain)		
◆ Master-Gateway relationship	Master	Gateway
◆ Gateway-Host relationship	Gateway	Host
Gateway-managed (Gateway & Host are not in same domain)		
◆ Master-Gateway relationship	Master	Gateway
◆ Gateway-Host relationship	Host	Gateway

When PC-Duo Host is not in the same domain as the Gateway, the relationship is automatically reversed: The Host is programmed to be the client and will reach out to the Gateway (see “[Firewall-friendly connections](#)” for more information about PC-Duo firewall-friendly connections).

To guarantee security in the PC-Duo environment, it is critical that PC-Duo components acting as servers validate the credentials of users of PC-Duo components acting as clients before they provide access or data. The burden is placed on the client to authenticate itself to the server. PC-Duo implements two types of authentication to support this:

- ◆ “Identity Authentication”
- ◆ “Endpoint Authentication”

Identity Authentication

In general, this operation answers the following security question: How does the server know who the client is? A PC-Duo application acting as a server will not provide access or information to any PC-Duo application acting as a client until it can validate that client's identity. PC-Duo provides the server three different methods of authenticating the identity of the PC-Duo client:

Connection	Windows authentication	Simple password	Shared-secret password
Peer-to-peer	Yes	Yes	No
Gateway-managed (Gateway & Host are in same domain)			
◆ Master-Gateway relationship	Yes	No	No
◆ Gateway-Host relationship	Yes	No	Yes
Gateway-managed (Gateway & Host are not in same domain)			
◆ Master-Gateway relationship	Yes	No	No
◆ Gateway-Host relationship	No	No	Yes

◆ **Windows authentication:** By default, a PC-Duo application acting as a server uses Windows authentication to check the Windows credentials of the client application:

- ◆ The Host will check the Windows credentials of the PC-Duo Master user in the case of a peer-to-peer connection;
- ◆ The Gateway will check the Windows credentials of the PC-Duo Master users in the Master-Gateway part of a Gateway-managed connection;
- ◆ The Host will check the Windows credentials of the user logged into the Gateway in the Gateway-Host part of a Gateway-managed connection (when Host and Gateway are in the same domain).

NOTE: If Host and Gateway are not in the same domain, Windows authentication will not usually be available. In that case, Host and Gateway will rely on Shared secret password.

◆ **Simple password:** Prior to making a connection, a custom password can be created on the **Security** tab of the Host and shared with PC-Duo Master user. This feature permits the PC-Duo Master user to connect to a Host without regard to PC-Duo Master user's Windows credentials.

NOTE: Simple password applies only to peer-to-peer connections.

◆ **Shared secret password:** In the case that the Host does not share a domain relationship with the PC-Duo Gateway, or if the Host is outside of the network and cannot contact its domain controller, Windows authentication will not usually be available. Behind the scenes, the PC-Duo Gateway and the Host will exchange a 16-byte secret password that only they will know. As a result, in all subsequent connections, the PC-Duo Gateway and Host will have some measure of authentication when they are not in the same domain. If the Host belongs to the same domain as the PC-Duo Gateway, and the Host is able to reach a domain controller, the Host will prefer to do Windows authentication instead of shared secret password.

Endpoint Authentication

In general, this operation answers the following security question: How does the client know it is connected to the right server? Identity authentication doesn't prohibit the client from being fooled into connecting to a different server. In order to guarantee that information and services are coming from the expected server, PC-Duo supports endpoint authentication using Secure Sockets Layer (SSL).

◆ **SSL certificate authentication (PC-Duo Gateway only):** PC-Duo has implemented server endpoint authentication using SSL, which means the client will request and validate a certificate from the server before providing requested information or services. This ensures the client has connected to the right server. The following list describes where SSL authentication can and cannot be used:

- ◆ **Peer-to-peer connections:** SSL authentication is not available for peer-to-peer connections. This would require each Host (acting as server) to carry its own certificate, which would be unwieldy and costly to manage.

- ◆ **Gateway-managed connections (Host is in same domain as Gateway):** SSL authentication is available between Master (acting as client) and Gateway (acting as server). Before connecting, the Master will request and validate a certificate from the Gateway. In general, SSL between Master and Gateway would be most useful when the Master is outside the LAN and/or coming in through a corporate firewall to access the Gateway.

***NOTE:** SSL authentication is not available between the Gateway (acting as client) and the Host (acting as server). As in peer-to-peer connections, this would require each Host to carry its own certificate. SSL connections to the Host are generally not required because the Host can be configured to use a reverse connection to the Gateway, which can use SSL.*

- ◆ **Gateway-managed connections (Host is not in same domain as Gateway):** When the Host is outside the LAN and/or behind a firewall or NAT-device, the Host is the client and has responsibility to contact the Gateway. SSL authentication is supported and would be appropriate to ensure that the Host is connecting to the right Gateway. The Host will validate the Gateway Server certificate before accepting the connection, ensuring that the Host is communicating with the correct Gateway Server.

In summary, SSL can be used by the Master to authenticate a Gateway, and by a Host to authenticate a Gateway when the Host is outside the domain:

Connection	Client	Server	SSL Supported
Peer-to-peer	Master	Host	No

Gateway-managed (Master & Host are in same domain)

◆ Master-Gateway relationship	Master	Gateway	Yes
◆ Gateway-Host relationship	Gateway	Host	No

Gateway-managed (Master & Host are not in same domain)

◆ Master-Gateway relationship	Master	Gateway	Yes
◆ Gateway-Host relationship	Host	Gateway	Yes

Authorization

One of the strongest features of PC-Duo remote support solutions is the fine-grained access control. For example, to perform remote support, you must have the following:

- ◆ Proper credentials with which to connect to the Host computer
- ◆ Authorization to view the Host computer remotely
- ◆ Authorization to control the Host computer remotely

Your credentials are established when you connect to a Host computer (or to a PC-Duo Gateway), and persist until the connection breaks. You can configure access and other rights directly on the Host computer for peer-to-peer connections. Alternatively, you can use the PC-Duo Gateway to enforce custom access rights policies on PC-Duo Master users, roles, or groups for Gateway-managed connections.

Auditing

PC-Duo Gateway provides a detailed log of connection attempts, actions and other activities that occur in the network. This log is also customizable and exportable to 3rd party reporting products using standard formats.

PC-Duo Gateway also features screen recording for any Host in contact with a Gateway, whether or not there is an active remote support connection. With this feature, PC-Duo Master users can keep a visual log of activities going on in the network.

Encryption

To ensure privacy of communications between PC-Duo applications across the network, PC-Duo provides advanced encryption using Advanced Encryption Standard (AES) block ciphers. This protection will be automatic and transparent every time two PC-Duo 11.0 components or later are communicating with each other.

By default, PC-Duo uses AES 256-bit encryption, however other encryption options can be set, including:

- ◆ AES encryption (256-bit key)
- ◆ AES encryption (192-bit key)

- ◆ AES encryption (128-bit key)
- ◆ Triple-DES (3DES) encryption (192-bit key)

NOTE: PC-Duo 11.0 and later also support RC4 encryption for the sole purpose of being able to connect to older Hosts (v10.0 and earlier), which only allows RC4.

Order of precedence

When two PC-Duo components have different encryption options set, the first encryption choice in common between the two is used (going down the list in order), with preference set as follows:

- ◆ Preference set by the Host, when the Gateway requests connection to the Host
- ◆ Preference set by the Gateway, when the Master requests connection to a Host through the Gateway

PC-Duo networking features

PC-Duo remote desktop solutions support several standard transport protocols for computer-to-computer communication, and two types of network addressing schemas.

Network protocols

PC-Duo products support most of the standard networking and transport protocols, including:

- ◆ **IP:** IP is a general-purpose protocol supported on a wide variety of networks and servers. PC-Duo components support communications using either the TCP or UDP transport protocols running over IP. PC-Duo has established the following standard ports for use with either TCP or UDP:
 - ◆ PC-Duo Host listens on port 1505 by default
 - ◆ PC-Duo Gateway listens on port 2303 by default
- ◆ **SSL:** The SSL protocol runs above TCP/IP and below higher-level protocols such as HTTP or IMAP. Using TCP/IP on behalf of the higher-level protocols allows an SSL-enabled server to authenticate itself to an SSL-enabled client, and then establish an encrypted connection between the remote computers.
 - ◆ By default, PC-Duo Gateway listens for incoming SSL connections on port 443, but it might be appropriate to note that this can be easily changed to avoid conflicts with other server software installed on the same machine.
 - ◆ The PC-Duo Gateway now ships with a Gateway Certificate Manager to manage the creation and/or selection of a SSL security certificate for the PC-Duo Gateway.
- ◆ **WebSocket:** The WebSocket protocol runs above HTTP or HTTPS. This provides a web-proxy friendly and firewall-friendly transport. Only the Gateway Server accepts WebSocket connections; the Host can report to the Gateway this way, and the Master and other client software can connect to the Gateway this way.
 - ◆ The PC-Duo Gateway listens for incoming Secure WebSocket connections (WSS) when SSL is enabled, and uses the same port. It listens for WebSocket connections (WS) when TCP is enabled, and uses the same port.

Network addressing schemas

The PC-Duo UDP, TCP and SSL transport protocols support the use of either IPv4 (32-bit) or IPv6 (128-bit) addresses.

Wake-on-LAN support

PC-Duo can be used to "wake-up" remote computers that have been shut down (sleeping, hibernating, or soft off; i.e., ACPI state G1 or G2), with power reserved for the network card, but not disconnected from its power source. The network card listens for a specific packet containing its MAC address, called the *magic packet*, that is broadcast on the subnet or LAN.

In order to execute this feature, both the MAC address and the last known IP address of the remote computer must be known. Since the PC-Duo Gateway knows both of these pieces of information, it is in a position to send the Wake-on-LAN signal.

PC-Duo implements this functionality in Gateway-managed connections in two ways:

- ◆ **Implicit Wake-on-LAN:** If Gateway is asked to make a connection to a remote computer and the last status indicates that the remote computer is "Offline", the Gateway will automatically attempt to wake up the remote computer by sending appropriately configured WOL signal. If the remote computer was shut down in a state capable of receiving WOL signal, it will wake up and report to the Gateway and a connection will be established.
- ◆ **Explicit Wake-on-LAN:** A network administrator, using either PC-Duo Master or PC-Duo Gateway Administrator, can attempt to wake up a remote computer by explicitly sending the WOL signal to that machine. If the remote computer was shut down in a state capable of receiving WOL signal, it will wake up and report to the Gateway and a connection will be established.

See "Send Wake-on-LAN Signal" in the *PC-Duo Master Guide* for more information.

PC-Duo documentation and technical support

Each of the four PC-Duo components has its own guide:

- ◆ *PC-Duo Master Guide*
- ◆ *PC-Duo Host Guide*
- ◆ *PC-Duo Gateway Server Guide*
- ◆ *PC-Duo Web Console Operating Guide*
- ◆ *PC-Duo Web Console Installation Guide*
- ◆ *PC-Duo Deployment Tool Guide*

For more information about PC-Duo documentation and technical support, see:

- ◆ "Typographical conventions"
- ◆ "Technical support options"

Typographical conventions in documentation

PC-Duo documentation uses typographical conventions to convey different types of information.

Computer text

Filenames, directory names, account names, IP addresses, URLs, commands, and file listings appear in a plain fixed-width font:

You can use the default domain user account named `'RemoteControlGateway'`.

In examples, text that you type literally is shown in a bold font.

To run the installation program, type **`installme`** in the command line.

Screen interaction

Text related to the user interface appears in **bold sans serif type**.

Enter your username in the **Login** field and click **OK**.

Menu commands are presented as the name of the menu, followed by the > sign and the name of the command. If a menu item opens a submenu, the complete menu path is given.

Choose **Edit > Cut**.

Choose **Edit > Paste As... > Text**.

Variable text

Variable text that you must replace with your own information appears in a fixed-width font in italics. For example, you would enter your name and password in place of ***YourName*** and ***YourPassword*** in the following interaction.

Enter your name: *YourName*
Password: *YourPassword*

File names and computer text can also be displayed in italics to indicate that you should replace the values shown with values appropriate for your enterprise.

Key names

Names of keyboard keys appear in SMALL CAPS. When you need to press two or more keys simultaneously, the key names are joined by a + sign:

Press RETURN.

Press CTRL+ALT+DEL.

Technical support options

If you have any problems installing or using the PC-Duo remote support products, information and support resources are available to help:

This manual and the *Release Notes* may contain the information you need to solve your problem. Please re-read the relevant sections. You may find a solution you overlooked.

Our technical support staff can be contacted by the following means:

- ◆ For Americas and Asia/Pacific:
email: support@vector-networks.com
phone: (800) 330-5035
- ◆ For Europe, Middle East and Africa:
email: support@virtualnetworkpartners.eu
phone: +44 2030040750

We offer a range of support options including support and maintenance contracts, and time and materials projects. Consult our web site for the support plan that best meets your needs. Go to <http://www.vector-networks.com> and navigate to the **Support** section of the web site for more information.

Master Installation

To install PC-Duo Master, the following requirements and recommendation should be met:

- ◆ "Requirements"
- ◆ "Display considerations"
- ◆ "Installation notes"
- ◆ "Start options"
- ◆ "Licensing"

Requirements

PC-Duo Master can be installed on any computer that runs a supported operating system (OS) and meets the minimum requirements described in this section.

Operating system requirements

Supported operating systems are:

- ◆ Windows Vista
- ◆ Windows Server 2008
- ◆ Windows 7
- ◆ Windows Server 2008 R2
- ◆ Windows 8
- ◆ Windows Server 2012
- ◆ Windows 8.1
- ◆ Windows Server 2012 R2
- ◆ Windows 10
- ◆ Windows Server 2016

PC-Duo applications are supported on both 32- and 64-bit editions of these operating systems.

Hardware requirements

The hardware requirements are:

- ◆ Minimum requirements – Same as those specified by Microsoft for your operating system.
- ◆ Recommended requirements – Same as those specified by Microsoft for your operating system.

Other requirements

The following additional requirements are required or recommended for installation of PC-Duo Master:

- ◆ Windows Installer 3.1 or later.
- ◆ Adobe Reader – Required for documentation.
- ◆ Local Administrator access rights – Required for the user who is installing PC-Duo Master on the machine.
- ◆ Additional memory – Required for each PC-Duo Master Connection Window or PC-Duo Master Cycling Monitor window. The amount should be equal to the display size of the Host. 3MB should be considered for each 1024x768 Host screen.

◆ Microsoft Core XML Services (MSXML) 6.0 – Required for Remote Management. If the Master cannot find the redistributable MSXML6 system component, an error message will appear in the Remote Management window. In this case, you must install MSXML6 and restart the Master. See <http://www.microsoft.com> for more information about the redistributable msxml6.msi package.

Network requirements

PC-Duo Master can operate over any type of network, including dial-up, Ethernet, token ring, and FDDI, provided that the network supports the TCP/IP, UDP/IP, IPX or SSL protocols.

The following conditions apply:

- ◆ IP is a general-purpose protocol supported on a wide variety of networks and servers. To enable communication using TCP or UDP over IP, you must enable the Microsoft TCP/IP Protocol (or you can use another WinSock 2 compliant IP stack).
- ◆ The SSL protocol runs above TCP/IP and below higher-level protocols such as HTTP or IMAP. Using TCP/IP on behalf of the higher-level protocols allows an SSL-enabled server to authenticate itself to an SSL-enabled client, and both machines to establish an encrypted connection.
- ◆ The WebSocket protocol runs above HTTP or HTTPS. PC-Duo uses the binary WebSocket protocol over HTTP (which in turn is over TCP) as well as over HTTPS (which in turn runs over SSL). For plain WebSocket (WS) connections over HTTP, PC-Duo uses the same encryption used for TCP connections. For Secure WebSocket (WSS) connections, the connection is encrypted and secured by the underlying HTTPS/SSL connection.
- ◆ The PC-Duo UDP, TCP and SSL transports fully support IPv4 and IPv6 addressing.

Display considerations

To achieve the best color reproduction, the display capabilities of the computer on which you run PC-Duo Master must match or exceed those of the remote Host computer.

If the Host computer's resolution exceeds that of the local computer, the Host computer display includes scroll bars.

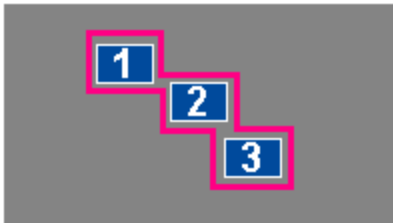
Support for multiple monitors

In the Windows OS, multiple monitors can be used to increase the size of the desktop. By connecting more than one monitor, you can see more programs and windows simultaneously without overcrowding the desktop on one monitor.

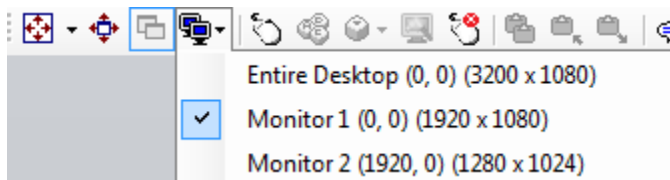
PC-Duo Master supports multiple monitors so that you can access the entire desktop remotely. For example, consider a Host computer that uses three monitors. PC-Duo Master shows everything that is displayed on each monitor when you connect to that Host.

If the Host computer's display configuration is non-rectangular, the following caveats apply to the Master screen:

- ◆ A bright border traces the non-rectangular edge of the multiple-monitor desktop.
- ◆ The space outside of the multiple-monitor desktop appears in a dark color.
- ◆ Additional Host monitors must be positioned below and to the right of the primary monitor; any monitor space above and/or to the left of the primary monitor will be cut off (this is a Windows restriction).



You can also choose to display just a single monitor of the remote desktop in order to “zoom in” on it. This can be done through the connection window by using the “Select Host Monitor” toolbar dropdown menu.



Installation notes

If you plan to use PC-Duo Master to make remote connections through a PC-Duo Gateway, see *PC-Duo Gateway Server Guide* before installing PC-Duo Master.

PC-Duo Master is distributed using Internet download. It can also be deployed and installed to large numbers of machines using PC-Duo Deployment Tool.

Install via internet download

PC-Duo applications are distributed as ZIP files available for download from <http://www.vector-networks.com>. Unzip the contents (while preserving the directory tree structure) on your computer.

To install PC-Duo Master, simply click on the **Master.msi** file.

Install via PC-Duo Deployment Tool

PC-Duo Deployment Tool can be used to install PC-Duo Master on one or more computers in your network. For detailed information, see the *PC-Duo Deployment Tool Guide*.

MSIEXEC variables

Any of the following `MSIEXEC` parameters can be included when you implement command line installation of PC-Duo Host. Modify these directly in the `.MSI` file or apply them to a `.MST` transform file.

NOTE: These property values are case sensitive. Do not change other values in the `.MSI` file.

Property	Description
LICENSE	The required PC-Duo Host license key that is distributed with the purchase of the software.
ARPSYSTEMCOMPONENT	Setting this value to "1" disables the ability to Add/Remove/Modify the product via the Control Panel. NOTE: Default value "0" allows users to modify the program through Add/Remove Programs.
TRANSFORMS	Use the <code>TRANSFORMS</code> property to specify any transforms (* .MST files) to be applied to the installation package. You can separate multiple transforms with a semicolon. Do not use the semicolon character in the name of your transform because it will

be interpreted as a separator.

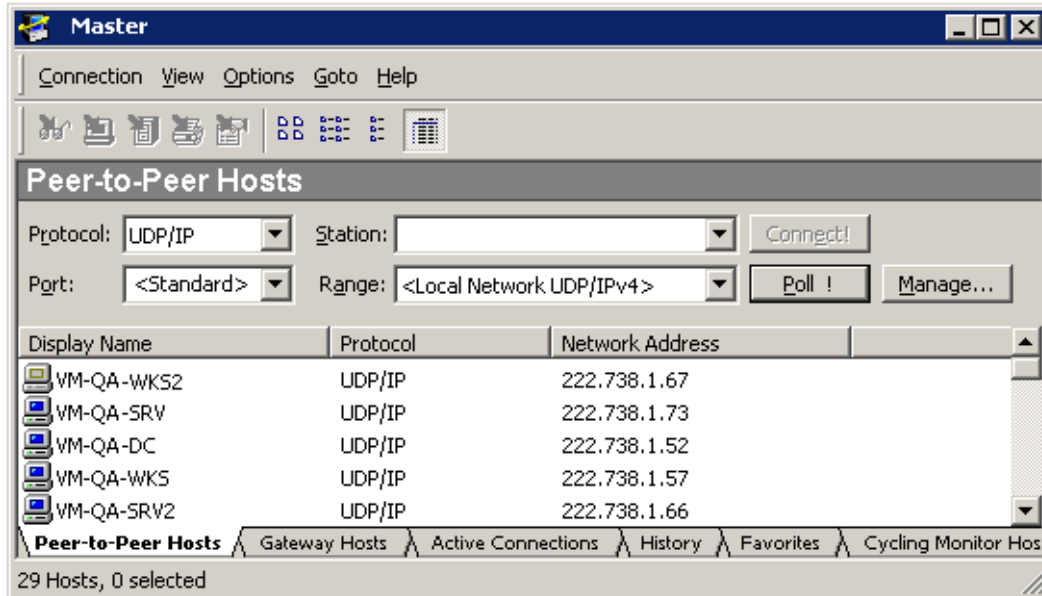
INSTALLDIR	Specify the directory in which to install the software.
<pre>REBOOT { Force Suppress ReallySuppress }</pre>	<p>Force: Always prompt for a reboot at the end of the installation</p> <p>Suppress: Suppress prompts for a reboot at the end of the installation</p> <p>ReallySuppress: Suppress all prompts for reboots during the installation.</p> <p>NOTE: <i>The PC-Duo installer is configured to reboot at the end of a silent installation, unless otherwise overridden by the REBOOT parameter. This is true for both the MSI and the Setup.exe.</i></p>
NOFIREWALLCONFIG	Turn off automatic registration of PC-Duo Host as an exception to Windows Firewall. If this is set to a non-blank value, no firewall configuration is done by the installer. The default is that this property is not set, and the installer does the firewall configuration.
ADDLOCAL	Used to skip installation of the "Remote Printing Support" component. If not specified, ALL components are installed. To not install Remote Printing, specify: "ADDLOCAL=Host,Common"

Start options

Start PC-Duo Master using any of the following options:

- ◆ Choose **Start > All Programs > Vector networks > PC-Duo Master**
- ◆ Choose **Start > Run** and enter **proxy . exe**. If you cannot open the application right away, navigate to your product install directory from the command window before you run **proxy . exe**.
- ◆ Double-click a PC-Duo Master shortcut file that stores remote Host computer connection information. The shortcut file ends with the **. PRX4** extension. When you use this method to start PC-Duo Master, you establish a connection to a specified Host computer immediately. For more information, see [“Save as Shortcut”](#).

When PC-Duo Master is started, the PC-Duo Master Console appears.



Licensing

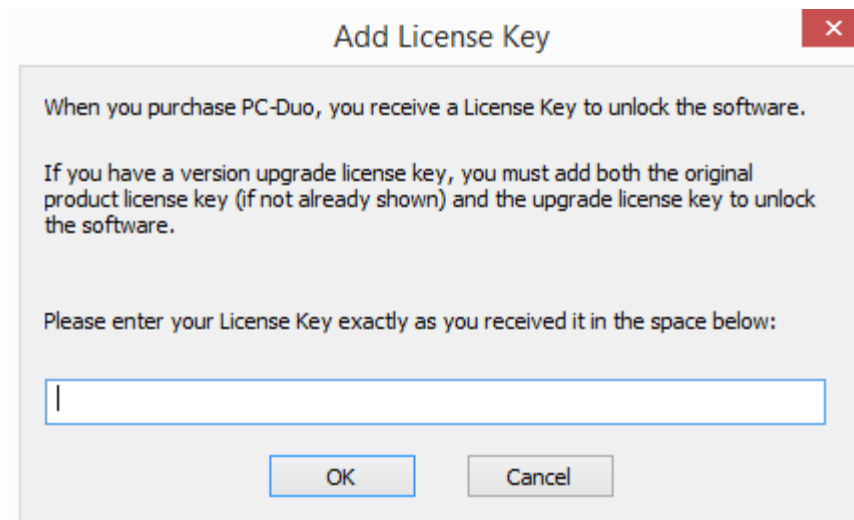
If you download this software from the Vector Networks' web site on a 30-day trial basis and want to continue using the product, you may purchase it by contacting a preferred reseller, or by contacting Vector Networks directly. Your purchase provides an appropriate license key to use with PC-Duo Master.

The software does not have to be reinstalled after you purchase it. The product package contains a license key that you can add to your existing installation. This key converts your 30-day trial software directly to an unlimited version.

Add a license key before your trial period expires

To add a license key before your 30-day trial expires, follow these steps:

- 1 Select **Start > All Programs > Vector Networks > PC-Duo Master**.
- 2 Select **Help > About PC-Duo Master** from the PC-Duo Master window.
- 3 When the About PC-Duo Master window appears, click **Add License**. The Add License Key window appears.
- 4 Enter the license key, and click **OK**.



Your license is activated immediately. PC-Duo Master does not need to be restarted.

NOTE: If you are upgrading, then you will see both the original product license and the upgrade license in the About PC-Duo Master window.

Add a license key after your trial period expires

If you attempt to run PC-Duo Master after your trial period has expired, the message **Thank you for trying PC-Duo** appears. Within the message, click **Add License and enter your new license key**.

Your license is activated immediately. PC-Duo Master does not need to be restarted.

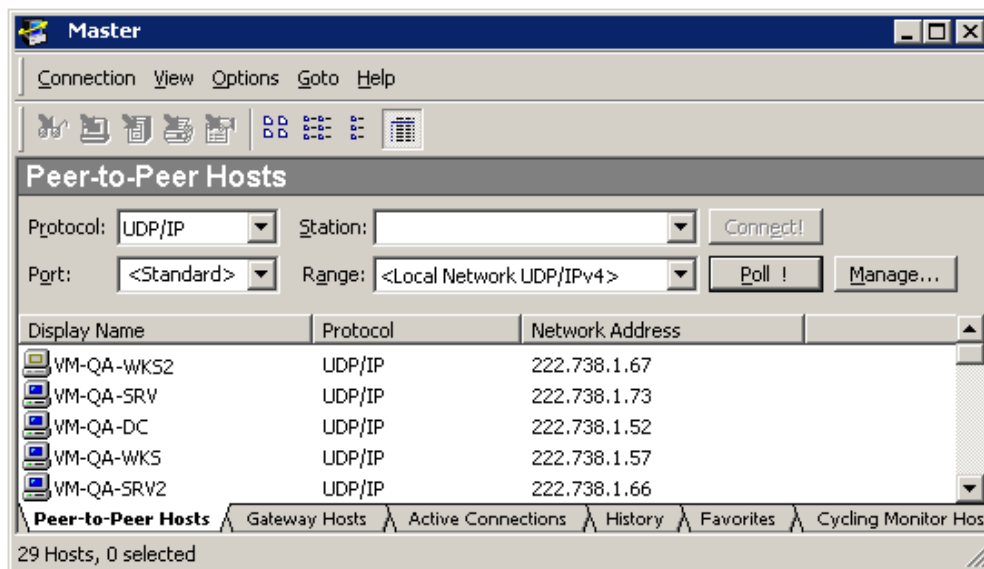
Upgrade your license

If you are upgrading your license, you will receive an Upgrade license key, which you should add using the instructions above. Both the original product license and the upgrade license will be listed on the **About** tab.

Master Operation

This section describes the components of the PC-Duo Master window:

Double-click on any Host computer in either the **Peer-to-Peer Hosts** tab or the **Gateway Hosts** tab of the PC-Duo Master window in order to open a connection to that computer. A Master Connection Window will open for that computer (see "Connection Window Operation" for more information). You can have one or more Master Connection Windows to different Host computers open at the same time.



The PC-Duo Master window has a set of tabs to organize access to remote Host computers in your network. These tabs are at the bottom of the window:

- ◆ **"Peer-to-Peer Hosts"**: Find and make peer-to-peer connections to remote machines with PC-Duo Host in this tab.
- ◆ **"Gateway Hosts"**: Choose a Gateway and a Gateway Group (by default, the Group is set to All Hosts), and find and make Gateway-managed connections to remote machines with PC-Duo Host in this tab. Screen activity on the Host machine can also be recorded (with or without an active connection) and played back in the "Playback Window".
- ◆ **"Active Connections"**: View and/or disconnect active peer-to-peer or Gateway-managed connections in this tab.
- ◆ **"History"**: Review a list of recent peer-to-peer and Gateway-managed connections in this tab. If the Hosts are still available, make connections to those Hosts in this tab.
- ◆ **"Favorites"**: Keep a list of favorite peer-to-peer or Gateway-managed connections in this tab.
- ◆ **"Cycling Monitor Hosts"**: Continuously monitor peer-to-peer or Gateway-managed connections in this tab. Create a list of Host computers to monitor in a view-only mode by cycling through the connections to each Host.





NOTE: Windows Firewall may prevent some Host computers from appearing in the Master window. By default, PC-Duo Host automatically adds the PC-Duo Host service to the list of Windows Firewall exceptions, but if this is turned off, then you may need to add the PC-Duo Host application (along with appropriate transport and port, e.g. UDP 1505 and/or TCP 1505) as an exception to Windows Firewall on that Host computer.

In addition to the tabs, the following additional features are available through the PC-Duo Master window:

- ◆ Connecting to computers running VNC server (e.g. Mac, Linux). See [“VNC Hosts”](#).
- ◆ Menus for selecting features. See [“Menu options”](#).
- ◆ Default Master window settings. See [“Master Settings”](#).

Host status icons










Each Host computer that is listed in any of the tabs of the PC-Duo Master window has a workstation icon associated with it. The connection status and availability of the Host computers is indicated by the color of the icon.

Icon	Color	Status
	Blue	Host computer is available for connection.
	Gray	Host computer is not currently available for connection, usually because it is busy.
	Light green	Are currently connected to this Host computer.
	Dark green	Are currently connected to and monitoring this Host computer in the PC-Duo Master Cycling Monitor window.

NOTE: When logged-in users are displayed on the managed Hosts tab, the icon resembles a user (head in profile) rather than a workstation, but the color and status indicators are identical to those listed above. See [“Gateway Hosts”](#) for information on logged-in users.

Tool bar options

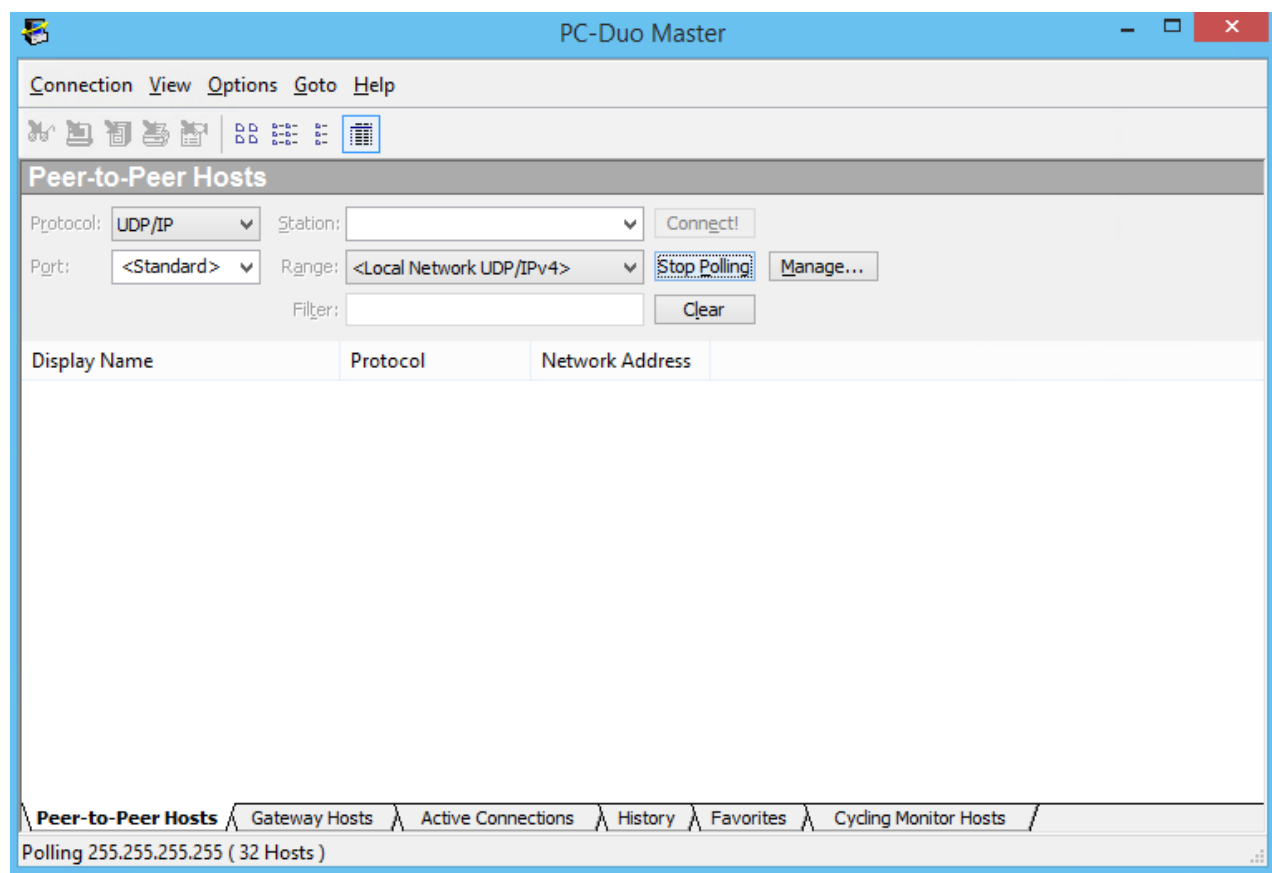
Table below summarizes the functions of icons on the tool bar in the PC-Duo Master window.

Icon	Function
	Connects to the selected Host computer and displays remote desktop only
	Connects to the selected Host computer with the Remote Control tab selected.
	Connects to the selected Host computer with the File Transfer tab selected.
	Connects to the selected Host computer with the Remote Printing tab selected.
	Connects to the selected Host computer with the Remote Management tab selected.
	Displays the available Host computers as large icons.
	Displays the available Host computers as small icons.
	Displays the available Host computers as an alphabetical list.
	Displays the available Host computers as a detailed list.

Peer-to-Peer Hosts tab

If a Master can locate a Host in its network, the Host is known as a Peer-to-Peer Host and will be listed on the Peer-to-Peer Hosts tab in the Master. Double-click on any remote Host to establish a direct remote control connection (called a "peer-to-peer connection"); a Master Connection Window will pop up showing the desktop of the remote Host (see Connection Window Operation for more information).

With peer-to-peer connections, security and other configuration settings will be negotiated between the Master and Host.



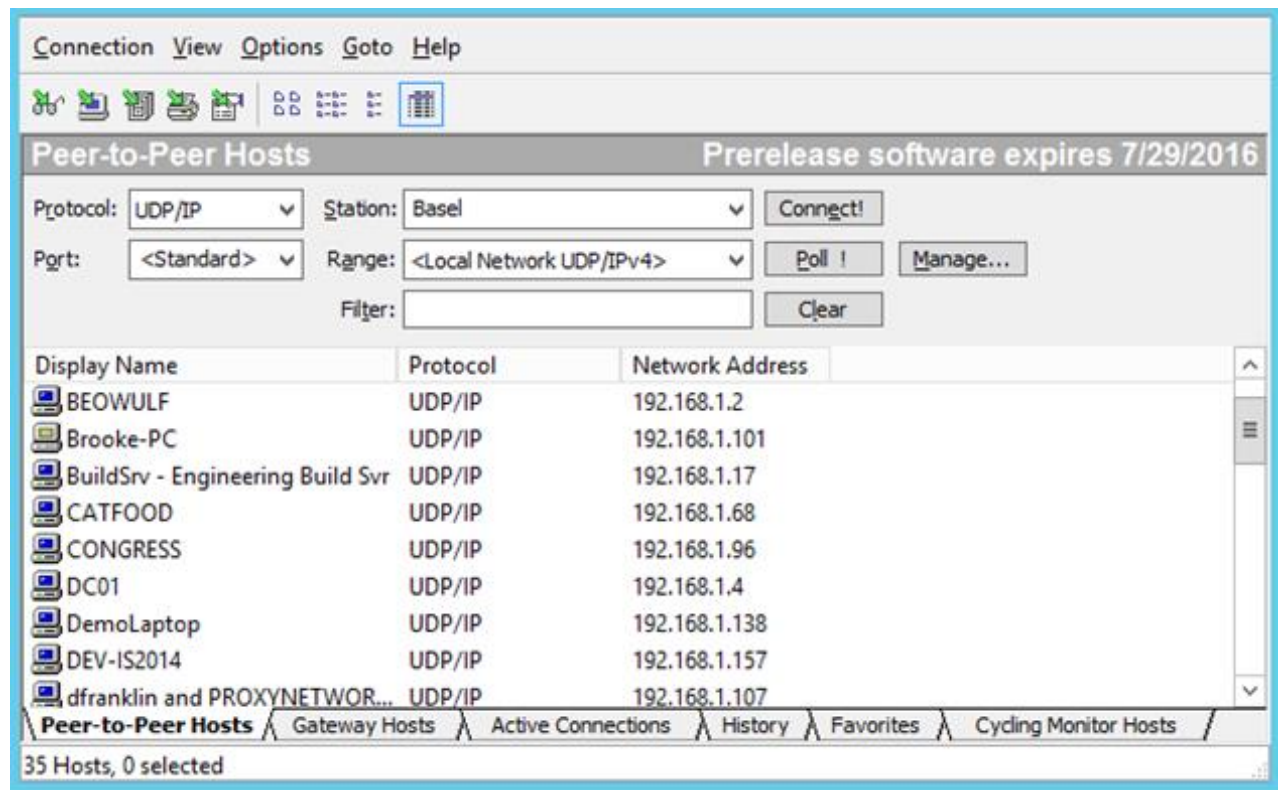
From the **Peer-to-Peer Hosts** tab of the PC-Duo Master window, you can find Hosts by using one of the following 3 options:

- ◆ "Type the station or address"
- ◆ "Select from automatic polling lists"
- ◆ "Search with custom polling list"

Type the station or address

Sometimes polling for machines in the network with PC-Duo Host is not ideal (such as a network with a large number of machines distributed across multiple domains). In these situations, polling by the Master may be slow and bandwidth-intensive.

Instead, if you know the IP address of the Host computer, you can initiate a connection by typing its address in the **Station** field of the **Peer-to-Peer Hosts** tab.



To manually specify a Host connection directly from the Peer-to-Peer Hosts tab, follow these steps:

- 1 Choose **UDP/IP**, **TCP/IP**, or **IPX** from the **Protocol** list to specify the required Host computer connection protocol.
- 2 If you do not choose the (default) standard PC-Duo port, type the port number next to **Port** to specify a port number.

NOTE: PC-Duo Host uses port 1505 by default.

- 3 Type the network address or station name (e.g. "Basel") of the remote Host computer in the **Station** field. You can also select recently typed stations or addresses from the drop-down list.

- 4 To establish a connection to the specified Host computer, use one of the following methods:

- ◆ Click the **Connect!** button.
- ◆ Select **Connect** from the **Connection** menu.

◆ Select **Connect Special** from the **Connection** menu if you want to connect for a particular service, such as file transfer, or as another user.

When a connection is established to the Host computer, the **PC-Duo Master Connection Window** appears. For more information, see *PC-Duo Host Guide*.

Select from automatic polling list

When PC-Duo Master starts up and the **Peer-to-Peer Hosts** tab is selected, the Master automatically starts polling the network for machines with PC-Duo Host. Soon, a list of all Host computers in your network will appear.

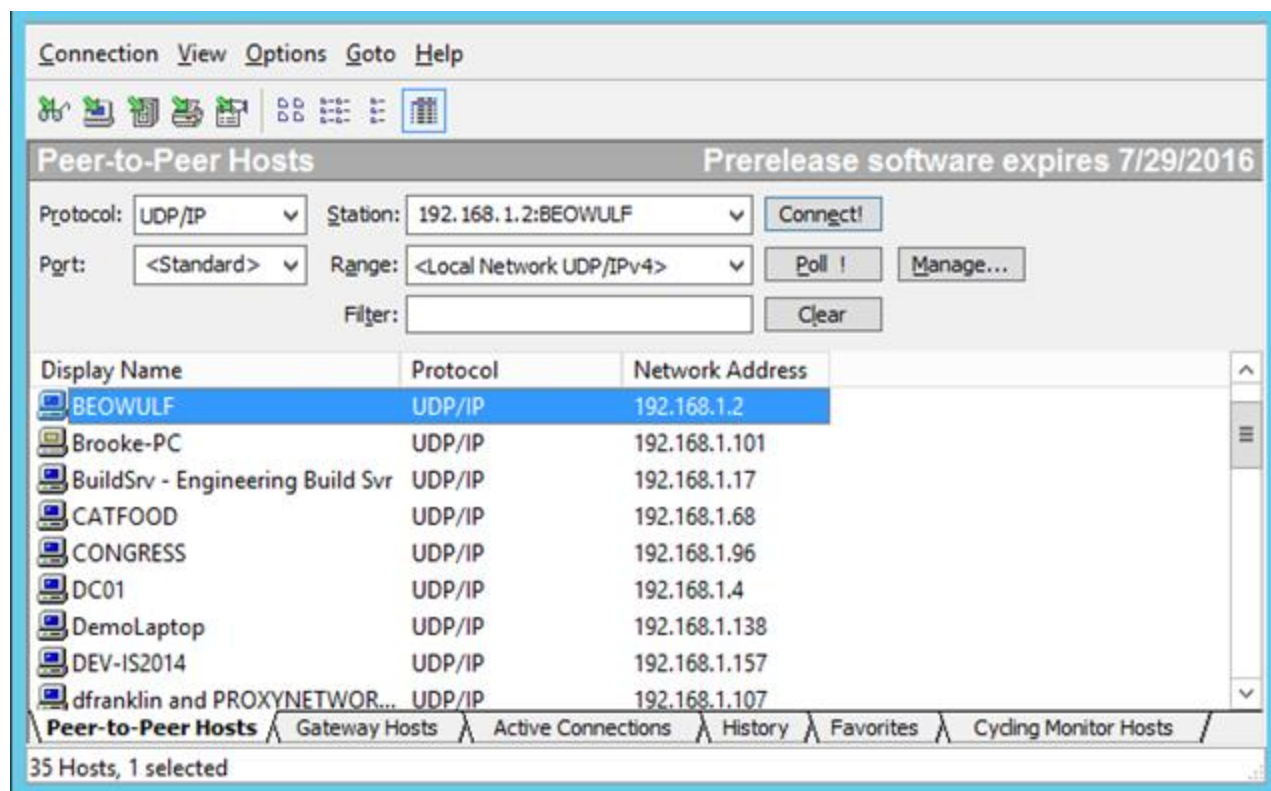
NOTE: The polling feature works with the UDP/IP and IPX protocols only. Polling does not work with the TCP/IP protocol.

By default, when PC-Duo Master is started, it polls for all Host computers using the default search parameter in the **Range** list (by default, this is set to UDP/IP on local network segment). Automatic polling can be disabled in **Options > Master Settings** so that search for computers is always initiated manually.

For each computer, the following information is provided:

- ◆ An **Icon** to indicate connection status. For information on the icons, see “[Master Operation](#)”.
- ◆ **Display Name**
- ◆ **Protocol**
- ◆ **Network Address**

To refresh the list, click **Poll** or to stop a polling operation, click **Stop**.



When you select a Host computer in the list, the **Station** field is updated to reflect your selection. For display options for this field, see [“Master Settings”](#).

Double-click a Host computer in the list to connect to it.

Filter the list

If you have a large number of computers on your network, the resulting list of Hosts may make it difficult to find the one Host you are looking for. In that case, you can type a filter string into the **Filter** box to narrow down the list of Hosts. Only those Hosts that contain the filter string somewhere in their Display Name or Network Address fields will be displayed in the list. This makes it easy to find a Host with a particular name, or all Hosts on a certain sub-network, etc. Click the **Clear** button to erase the filter string and display all Hosts retrieved by the last poll operation.

Search using custom polling list

When PC-Duo Master starts up and the **Peer-to-Peer Hosts** tab is selected, the Master automatically starts polling the network for machines with PC-Duo Host.

To limit or expand the number of computers listed, adjust the range of addresses polled with your own search criteria. From the Manage Polling Ranges dialog, create and save a search to poll a range of network addresses or a single broadcast address. Once more than one search is created and saved, you can create a group of searches to poll more than one network segment at a time.

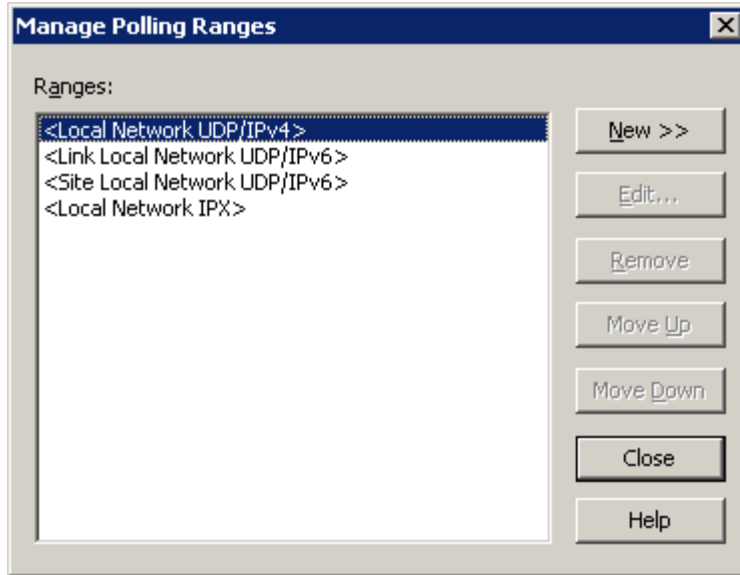
For more information about creating and managing searches, see:

- ◆ “Create a search for peer-to-peer Host computers”
- ◆ “Create a UDP/IP search”
- ◆ “Group one or more saved searches”
- ◆ “Manual polling”

Create a search for peer-to-peer Host computers

By default, PC-Duo Master searches only your local network segment when it starts to poll for Host computers. To search for Host computers on a different network segment, a named search must be created.

To create, edit, or remove a search, click **Manage** in the **Peer-to-Peer Hosts** tab. The Manage Polling Ranges window appears.



The **Ranges** list displays any searches that you have specified and saved, as well as the default local network searches. The searches that can be saved include a single address, a range of addresses, or a grouping of previously saved searches.

Four entries (<Local Network UDP/IPv4>, <Link Local Network UDP/IPv6>, <Site Local Network UDP/IPv6>, and <Local Network IPX>) represent the local networks to which you are connected. You cannot edit or remove any of them. You can edit or remove any other searches listed:

- ◆ Click **Edit** to change the definition of a selected search.
- ◆ Click **Remove** to delete a selected search from the list.

A new search can be created using either a custom polling range or a custom group by clicking **New>>**.

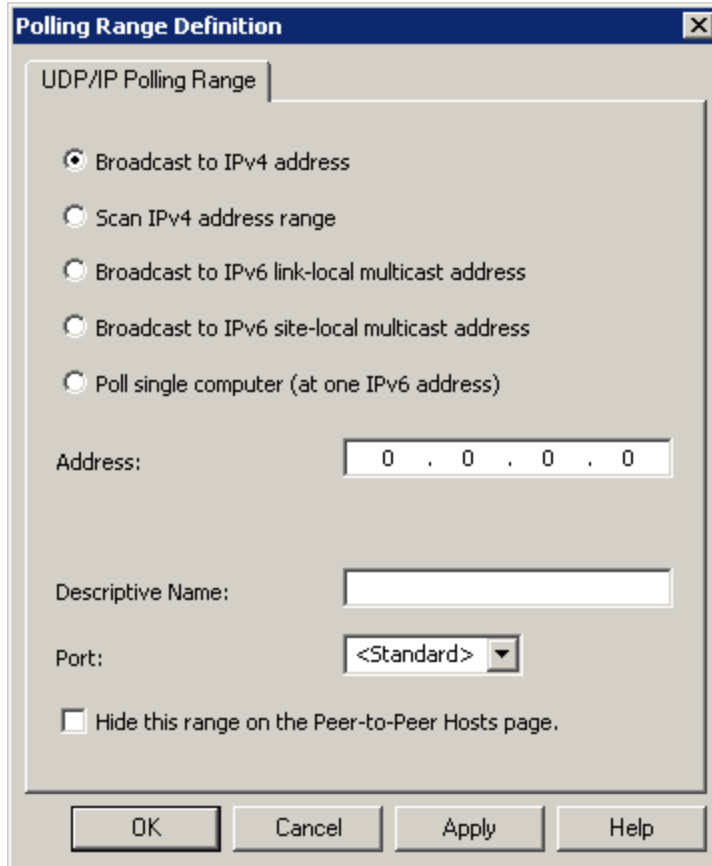
Create a UDP/IP search

Use UDP/IP to poll for Host computers using one of the following techniques:

Create a UDP/IP broadcast to IPv4 address

To locate a Host computer by polling a specific IPv4 address, follow these steps:

- 1 From the Manage Polling Ranges window, select **New > UDP/IP**. The Polling Ranges Definition window appears.



The image shows a 'Polling Range Definition' dialog box with a tab labeled 'UDP/IP Polling Range'. It contains five radio button options: 'Broadcast to IPv4 address' (selected), 'Scan IPv4 address range', 'Broadcast to IPv6 link-local multicast address', 'Broadcast to IPv6 site-local multicast address', and 'Poll single computer (at one IPv6 address)'. Below these is an 'Address' field with the value '0 . 0 . 0 . 0'. There is a 'Descriptive Name' text box and a 'Port' dropdown menu set to '<Standard>'. A checkbox labeled 'Hide this range on the Peer-to-Peer Hosts page.' is unchecked. At the bottom are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

- 2 Select **Broadcast to IPv4 address**.
- 3 Enter the Host computer network address that you want to poll in the **Address** field.
- 4 Enter a name for the search next to **Descriptive Name**.
- 5 To specify a UDP port number to use for polling, enter it in the **Port** field. The default <Standard> port is 1505.
- 6 To omit the search from the **Ranges** list located on the Peer-to-Peer Hosts tab, click **Hide this range on the Peer-to-Peer Hosts page**.
- 7 Save your search using one of the following methods:
 - ◆ Click **Apply** to save changes and leave the Polling Range Definition window open.
 - ◆ Click **OK** to save changes and close the Polling Range Definition window.

NOTE: Select **Broadcast to IPv4 address** to search for remote Host computers by sending a packet to a specific address. Note that broadcasts to other networks or subnets only work if intervening routers are configured to forward broadcasts.

Create a UDP/IP scan IPv4 range of addresses

To locate one or more Host computers by polling a range of IPv4 addresses, follow these steps:

- 1 From the Manage Polling Ranges window, select **Local Network UDP/IP** and click **New**. The Polling Ranges Definition window appears.

Polling Range Definition

UDP/IP Polling Range

☐ Broadcast to IPv4 address
☒ Scan IPv4 address range
☐ Broadcast to IPv6 link-local multicast address
☐ Broadcast to IPv6 site-local multicast address
☐ Poll single computer (at one IPv6 address)

First Address:

Number of addresses:

Descriptive Name:

Port:

☐ Hide this range on the Peer-to-Peer Hosts page.

OK Cancel Apply Help

UDP/IP Polling Range - Scan IPv4 address range

- 2 Select **Scan IPv4 address range**.
- 3 Enter the first address in your desired network polling range next to **First Address**.
- 4 Specify the size of the range by entering the number of addresses to search beyond the First Address next to **Number of addresses**.
- 5 Enter a name for the search next to **Descriptive Name**.
- 6 To specify a UDP port number to use for polling, enter it in the **Port** field. The default <Standard> port is 1505.
- 7 To omit the search from the **Ranges** list on the Peer-to-Peer Hosts tab, click **Hide this range on the Peer-to-Peer Hosts page**.
- 8 Save your search using one of the following methods:
 - ◆ Click the **Apply** button to apply changes and leave the Polling Range Definition window open to create and save more UDP searches.
 - ◆ Click the **OK** button to save changes and close the Polling Range Definition window.

Create a UDP/IP broadcast to IPv6 link-local multicast address

IPv6 link-local addresses are used only on a particular local link (physical network), typically for special purposes such as address resolution or neighbor discover. The link-local broadcast address is FF02::1.

To locate a Host computer by polling a specific IPv6 multicast address on a local link, follow these steps:

- 1 From the Manage Polling Ranges window, select **Local Network UDP/IP** and click **New**. The Polling Ranges Definition window appears.

Polling Range Definition

UDP/IP Polling Range

☐ Broadcast to IPv4 address
☐ Scan IPv4 address range
☒ Broadcast to IPv6 link-local multicast address
☐ Broadcast to IPv6 site-local multicast address
☐ Poll single computer (at one IPv6 address)

Descriptive Name:

Port:

☐ Hide this range on the Peer-to-Peer Hosts page.

OK Cancel Apply Help

UDP/IP Polling Range - Broadcast to IPv6 link-local multicast address

- 2 Select **Broadcast to IPv6 link-local multicast address**.
- 3 Enter a name for the search next to **Descriptive Name**.
- 4 To specify a UDP port number to use for polling, enter it in the **Port** field. The default <Standard> port is 1505.
- 5 To omit the search from the **Ranges** list located on the Peer-to-Peer Hosts tab, click **Hide this range on the Peer-to-Peer Hosts page**.
- 6 Save your search using one of the following methods:
 - ◆ Click **Apply** to save changes and leave the Polling Range Definition window open.
 - ◆ Click **OK** to save changes and close the Polling Range Definition window.

Create a UDP/IP broadcast to IPv6 site-local multicast address

IPv6 site-local addresses allow data to be sent only to the devices within a site or organization. The site-local broadcast address is FF05::4000:1.

To locate a Host computer by polling a specific IPv6 multicast address within a site or organization, follow these steps:

- 1 From the Manage Polling Ranges window, select **Local Network UDP/IP** and click **New**. The Polling Ranges Definition window appears.

The image shows a 'Polling Range Definition' dialog box. It has a title bar with a close button. Inside, there's a tab labeled 'UDP/IP Polling Range'. Below the tab are five radio buttons: 'Broadcast to IPv4 address', 'Scan IPv4 address range', 'Broadcast to IPv6 link-local multicast address', 'Broadcast to IPv6 site-local multicast address' (which is selected), and 'Poll single computer (at one IPv6 address)'. Below these are two text input fields: 'Descriptive Name:' and 'Port:' (with a dropdown menu showing '<Standard>'). There is also a checkbox labeled 'Hide this range on the Peer-to-Peer Hosts page.' At the bottom are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.

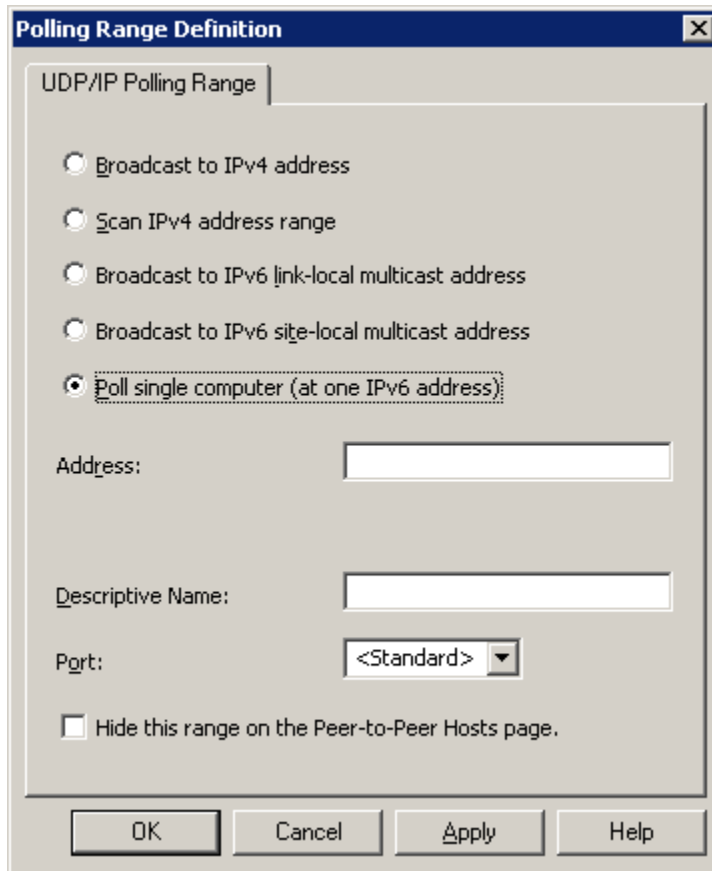
UDP/IP Polling Range - Broadcast to IPv6 site-local multicast address

- 2 Select **Broadcast to IPv6 site-local multicast address**.
- 3 Enter a name for the search next to **Descriptive Name**.
- 4 To specify a UDP port number to use for polling, enter it in the **Port** field. The default <Standard> port is 1505
- 5 To omit the search from the **Ranges** list located on the Peer-to-Peer Hosts tab, click **Hide this range on the Peer-to-Peer Hosts page**.
- 6 Save your search using one of the following methods:
 - ◆ Click **Apply** to save changes and leave the Polling Range Definition window open.
 - ◆ Click **OK** to save changes and close the Polling Range Definition window.

Create a UDP/IP Poll single computer (at one IPv6 address)

To locate a Host computer by polling a specific IPv6 address, follow these steps:

- 1 From the Manage Polling Ranges window, select **Local Network UDP/IP** and click **New**. The Polling Ranges Definition window appears.



The image shows a Windows-style dialog box titled "Polling Range Definition". It has a tab labeled "UDP/IP Polling Range". Inside the dialog, there are five radio button options: "Broadcast to IPv4 address", "Scan IPv4 address range", "Broadcast to IPv6 link-local multicast address", "Broadcast to IPv6 site-local multicast address", and "Poll single computer (at one IPv6 address)". The last option is selected and highlighted with a dashed border. Below these options are three text input fields: "Address:", "Descriptive Name:", and "Port:". The "Port:" field has a dropdown menu currently showing "<Standard>". At the bottom of the dialog is a checkbox labeled "Hide this range on the Peer-to-Peer Hosts page." which is currently unchecked. At the very bottom are four buttons: "OK", "Cancel", "Apply", and "Help".

UDP/IP Polling Range - Poll single computer (at one IPv6 address)

- 2 Select **Poll single computer (at one IPv6 address)**.
- 3 Enter the address of the computer in your desired network polling range in the **Address** box.
- 4 Enter a name for the search in the **Descriptive Name** box.
- 5 To specify a UDP port number to use for polling, enter it in the **Port** field. The default <Standard> port is 1505.
- 6 To omit the search from the **Ranges** list located on the Peer-to-Peer Hosts tab, click **Hide this range on the Peer-to-Peer Hosts page**.
- 7 Save your search using one of the following methods:
 - ◆ Click **Apply** to save changes and leave the Polling Range Definition window open.
 - ◆ Click **OK** to save changes and close the Polling Range Definition window.

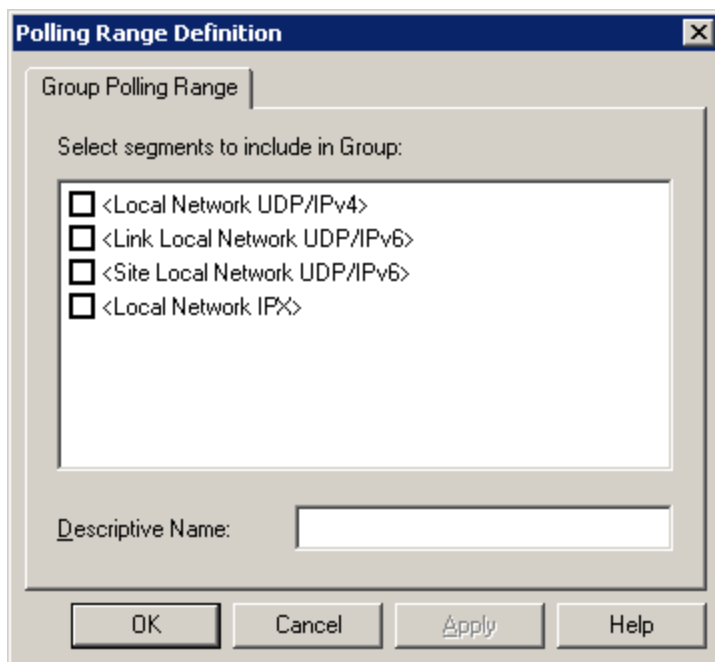
Group one or more saved searches

Two or more searches can be grouped together to poll for Host computers. The result of using a polling group is that the combined results appear in a single list on the **Peer-to-Peer Hosts** tab. For example, polling groups can be used to combine the results of UDP/IP and

IPX searches. Searches must be created separately and saved, before they can be combined into a group.

To create a group of searches for polling, follow these steps:

- 1 Select **New > Group** from the Manage Polling Ranges window. The Polling Range Definition window appears.



- 2 Click the check box to select any previously created searches to include in the polling group.
- 3 Enter a name for the polling group in the **Descriptive Name** field.
- 4 Save your polling group using one of the following methods:
 - ◆ Click **Apply** to apply changes and leave the Polling Range Definition window open to create more groups.
 - ◆ Click **OK** to save changes and close the Polling Range Definition window.

Manual polling

Saved searches can be used to manually poll for Host computers, even if the Master is configured for automatic polling.

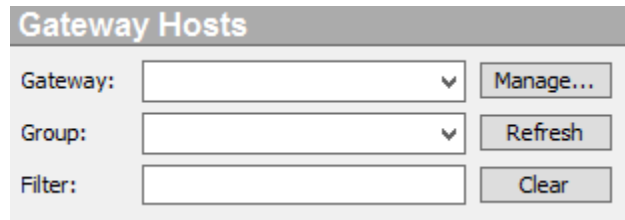
To use a saved search to poll for Host computers, follow these steps:

- 1 Use the **Range** list to select a search. This list includes two default searches through your local network and any searches you create using the Manage Polling Ranges window. Note the following:
 - ◆ When you select a new search from the list, polling begins automatically.
 - ◆ Click **Poll** to refresh the current list of Host computers. This list reflects the search that is currently listed next to **Range**.

- ◆ The search for Host computers might take some time. New Host computers are added to the list as they are found.
- 2 The Poll button changes its title to Stop Polling when polling begins. You can click Stop Polling to terminate the search and leave the current results in the display.

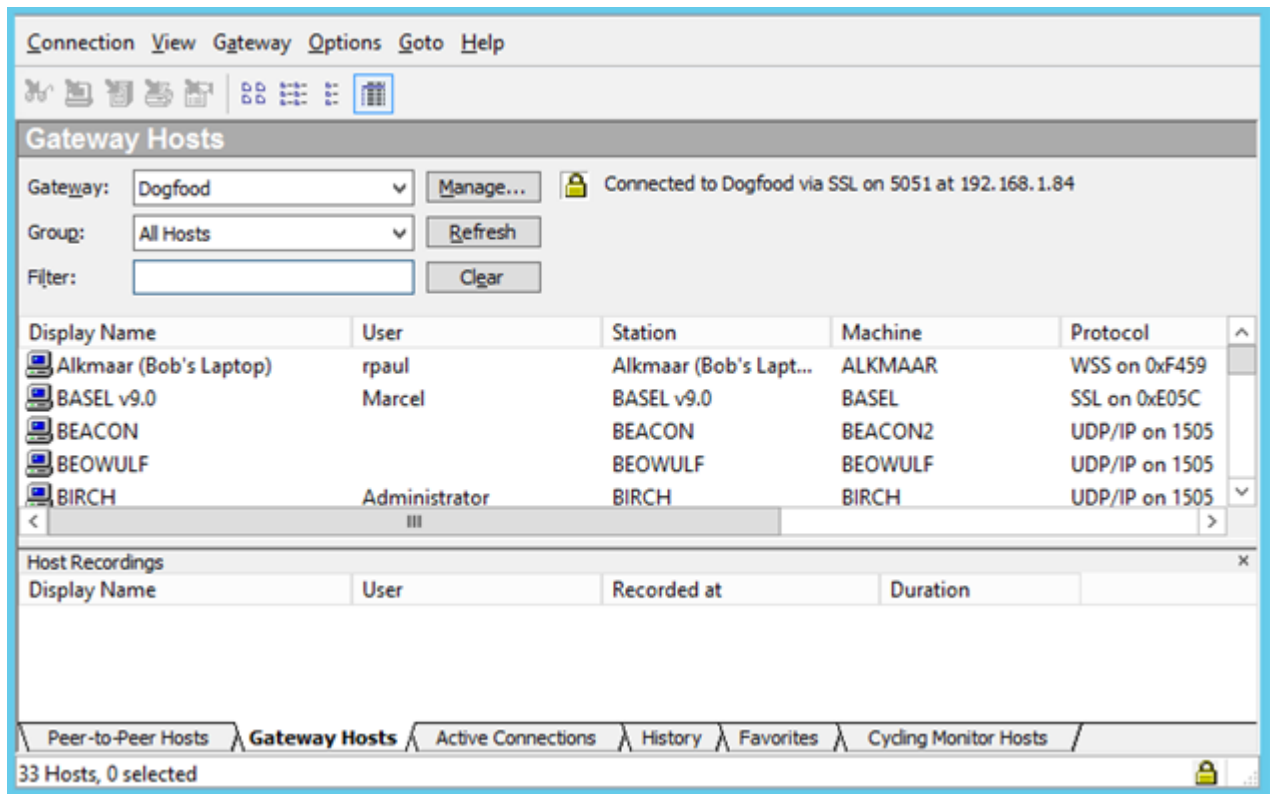
Gateway Hosts tab

When a remote Host computer is configured to report to a PC-Duo Gateway, the Host is known as a Gateway Host. To find a Gateway Host, follow these steps:



Gateway Hosts	
Gateway:	<input type="text"/> Manage...
Group:	<input type="text"/> Refresh
Filter:	<input type="text"/> Clear

- ◆ Choose a Gateway from the **Gateway** drop-down list. Add/modify/delete Gateway entries by clicking on the **Manage** button (see "Add a Gateway" for more information).
- ◆ Choose a group from the **Group** drop-down list. By default, this value is initially set to the All Hosts group. To add/modify/delete custom groups, please see *Gateway Server Guide*. When you choose a group, all the Gateway Hosts in that group will appear in the main Master window. The list of Gateway Hosts will be automatically refreshed to reflect any changes to the group or Gateway, but you can also manually refresh at any time by clicking **Refresh** or choosing **Gateway > Refresh Host List** from the menu.
- ◆ Optionally, enter a filter string in the **Filter** box to narrow down the list of Hosts. Only those Hosts that contain the filter string somewhere in their Display Name, User, Station, Machine, or Network Address fields will be displayed in the list. This makes it easy to find a Host with a particular name, or all Hosts with a certain user logged in, or all Hosts on a certain sub-network, etc. Click the **Clear** button to erase the filter string and display all Hosts in the currently selected group.



From the **Gateway Hosts** tab of the PC-Duo Master window, you can:

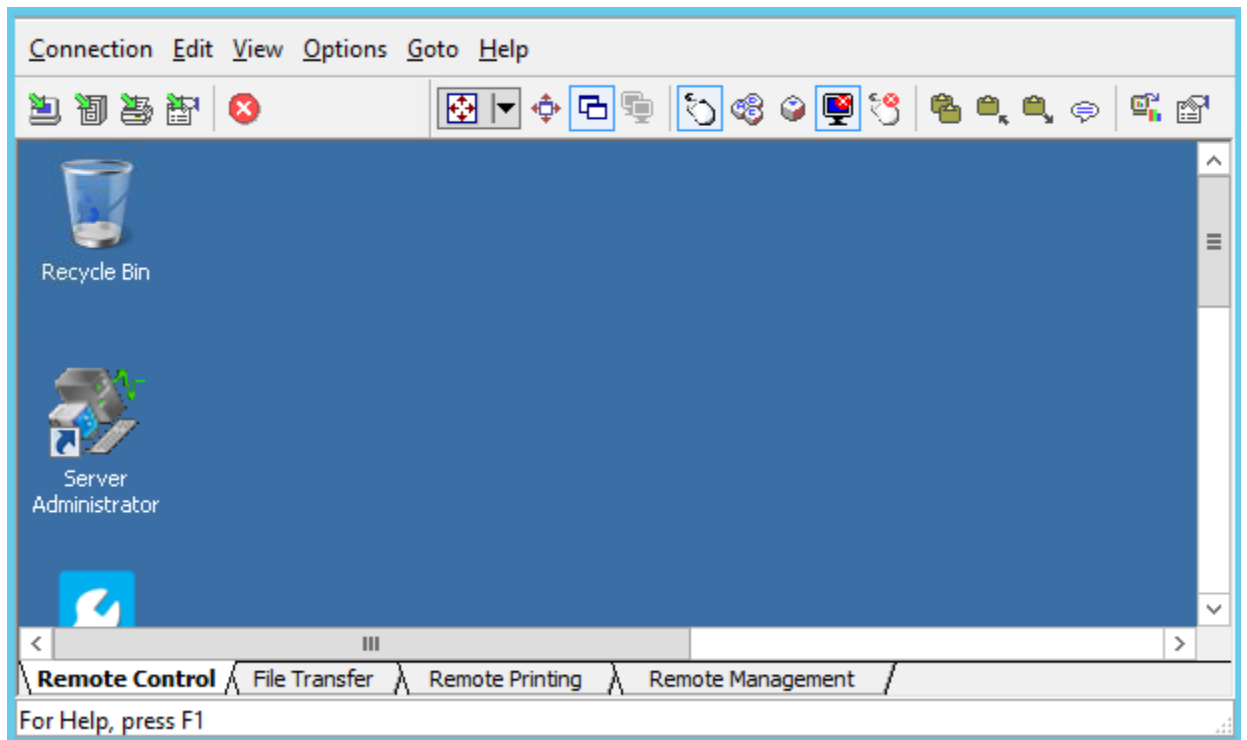
- ◆ “Connect to a Gateway Host”
- ◆ “Record screen activity on a Gateway Host”
- ◆ “Play a recording”
- ◆ “Add a Gateway”
- ◆ “Manage access rights to a Gateway Host”
- ◆ “Send Wake-on-LAN Signal”

Connect to a Gateway Host

You can establish a remote control connection through the selected Gateway (called a "Gateway-managed connection") to one or more Gateway Hosts using any of the following methods:

- ◆ Double-click the Host.
- ◆ Select the Host and choose **Connection > Connect**.
- ◆ Select the Host and choose **Connection > Connect Special**, and then choose **Remote Control**, **File Transfer**, **Remote Printing** or **Remote Management** to specify the default tab to display whenever you connect to that Host computer.
- ◆ Select the Host and choose **Connection > Connect Special > Connect As**, and then type the **Username** and **Password** to log in as a different user.

A separate Master Connection Window will pop up showing the desktop of the remote Host (see Connection Window Operation for more information):



The benefit of a Gateway-managed connection is that security and other configuration options can be enforced by the Gateway on all Hosts in a particular Gateway group or on all Gateway Hosts. These settings will override any individual settings at the Host level.

Record screen activity on a Gateway Host

From the **Gateway Hosts** tab of the PC-Duo Master console window, screen activity on any managed Host can be recorded, even if there is not active remote control connection. When PC-Duo Master initiates a recording session, screen data from managed Host is streamed to a file on the PC-Duo Gateway. The Gateway can support multiple recording sessions at the same time. Consult the screen recording hardware requirements for scalability information.

Host Recordings list

To set up the **Gateway Hosts** tab to display a list of recordings, click **View > Host Recordings**. The **Host Recordings** portion of the tab lists the following information:

- ◆ **Display Name** – Shows the name of the Host computer on which you recorded screen activity, followed by the data and time that you began to record it.
- ◆ **Recorded at** – Shows the date and time that you began to record.
- ◆ **Duration** – Shows the duration of the recording in seconds

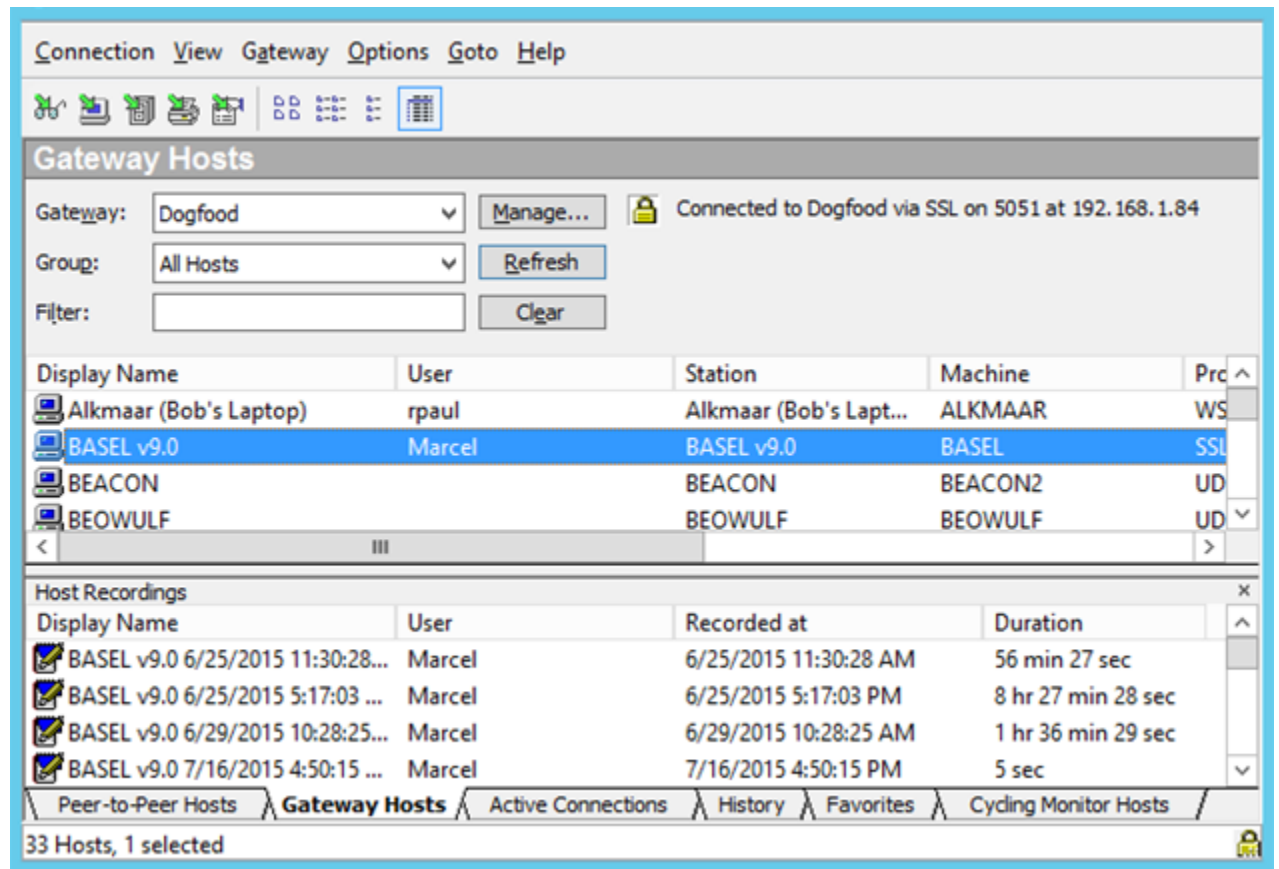
Begin recording

To record activity on a Host computer, you must be connected to the PC-Duo Gateway that manages the Host, but you do not have to be connected to the Host computer itself. One or more recording sessions can occur at the same time.



To record screen activity:

- 1 Connect to the PC-Duo Gateway that manages the Host computers on which you want to record screen activity.
- 2 In the list of managed Hosts, select each Host on which you want to record activity.
- 3 Right-click and choose **Record**, or choose **Connection > Record** from the menu. The Record Selected Host(s) window opens.
- 4 In the Record Selected Host(s) window, specify the **Recording Span** in minutes. The default setting is 5.
- 5 Click **OK** to begin recording.

As soon as the recording begins, it is listed in **Host Recordings**. When a recording has finished, it remains listed in **Host Recordings** but the icon changes.



The following icons indicate the status of a recording:

- ◆  in the **Gateway Hosts** list indicates a Host on which a recording is in process.
- ◆  in the **Host Recordings** list indicates a recording in process.

◆  in the **Host Recordings** list indicates a recording that has finished.

Adjust the time span for recording

When a recording is in process you can adjust its recording time.

- 1 In the **Host Recordings** list, select each recording for which you want to change the recording span.
- 2 Right-click and choose **Adjust Recording Time**.
- 3 In the Record Selected Host(s) window, select a different **Recording Span** in minutes and click **OK**.

Stop recording

A recording can be stopped at any time:

- 1 In the **Host Recordings** list, select each recording that you want to stop.
- 2 Right-click and choose **Stop Recording Time** or choose **Connection > Stop Recording** from the menu. The recording stops immediately.

Play a recording

Recordings can be played back in the following ways:

- ◆ From the PC-Duo Gateway, which streams the recording to the Master.
- ◆ From a PC-Duo recording file, that has been saved with the `.PrxRec` extension to a local drive.

The recording plays in the PC-Duo Master Playback window. For more information, see [“Playback Window Operation”](#).

Play a recording from the PC-Duo Gateway

To play a recording from the PC-Duo Gateway:

- 1 Select the recording you want to play.
- 2 Right-click the recording and choose **Playback Recording** or choose **Connection > Playback Recording** from the menu.

The Playback window opens and the recording begins to play.

Play a recording from a file

Use this feature to either copy to a disc or email a recording file to a location that may not be able to access the PC-Duo Gateway. The recordings are stored by the PC-Duo Gateway at a location configured by the Gateway Administrator (which may or may not be accessible through a network share).

Delete a recording

Delete a recording from the Host Recordings list and the PC-Duo Gateway.

- 1 In the **Host Recordings** list, select each recording that you want to delete.

2 Right-click and choose **Delete Recording** or choose **Connection > Delete Recording** from the menu. The recording is removed from the **Host Recordings** list and deleted from the PC-Duo Gateway.

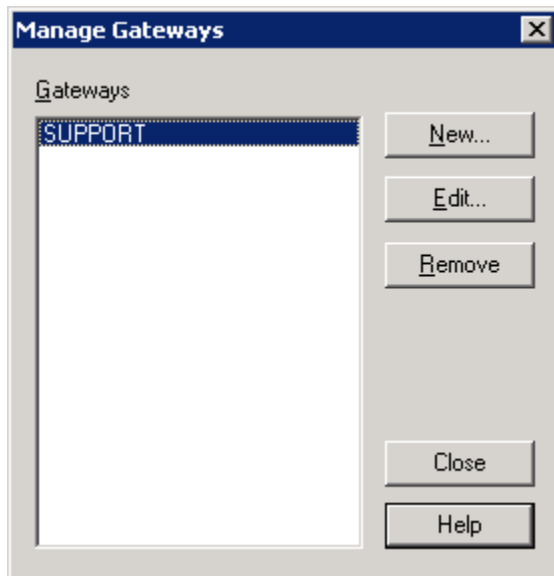
NOTE: If you save a PC-Duo recording file to a local drive, you must use Windows Explorer to delete the .PrxRec file.

Add a Gateway

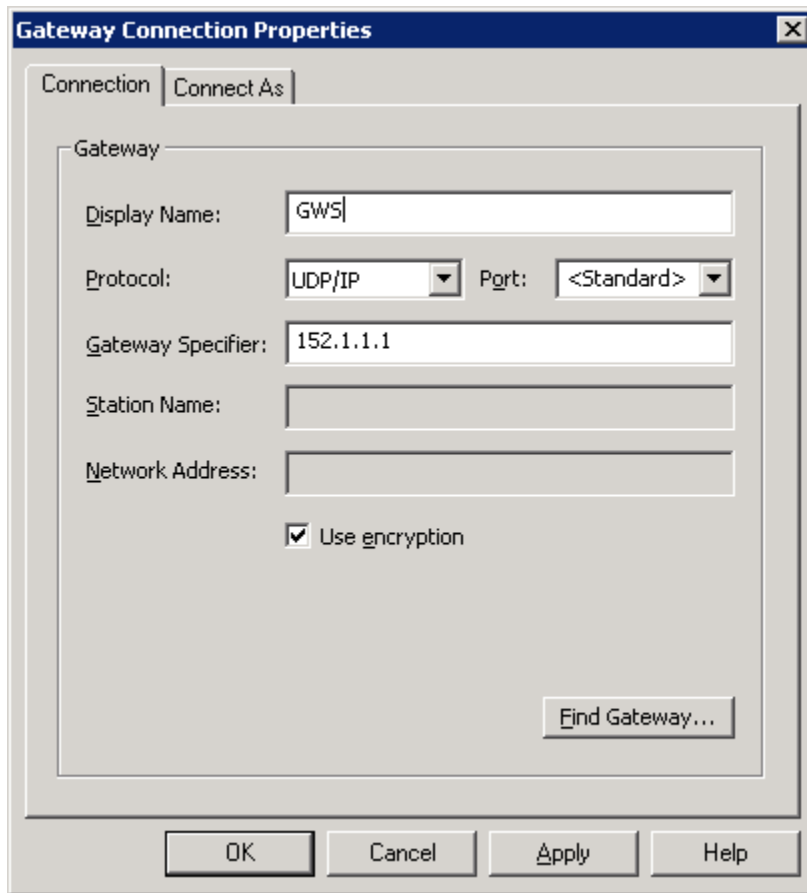
To make a connection from PC-Duo Master to a Gateway Host computer, the PC-Duo Gateway must be added to the drop-down list of PC-Duo Gateways.

To add a PC-Duo Gateway:

1 From the **Gateway Hosts** tabs, click **Manage**, or choose **Gateway > Manage Gateway List** from the menu. The **Manage Gateways** window opens.



2 Click **New**. The **Gateway Connection Properties** window opens.



3 In the **Connection** tab, follow these steps:

- ◆ Enter a name for the PC-Duo Gateway in the **Display Name** box.
- ◆ Select a connection protocol from the **Protocol** list.
- ◆ Select a standard **Port** or type in a port number.

NOTE: The default port number for SSL protocol is 443. Both TCP and SSL cannot listen on the same port, and must therefore be configured for distinct ports. The default <Standard> PC-Duo Gateway port number for TCP and UDP is 2303.

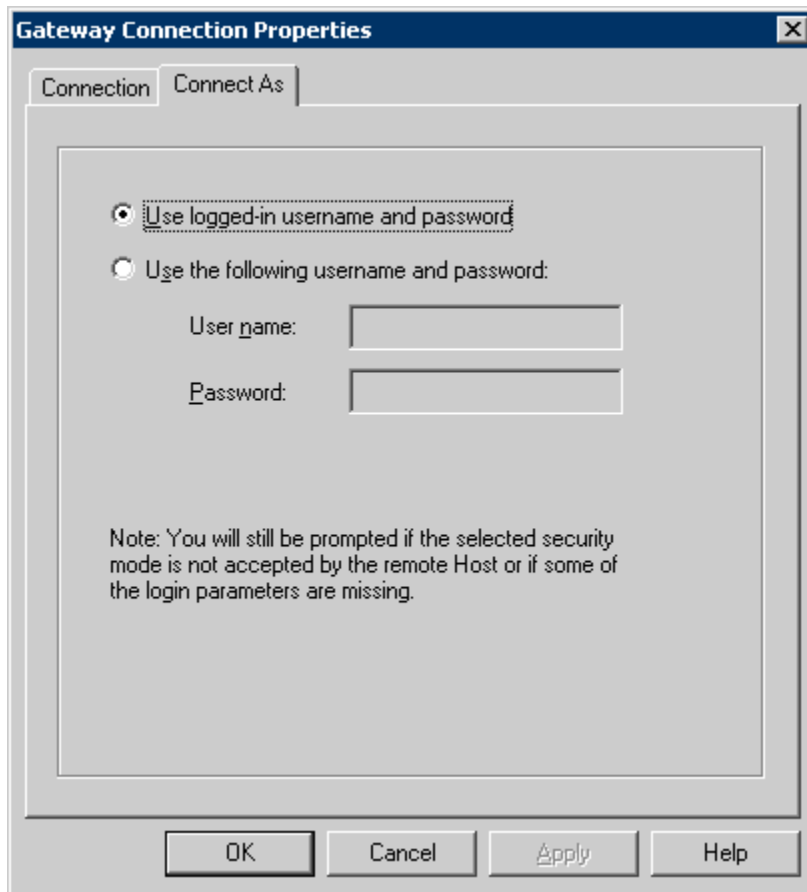
- ◆ Identify the PC-Duo Gateway in the **Gateway Specifier** text box with either of the following methods:
 - ◆ Type the server name, DNS name, or network IP address
 - ◆ Click **Find Gateway** to open the **Find Gateway Wizard**, which walks you through the steps to find a PC-Duo Gateway.

4 If you want to change the default **Protocol** or **Port**, select another choice from the list. See “[Connection tab](#)” for details.

5 In the **Connect As** tab, there are two login options for connecting to the PC-Duo Gateway:

- ◆ Leave the default, **Use logged-in username and password**, to accept the existing user login credentials.

- ◆ Select **Use the following username and password** and type a different **User name** and **Password** to change the login credentials.



6 Click **OK** to close the **Gateway Connection Properties** window. The PC-Duo Gateway is now listed in the **Manage Gateways** window.

7 Modify/delete Gateways in the **Manage Gateways** window:

- ◆ Select a PC-Duo Gateway in the list and click **Edit** to edit its properties.
- ◆ Select a PC-Duo Gateway in the list and click **Remove** to remove it.
- ◆ Click **Close** to return to the PC-Duo Master window.

Pre-defined (administrator-supplied) Gateways

PC-Duo Master version 12.7 and later support pre-defined entries that automatically appear in the drop-down list of PC-Duo Gateways. The entries are defined by an administrator using PC-Duo Deployment Tool version 12.7 or later and pushed to the Master machine either when PC-Duo Master is installed, or at any later time using the Deployment Tool's "Update Master Settings" function. This helps make PC-Duo Master "ready to run" immediately upon installation, for those users who connect to Hosts via PC-Duo Gateway.

PC-Duo Master follows these rules when a set of Gateway configurations are pushed via Deployment Tool, whether at install time or via the "Update Master Settings" function:

1. New settings take effect only after Master is exited and restarted.
2. Gateways pushed via Deployment Tool are marked “read only” and cannot be modified by the end-user.
3. Gateways pushed via Deployment Tool apply to all users of the machine, but do not affect any user-defined Gateways.
4. Any previously pushed Gateway that does not appear in the new list will be deleted. Gateways are matched by protocol, address and station specifier.
5. Pushing an empty list will delete all previously pushed Gateways, provided the “Remove all gateways from settings?” checkbox is checked. Otherwise, pushing an empty list will have no effect.
6. Gateways are pushed without username or password settings, so the first time a pre-defined Gateway is used, if the logged in user does not have sufficient rights to connect to that Gateway, he or she will be prompted by PC-Duo Master to enter a set of credentials that allow him or her to connect.

Manage access rights to a Gateway Host

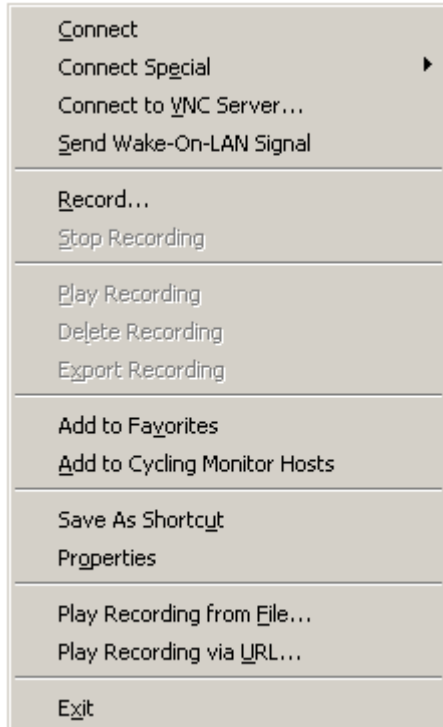
For auditing purposes, your network administrator may require that all remote control connections be established through a PC-Duo Gateway. If this is the case, your remote control access rights for Gateway Hosts are determined by the credentials you use to connect to the PC-Duo Gateway. Usually, these are your Windows credentials.

If your administrator has restricted your access rights, the remote control functionality on a Gateway Host may be limited or denied. See your administrator if you are unable to connect to either a PC-Duo Gateway or a Host computer.

Note: If you connect to a Gateway using an Administrative account (see PC-Duo Web Console Operating Guide) and all available Administrative licenses are already in use, you will be placed in Restricted Administrative Mode, and a message to that effect will appear on right side of the page header on the Gateway Hosts tab. In this mode you have no rights to see any Groups or Hosts. Use the Gateway Administrator or the PC-Duo Web Console to login and resolve any concurrent usage or licensing issues.

Send Wake-on-LAN Signal

When a Master attempts to connect through the Gateway to a remote computer with a Host, and the last Host status in the Gateway indicates that the Host is offline, PC-Duo assumes that the remote computer is asleep, and will automatically send the Wake-on-LAN signal (based on its MAC address and last known IP address). If the Gateway doesn't think the Host is offline, this step is skipped.

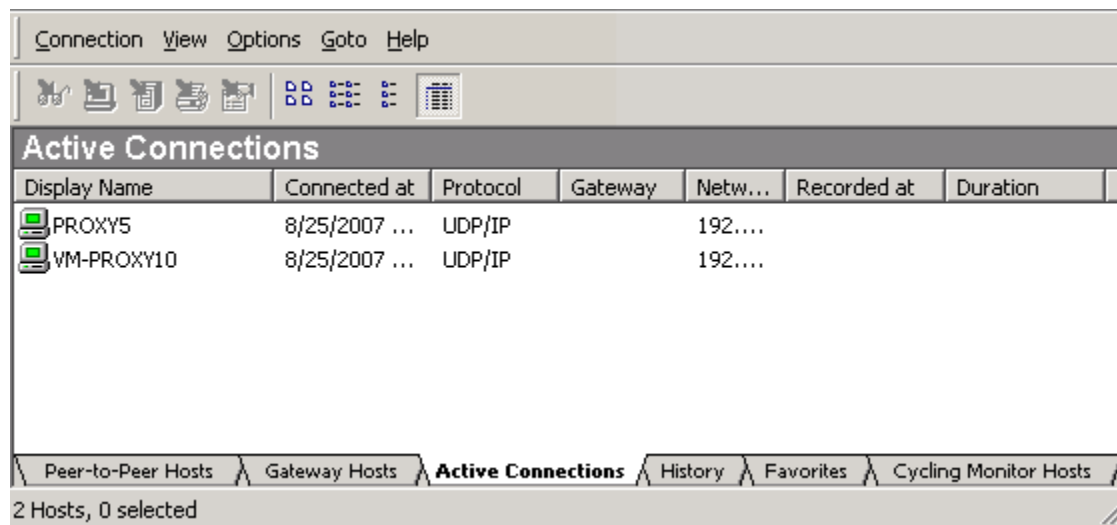


If the remote computer was asleep, and wakes up in a timely manner, the Master connection attempt will be successful (although it may take longer than if the computer were already awake). If the computer doesn't wake up in a timely manner, the connection attempt will fail, but the computer will now be awake so if the Master attempts a connection again, it should be successful.

The Master user can also explicitly try to wake up an offline computer by selecting a Host with offline status in the Gateway Hosts tab and then invoking the Send Wake-on-LAN Signal command from the console menu bar (**Connection > Send Wake-on-LAN Signal**) or Gateway Hosts tab context menu. If a Host is not selected, the Send Wake-on-LAN Signal command will not be active.

Active Connections tab

View active remote connections from the **Active Connections** tab of the PC-Duo Master window.



View active connections as follows:

- ◆ Each Host computer to which you establish a remote control connection is listed separately.
- ◆ If you establish a cycling connection, then the corresponding currently active Host computer is listed with a dark green icon.

Select the **Active Connections** tab to view concise information about each of the current connections in five columns:

- ◆ The **Display Name** column indicates the name by which the connection is identified.
- ◆ The **Connected at** column indicates the time and date at which the connection is established.
- ◆ The **Protocol** column indicates whether the connection uses the TCP/IP, UDP/IP, SSL or IPX protocol.
- ◆ The **Gateway** column indicates the PC-Duo Gateway (if any) that manages the connection.
- ◆ The **Network Address** column indicates the network address of the Host computer, displayed in IP or IPX format as appropriate.
- ◆ The **Recorded at** column indicates the time when a recording session on the Host computer was started
- ◆ The **Duration** column indicates how long the recording session lasted

Double-click an entry to return to the associated connection activity (remote control or cycling).

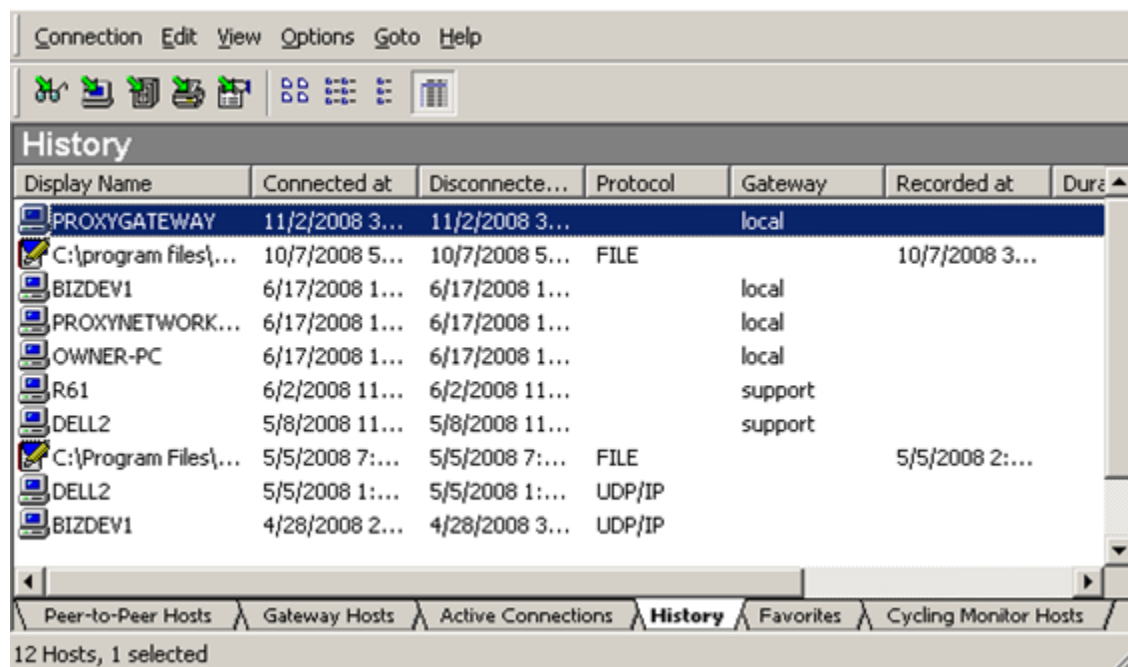
Connection menu from the Active Connections tab

When one of the entries in the **Active Connections** list is selected, the following **Connection** menu items are available:

- ◆ Use **Show Window** to move the associated connection activity to the foreground.
- ◆ Use **Disconnect** to terminate a selected active connection.
- ◆ Use **Add to Favorites** to add a selected remote Host computer to the list of favorite Host computers. See [“Favorites”](#).
- ◆ Use **Add to Cycling Monitor Hosts** to add a selected Host computer to the list on the Cycling Monitor Hosts tab of the PC-Duo Master window. See [“Cycle through the Cycling Monitor Hosts list”](#).
- ◆ Use **Save as Shortcut** to create a shortcut file (with the extension `.PRX4`) for the selected Host computer.
- ◆ Use **Properties** to display information about a selected remote connection.

History tab

View a list of the most recent Host computers to which you have connected through the **History** tab of the PC-Duo Master window.



Select the **History** tab to view concise information about each of your most recent connections:

- ◆ The **Display Name** column indicates the name by which the connection is identified.
- ◆ The **Connected at** column indicates the time and date at which the connection is established.
- ◆ The **Disconnected at** column indicates the time and date at which the connection was terminated.
- ◆ The **Protocol** column indicates whether the connection uses the TCP/IP, UDP/IP, SSL or IPX protocol.
- ◆ The **Gateway** column indicates the PC-Duo Gateway (if any) that manages the connection.
- ◆ The **Network Address** column indicates the network address of the Host computer, displayed in IP or IPX format as appropriate.
- ◆ The **Recorded at** column indicates the time when a recording session on the Host computer was started
- ◆ The **Duration** column indicates how long the recording session lasted

The following tasks can also be performed:

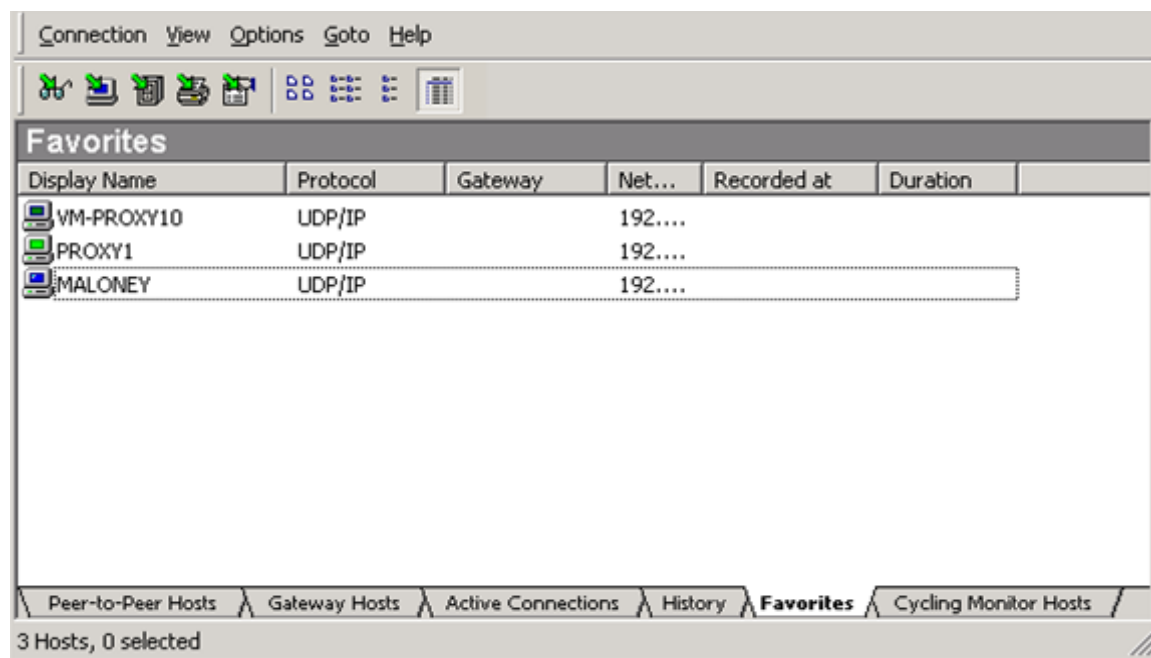
- ◆ Sort history information: Sort the information displayed in the History tab according to the values of any column heading by clicking the column heading. For example, click **Display Name** to sort the items in the list alphabetically by name.
- ◆ Open a connection to a Host computer: Open a connection to any Host computer listed in the History tab by double-clicking the Host computer name.
- ◆ Clear items in the history list: Select **Edit > Clear History** from the History tab of the PC-Duo Master console window to clear the history list.

NOTE: See *[“Master Settings”](#)* for information on settings relevant to the History tab.

Favorites tab

Save information about the most common or important connections that you make, and list these connections on the **Favorites** tab of the PC-Duo Master window.

For see specific properties of Hosts listed on **Favorites** tab, see "Properties of favorite Host computers".



Select the **Favorites** tab to view concise information about each of your favorite connections:

- ◆ The **Display Name** column indicates the name by which the connection is identified.
- ◆ The **Protocol** column indicates whether the connection uses the TCP/IP, UDP/IP, SSL or IPX protocol.
- ◆ The **Gateway** column indicates the PC-Duo Gateway (if any) that manages the connection.
- ◆ The **Network Address** column indicates the network address of the Host computer, displayed in IP or IPX format as appropriate.
- ◆ The **Recorded at** column indicates the time when a recording session on the Host computer was started
- ◆ The **Duration** column indicates how long the recording session lasted

Connection menu from the Favorites tab

When one of the entries in the Favorites list is selected, the following Connection menu items are available:

- ◆ Use **Connect** to connect to a favorite Host computer

- ◆ Use **Connect As** to connect to a favorite Host computer with credentials other than your Windows user name and password.
- ◆ Use **Remove** to delete a favorite Host computer from the list of favorites
- ◆ Use **Rename** to assign a new name to a favorite Host computer
- ◆ Use **Add to Cycling Monitor Hosts** to add a favorite Host computer to the list on the Cycling Monitor Hosts tab of the PC-Duo Master control panel. See ["Cycle through the Cycling Monitor Hosts list"](#).
- ◆ Use **Save as Shortcut** to create a shortcut file (with the extension .PRX4) for the favorite Host computer.
- ◆ Use **Properties** to display information about a favorite Host computer.

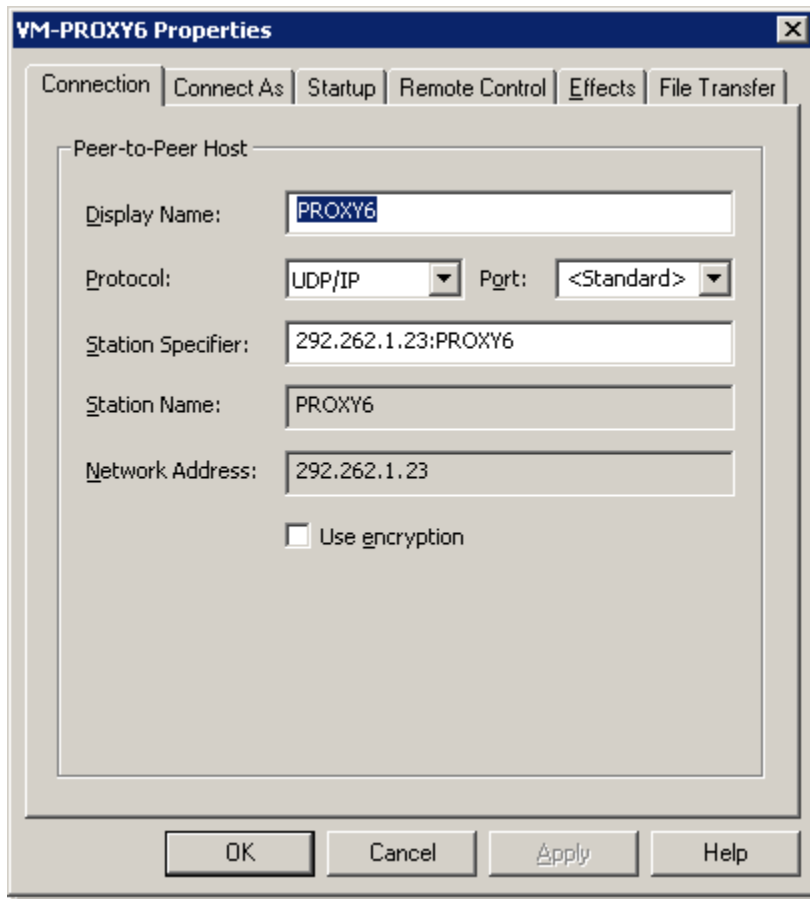
Properties of favorite Host computers

Use **Connection > Properties** from the **Favorites** tab of the PC-Duo Master console window to view or edit connection parameters for a selected Host computer.

Connection tab

Use the **Connection** tab to set and display the settings for favorite Host computers.

If the favorite computer you select is a peer-to-peer Host computer (originally listed on the **Peer-to-Peer Hosts** tab), the **Connection** tab displays information similar to the following:



The following Host computer connection properties can be edited:

- ◆ Connection protocol: Select a **Protocol** from this list.
- ◆ Connection port: Select the standard **Port** or type in a port number.
- ◆ Type in the **Station Specifier** or other items using the following syntax:
`network_address:machine_network_name`. A station specifier is an optional network specifier followed by a colon, and a station name (which can include wild cards). It can be:
 - ◆ a protocol-specific network address prefixed with '@'
 - ◆ a DNS name (for UDP and TCP)
 - ◆ a PC-Duo station specification
- ◆ Check or uncheck **Use encryption**.

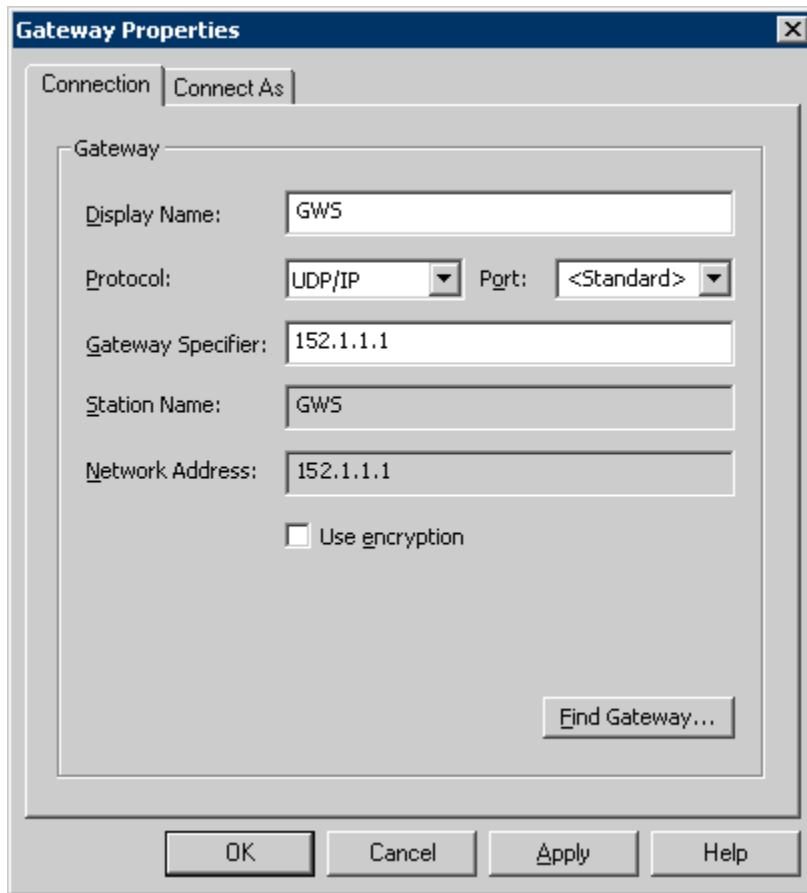
If the favorite computer you select is a managed Host computer (originally listed on the **managed Hosts** tab), the connection properties of a managed Host computer displays.

The screenshot shows the 'FRONTDESK Properties' dialog box with the 'Connection' tab selected. The dialog contains several input fields for configuring the gateway connection. The 'Host key' field is highlighted with a blue selection bar. At the bottom right of the dialog is a 'Gateway...' button.

Field	Value
Display Name	FRONTDESK
Host key	w={9CD708F7-72F0-4821-B322-22AF1C311
Protocol	UDP/IP
Port	1505
Station Name	FRONTDESK
Network Address	192.168.1.102
Workstation ID	{9CD708F7-72F0-4821-B322-22AF1C311E06
User	

Edit the Host key, which is the key used by the PC-Duo Gateway to specify the Host computer address.

When **Gateway** is clicked, the following information relevant to your local connection to the PC-Duo Gateway appears.



Connect As tab

Specify credentials to use when connecting to a Host computer for peer-to-peer connections or to a PC-Duo Gateway.

Select the following options from the **Connect As** tab:

- ◆ Select **Use logged-in username and password** to log in with the username and password for your local computer.
- ◆ Select **Use the following username and password** to log in to the associated Host computer with other credentials (username and password). Enter the appropriate credentials in the fields provided.

If you do not enter the required username and/or password, the Enter Network Password window appears when you attempt to connect. See [“Connecting with different credentials”](#) for more information.

Startup tab

From the **Startup** tab, choose the name of one of the PC-Duo Master Connection Window tabs from the **Make the following tab active** at connect list. The name you choose is the default tab you view when you connect to a Host computer.

For more information, see the **Startup** tab on the "Default Connection Window Settings" page.

Remote Control tab

Specify the default behavior for remote control connections from the **Remote Control** tab.

For more information, see the **Remote Control** tab on the "Default Connection Window Settings" page.

Effects tab

Use the options on the **Effects** tab to provide default settings for enabling and disabling certain visual effects when connecting to a Host computer. By disabling any of the listed visual effects, you can reduce the amount of screen data that needs to be captured and transmitted over the network.

For more information, see the **Effects** tab on the "Default Connection Window Settings" page.

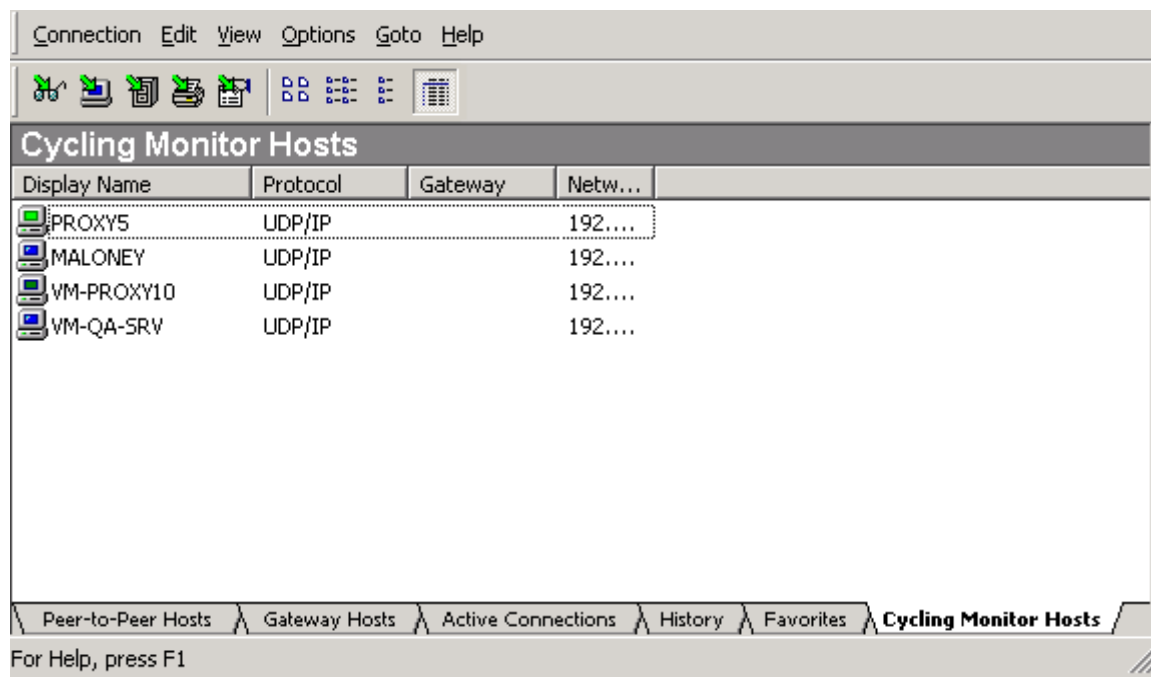
File Transfer tab

Use the **File Transfer** tab to provide default settings for remote file transfer.

For more information, see the **File Transfer** tab on the "Default Connection Window Settings" page.

Cycling Monitor Hosts tab

The Cycling Monitor allows you to serially check in on a set of remote Host computers to monitor the activity of those Hosts but not to take control of them. The Cycling Monitor has its own window, similar to the Master Connection Window, except that it is view-only mode at all time (see “[Cycling Monitor Window Operation](#)” for more information). The Cycling Monitor window will show the desktop of each remote Host listed on the **Cycling Monitor Hosts** tab for a predetermined period of time.



In the Cycling Monitor Hosts tab, you can perform the following tasks:

- ◆ “Add Host computers”
- ◆ “Sort Host computers”
- ◆ “Connect to Host computers”
- ◆ “Cycle through the Cycling Monitor Hosts list”
- ◆ “Open Cycling Monitor”
- ◆ “Remove Host computers”
- ◆ “Clear all Host computers”

Select the **Cycling Monitor Hosts** tab to view concise information about any Host you want to monitor:

- ◆ The **Display Name** column indicates the name by which the connection is identified.
- ◆ The **Protocol** column indicates whether the connection uses the TCP/IP, UDP/IP, SSL or IPX protocol.

- ◆ The **Gateway** column indicates the PC-Duo Gateway (if any) that manages the connection.
- ◆ The **Network Address** column indicates the network address of the Host computer, displayed in IP or IPX format as appropriate.

Connection menu from the Cycling Monitor Hosts tab

When the **Cycling Monitor Hosts** tab of the PC-Duo Master console window is selected, the **Connection** menu options change. The following additional options appear:

- ◆ Show Window – Use **Connection > Show Window** to open the Cycling Monitor window to view the activities of that Host computer and other Host computers on the cycling list.
- ◆ Remove – To remove a Host computer listed on the **Cycling Monitor Hosts** tab, select it and then select **Connection > Remove**.
- ◆ Rename – To change the displayed name for a Host computer listed on the **Cycling Monitor Hosts** tab, select it and then select **Connection > Rename**.

Add Host computers

Add to the list of Host computers in the **Cycling Monitor Hosts** tab by selecting a Host computer on any other tab of the PC-Duo Master console window, and then choose **Connection > Add to Cycling Monitor Hosts**.

When you add a Host computer to the list in the **Cycling Monitor Hosts** tab, the PC-Duo Master Cycling Monitor window is automatically moved to the top (and opened, if it has not yet been opened) if the **Activate if a new object has been appended** option in the Cycling Monitor Settings window is selected.

Sort Host computers

Sort the list of Host computers on the Cycling Monitor Hosts tab of the PC-Duo Master console window by selecting one of the column titles (such as **Display Name** or **Network Address**). The listed Host computers are sorted alphabetically or numerically, according to the type of information that is displayed in the selected column.

Connect to Host computers

Double-click a Host computer listed on the **Cycling Monitor Hosts** tab to monitor its activity through the PC-Duo Master Cycling Monitor window.

Cycle through the Cycling Monitor Hosts list

The default for the PC-Duo Master Cycling Monitor window is to cycle through the Host computers in the list one at a time. Change the cycle rate using **Options > Cycling Monitor Settings** or the tool bar. Freeze the monitoring process from the **Connection** menu.

As you cycle through monitoring Host computers in the PC-Duo Master Cycling Monitor window, view the connection status for each Host computer from the icons listed on the **Cycling Monitor Hosts** tab.

Open Cycling Monitor

To open the PC-Duo Master Cycling Monitor window, double-click a selected Host computer on the **Cycling Monitor Hosts** tab.

Remove Host computers

To remove a selected Host computer from the list on the **Cycling Monitor Hosts** tab, right-click and select **Remove**.

Clear all Host computers

To clear all Host computers from the **Cycling Monitor Hosts** list, select **Edit > Clear Cycling Monitor Hosts**.

VNC Hosts

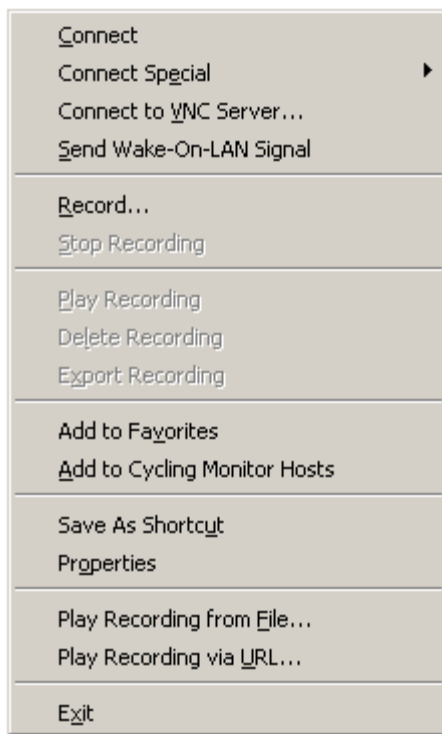
In addition to Peer-to-Peer Hosts and Gateway Hosts, PC-Duo Master can reach and establish remote control connections to remote computers running a standard version of the Virtual Network Computing (VNC) server ("VNC Hosts"). PC-Duo Master includes a proprietary implementation of the VNC Remote Frame Buffer (RFB) protocol, enabling it to function as a VNC client that can connect to and interoperate with any standard VNC server.

PC-Duo Master supports connections to VNC server running on the following operating systems:

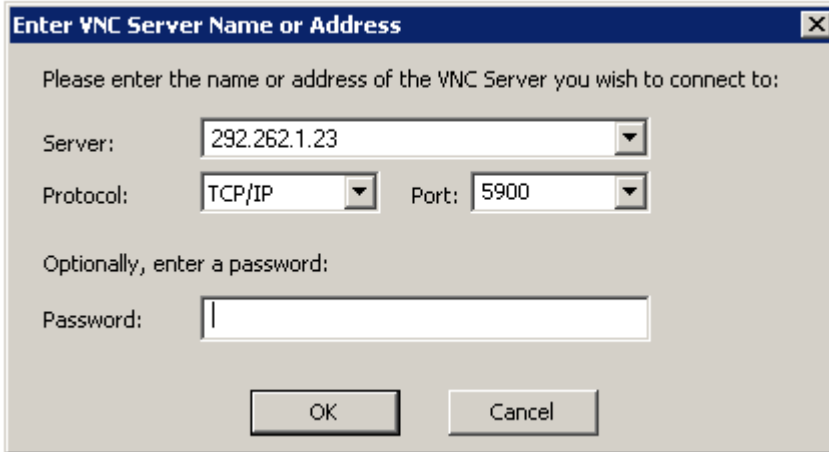
- ◆ Apple Macintosh (when the built-in screen sharing is configured to allow VNC connections, or when an alternative VNC server is installed and configured). The following specific configurations are supported:
 - ◆ OS X 10.5+
- ◆ Linux (when a VNC server is installed and configured). The following configurations are supported:
 - ◆ Linux (any) running the VNC server

Peer-to-Peer Connections to VNC Server

PC-Duo Master console includes a menu item **Connection > Connect to VNC Server...** to initiate a peer-to-peer connection to a VNC server:



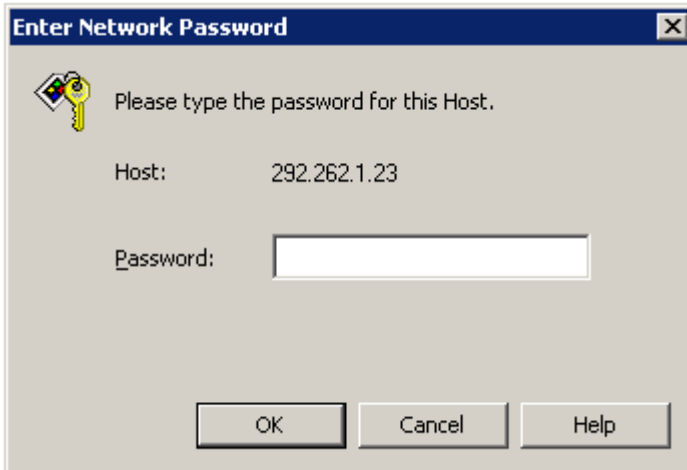
A dialog box will appear to prompt for the information required to connect to the server:



The dialog box titled "Enter VNC Server Name or Address" has a close button (X) in the top right corner. It contains the instruction "Please enter the name or address of the VNC Server you wish to connect to:". Below this, there are three input fields: "Server:" with a dropdown menu showing "292.262.1.23", "Protocol:" with a dropdown menu showing "TCP/IP", and "Port:" with a dropdown menu showing "5900". Below these fields is the instruction "Optionally, enter a password:" followed by a "Password:" label and an empty text input field. At the bottom are "OK" and "Cancel" buttons.

As illustrated, the required information is the server name (DNS name or IP address), the protocol (currently the only option is TCP), and the port (default is set to port 5900).

VNC servers normally require a password for authentication. This password can be entered in the dialog box. If no password is entered, but the VNC server requires one, a dialog box will appear to collect the password:



The dialog box titled "Enter Network Password" has a close button (X) in the top right corner. It features a key icon on the left and the instruction "Please type the password for this Host.". Below this, there are two input fields: "Host:" with a text field containing "292.262.1.23" and "Password:" with an empty text input field. At the bottom are "OK", "Cancel", and "Help" buttons.

Once connected, the remote display of the computer running the VNC server appears in a standard Master Connection Window.

The Connection Window for a VNC server has the following limitations:

- ◆ Only the Remote Control service is supported at this time. Menu options and icons for other services such as File Transfer, Remote Printing, Remote Management and Chat are disabled.
- ◆ Other configuration options are not applicable

◆ Some shortcut commands are not applicable, depending on which OS platform the VNC server is running; see table below for more detail

Shortcut Command	MacOS	Windows	Linux
Ctrl-Alt-Del	No	Yes	No
Windows-L	No	Yes	No
F11	Yes	Yes	Yes
PrintScreen & Alt-PrintScreen	No but Alt+Shift+3+Mouse will work instead	No	No

Command Line Support for VNC Hosts

Connections to VNC servers can be invoked from the Master command line utility using the following option:

- “/v” indicates that the specified Host is a VNC server. This switch can be used in conjunction with the /p (protocol), /s (station specifier), and /x (password) switches to fully specify a VNC server to connect to. See "Command line options" for more detail.

Menu options

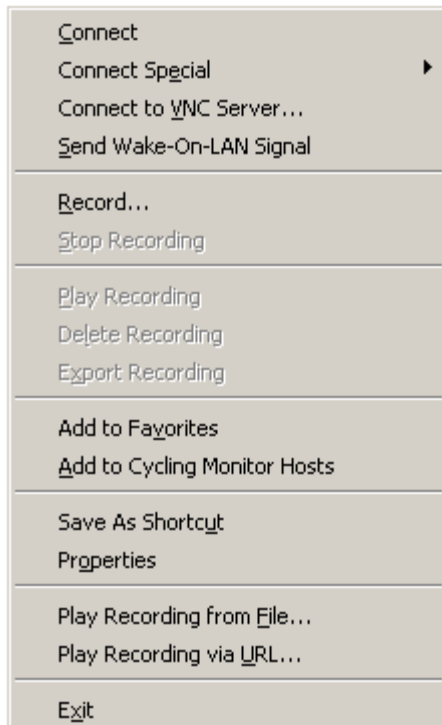
Use the following menus to manage configuration settings for PC-Duo Master:

- ◆ Select “[Connection](#)” to see detailed list of all remote connection options
- ◆ Select “[Edit](#)” to modify the list of Host computers on the History or Cycling Monitor Hosts tab
- ◆ Select “[View](#)” to show or hide parts of the PC-Duo Master window
- ◆ Select “[Gateway](#)” to operate the **Manage** and **Refresh** buttons on the Gateway Hosts tab
- ◆ Select “[Options](#)” for modify default display options for various windows
- ◆ Select “[Goto](#)” to select tabs on the PC-Duo Master window
- ◆ Select “[Help](#)” to obtain help on the product

NOTE: The menus change according to which tab you select in the PC-Duo Master window.

Connection

Use the following **Connection** menu options on the **Peer-to-Peer Hosts** and **Gateway Hosts** tabs of the PC-Duo Master console window:



- ◆ “[Connect](#)”
- ◆ “[Connect Special](#)”
- ◆ “[Connect to VNC Server...](#)”

- ◆ “Send Wake-on-LAN Signal”
- ◆ “Record...”
- ◆ “Stop Recording”
- ◆ “Play Recording”
- ◆ “Delete Recording”
- ◆ “Export Recording”
- ◆ “Add to Favorites”
- ◆ “Add to Cycling Monitor Hosts”
- ◆ “Save as Shortcut”
- ◆ “Properties”
- ◆ “Play Recording from File...”
- ◆ “Play Recording via URL...”

See also the following **Connection** menu options that become available depending on which tab you select:

- ◆ “Connection menu from the Cycling Monitor Hosts tab”
- ◆ “Connection menu from the Active Connections tab”
- ◆ “Connection menu from the Favorites tab”

Connect

Select **Connection > Connect** from any tab other than Active Connections to connect to a selected Host computer. A PC-Duo Master Connection Window appears.

Use the **PC-Duo Master Connection** window to view or control a remote Host computer. Establish simultaneous connections to one or more Host computers by repeating this procedure.

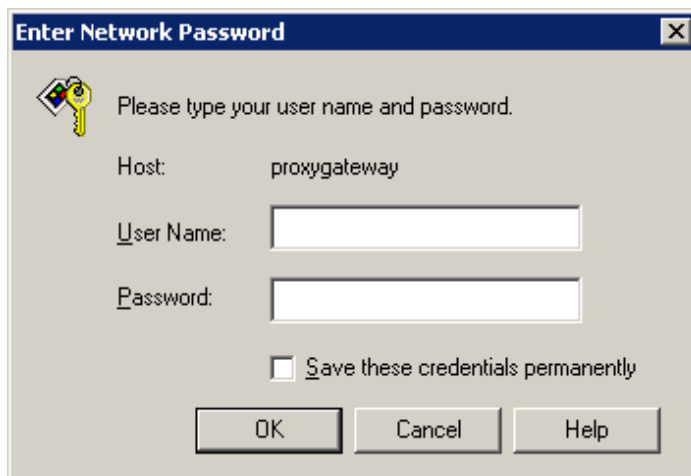
Connect Special

Use **Connection > Connect Special** to choose from the following connection options when you connect to a Host computer:

- ◆ Select **Remote Control** to connect to a selected Host computer and open the PC-Duo Master Connection Window with the **Remote Control** tab selected. See “[Remote Control](#)”.
- ◆ Select **File Transfer** to connect to a selected Host computer and open the PC-Duo Master Connection Window with the **File Transfer** tab selected. See “[File Transfer](#)”.
- ◆ Select **Remote Printing** to connect to a selected Host computer and open the PC-Duo Master Connection Window with the **Remote Printing** tab selected. See “[Remote Printing](#)”.
- ◆ Select **Connect As** to connect to a selected Host computer with credentials other than your Windows user name and password.

Connecting with different credentials

When you connect to a Host computer, you are usually authenticated with the same user name and password with which you logged in to your local computer. Select **Connection > Connect Special > Connect As** to connect to the Host computer with different credentials. When you initiate a connection to a Host that requires a different username and/or password, the Enter Network Password window appears.



Enter Network Password window

Enter an authorized username and/or password for the Host computer (fill in all blank fields) and click **OK**.

Record...

On the managed Hosts tab, select **Record...** to start a recording for any Gateway-managed Host computer that is selected.

Stop Recording

On the managed Hosts tab, select **Stop Recording** to stop any active recording for any Gateway-managed Host computer that is selected.

Play Recording

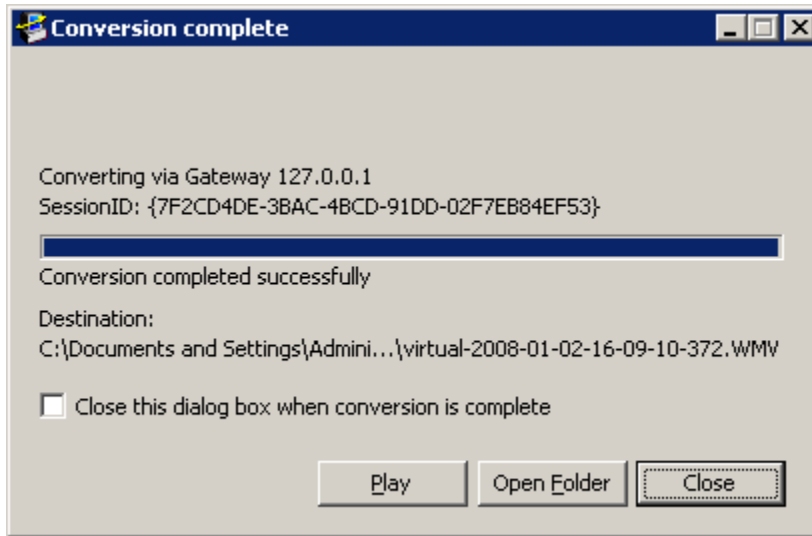
On the managed Hosts tab, select **Play Recording** to activate the Master Playback window and play back a recording selected from the Hosts recordings list in the Master Console.

Delete Recording

On the managed Hosts tab, select **Delete Recording** to delete a recording selected from the Hosts recordings list in the Master Console.

Export Recording

On the managed Hosts tab, select **Export Recording** to save a recording selected from the Hosts recordings list in the Master Console in Microsoft .wmv format. The following dialog box will pop up during and at the completion of the recording:



Add to Favorites

Select **Add to Favorites** to add a selected peer-to-peer or Gateway-managed Host computer to the list of favorite Host computers. The list of favorite Host computers appears when you select the Favorites tab on the PC-Duo Master console window. See [“Favorites”](#).

Add to Cycling Monitor Hosts

Select **Add To Cycling Monitor Hosts** to add a selected Host computer to the list on the Cycling Monitor Hosts tab. This is the list of Host computers you intend to supervise using the PC-Duo Master Cycling Monitor window.

NOTE: If you check **Activate if a new object has been appended** under the General tab of the Cycling Monitor Settings window, cycling monitor connections are automatically activated when you add a Host computer to the **Cycling Monitor Hosts list**.

Save as Shortcut

To save connections that you access frequently as shortcut files on your desktop, use **Connection > Save As Shortcut**. The shortcut file, which has the extension **.PRX4**, provides an easy way to connect to a selected Host computer for the purpose of remote control, file transfer, or remote printing.

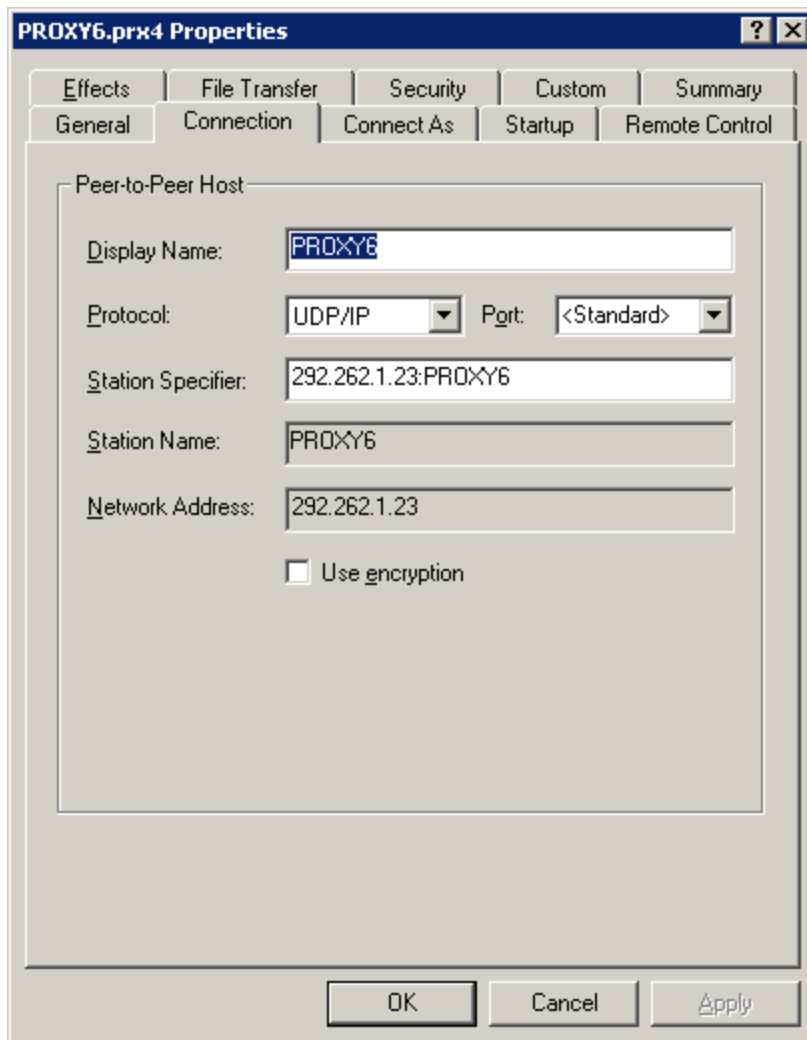
Alternatively, drag and drop connections to your desktop to create a shortcut.

Use a shortcut file to establish a connection to its associated Host computer by double-clicking the shortcut file from the desktop.

The shortcut file saves information about the connection to the Host computer. You can view information about your Host computers by right-clicking the shortcut file from your desktop and selecting **Properties**. This information includes the following:

- ◆ The protocol used to access the Host computer
- ◆ The Host computer network address
- ◆ The Host computer station name

See [“Properties of favorite Host computers”](#) for more information.



Properties

Use **Connection > Properties** to display the connection information for a selected Host computer.

When a Host computer is selected from the **Favorites** or **Cycling Monitor Hosts** tabs, you can edit the properties that appear. Editable properties also appear when you right-click a shortcut file that is saved to your computer and select **Properties**.

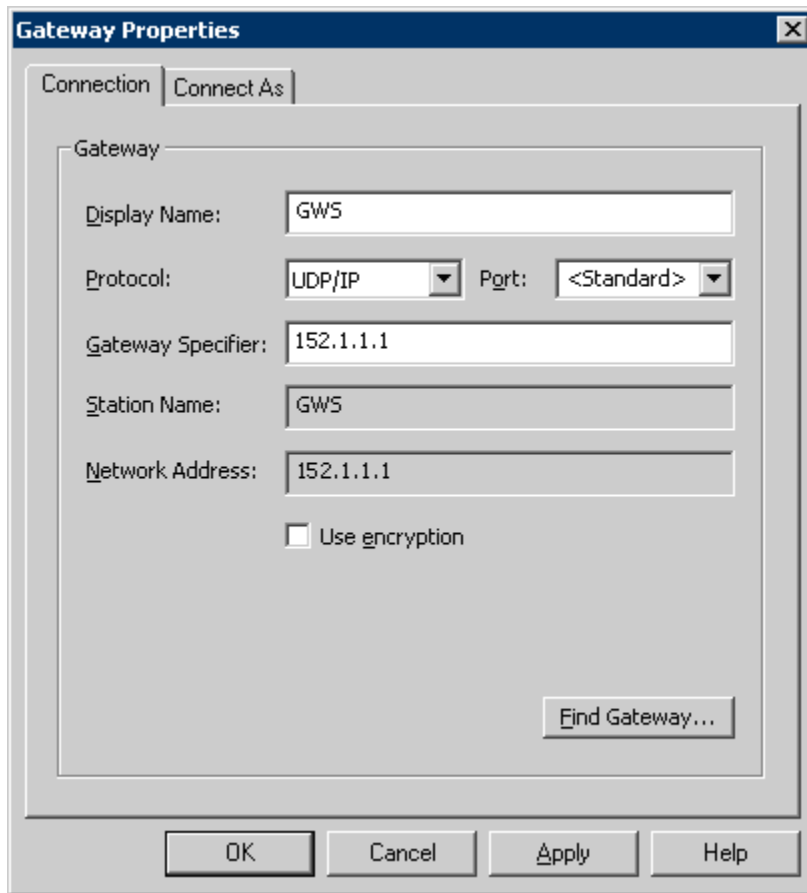
When a Host computer is selected from the **Peer-to-Peer Hosts** or **managed Hosts** tabs, you cannot edit the properties that appear. The following **Properties** window is for a managed Host and is not editable.

The screenshot shows the 'FRONTDESK Properties' dialog box with the 'Connection' tab selected. The dialog contains several input fields for configuring the connection to a Gateway Host. The fields are: Display Name (FRONTDESK), Host key (w={9CD708F7-72F0-4821-B322-22AF1C311), Protocol (UDP/IP), Port (1505), Station Name (FRONTDESK), Network Address (192.168.1.102), Workstation ID ({9CD708F7-72F0-4821-B322-22AF1C311E0), and User (empty). A 'Gateway...' button is located at the bottom right of the input fields. At the bottom of the dialog are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

Field	Value
Display Name	FRONTDESK
Host key	w={9CD708F7-72F0-4821-B322-22AF1C311
Protocol	UDP/IP
Port	1505
Station Name	FRONTDESK
Network Address	192.168.1.102
Workstation ID	{9CD708F7-72F0-4821-B322-22AF1C311E0
User	

NOTE: When you view properties for a Host computer listed on the managed Hosts tab, the protocol and port specified indicate those used for the connection between the remote Host computer and the PC-Duo Gateway.

Click **Gateway...** to see properties for the connection between the PC-Duo Gateway and the Master computer.



Edit

Select **Edit > Clear History** from the **History** tab of the PC-Duo Master console window to clear the history list.

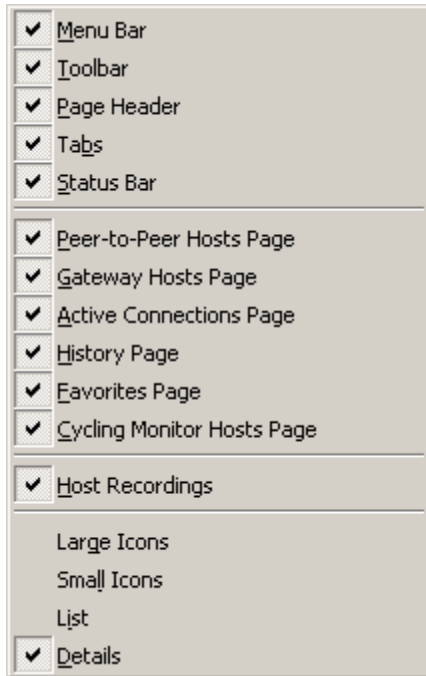
Select **Edit > Clear Cycling Monitor Hosts** from the **Cycling Monitor** tab of the PC-Duo Master console window to clear the Cycling Monitor Hosts list.

View

Modify display options for the PC-Duo Master console window by using the **View** menu.

The **View** menu is organized into three sections:

- ◆ Top section - user interface elements in the PC-Duo Master window
- ◆ Middle section - tabs in the PC-Duo Master window
- ◆ Bottom section - icon viewing options



User interface elements in the PC-Duo Master console window

Toggle the appearance of the following elements in the PC-Duo Master console window by checking or unchecking items on the **View** menu:

- ◆ Menu Bar
- ◆ Tool Bar
- ◆ Page Header, the heading displayed for each selected tab
- ◆ Status Bar
- ◆ Tabs

Tabs in the PC-Duo Master console window

Control the appearance of the following tabs by checking or unchecking the tab names listed on the **View** menu:

- ◆ Peer-to-Peer Hosts
- ◆ Gateway Hosts
- ◆ Active Connections
- ◆ History
- ◆ Favorites
- ◆ Cycling Monitor Hosts

Icon viewing options

When a Host computer icon is selected on any tab, the display option for icons can be set by using the **View** menu:

- ◆ Select **Large Icons** to display Host computer icons as large icons, with the name of the remote Host computer as the title. The icons are arranged left to right, and then top to bottom, sorted alphabetically according to Host computer name.
- ◆ Select **Small Icons** to display Host computer icons as small icons.
- ◆ Select **List** to display Host computer icons as small icons, sorted alphabetically, and placed top to bottom, and then left to right.
- ◆ Select **Details** to display Host computer icons in a vertical scrolling list, along with other details, such as the IP address of each Host computer.

Gateway

Use the **Gateway** menu from the **Gateway Hosts** tab of the PC-Duo Master console window to select the following commands:

- ◆ **Refresh Host List** refreshes the list of Host computers on the **Gateway Hosts** tab.
- ◆ **Manage Gateway List** opens the Manage Gateways window from the **managed Hosts** tab. See [“Add a PC-Duo Gateway”](#).

Options

Use the **Options** menu to set the following options:

- ◆ [“Master Settings”](#)
- ◆ [“Keyboard Mapping”](#)
- ◆ [“Default Connection Window Settings”](#)
- ◆ [“Cycling Monitor Settings”](#)
- ◆ [“Default Playback Window Settings”](#)

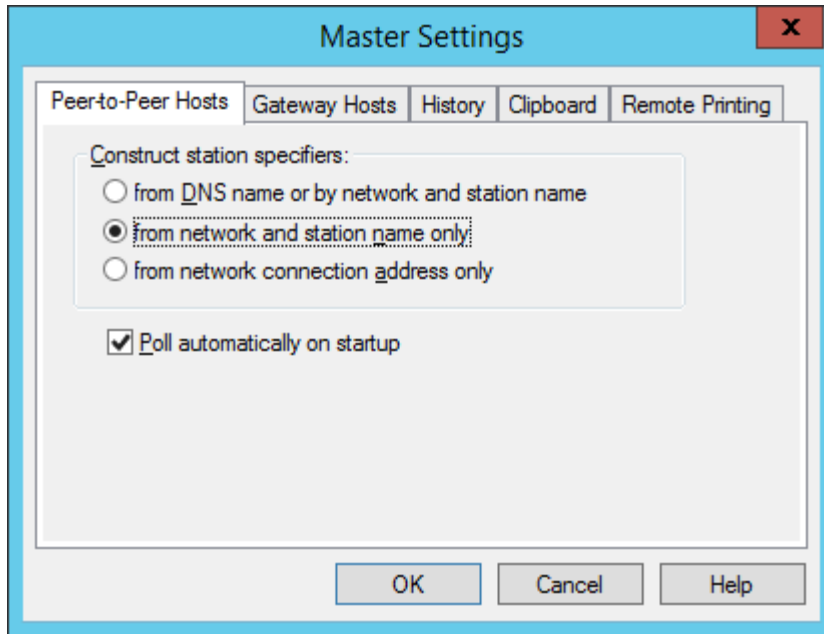
Master Settings

Select **Options > Master Settings** to set certain preferences for the following features:

- ◆ [“Peer-to-Peer Hosts”](#) - to set automatic polling options and station specifier construction options for the **Peer-to-Peer Hosts** tab.
- ◆ [“Gateway Hosts”](#) - to set some options that may limit the way Host computers display on the **Gateway Hosts** tab.
- ◆ [“History”](#) - to set some options for how Host computers display on the **History** tab.
- ◆ [“Clipboard”](#) - to set options to automatically share clipboard between Host and Master, or to include the Host’s mouse pointer when using the Copy Host Screen function.
- ◆ [“Remote Printing”](#) - to set option to include or not include the mouse pointer on Host computer in screen capture.

Peer-to-Peer Hosts

Select the **Peer-to-Peer Hosts** tab in the Master Settings window to adjust the following settings:



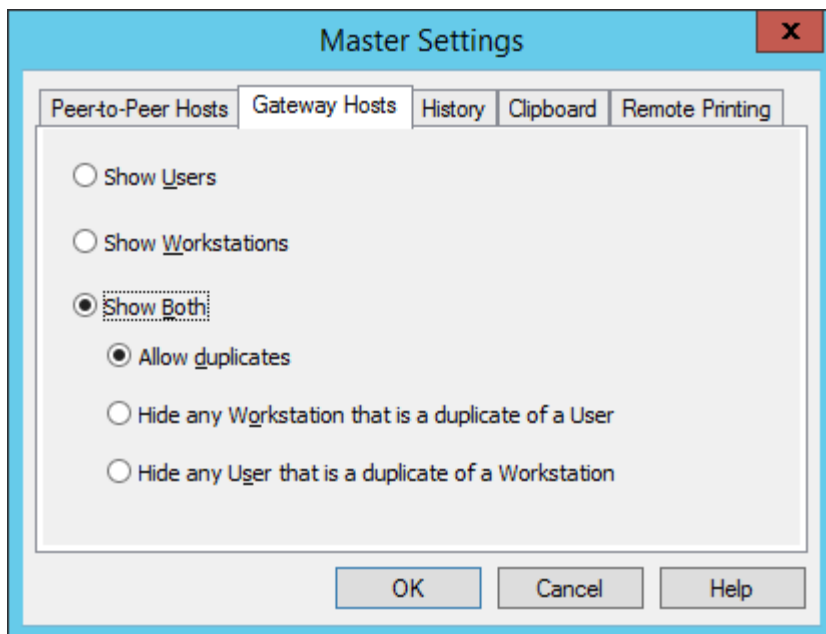
◆ **Construct station specifiers:** Specify the way that station specifiers (connect strings) are constructed for polled Hosts by selecting one of the following options:

- ◆ **From DNS name, or by network and station name** specifies Host computers either by computer name or by DNS name. With this option, a reverse DNS lookup is attempted using the network address. A reverse DNS lookup can take a long time depending on the network configuration, and may cause performance problems if there is a large number of Host computers. If the reverse DNS lookup succeeds, the station specifier is the DNS name. Otherwise, the network address and station name are used.
- ◆ **From network and station name only** specifies Host computers by network address and station name using the `address:name` syntax.
- ◆ **From network connection address only** specifies Host computers network address.

◆ Check **Poll automatically on startup** to poll for Host computers when you start PC-Duo Master. With this option, PC-Duo Master searches for all computers listed next to **Range** on the Peer-to-Peer Hosts tab. This is useful if the polling range is small. If the polling range is large, automatic polling may slow PC-Duo Master's startup significantly.

Gateway Hosts

Use the **managed Hosts** tab of the **Master Settings** window to control how items are displayed on the **Gateway** tab.



Specify which type of Gateway-managed Host computers to display:

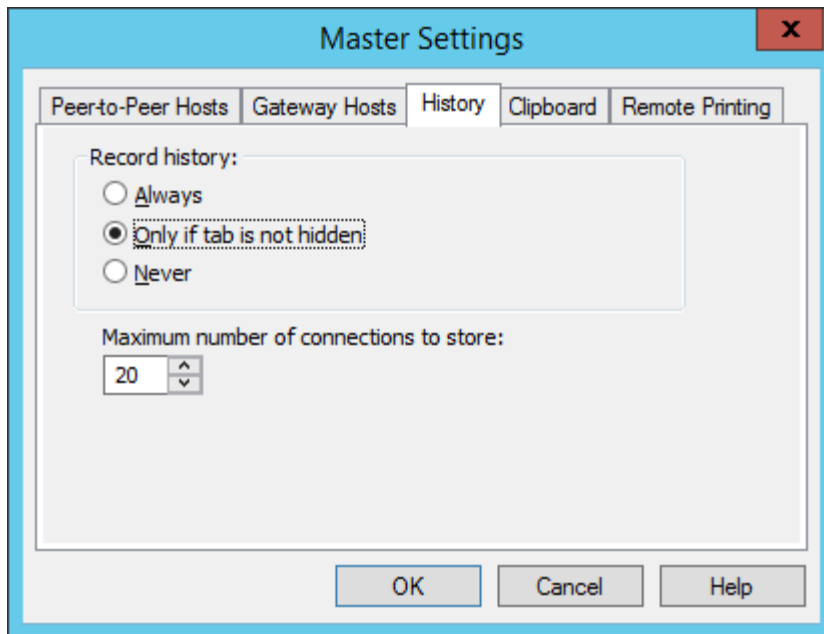
- ◆ Select **Show Users** to display the set of Gateway-managed users who are logged in.
- ◆ Select **Show Workstations** to display the target set of Gateway-managed workstations.
- ◆ Select **Show both** to display all logged-in users and workstations in the set of Gateway-managed Hosts. You can specify how you want duplicates handled when both a workstation and a user logged into that workstation are potential Hosts. You can select one of the following:
 - ◆ **Allow duplicates:** Allow both the logged-in user and corresponding workstation to display (although they resolve to the same physical Host computer).
 - ◆ **Hide any workstation that is a duplicate of a user:** Display only the logged-in user.
 - ◆ **Hide any user that is a duplicate of a workstation:** Display only the workstation on which the logged-in user is working.

NOTE: This is an advanced feature. Do not change the default options unless you know how your PC-Duo Gateway is configured.

History

Use the **History** tab of the Master Settings window to control the way that items are recorded on the **History** tab:

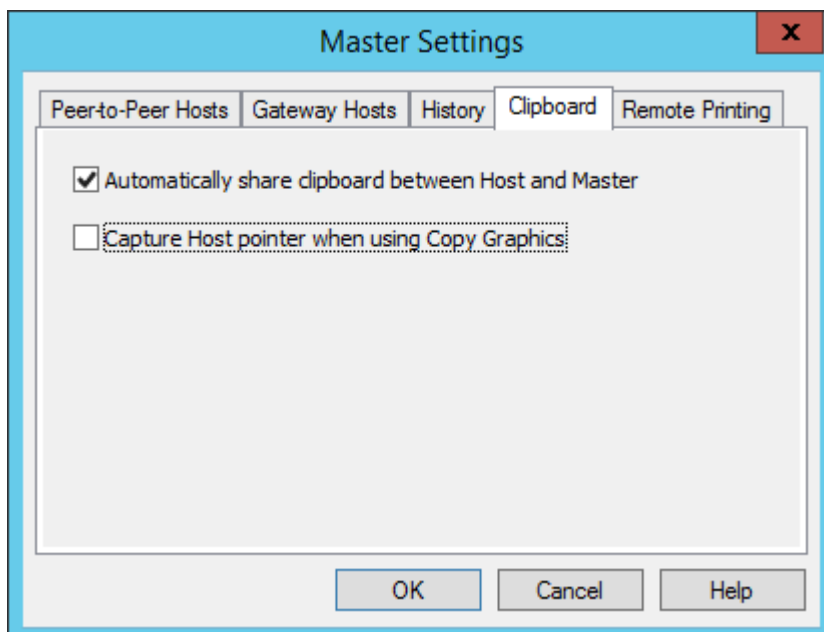
- ◆ **Always:** All of your connections to Host computers are reported on the History tab.
- ◆ **Only if tab is not hidden:** Your connections to Host computers are reported on the History tab only when the tab is visible.
- ◆ **Never:** Your connections to Host computers are not reported on the History tab.



Also, you can limit the number of connections to save on the History tab by specifying a value for **Maximum number of connections to store (default = 20)**.

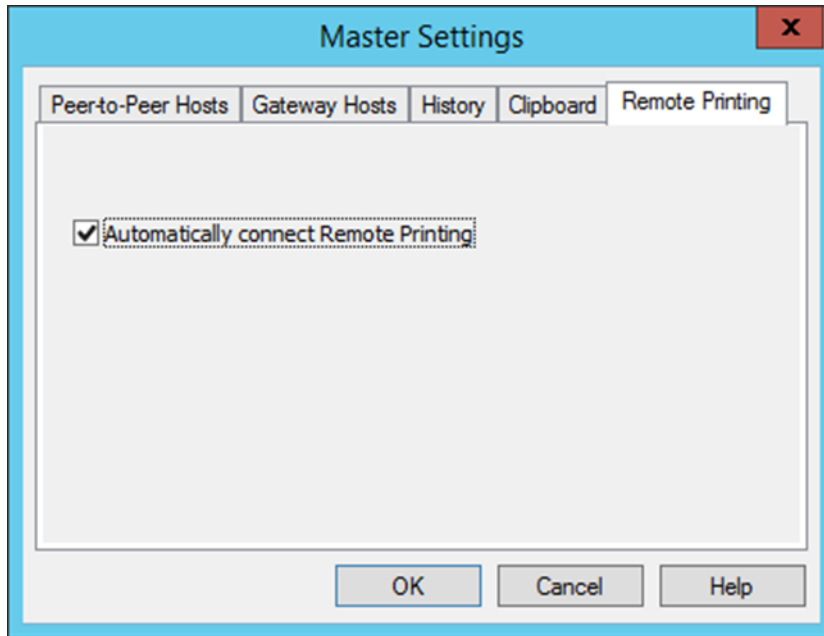
Clipboard

Use the **Clipboard** tab of the Master Settings window to specify whether clipboard content should be shared automatically between Master and Host, and whether or not the mouse pointer on the remote Host screen should be captured:



Remote Printing

Use the **Remote Printing** tab of the Master Settings window to specify whether the Master should automatically connect for Remote Printing when a new Connection Window is opened:

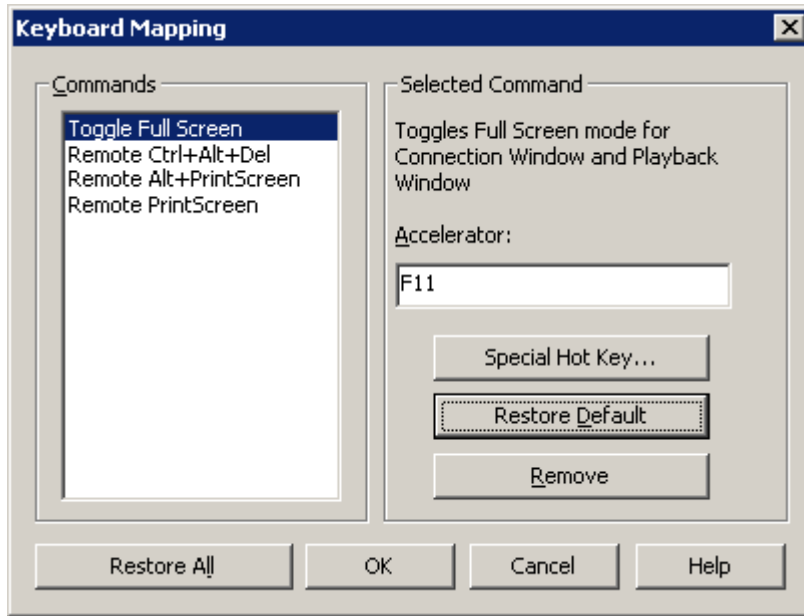


Keyboard Mapping

Certain key combinations perform special functions on a computer. Because of Windows features, the following key combinations can apply to the local computer only:

- ◆ CTRL+ALT+DEL
- ◆ CTRL+ESC
- ◆ Any key combination that includes the Windows key

To create a key combination that applies to the remote Host computer, select **Options > Keyboard Mapping**.



There are five sections in the Keyboard Mapping window:

- ◆ “Commands”
- ◆ “Accelerator and Special Hot Key”
- ◆ “Restore Default”
- ◆ “Remove”
- ◆ “Restore All”

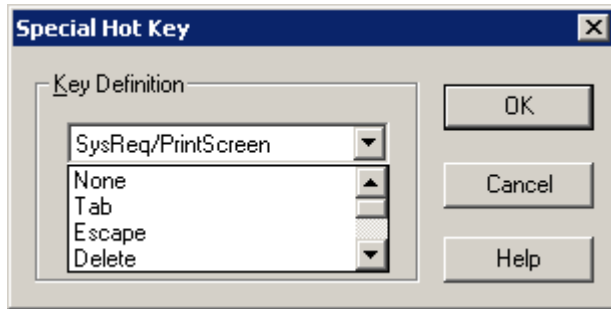
Commands

The **Commands** list shows the commands available for mapping. A text description of the currently selected command is shown under **Selected Command**. The currently mapped key, which when pressed will invoke the command, is described under **Accelerator**.

Figure above illustrates the TOGGLE FULL SCREEN accelerator key combination mapped to the Remote F11 command. This means that when a PC-Duo Master Connection Window has the focus and the user presses the F11 key, the Host computer will be sent F11, which will have the effect of opening the full screen on the Host computer.

Accelerator and Special Hot Key

To modify the key combination in the **Accelerator** field, place the cursor in the **Accelerator** field and simply press the desired key combination. The text description of the key combination will automatically appear. To specify special hot key combinations, which you cannot normally type because the system will immediately interpret them using the default meaning, such as ALT+TAB, CLICK **Special Hot Key** to open the Special Hot Key window.



In the **Keyboard Definition** section, select the keys you want to use and click **OK** to return to the Keyboard Mapping window. The **Accelerator** field shows the new key combination.

Remove

To remove a key mapping, select the command in the **Commands** list and click **Remove**.

Restore Default

To restore a key mapping to its default setting, select the command in the **Commands** list and click **Restore Default**.

Restore All

To restore all key mappings to the default settings, click **Restore All**.

Default Connection Window Settings

Use **Options > Default Connection Window Settings** to set initial parameters for remote connections and specify a configuration template for new PC-Duo connections.

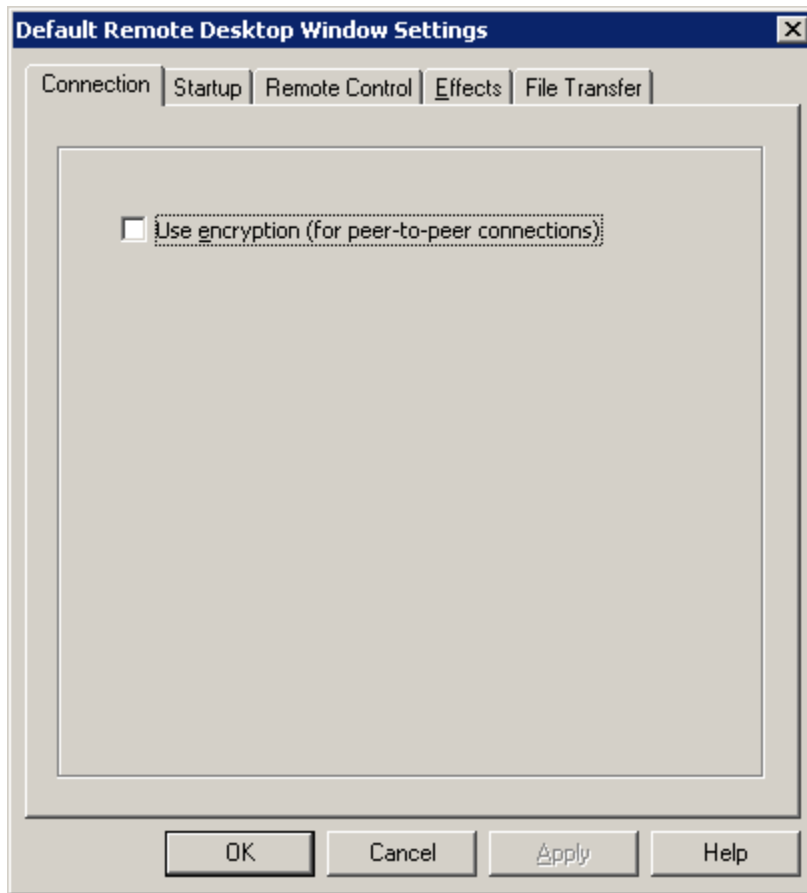
NOTE: You can change most of these settings for a particular connection once it is established. To do so, select **Options > Connection Window Settings** from the PC-Duo Master Connection Window.

Set five types of default Connection Window settings can be set:

- ◆ "Connection"
- ◆ "Startup"
- ◆ "Remote Control"
- ◆ "Effects"
- ◆ "File Transfer"

Connection

In version 4.0 and later, the Host computer supports encryption. From the **Connection** tab of the Default Connection Window Settings window, require data encryption for data transfer.



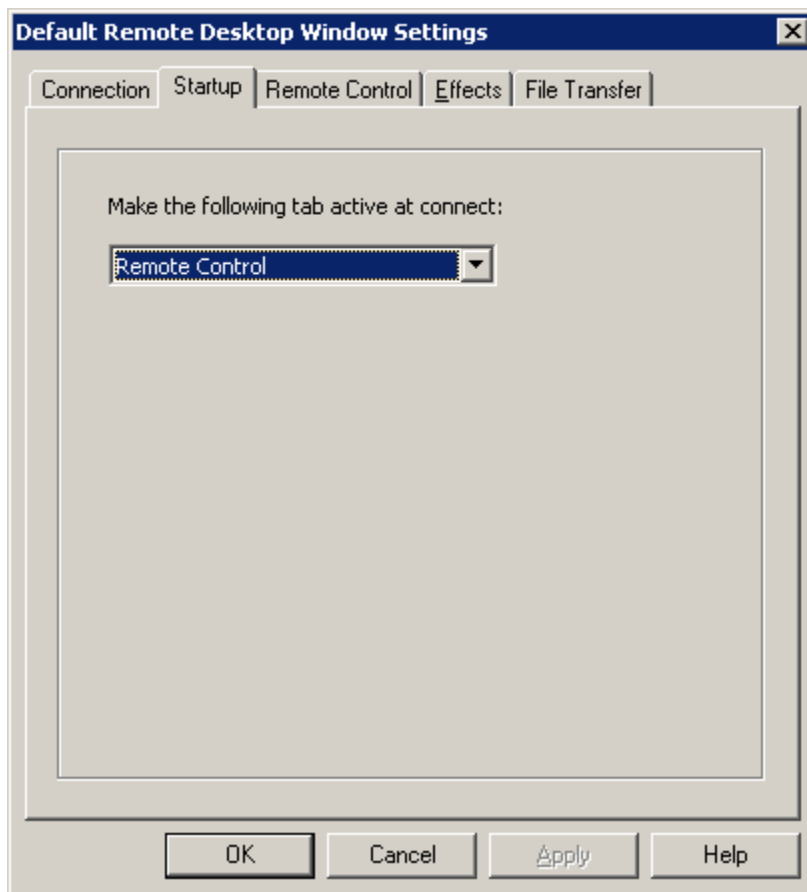
Check **Use encryption** to require data encryption for data transfer.

NOTE: Host computer encryption requirements override this option. The connection is encrypted if the Host computer requires encryption, even if you uncheck **Use encryption**.

Startup

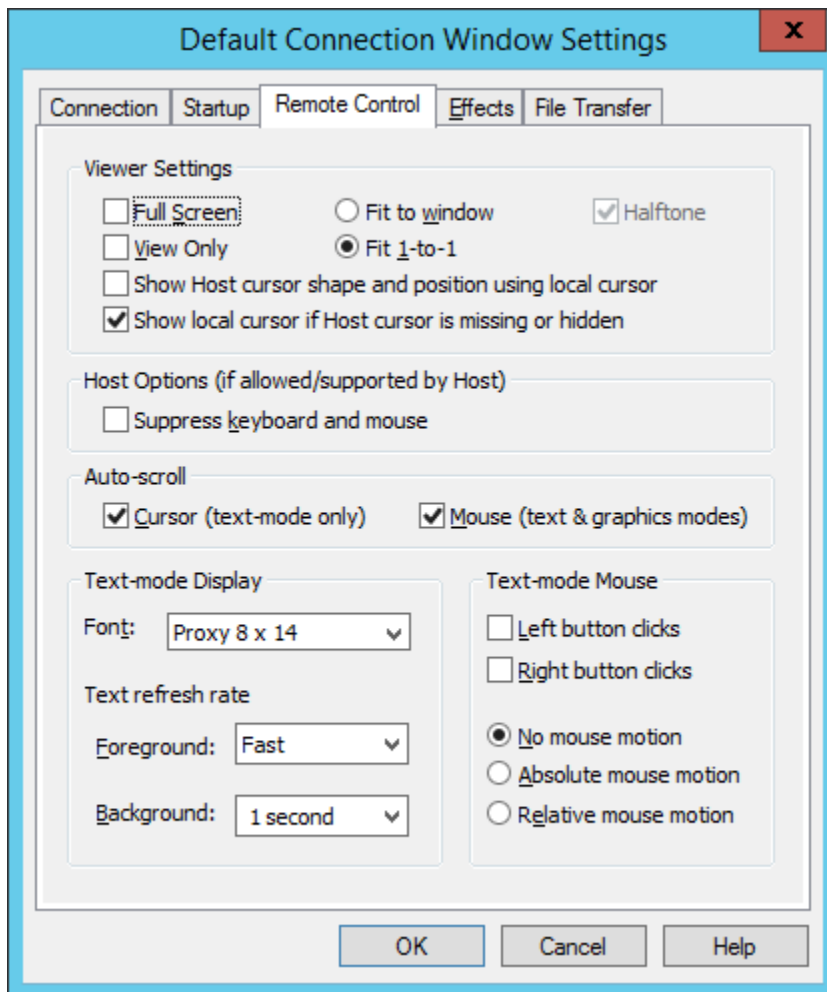
From the **Startup** tab of the Default Connection Window Settings window, choose the name of one of the PC-Duo Master Connection Window tabs from the **Make the following tab**

active at connect list. The name you choose is the default tab you view when you connect to a Host computer.



Remote Control

Specify the default behavior for remote control connections from the **Remote Control** tab of the Default Connection Window Settings window.



Modify the following options:

- ◆ Use **Viewer Settings** to specify default settings for the remote display:
 - ◆ Select **Full Screen** to fill the entire screen of the local computer with a view of the Host computer monitor in the PC-Duo Master Connection Window.
 - ◆ Select **View only** to allow users of PC-Duo Master to view the display without taking control of the Host computer.
 - ◆ Select **Fit to window** to scale the display of the Host computer to fit into the PC-Duo Master Connection Window.
 - ◆ Select **Fit 1-to-1** to have each pixel on the Host computer display correspond to one pixel on the Master computer.
 - ◆ Select **Half-tone** to improve the quality of the display when the Master is in Fit to Window mode.

Note: The Half-tone option affects only the way the screen is rendered by the Master, and may increase CPU usage on the Master.

◆ Select **Show host cursor shape and position using local cursor** to cause PC-Duo Master to create a local cursor on the Master machine to display the Host cursor's shape and position. By default the Master will display the Host cursor by drawing it onto the Host screen. In certain cases, such as when the Master computer is itself being operated remotely, the default option will produce a noticeable lag. The local cursor option will correct this. NOTE: the local cursor option always displays the Host cursor in its original size, and does not scale when the Master Connection Window is in Fit to window mode.

◆ Select **Show local cursor if Host cursor is missing or hidden** to cause PC-Duo Master to display a local cursor on the Master machine when the Host cursor is missing or hidden. By default the Master will display exactly what the Host is using for a cursor. In certain cases, such as when remotely operating a tablet or a computer that has no mouse, this makes it difficult to use the mouse on the Master side. This option will correct this by displaying a substitute cursor (on the Master side only).

◆ Modify the **Host Options** to specify the operation of the remote Host computers when you establish PC-Duo Master Connections:

- ◆ Select **Suppress keyboard and mouse** to request that the remote Host computer mouse and keyboard be disabled at connection time. If this request is granted, no one can operate the mouse and keyboard located at the Host computer at any time during the PC-Duo Master Connection. Note that even if you select this option, it is possible that the remote Host computer is configured so as not to allow keyboard and mouse suppression.

NOTE: *These options are not currently supported on Vista platforms.*

◆ Modify **Auto-scroll** group options to specify whether you want the window to scroll when the cursor (for text-only screens) or mouse reaches a boundary:

- ◆ Select **Cursor (text-mode only)** to automatically scroll when the cursor comes to an edge of the PC-Duo Master Connection Window when you hold the `CTRL` key down.
- ◆ Select **Mouse (text & graphics mode)** to automatically scroll when the mouse comes to an edge of the PC-Duo Master Connection Window when you hold the `CTRL` key down.

◆ Modify **Text-mode Display** options for Host computers that display text screens, rather than graphical screens:

- ◆ Use the **Font** drop-down list to select the typeface and type size to use for viewing remote connections locally. By changing the font, you can increase or decrease the size of the Host computer screen displayed in the PC-Duo Master Connection Window. A smaller font lets you see more of the Host computer display. A larger font improves readability. You can preview the fonts from each entry in the **Font** list. The names of the fonts consist of a typeface name and a size. Text fonts called **PROXY** are fonts that are included with this software package. Fonts with other typeface names are Windows fonts that are also suitable for text display.
- ◆ Use the **Text refresh rate** settings to specify the rate at which changes in the text display are updated on your screen. This allows you to find a suitable compromise between "refresh rate" and the amount of computation time and network resources spent in updating the text display. Note the following:
 - The **Foreground** setting rate you select applies when the Connection Window is active.
 - The **Background** setting rate you select applies when the Connection Window is not active.

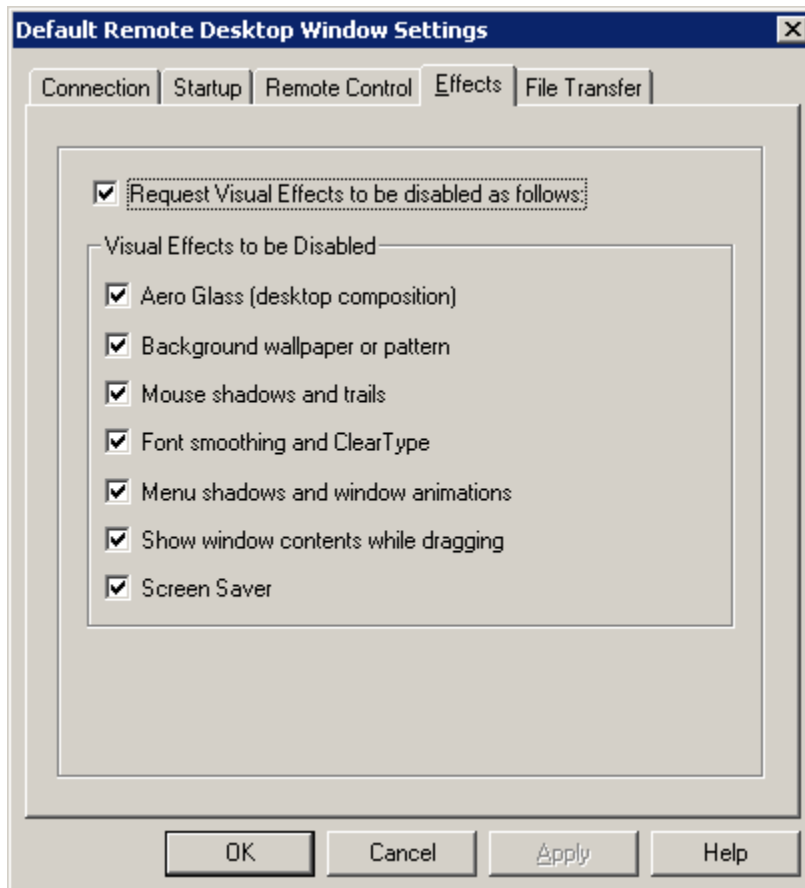
In general, if you have sufficient computational power and a speedy connection, you should leave both refresh rates set to **Fast**.

◆ Modify the **Text-mode Mouse** group to control how information from the mouse on the local computer is transmitted to a remote Host computer when it operates in text mode:

- ◆ Check **Left button clicks** to ensure that left mouse button clicks are sent to the remote Host computer.
- ◆ Check **Right button clicks** to ensure that right mouse button clicks are sent to the remote Host computer.
- ◆ There are three different ways in which the motion of the mouse on the Master can be interpreted and sent to the remote Host computer:
 - If you select **No motion**, then the mouse does not move at all.
 - If you select **Absolute motion**, then the Host computer is provided an absolute mouse position [for example, a coordinate such as (44,13)].
 - If you select **Relative motion**, then only the differential motion of the mouse (up, down, left, or right from current position) is sent to the Host computer.

Effects

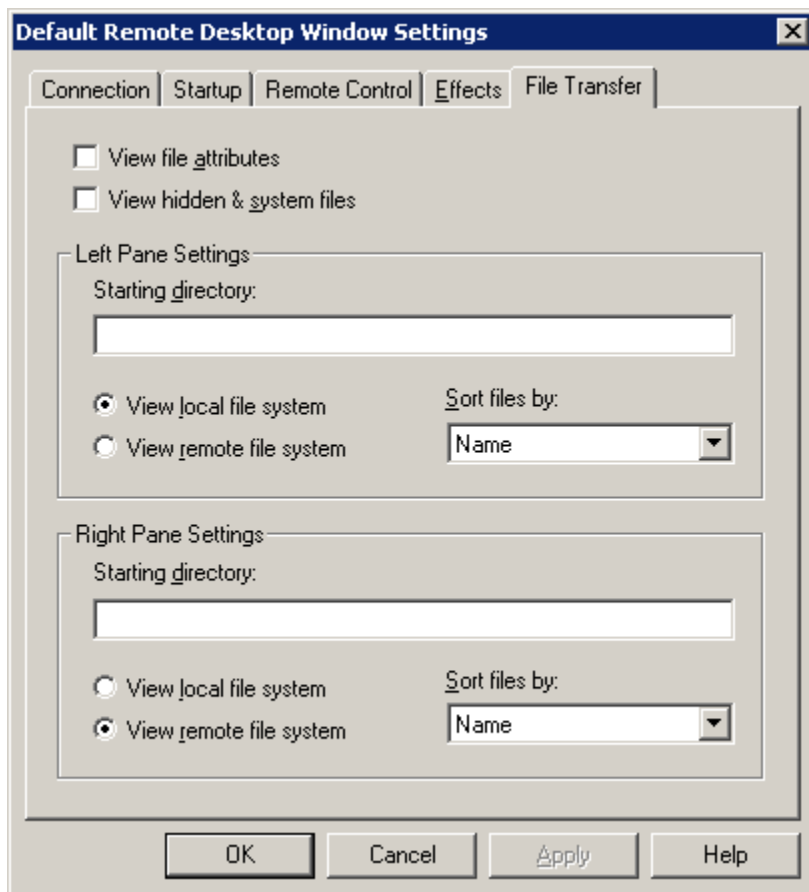
Use the options on the **Effects** tab of the Default Connection Window Settings window to provide default settings for enabling and disabling certain visual effects when connecting to a Host computer. By disabling any of the listed visual effects, you can reduce the amount of screen data that needs to be captured and transmitted over the network.



All visual effect options are enabled by default. Check **Request Visual Effects to be disabled as follows** to enable or disable specific graphical effects. Check the visual effects options that you want to disable under **Visual Effects to be Disabled**. Leave the visual effects options that you want to enable unchecked.

File Transfer

Use the **File Transfer** tab of the Default Connection Window Settings window to provide default settings for remote file transfer.



Select the following:

- ◆ **View file attributes:** An extra column that provides file attribute information appears on both the left and right sides of the **File Transfer** tab.
- ◆ **View hidden & system files:** Hidden and system files are added to both the left and right sides of the **File Transfer** tab.

Specify the following default settings:

- ◆ Default starting directories for local and remote computers
- ◆ The location for local and remote computer files. For example, select **View local file system** under **Left Pane Settings** to view local files on the left side of the File Transfer tab and the remote files on the right side.

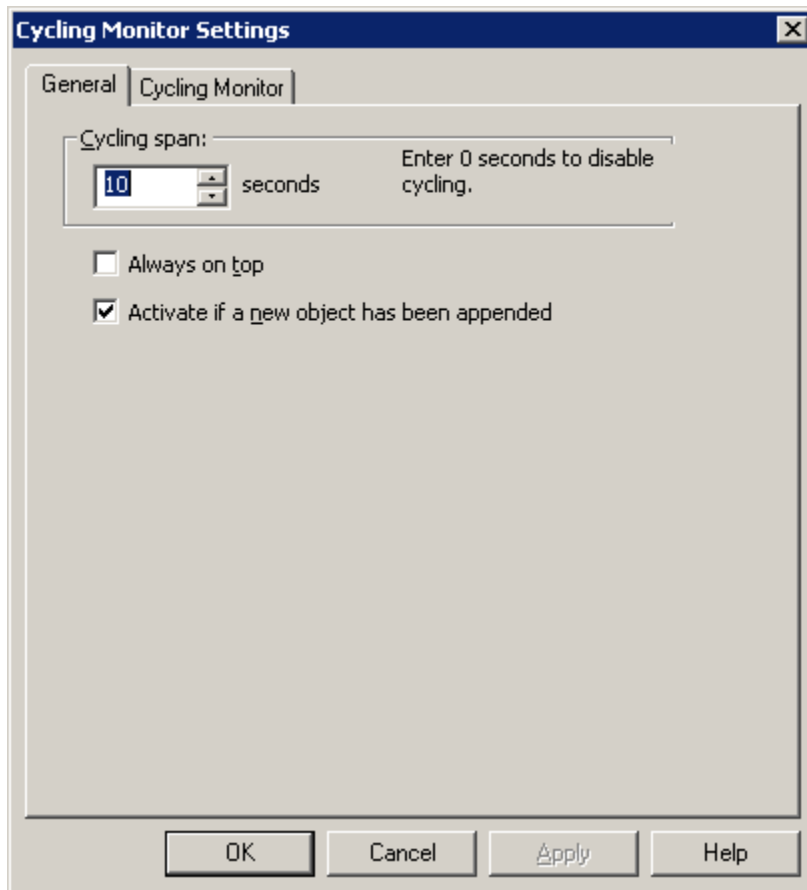
- ◆ The category by which the files on each side are sorted:
 - ◆ Choose **Name** to sort files by file name
 - ◆ Choose **Size** to sort files by file size
 - ◆ Choose **Modified** to sort files by the file modification date

Cycling Monitor Settings

Use the PC-Duo Master Cycling Monitor to serially check on multiple remote connections in the PC-Duo Master Cycling Monitor window. On the PC-Duo Master window, use **Options > Cycling Monitor Settings** to control the behavior of this window.

General

Use the **General** tab to specify preferences for the PC-Duo Master Cycling Monitor window.



Set the following preferences:

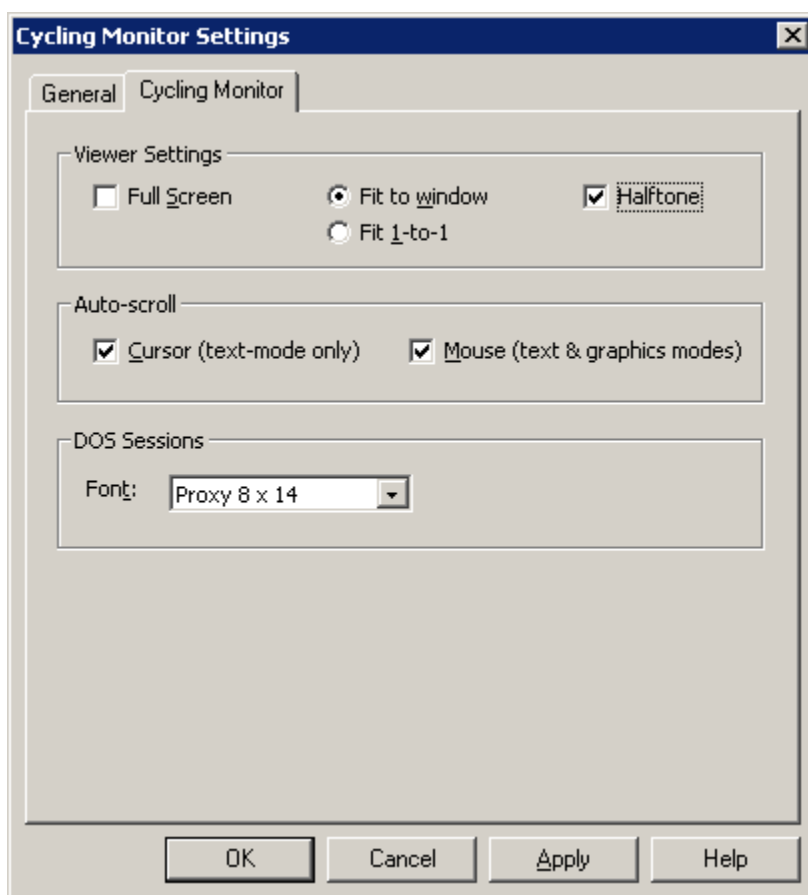
- ◆ Set the number of seconds to display each connection in the PC-Duo Master Cycling Monitor window using **Cycling span**. Select **0** to disable the automatic cycling through Host computers. This also disables the **Connection > Start Cycling** and **Connection > Stop Cycling** menu commands in the PC-Duo Master Cycling Monitor window.

- ◆ If you check **Always on top**, the PC-Duo Master Cycling Monitor window is always the top window.
- ◆ If you check **Activate if a new object has been appended**, the PC-Duo Master Cycling Monitor window is moved to the foreground as soon as you add a new Host computer to the list on the Cycling Monitor Hosts tab and attempt to establish a connection with that Host computer.

If you do not check **Activate if a new object has been appended**, remote Host computers are silently added to the **Cycling Monitor Hosts** list without attempting to establish a connection in the PC-Duo Master Cycling Monitor window.

Cycling Monitor Settings

Control the display of the PC-Duo Master Cycling Monitor window using the **Cycling Monitor Hosts** tab.



Select the following:

- ◆ Use **Viewer Settings** to specify how a remote computer is displayed by default:
 - ◆ Select **Full Screen** to fill the entire screen of the local computer with a view of the Host computer monitor in the PC-Duo Master Cycling Monitor window.
 - ◆ Select **Fit to window** to scale the display of the remote computer to fit into the PC-Duo Master Cycling Monitor window.

- ♦ Select **Fit 1-to-1** to have each pixel on the remote display correspond to one pixel on the local computer.
- ♦ Select **Halftone** to improve the quality of the display when the Master is in Fit to Window mode.

Note: The Halftone option affects only the way the screen is rendered by the Master, and may increase CPU usage on the Master.

- ♦ Modify the **Auto-scroll** group options to specify whether you want the window to scroll when the cursor or mouse reaches a boundary:
 - ♦ Select **Cursor (text-mode only)** to scroll automatically when the cursor comes to an edge of the PC-Duo Master Connection Window when you hold the `CTRL` key down.
 - ♦ Select **Mouse (text & graphics mode)** to scroll automatically when the mouse comes to an edge of PC-Duo Master Connection Window when you hold the `CTRL` key down.

- ♦ Modify text mode screen options in **DOS Sessions**:

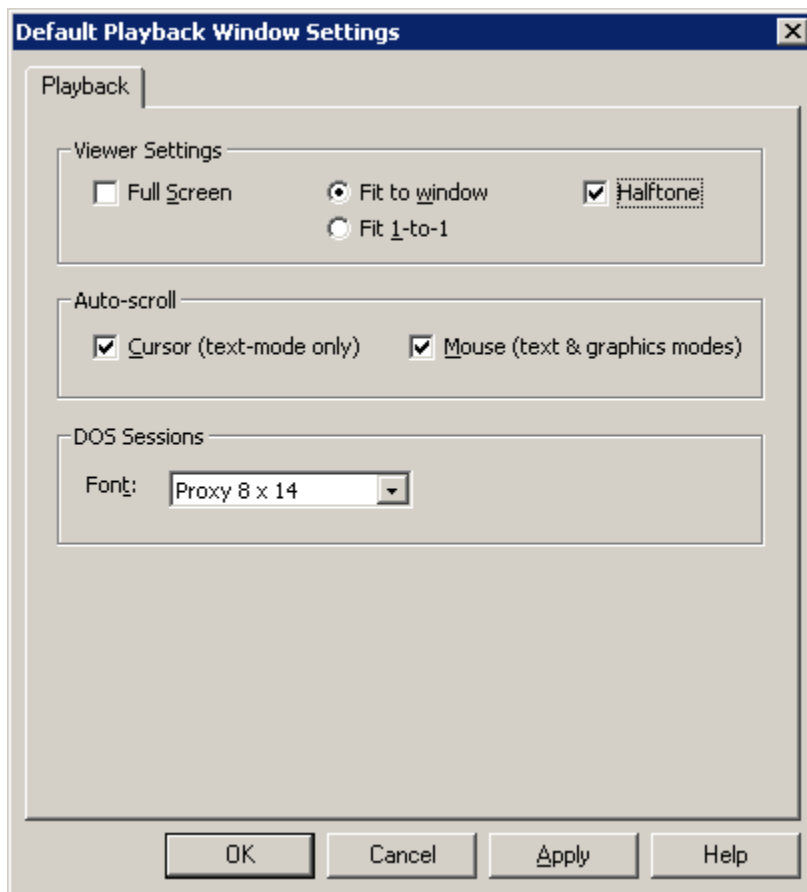
The **Font** drop-down list allows you to select the typeface and type size used to display the remote Host computer screen in the PC-Duo Master Cycling Monitor window.

By varying the font, you can increase or decrease the size of the Host computer screen displayed in the PC-Duo Master Cycling Monitor window. If you use a small font, you can display more of the Host computer in a small window. To improve readability (but require a larger window), use a large font.

The fonts in the list are previewed as they actually appear. The names of the fonts are composed of a typeface name and a size. PC-Duo text fonts are included with the software package. Fonts with other typeface names are Windows fonts that are also suitable for text display.

Default Playback Window Settings

When playing back a PC-Duo screen recording, the display of the PC-Duo Playback window can be controlled using the **Playback Window Settings** tab.



Select the following:

- ◆ Use **Viewer Settings** to specify how a remote computer is displayed by default:
 - ◆ Select **Full Screen** to fill the entire screen of the local computer with a view of the Host computer monitor in the PC-Duo Master Cycling Monitor window.
 - ◆ Select **Fit to window** to scale the display of the remote computer to fit into the PC-Duo Master Cycling Monitor window.
 - ◆ Select **Fit 1-to-1** to have each pixel on the remote display correspond to one pixel on the local computer (set by default).
 - ◆ Select **Halftone** to improve the quality of the display when the Master is in Fit to Window mode.

Note: The Halftone option affects only the way the screen is rendered by the Master, and may increase CPU usage on the Master.
- ◆ Modify the **Auto-scroll** group options to specify whether you want the window to scroll when the cursor or mouse reaches a boundary:
 - ◆ Select **Cursor (text-mode only)** to scroll automatically when the cursor comes to an edge of the PC-Duo Master Connection Window when you hold the **CTRL** key down (set by default).
 - ◆ Select **Mouse (text & graphics mode)** to scroll automatically when the mouse comes to an edge of PC-Duo Master Connection Window when you hold the **CTRL** key down (set by default).

◆ Modify text mode screen options in **DOS Sessions**:

The **Font** drop-down list allows you to select the typeface and type size used to display the remote Host computer screen in the PC-Duo Master Cycling Monitor window (set to "PC-Duo 8x14" by default).

By varying the font, you can increase or decrease the size of the Host computer screen displayed in the PC-Duo Master Cycling Monitor window. If you use a small font, you can display more of the Host computer in a small window. To improve readability (but require a larger window), use a large font.

The fonts in the list are previewed as they actually appear. The names of the fonts are composed of a typeface name and a size. PC-Duo text fonts are included with the software package. Fonts with other typeface names are Windows fonts that are also suitable for text display.

Goto

Use the **Goto** menu to change tabs in the PC-Duo Master console window:

- ◆ Peer-to-Peer Hosts Page
- ◆ Gateway Hosts Page
- ◆ Active Connections Page
- ◆ History Page
- ◆ Favorites Page
- ◆ Cycling Monitor Page

Help

The **Help** menu contains commands to invoke the Help system, provide access to special webpages on the Internet, and display information about your PC-Duo Master license and configuration.

Press the **F1** key or click a **Help** button (in the windows that offer one) to access context-sensitive online help.

The **Help** menu has the following commands:

- ◆ "Help Topics"
- ◆ "Vector Networks Home Page"
- ◆ "Check for Updates and Maintenance Releases"
- ◆ "Purchase Additional Licenses"
- ◆ "Order Technical Support Contract"
- ◆ "About PC-Duo Master"

Help Topics

Select **Help > Help Topics** to access the table of contents for the PC-Duo Master online help system. You can display help for any topics you select.

Vector Networks Home Page

Select **Help > Vector Networks Home Page** to connect to the Vector Networks Home page, where you can get access to upgrades, patches, product news, product information, and technical notes relevant to your PC-Duo products.

Check for Updates and Maintenance Releases

Select **Help > Check for Updates and Maintenance Release** to connect to the Vector Networks Support page, where you can request information about the latest upgrades, patches and maintenance releases for PC-Duo products.

Purchase Additional Licenses

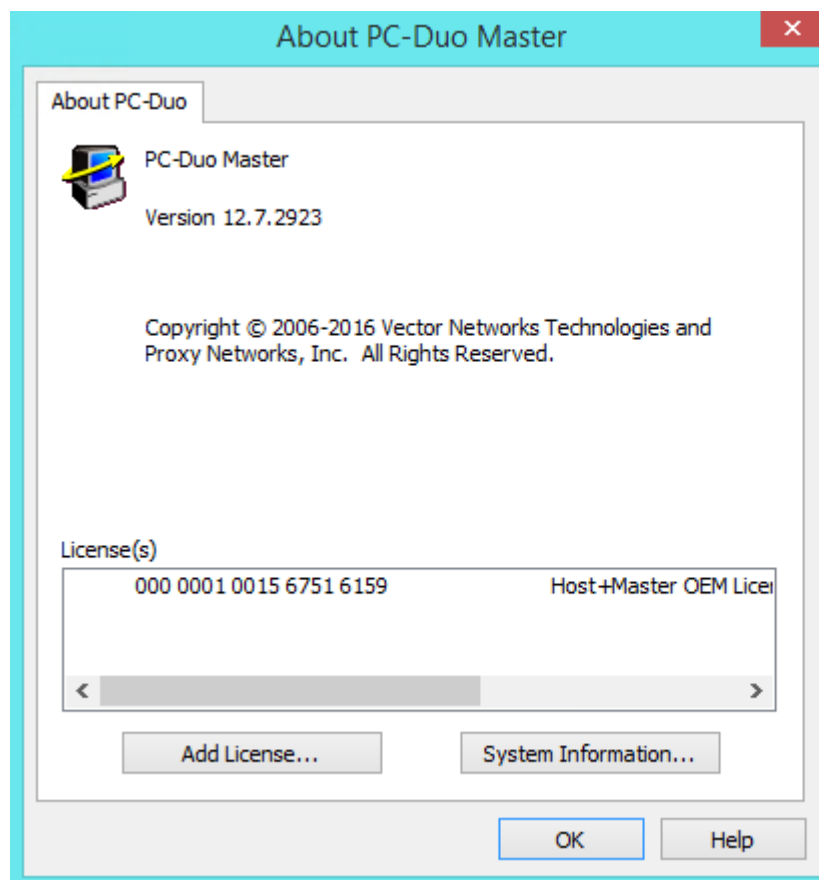
Select **Help > Purchase Additional Licenses** to connect to the Vector Networks Store page, where you can purchase additional licenses of PC-Duo products.

Order Technical Support Contract

Select **Help > Order Technical Support Contract** to connect to the Vector Networks Support page, where you can order a Maintenance & Support contract your product. These contracts will provide you access to live technical support and free upgrades during the contract period for all new maintenance and new feature releases.

About PC-Duo Master

Select **Help > About PC-Duo Master** to display details about the PC-Duo Master software that is installed on your computer.



*The **About PC-Duo** tab displays the following information:*

- ◆ The name and version number of your software
- ◆ Copyright information
- ◆ The company and user to whom the software is registered
- ◆ License key(s) registered with the package

Some features available with PC-Duo Master are specified by the license key(s) you purchase. Only the features that you have licensed for use are available to you. You may have entered one or more licenses. These appear in the **License(s)** list.

There are two buttons in the **About PC-Duo** window:

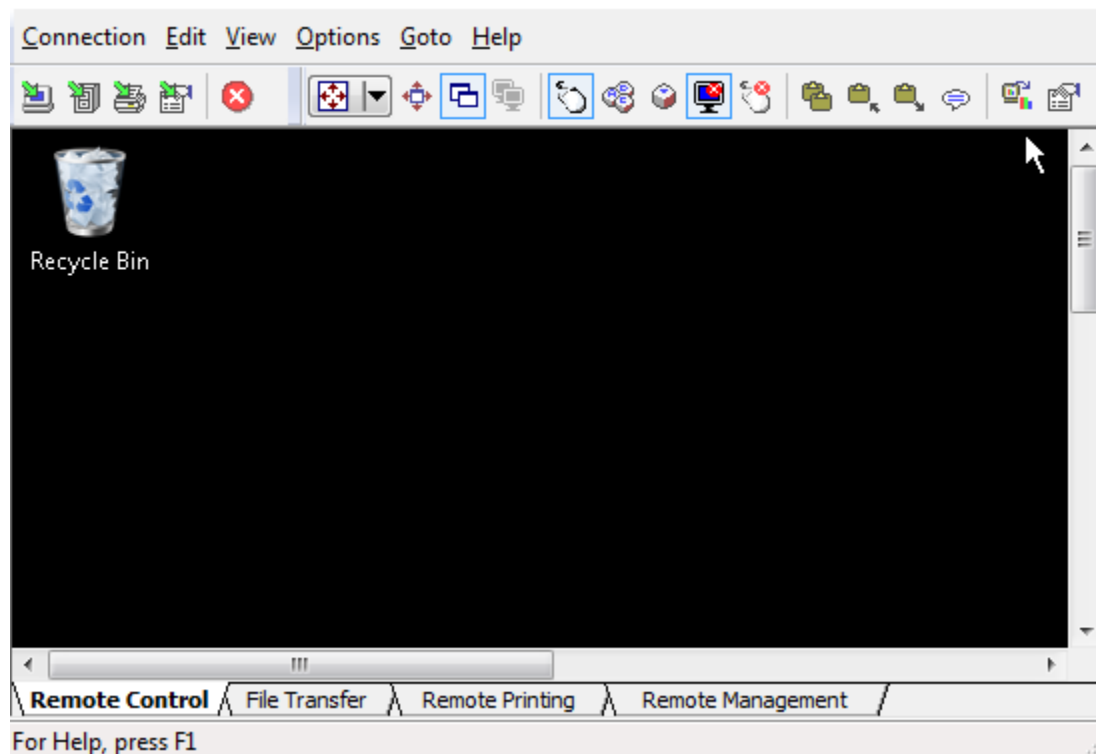
- ◆ **Add License:** Add more license keys by clicking **Add License** and entering your license number in the Add License Key window. See "[Licensing](#)" for more information.
- ◆ **System Information:** Click on **System Information** to generate a detailed report about the configuration of your workstation. This report is saved as a text file named *Yourcomputername_Config.txt* on your desktop.

Connection Window Operation

The PC-Duo Master Connection Window has the following tabs:

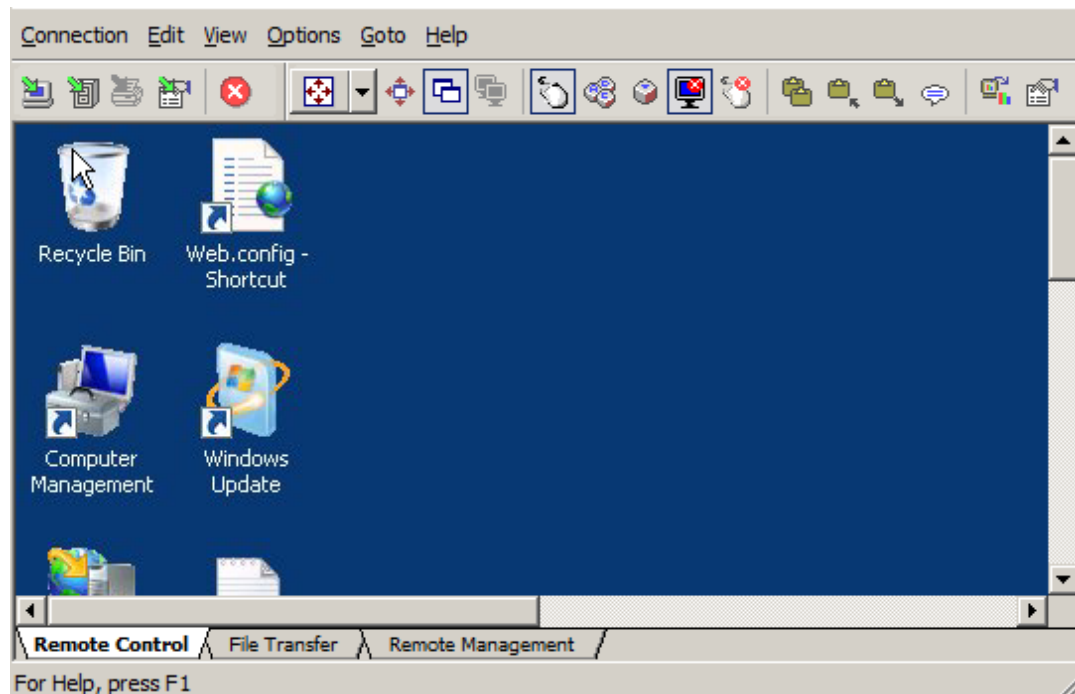
- ◆ Select "Remote Control tab" to monitor activity, run applications remotely, and troubleshoot Host computers using remote control.
- ◆ Select "File Transfer tab" to quickly and securely transfer files between two computers using the PC-Duo file transfer feature.
- ◆ Select "Remote Printing" tab to change remote printing settings or to monitor the progress of remote printing jobs.
- ◆ Select "Remote Management tab" to send view information on hardware and software resources on a remote computer, and to view/change system settings.

NOTE: Your remote control access rights for Gateway-managed or peer-to-peer connections are determined by the credentials you use to make the connection. If your administrator has restricted your access rights, remote control functionality may be denied or limited.



Remote Control tab




Select the **Remote Control** tab on the Master Connection Window to view and operate the remote Host computer as if you were its local user. Take control of the mouse and keyboard, or simply monitor remote Host computer activity, without interrupting a local user on the Host computer.


















Control operations on the remote Host computer using the keyboard and mouse on your local computer.

Toolbar options

Table below summarizes the functions of icons available on the tool bar when the Master Connection Window is set to the Remote Control tab.

Icon	Function
	Connects to the selected Host computer with the Remote Control tab selected.
	Connects to the selected Host computer with the File Transfer tab selected.
	Connects to the selected Host computer with the Remote Printing tab selected.

	Connects to the selected Host computer with the Remote Management tab selected.
	Closes Master Connection Window and disconnects from Host computer.
	Displays the screen output from the remote Host computer using either the entire desktop or the current monitor screen on the local computer. To return to the local computer display, click the Full Screen button on the floating palette, or press F11 in the Master Connection Window.
	Scales the image of the Host computer display to fit the size of the Connection Window.
	Specifies that one pixel of the Host computer display corresponds to exactly one pixel on the display of the local computer.
	Allows selection of a single monitor, of a multi-monitor Host, to be selected and “zoomed in” on.
	Gives keyboard and mouse control of the Host computer to the remote user of a PC-Duo Gateway-managed connection.
	Sends a CTRL-ALT-DEL key sequence to the Host.
	Sends a predefined key combination to the Host computer as though it were entered on the keyboard of the remote Host computer when you are connected to it for remote control. This is useful for sending special key combinations such as CTRL-ALT-DEL.
	Tells the Host to disable visual effects.
	Suppresses keyboard and mouse input at the Host.
	Automatically copies the contents of the clipboard between the remote Host computer and the local computer when you view the Remote Control tab.
	Copies the contents of the clipboard on the remote Host computer to the clipboard on your local computer when you view the Remote Control tab.
	Copies the contents of the clipboard on your local computer to the clipboard on the remote Host computer when you view the Remote Control tab.
	Opens a Chat window in which text messages can be sent to Host and to any other Masters connected to that Host.



Copies a selected region of the Host computer display in the Master Connection Window to the clipboard on your local computer from the **Remote Control** tab.



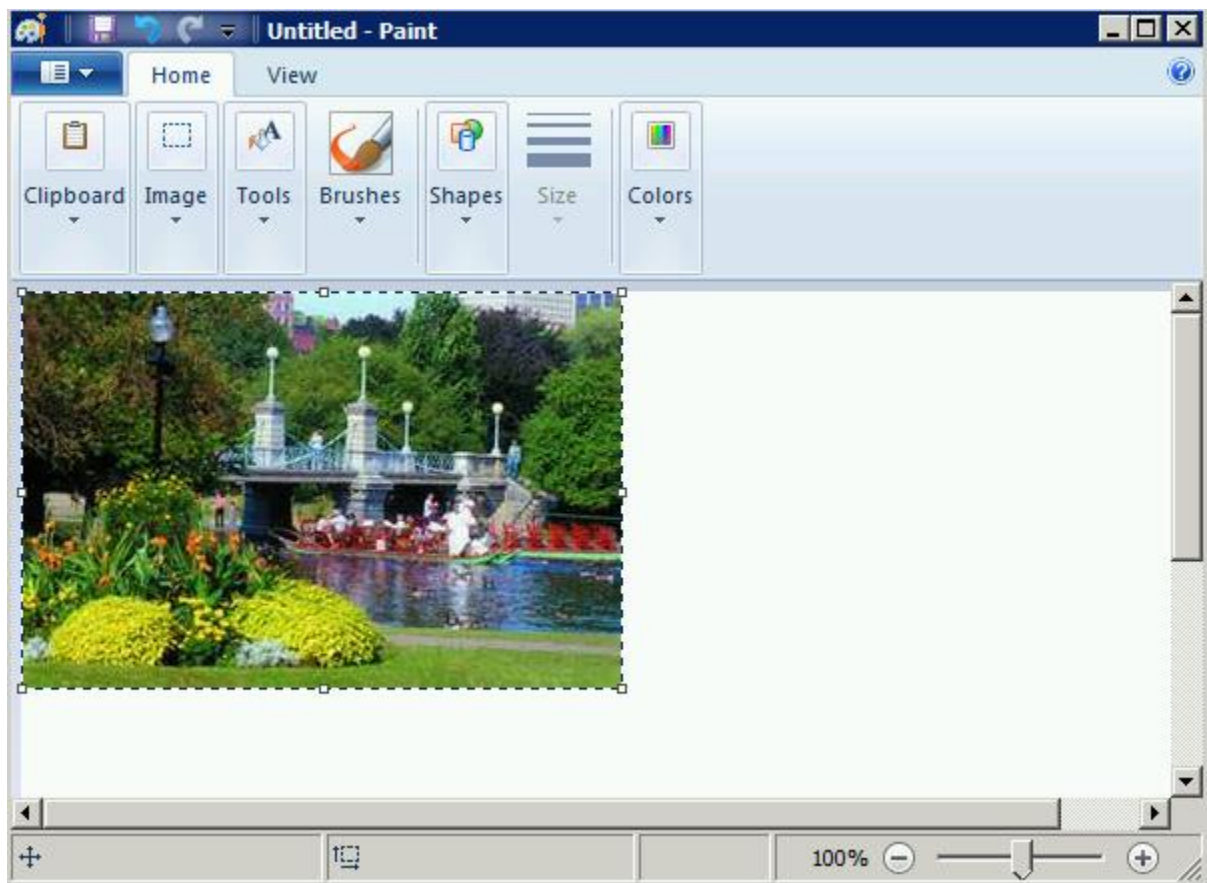
Displays the Connection Window Settings dialog, which contains settings for the **Remote Control** tab.

Copy information to the remote clipboard

Transfer text, graphics, or other information from the clipboard on your local computer to the clipboard on the Host computer.

To copy information to the remote clipboard:

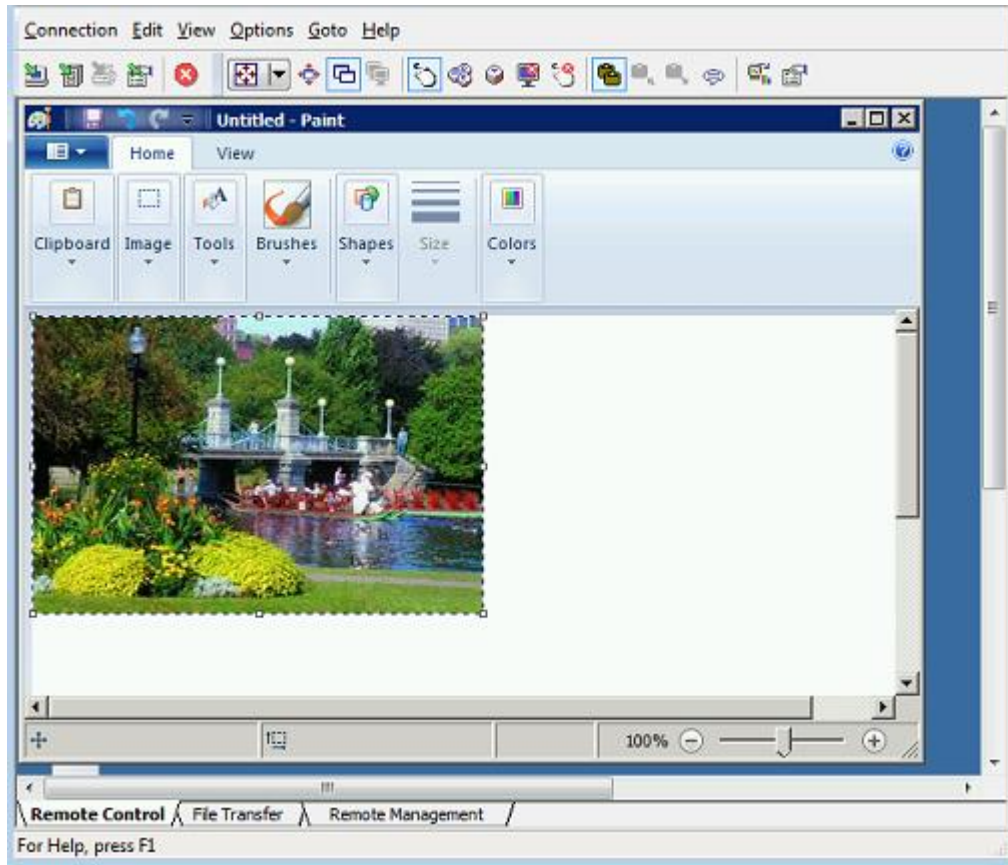
- 1 Select the text or graphic on your local computer that you want to transfer to your Host computer. For example, if you use a Paint program, you might select a portion of a drawing you are making on your local computer.



Selection to transfer from local computer

- 2 Copy the information that you want to move to the Host computer to the clipboard on your local computer; for example, use an application's Cut or Copy command.

- 3 If the Auto-Share Clipboard option is selected, the information on the clipboard of the local computer will be automatically copied to the clipboard on your Host computer. Otherwise, return to the PC-Duo Master Connection Window and select **Edit > Send Clipboard to Host**. You can also click the **Send Clipboard** tool bar button.
- 4 In the PC-Duo Master Connection Window, paste the text or graphic into an application that you are running remotely on the Host computer.



Selection transferred to Host computer

Copy information from the remote clipboard

Transfer text, graphics, or other information, from the clipboard on the remote Host computer to the clipboard on your local computer.

To copy information from the remote clipboard:

- 1 Select the text or graphic you want to transfer from an application running on your Host computer. For example, if you are using a word processing program, you might select a sentence or a paragraph that you want to transfer.
- 2 Copy the desired information to the clipboard on the Host computer. Most programs let you copy information to the clipboard by choosing **Edit > Copy** or by pressing **CTRL+C**.
- 3 If the Auto-Share Clipboard option is selected, the information on the clipboard of your Host computer will be automatically copied to the clipboard

on your local computer. Otherwise, choose **Edit > Get Clipboard from Host**, or click the **Get Clipboard** button on the tool bar.

4 Paste the text or graphic into an application running on your local computer.

NOTE: *PC-Duo supports clipboard formats by value rather than by reference. The actual data that you paste, such as text, must be in the clipboard. If the clipboard contains only a reference to the data, such as a file name, PC-Duo displays a message that the clipboard does not contain a supported format.*

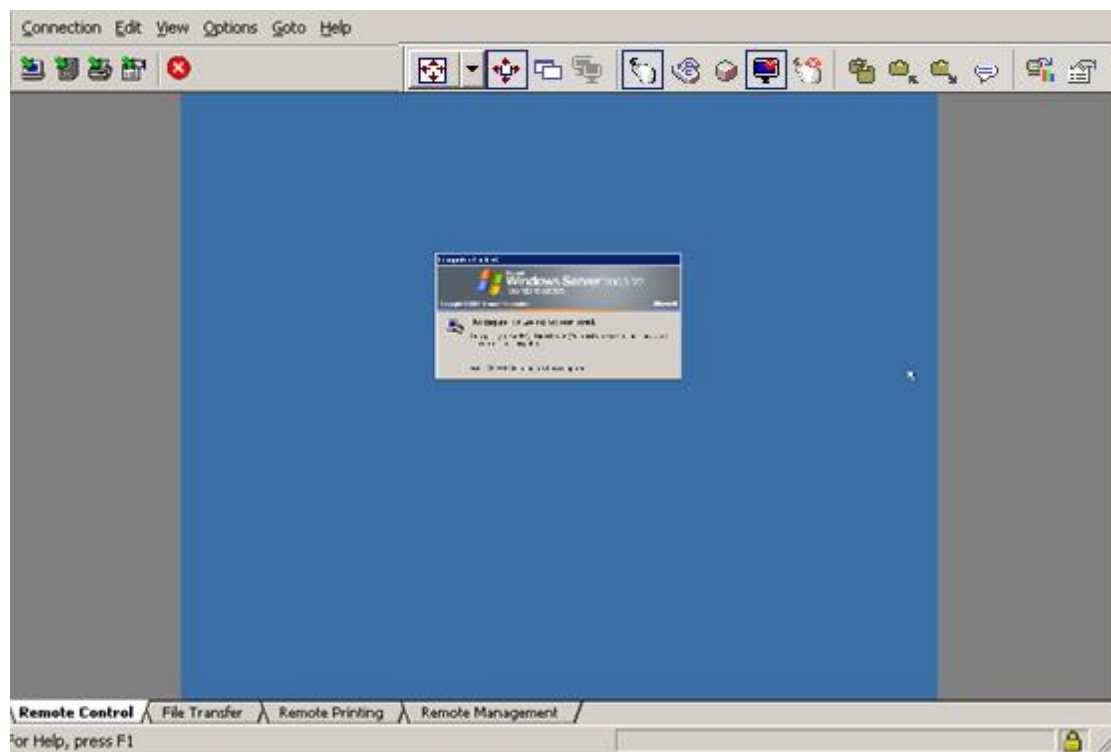
Operate your mouse on the remote Host computer

During remote control sessions, the mouse can exist in the following states:

- ◆ When the mouse cursor is inside the PC-Duo Master Connection Window, the mouse is remote and all movements and clicks are transmitted to the Host computer.
- ◆ When the mouse cursor is anywhere else, the mouse is local and any mouse operation affects your local Windows session only.

Fit-to-Window

The Fit-to-Window display option in the Master preserves the Host screen aspect ratio, and centers the display in the available space. Also, text mode screen will be centered in available space in all display modes.



To improve the quality of display in Fit-to-Window mode, choose **Options > Connection Window Settings** and select the Halftone checkbox.

Note: The Halftone option affects only the way the screen is rendered by the Master, and may increase CPU usage on the Master.

Resize the PC-Duo Master Connection Window

Resize the PC-Duo Master Connection Window by dragging its border. When the **View > Fit 1-to-1** display option is used, you cannot resize the window larger than the Host computer screen size. If you hold down the **CTRL** key when you resize the window, it retains the aspect ratio of the Host computer display.

Request/release input control

When connected to a Host computer, two input control states are possible:

- ◆ With input control, you control the mouse and keyboard of the Host.
- ◆ Without input control, you monitor the Host computer but do not control it.

For a peer-to-peer connection, there can be only one Master connected to a Host. In this case, you might want to toggle the state to have or not have input control of the Host.

For a Gateway-managed connection, multiple users can be connected to the same Host. In this case, another user may request input control of the Host. Provided you have the proper access control rights, you can request or relinquish input control to the other user.


Toggle the input control state by clicking an icon in the toolbar of the **PC-Duo Master Connection** window. The icon you click depends on the type of connection you have to the Host computer.

To toggle input control of a Host computer:

- ◆ Click  or choose **Edit > Input Control** from the menu.

Open chat window

When connected to a chat-enabled Host, you will automatically join a chat room including the Host end-user and any other Master users connected to that host. A chat window can be opened to send and receive text messages with the user at the Host machine by

clicking on  icon on the tool bar. When you type a text message and click **Send**, the message will be sent to a similar chat window on the Host display. If the chat window is not already up on Host display, it will automatically be started to display the message.


If you are using a Gateway-managed connection to the Host, and there are other PC-Duo Master users connected to the same Host via the same Gateway, any text messages will automatically be sent to all the other Master displays as well.

NOTE: Chat support requires that all components (Host, Master, Gateway) be version 6.0 or later.

Capture a screen image from the Host computer display

All or part of the Host display can be captured and copied to the clipboard on your local computer. After copying a region of the Host computer display, paste the image into a document or image processing application that you have running on your local computer.

To copy screen images to the clipboard on your local computer, follow these steps:

- 1 From the **Remote Control** tab of the **PC-Duo Master Connection Window**, choose **Edit > Copy Host Screen** or click the  icon on the tool bar. The cursor changes to a top left corner angle shape to indicate where to place the first anchor of the selection.

- 2 Move to the top left corner of the rectangle to the top left corner of the graphic or region of the screen that you wish to copy and hold down the left mouse button at that location.
- 3 While holding down the left mouse button, drag the cursor to the bottom right corner of the region you want to capture. As you move your mouse, the area you select is indicated visually on the screen.
- 4 When you have selected the area you want, release the mouse button.

The captured graphic is copied to the clipboard on your local computer and you can paste the image into a graphics or word processing document.

Copy text from the Host computer display



When the Host computer presents a text-only display, you may copy text from the remote Host computer to the system clipboard of your local computer. To do so, follow these steps:

- 1 From the **Remote Control** tab of the **PC-Duo Master Connection Window**, choose **Edit > Copy Host Screen**. The cursor changes its shape to indicate that you can start selecting text.
- 2 Use your mouse to select the text that you want to capture from the Host computer.
- 3 When you select the text, the copy text mode is complete and the text is copied into the clipboard on your local computer. You can paste it into any application you open on your local computer.

NOTE: When copying text onto the local clipboard, PC-Duo Master also copies a bitmap image of the same selected region of the screen and places that on the clipboard as well. Use the "Paste Special" or similar option of your application to choose which format, text or image, is to be pasted.

Use CTRL-ALT-DEL and other special keys on the remote computer

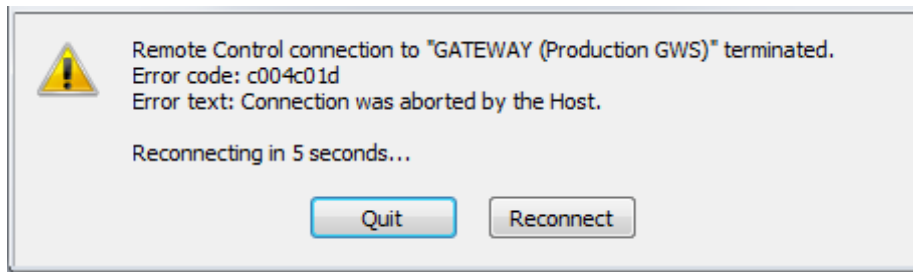
Send special key combinations that would normally be intercepted by your local computer to the remote computer. To send a key combination to the Host computer, select **Edit > Send Keystroke** from the PC-Duo Master Connection Window., and then select the key combination.

For example, select **Edit > Send Keystroke > Remote Alt+Ctrl+Del** to send CTRL-ALT-DEL to your Host computer. The Send Keystroke menu is also accessible on the tool bar via the  button. And the Alt+Ctrl+Del combination is also directly accessible on the tool bar via the  button.

Special key combinations are also interpreted by the Host according to the values that you specify in the PC-Duo Master console window when you select **Options > Keyboard Mapping**. For more information, see "[Keyboard Mapping](#)".

Automatically reconnect when a connection drops

Sometimes while connected to a Host your connection will drop, perhaps due to a network connectivity issue, or because the Host service on the remote machine is exiting or restarting. In most cases, PC-Duo Master automatically attempts to reconnect to the Host, while presenting the following dialog:



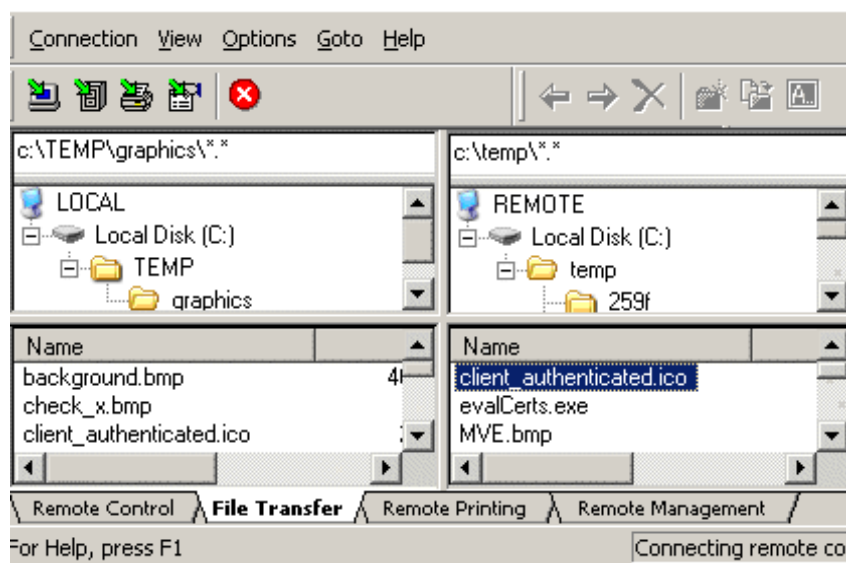
This dialog shows the reason for the Remote Control disconnect, as well as any other services that were disconnected before the RC disconnect, and also displays two buttons labeled Quit and Reconnect. By default, PC-Duo Master will automatically attempt to reconnect 15 seconds after the Remote Control disconnect. A countdown timer shows the time left before reconnect. If you wish to attempt the reconnect immediately, simply click "Reconnect." If you do not wish to attempt any further reconnects, click "Quit" and the Connection Window will automatically close. If the reconnect succeeds, the dialog is automatically dismissed and Remote Control resumes as before. Any other services connected before the connection was interrupted will also be reconnected. If the reconnect fails, the reason for the failure will appear in the dialog, and PC-Duo Master will keep trying to reconnect after the next 15 seconds, until a connection succeeds or you click "Quit."

In certain cases, PC-Duo Master will not automatically reconnect. For instance, if a Host on Demand is stopping because the Host user chose to exit, or if the Host user explicitly chose to terminate the connection, or if the Host machine is going to sleep, then PC-Duo Master will not automatically reconnect. Instead, the disconnect dialog will display without the countdown timer, but the Reconnect button will still be available. If you choose to manually reconnect by clicking the Reconnect button, then PC-Duo Master will re-enter its automatic reconnect mode, and if the first reconnect is unsuccessful it will keep trying to reconnect after the next 15 seconds, until a connection succeeds or you click "Quit."

File Transfer tab

Use the **File Transfer** tab on the Master Connection Window to transfer files between your local computer and the remote Host computer. Other file maintenance tasks can be performed on either computer.

- ◆ "File transfer resume"
- ◆ "Manipulate files and folders for file transfer"



The file transfer display is split into four adjustable panels. By default, files for your local computer are on the left, and those for your remote Host computer are on the right. The following defaults apply:

- ◆ The top left panel displays the folder hierarchies on the local computer. Use these panels to browse your local and remote directories to select folders.
- ◆ A text field at the top of the tab, one for the left side and another for the right, indicates the full path name of the currently open or selected folder. Use this text field to navigate directly to a specific location on a local or remote file system.
- ◆ The bottom left panel shows the files in any folder that you select in the top left panel.

Follow these steps to transfer files between the local and remote computers:

1 From files located on the lower panel of the **File Transfer** tab, select one or more files to be transferred:

- ◆ Select from the left side if you plan to transfer files from your local Master computer to the remote Host computer.
- ◆ Select from the right side if you plan to transfer files from the remote Host computer to your local Master computer.


2 Select a target folder on the local or remote computer from the top panel. This is the computer to which you plan to transfer files.

3 Drag and drop the files from your source to your target directory, or right-click the selected files you plan to transfer:

- ◆ Select **Get** to transfer files from the Host computer to the local computer. Selected files are copied from the Host computer to the directory you select in the upper panel of the local computer directory listing.
- ◆ Select **Put** to transfer files from the local computer to the Host computer. Selected files are copied from the local computer to the directory you select in the upper panel of the Host computer directory listing.

Tool bar options

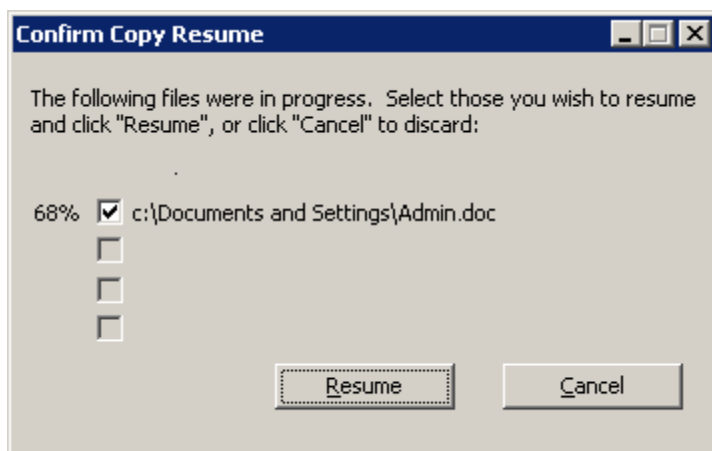
Table below summarizes the functions of icons available on the tool bar when the Master Connection Window is set to the File Transfer tab.

Icon	Function
	Connects to the selected Host computer with the Remote Control tab selected.
	Connects to the selected Host computer with the File Transfer tab selected.
	Connects to the selected Host computer with the Remote Printing tab selected.
	Connects to the selected Host computer with the Remote Management tab selected.
	Closes Master Connection Window and disconnects from Host computer.
	Get selected file or folder from the other directory.
	Put selected file or folder in the other directory.
	Deleted selected file or folder.
	Create a new directory or subdirectory.
	Move selected file or folder to a new folder on the same computer.
	Rename selected file or folder.

File transfer resume

Occasionally while transferring files, your connection may be interrupted, leaving some files only partially transferred. If the files are large, retransmitting them from the beginning again could prove very expensive. For this reason, PC-Duo Master provides a File transfer resume feature, which allows you to resume interrupted transfers exactly where you left off.

After a connection is interrupted (or if you manually cancel an in-process transfer), the next time you connect to the same Host and select the **File Transfer** tab in the Connection Window, PC-Duo Master scans both the local machine and the remote Host machine for records of interrupted file transfers. The list of any such resumable file transfers is then automatically presented in the Confirm Copy Resume window:



File transfer resume - Confirm Copy Resume dialog

Check or uncheck each file you wish to resume, and then click the **Resume** button. At that point, file transfers for the selected files are resumed, and the transfers will run either to completion, or until the connection is again interrupted.

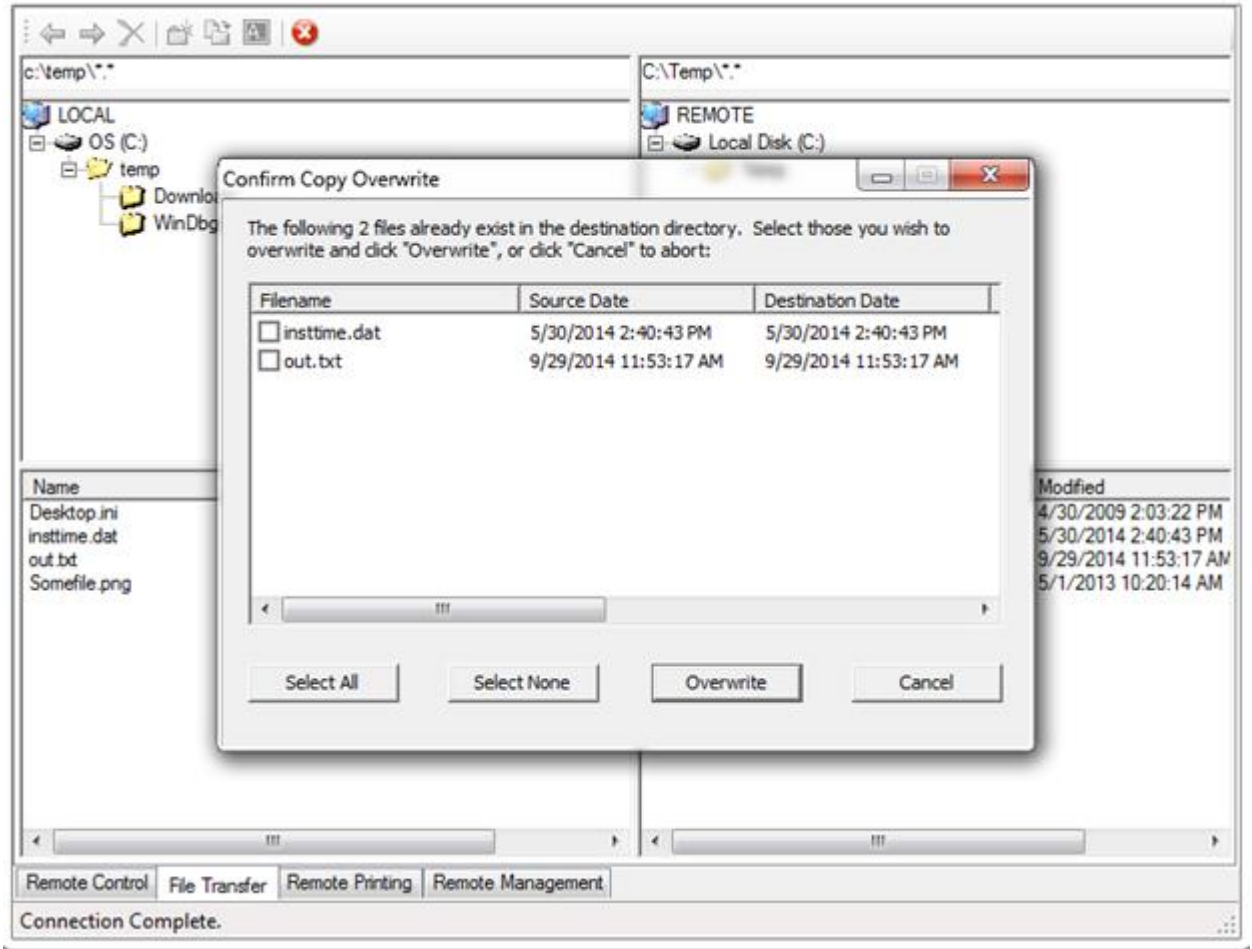
File transfers for any files that you uncheck will not be resumed, and their partial contents will be discarded. Also if you click **Cancel** instead of **Resume**, all partial contents will be discarded, and the record of those transfers will be deleted. Thus you have only one chance to resume a set of interrupted transfers.

NOTE: *PC-Duo Master does not resume the transfer of an entire directory or directory tree, only the individual files that were in process at the time the connection was lost.*

NOTE: *PC-Duo Master only allows transfers in one direction or the other (to or from the Host) at a time, so the list of resumable file transfers will always consist of only files to be sent to the Host, or only files to be received from the Host. PC-Duo Master does maintain a separate list of resumable file transfers for each Host.*

File transfer overwrite

Sometimes while transferring files, you may find that one or more files already exist in the destination directory. In previous versions of PC-Duo Master, those files would have been overwritten without your permission. In PC-Duo 12.7, the Master will prompt with the following dialog before overwriting any files:



Using this dialog you can choose to overwrite some, all or none of the files in common between the source and the destination.

Manipulate files and folders for file transfer

The following file and folder information is listed on the **File Transfer** tab:

- ◆ The top panels display the folder hierarchy, but only reveal the contents of the nodes of the tree that you explicitly open.
- ◆ No files appear in the top panels, nor do any folders appear in any bottom panels.
- ◆ A drive, folder, or one or more files must be selected before you can perform most file transfer operations.

When you double-click a computer, drive or folder, a list of all of the folders (or devices) that it contains displays in the top panel. The single files are listed in the bottom panel. Display the files within any folder by selecting the folder in the top panel and choosing the **List Directory** command from the right-click menu.

- ◆ Use standard Windows mouse and keyboard controls to browse your directory listings.
- ◆ Perform the following directory organization tasks on either computer by right-clicking one or more files or a folder, and selecting one of the following commands:

- ♦ **Delete** - to delete selected files or folders.
- ♦ **Rename** - to rename files or folders.
- ♦ **Create Directory** - to create folders by entering the folder path.
- ♦ **Move** - to move files or folders by entering the folder path.
- ♦ **Copy** - to copy files or folders by entering the folder path.

Remote Printing tab

Access the Remote Print Manager settings and monitor the progress of remote printing jobs using the Remote Printing tab on the Master Connection Window. An active remote control connection must be maintained between the Host computer and the local computer to complete the remote printing process.

Remote printing has been completely re-written for PC-Duo 12.7. You now have the ability to print in both directions, from Host to Master or from Master to Host. You no longer have to install matching printer drivers on Host and Master. You can send the same print job to multiple destinations at once. You can send saved print job files to a remote printer without going through the print process all over again. And remote printing works Peer-to-Peer as well as via Gateway, and on all PC-Duo 12.7 supported Windows platforms, (desktop and server operating systems, both 32-bit and 64-bit editions). All of this is made possible by two key components of PC-Duo remote printing - the PC-Duo XPS Printer driver, and the PC-Duo Remote Print Manager.

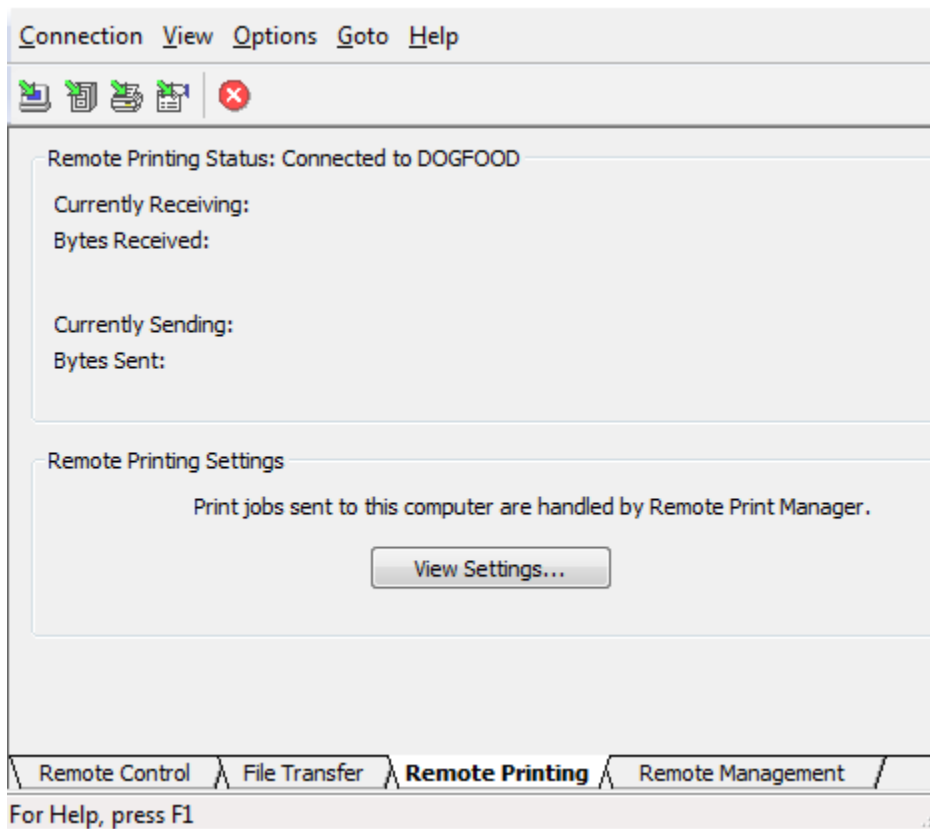
When you install PC-Duo Master on a computer, you also get the PC-Duo XPS Printer driver and Remote Print Manager. The XPS driver is used to create printer-independent XPS files, and the Remote Print Manager is used to manage sending and receiving print jobs (files) over one or more remote printing connections. When you make a remote printing connection to a Host, the Remote Print Manager starts up and places an icon in the system notification area (system tray). PC-Duo Master 12.7 automatically makes a remote printing connection when you make a remote control connection.

To print from Master to Host via an open a Connection Window, you simply use your application's print function to print to the PC-Duo Printer (automatically installed for you). The PC-Duo XPS driver converts the resulting print job into a printer-independent XPS file which it then submits to the Remote Print Manager. The Remote Print Manager automatically sends the file to the Host via the open remote printing connection, where it is received by the Host's own Remote Print Manager and printed according to the Host's Remote Print Manager settings.

To print from Host to Master, you simply use the Host application's print function to print to the PC-Duo Printer on the Host (automatically installed with PC-Duo Host). The resulting print job is sent to your local machine and printed according to your local Remote Print Manager settings.



- ♦ "Configure Remote Printing settings on your local computer"




- ◆ "Configure Remote Printing settings on a Host computer"
- ◆ "Print from Host to one or more Masters"
- ◆ "Print from Master to one or more Hosts"
- ◆ "Printing to mixed Host and Master targets"
- ◆ "Printing when there are no valid targets"
- ◆ "Send a saved print job file over a remote printing connection"



Tool bar options

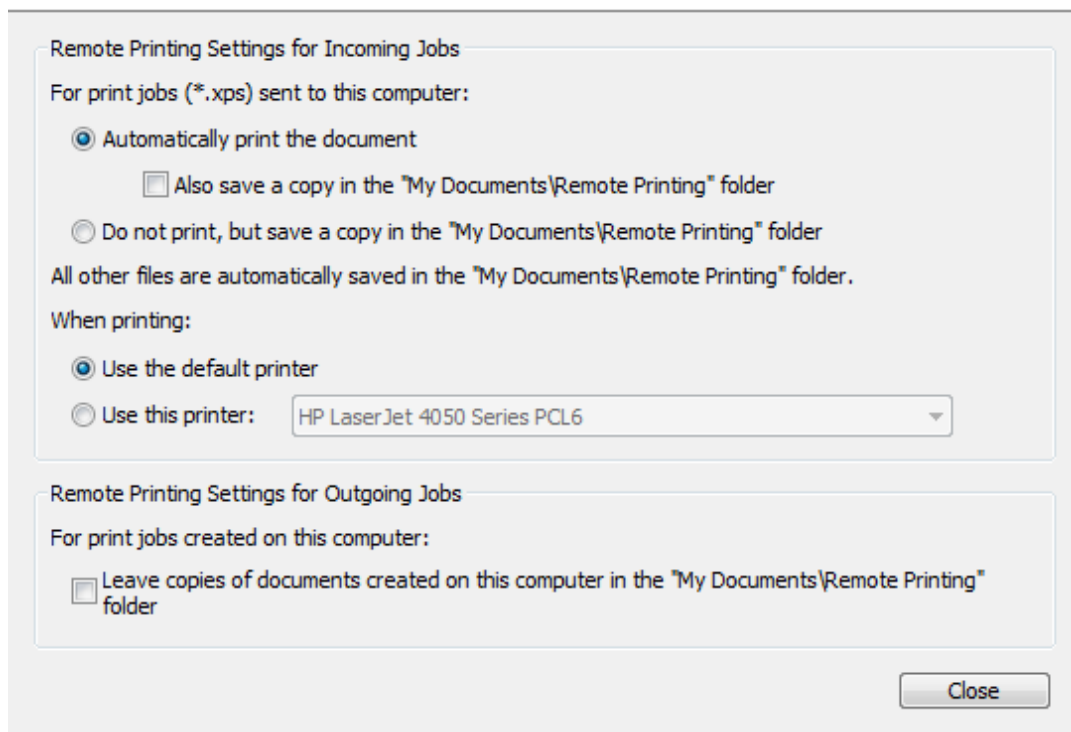
Table below summarizes the functions of icons available on the tool bar when the Master Connection Window is set to the Remote Printing tab.

Icon	Function
	Connects to the selected Host computer with the Remote Control tab selected.
	Connects to the selected Host computer with the File Transfer tab selected.

	Connects to the selected Host computer with the Remote Printing tab selected.
	Connects to the selected Host computer with the Remote Management tab selected.
	Closes Master Connection Window and disconnects from Host computer.

Configure Remote Printing settings on your local computer

With PC-Duo Master 12.7, you're ready for remote printing as soon as you make a remote control connection to a Host. By default, remote printing jobs received by the Remote Print Manager will be printed to the current default system printer. By adjusting the Remote Print Manager settings, however, you can choose to send those jobs to a different printer, to additionally save a copy of the print file, or not to print at all and only save a copy of the print file. To access the local Remote Print Manager settings, either click the "View Settings..." button on the Connection Window Remote Printing tab, or double-click the Remote Print Manager icon in the system notification area (system tray).



Remote Printing Settings for Incoming Jobs

For print jobs (*.xps) sent to this computer:

☒ Automatically print the document

☐ Also save a copy in the "My Documents\Remote Printing" folder

☐ Do not print, but save a copy in the "My Documents\Remote Printing" folder

All other files are automatically saved in the "My Documents\Remote Printing" folder.

When printing:

☒ Use the default printer

☐ Use this printer: HP LaserJet 4050 Series PCL6

Remote Printing Settings for Outgoing Jobs

For print jobs created on this computer:

☐ Leave copies of documents created on this computer in the "My Documents\Remote Printing" folder

Close

The Remote Print Manager Settings dialog has two main sections, one for incoming jobs, and one for outgoing jobs. For incoming jobs, you can specify whether to print the job, and if so whether also to save a copy of the file in the local "My Documents\Remote Printing" folder. Or you can specify not to print the job but only to save a copy of the file in the local "My Documents\Remote Printing" folder. When printing, you can either use

the current system default printer, or specify a different printer. Note that you cannot specify the PC-Duo Printer as the destination printer, as this would cause all incoming print jobs to be bounced back to where they came from!

For outgoing jobs, you simply have a choice of whether to leave a copy of the print file in the local "My Documents\Remote Printing" folder.

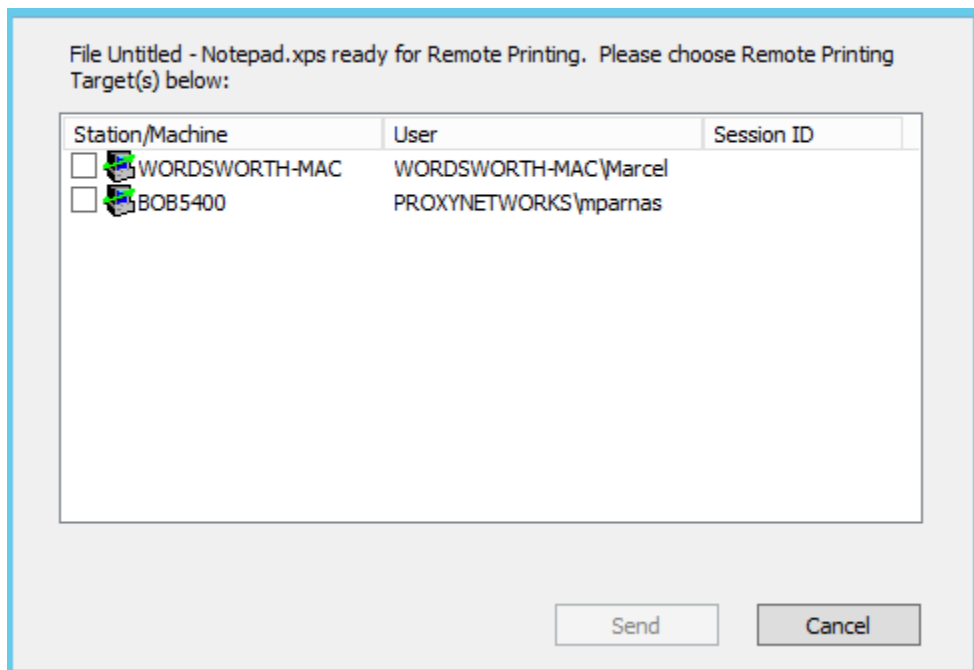
NOTE: *If you are running PC-Duo Master on Demand and have not previously installed the PC-Duo remote printing components on your machine, then the Remote Print Manager will not be available and your remote printing options will be limited to receiving print jobs from the remote Host. In that case the Remote Printing tab will present a simplified set of controls for incoming jobs, and the "View Settings..." button will be hidden.*

Configure Remote Printing settings on a Host computer

To access the Host Remote Print Manager settings, you must first establish a remote printing connection, by opening a Connection Window to the Host. When you make a remote printing connection to a Host, the Remote Print Manager starts up on the Host as well as on the Master, and places an icon in the system tray on both machines. PC-Duo Master 12.7 automatically makes a remote printing connection when you make a remote control connection. To access the Host Remote Print Manager settings, either double-click the Remote Print Manager icon in the Host's system tray, or right-click the icon and choose "Remote Print Manager Settings..."

Print from Host to one or more Masters

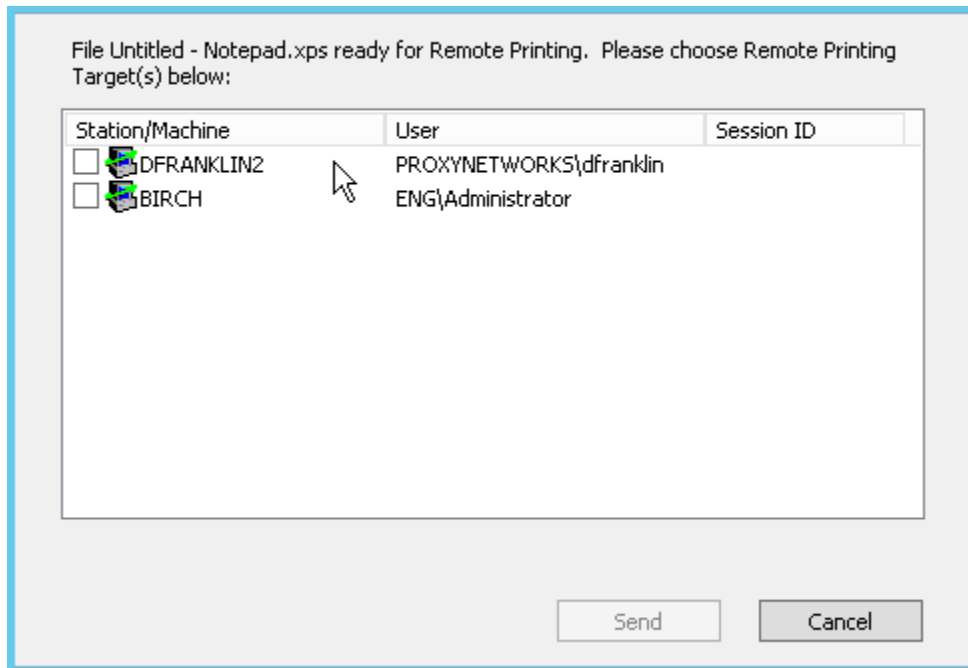
PC-Duo Host can accept multiple remote control and multiple remote printing connections via PC-Duo Gateway. If a Host has more than one remote printing connection, and you start a print job by printing from a Host application to the PC-Duo Printer on the Host, then the Remote Print Manager will present a dialog showing the various remote printing connections and allow you to choose which of them will receive the print job.



You can select one or more of the connected Masters to receive the print job by clicking the checkboxes next to each one, and then click "Send" to start sending the job. If you do not select any connections to receive the job, your only choice is to click "Cancel" to cancel the job and close the dialog. If you create another print job while the multiple target dialog is displayed, the new print job is queued until the dialog from the first job is dismissed.

Print from Master to one or more Hosts

With PC-Duo Master you can make multiple remote control and multiple remote printing connections to multiple Hosts. If you have more than one remote printing connections open, and you start a print job by printing from a local application to the PC-Duo Printer on the local machine, then the Remote Print Manager will present a dialog showing the various remote printing connections and allow you to choose which of them will receive the print job.



You can select one or more of the connected Hosts to receive the print job by clicking the checkboxes next to each one, and then click "Send" to start sending the job. If you do not select any connections to receive the job, your only choice is to click "Cancel" to cancel the job and close the dialog. If you create another print job while the multiple target dialog is displayed, the new print job is queued until the dialog from the first job is dismissed.

Printing to mixed Host and Master targets

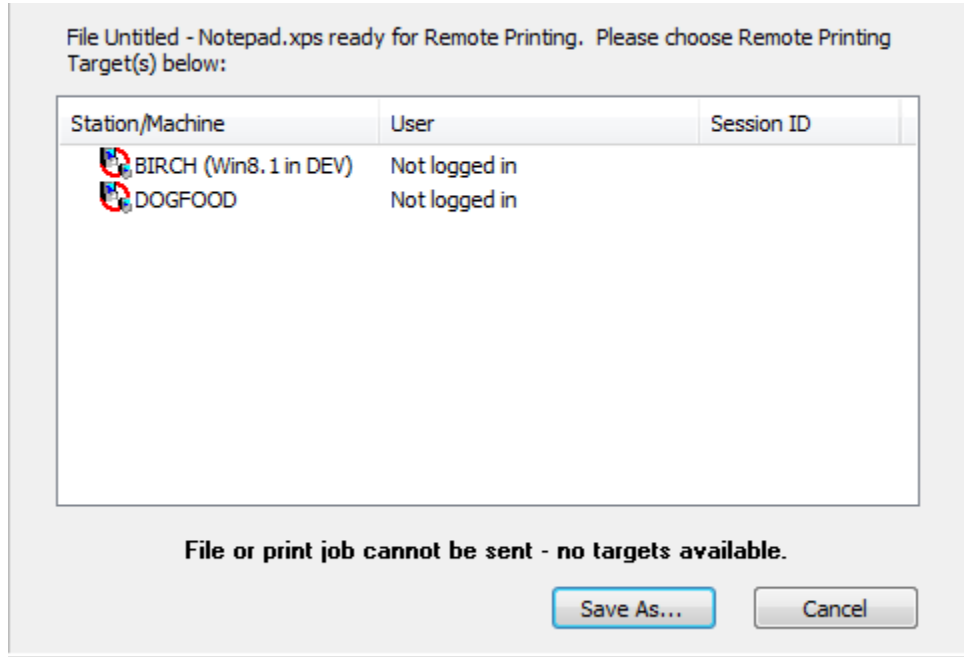
It is possible to have both PC-Duo Host and PC-Duo Master installed on the same machine, and to have both an incoming remote control and remote printing connection to your Host, while at the same time to have an outgoing remote control and remote printing connection to some other Host from your Master. In that case there is still only one copy of Remote Print Manager running on your machine, and both Host and Master will register their remote printing connections with that Remote Print Manager. If you then create a print job by printing to the local PC-Duo Printer, the Remote Print Manager will see you have two valid remote printing targets and will display the multiple target dialog. You can then choose to send the print job to either the remote Host or the remote Master or both. Incoming print jobs from either Host or Master will be treated normally, and will be printed or saved according to your local Remote Print Manager settings.

Printing when there are no valid targets

The Remote Print Manager requires there to be another Remote Print Manager running on the Host in order to send a print job to that Host. If no user is logged into the remote Host, then there is no Remote Print Manager running on the Host, and your local Remote Print Manager cannot print to that Host. The Host is said to be an invalid remote printing target, even though you may have an open remote printing connection to the Host (the

status in the Remote Printing tab in the Master Connection Window will report that you are connected).

If you create a remote printing job while you are in this state, your local Remote Print Manager will display a dialog explaining that there are no valid targets, but you will have the option to save the print job file to a folder of your choice. See the next section to find out why you might want to save the file and how to send a saved print job file to a remote printing target without going through the print process all over again.



NOTE: Downloading and running PC-Duo Host on Demand by itself does not install the PC-Duo Remote Print Manager or XPS printer driver. A Host of this type will not accept remote printing connections and will not even show up as an invalid target. However, if PC-Duo remote printing is separately installed beforehand on the machine which will run Host on Demand, then that Host can accept remote printing connections and serve as a valid remote printing target.

Send a saved print job file over a remote printing connection

The Remote Print Manager Settings dialog lets you specify whether to save a copy of outgoing print job files to the local "My Documents\Remote Printing" folder. You may want to do this if the process of printing certain documents from certain applications is particularly time-consuming or cumbersome. If you print the document once to the PC-Duo Printer, and save the print job file in .xps format, then you can re-send the file multiple times to multiple remote printing targets at any time by using the Remote Print Manager's Send File function.

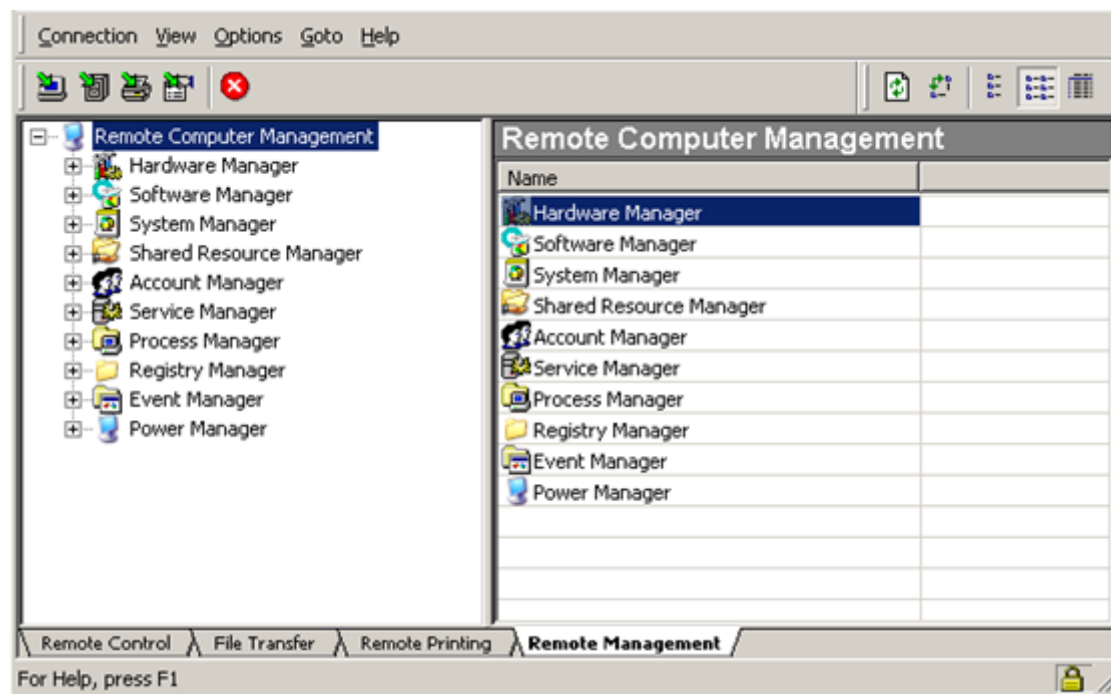
To invoke the Send File function, right-click the Remote Print Manager's icon in the system notification area (system tray) and choose "Send File...". A dialog will be displayed letting you select a file to be sent. By default only files of type .xps will be displayed in the dialog, but you can change this to display and choose files of any type, such as .pdf for example. If you select a file that does not end with a .xps extension, Remote Print Manager will send the file to the remote printing target, but it will not be automatically printed. Instead it will be automatically saved in the remote "My Documents\Remote Printing" folder. This function can therefore also be used as an ad hoc file transfer capability.

Send File can be used on either Host or Master. Once you choose a file to be sent, the process is the same as if you had just printed the file. If there is a single valid target available, the file is immediately sent to it and printed on the receiving side. If there is more than one valid target, the Remote Print Manager multiple target dialog will be displayed. And if there are no valid targets available, the no valid target dialog will be displayed.

Remote Management tab

Use the **Remote Management** tab on the Master Connection Window to view and manage information about hardware, software, system settings, services, processes, events and more on the remote Host computer.

- ◆ “Hardware Manager”
- ◆ “Software Manager”
- ◆ “System Manager”
- ◆ “Shared Resource Manager”
- ◆ “Account Manager”
- ◆ “Service Manager”
- ◆ “Process Manager”
- ◆ “Registry Manager”
- ◆ “Event Manager”
- ◆ “Power Manager”













NOTE: PC-Duo uses Microsoft Windows Management Instrumentation (WMI) to request, receive and modify management information on the remote Host computer. Because PC-Duo uses the secure PC-Duo connection to transport WMI commands and information, PC-Duo Remote Management does not require RPC (Remote Procedure Call) or file/print sharing to be enabled on the remote Host computer in order to operate.

NOTE: If the Master cannot find the redistributable MSXML6 system component, an error message will appear in the Remote Management window. In this case, you must install

MSXML6 and restart the Master. See <http://www.microsoft.com> for more information about the redistributable msxml6.msi package.

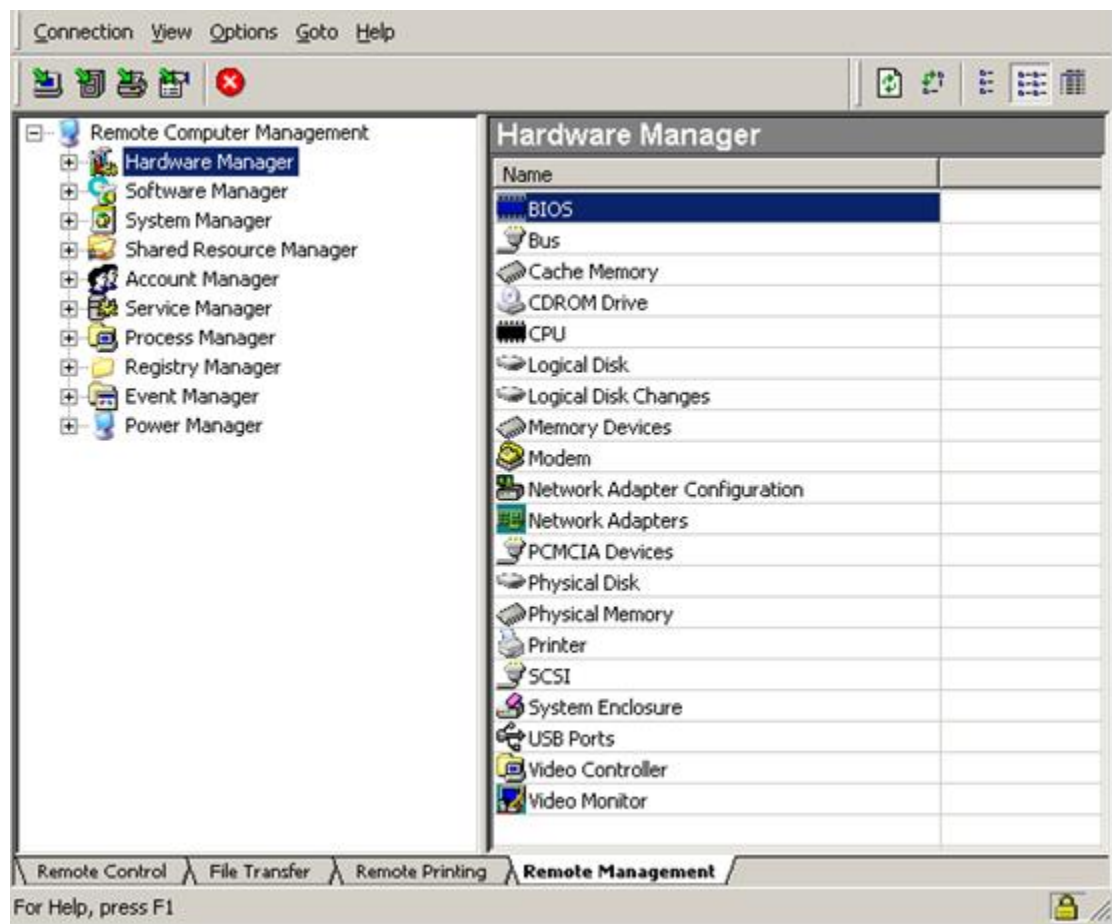
Tool bar options

Table below summarizes the functions of icons available on the tool bar when the Master Connection Window is set to the Remote Management tab.

Icon	Function
	Connects to the selected Host computer with the Remote Control tab selected.
	Connects to the selected Host computer with the File Transfer tab selected.
	Connects to the selected Host computer with the Remote Printing tab selected.
	Connects to the selected Host computer with the Remote Management tab selected.
	Closes Master Connection Window and disconnects from Host computer.
	Refresh result pane by resending WMI command to selected Host computer.
	Transpose columns and rows in result pane.
	Filter: Basic shows limited set of attributes and values for any selected component.
	Filter: Default shows a default set of attributes and values for any selected component.
	Filter: All shows full set of attributes and values for any selected component.

Hardware Manager

Hardware Manager provides you with a graphical view of physical devices and resources available on the remote Host computer.



- ◆ Select "BIOS" to view details about Basic Input/Output System (BIOS) on remote Host computer.
- ◆ Select "Bus" to view details about the physical system bus on remote Host computer.
- ◆ Select "Cache Memory" to view details about internal and external cache memory on the remote Host computer.
- ◆ Select "CDROM Drive" to view details about the CDROM drive on the remote Host computer.
- ◆ Select "CPU" to view details about the CPU(s) on the remote Host computer.
- ◆ Select "Logical Disk" to view details about data source(s) that resolve to actual local storage device(s) on the remote Host computer.
- ◆ Select "Logical Disk Changes" to view details about network storage devices that are mapped as logical disks on the remote Host computer.
- ◆ Select "Memory Devices" to view details about memory devices on the remote Host computer .
- ◆ Select "Modem" to view details about any POTS (Plain Old Telephone Service) modems on the remote Host computer.

- ◆ Select "Network Adapter Configuration" to view details about extra properties and methods that support the management of the TCP/IP and Internetwork Packet Exchange (IPX) protocols that are independent from the network adapters on the remote Host computer.
- ◆ Select "Network Adapters" to view details about network adapters on the remote Host computer.
- ◆ Select "PCMCIA Devices" to view details about PCMCIA devices on the remote Host computer.
- ◆ Select "Physical Disk" to view details about physical disk drives on the remote Host computer.
- ◆ Select "Physical Memory" to view details about for physical memory on the remote Host computer.
- ◆ Select "Printer" to view details about for printers connected to the remote Host computer.
- ◆ Select "SCSI" to view details about SCSI devices connected to the remote Host computer.
- ◆ Select "System Enclosure" to view details about the system enclosure for the remote Host computer.
- ◆ Select "USB Ports" to view details about the universal serial bus for the remote Host computer.
- ◆ Select "Video Controller" to view details about the video controller on the remote Host computer.
- ◆ Select "Video Monitor" to view details about the video monitor connected to the remote Host computer.

BIOS

BIOS provides you with a graphical view of settings for the BIOS running on the remote Host computer system.

BIOS has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- BIOS Characteristics
- BIOS Version
- Build Number
- Caption
- Code Set
- Current Language
- Description
- Identification Code

- Installable Languages
- Language Date
- List of Languages
- Manufacturer
- Other Target OS
- Primary BIOS
- Release Date
- Serial Number
- SMBIOS BIOS Version
- SMBIOS Major Version
- SMBIOS Minor Version
- SMBIOS Present
- Software Element ID
- Software Element State
- Status
- Target Operating System
- Version

WMI Class

PC-Duo uses the following WMI Class to request/retrieve BIOS information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
BIOS	Win32_BIOS

Bus

Bus provides you with a graphical view of settings for the bus on the remote Host computer system.

Bus has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Bus Type
- Device ID
- System Name
- Description
- Availability
- Bus Num
- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Error Cleared
- Error Description
- Install Date
- Last Error Code
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Status
- Status Info
- System Creation Class Name

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Bus information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
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Bus	Win32_Bus
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Cache Memory

Cache Memory provides you with a graphical view of settings for internal and external cache memory on the remote Host computer system.

Cache Memory has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Block Size
- Installed Size
- Max Cache Size
- Device ID
- Cache Type
- Number of Blocks
- Cache Speed
- Install Date
- Location
- System Name
- Write Policy
- Access
- Additional Error Data
- Associativity
- Availability
- Caption
- Config Manager Error Code
- Config Manager User Config
- Correctable Error
- Creation Class Name

- Current SRAM
- Description
- Ending Address
- Error Access
- Error Address
- Error Cleared
- Error Correct Type
- Error Data
- Error Data Order
- Error Description
- Error Info
- Error Methodology
- Error Resolution
- Error Time
- Error Transfer Size
- Flush Timer
- Last Error Code
- Level
- Line Size
- Other Error Description
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Purpose
- Read Policy
- Replacement Policy
- Starting Address
- Status

- Status Info
- Supported SRAM
- System Creation Class Name
- System Level Address

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Cache Memory information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Cache Memory	Win32_CacheMemory

CDROM Drive

CDROM Drive provides you with a graphical view of settings for the CDROM drive on the remote Host computer system.

CDROM Drive has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Capabilities
- Capability Descriptions
- Caption
- Compression Method
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Default Block Size
- Description
- Device ID

- Drive
- Drive Integrity
- Error Cleared
- Error Description
- Error Methodology
- File System Flags
- File System Flags Ex
- ID
- Install Date
- Last Error Code
- Manufacturer
- Max Block Size
- Maximum Component Length
- Max Media Size
- Media Loaded
- Media Type
- Mfr Assigned Revision Level
- Min Block Size
- Name
- Needs Cleaning
- Number of Media Supported
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Revision Level
- SCSI Bus
- SCSI Logical Unit
- SCSI Port

- SCSI Target ID
- Serial Number
- Size
- Status
- Status Info
- System Creation Class Name
- System Name
- Transfer Rate
- Volume Name
- Volume Serial Number

WMI Class

PC-Duo uses the following WMI Class to request/retrieve CDROM Drive information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
CDROM Drive	Win32_CDROMDrive

CPU

CPU provides you with a graphical view of settings for the CPU(s) on the remote Host computer system.

Each CPU has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Processor Type
- Version
- CPU Status
- Current Clock Speed
- Address Width

- Architecture
- Availability
- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Current Voltage
- Data Width
- Description
- Device ID
- Error Cleared
- Error Description
- Ext Clock
- Family
- Install date
- L2 Cache Size
- L2 Cache Speed
- L3 Cache Size
- L3 Cache Speed
- Last Error Code
- Level
- Load Percentage
- Manufacturer
- Max Clock Speed
- Number of Cores
- Number of Logical Processors
- Other Family Description
- PNP Device ID
- Power Management

Capabilities

- Power Management Supported
- Processor ID
- Revision
- Role
- Socket Designation
- Status
- Status Info
- Stepping
- Status Info
- System Creation Class Name
- System Name
- Unique ID
- Upgrade Method
- Voltage Caps

WMI Class

PC-Duo uses the following WMI Class to request/retrieve CPU information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
CPU	Win32_CPU

Logical Disk

Logical Disk provides you with a graphical view of settings for data source(s) that resolve to actual local storage device(s) on the remote Host computer system.

Logical Disk has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Description

- Media Type
- Free Space
- Total Size
- File System
- Install Date
- System Name
- Status Info
- Purpose
- Access
- Availability
- Block Size
- Caption
- Compressed
- Config Manager Error Code
- Config Manager USer Config
- Creation Class Name
- Device ID
- Drive Type
- Error Cleared
- Error Methodology
- Last Error Code
- Maximum Component Length
- Number of Blocks
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Provider Name
- Quotas Disabled
- Quotas Incomplete

- Quotas Rebuilding
- Status
- Supports Disk Quotas
- Supports File Based Compression
- System Creation Class Name
- Volume Dirty
- Volume Name
- Volume Serial Number

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Logical Disk information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Logical Disk	Win32_LogicalDisk

Logical Disk Changes

Logical Disk Changes provides you with a graphical view of settings for network storage devices that are mapped as logical disks on the remote Host computer system.

Logical Disk Changes has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Access
- Availability
- Block Size
- Caption
- Compressed
- Config Manager Error Code
- Config Manager User Config

- Creation Class Name
- Description
- Device ID
- Error Cleared
- Error Description
- Error Methodology
- File System
- Free Space
- Install Date
- Last Error Code
- Maximum Component Length
- Name
- Number of Blocks
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Provider Name
- Purpose
- Quotas Disabled
- Quotas Incomplete
- Quotas Rebuilding
- Session ID
- Size
- Status
- Status Info
- Supports Disk Quotas
- Supports File Based Compression
- System Creation Class Name
- System Name

- Volume Name
- Volume Serial Number

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Logical Disk Changes information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Logical Disk Changes	Win32_MappedLogicalDisk

Memory Devices

Memory Devices provides you with a graphical view of settings for memory devices on the remote Host computer system.

Memory Devices has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Access
- Additional Error Data
- Availability
- Block Size
- Caption
- Config Manager Error Code
- Config Manager User Config
- Correctable Error
- Creation Class Name
- Description
- Device ID
- Ending Address
- Error Access

- Error Address
- Error Cleared
- Error Data
- Error Data Order
- Error Description
- Error Granularity
- Error Info
- Error Methodology
- Error Resolution
- Error Time
- Error Transfer Size
- Install Date
- Last Error Code
- Name
- Number of Blocks
- Other Error Description
- PNP Device ID
- Power Management Capabilities
- Power Management Supported
- Purpose
- Starting Address
- Status
- Status Info
- System Creation Class Name
- System Level Address
- System Name

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Memory Device information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Memory Devices	Win32_MemoryDevice

Modem

Modem provides you with a graphical view of settings for any POTS (Plain Old Telephone Service) modems on the remote Host computer system.

Modem has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Answer Mode
- Attached To
- Availability
- Blind Off
- Blind On
- Caption
- Compatibility Flags
- Compression Info
- Compression Off
- Compression On
- Config Manager Error Code
- Config Manager User Config
- Configuration Dialog
- Countries Supported[]
- Country Selected
- Creation Class Name
- Current Passwords[]
- DCB[]
- Default[]
- Description
- Device ID
- Device Loader
- Device Type
- Dial Type
- Driver Date
- Error Cleared
- Error Control Forced

- Error Control Info
- Error Control Off
- Error Control On
- Error Description
- Flow Control Hard
- Flow Control Off
- Flow Control Soft
- Inactivity Scale
- Inactivity Timeout
- Index
- Install Date
- Last Error Code
- Max Baud Rate To Phone
- Max Baud Rate To Serial Port
- Max Number Of Passwords
- Model
- Modem Inf Path
- Modem Inf Section
- Modulation Bell
- Modulation CCITT
- Modulation Scheme
- Name
- PNP Device ID
- Port Sub Class
- Power Management Capabilities[]
- Power Management Supported
- Prefix
- Properties[]
- Provider Name
- Pulse
- Reset
- Responses Key Name
- Rings Before Answer
- Speaker Mode Dial
- Speaker Mode Off
- Speaker Mode On
- Speaker Mode Setup
- Speaker Volume High
- Speaker Volume Info

- Speaker Volume Low
- Speaker Volume Med
- Status
- Status Info
- String Format
- Supports Callback
- Supports Synchronous Connect
- System Creation Class Name
- System Name
- Terminator
- Time Of Last Reset
- Tone
- Voice Switch Feature

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Modem information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Modem	Win32_POTSModem

Network Adapter Configuration

Network Adapter Configuration provides you with a graphical view of settings for extra properties and methods that support the management of the TCP/IP and Internetwork Packet Exchange (IPX) protocols that are independent from the network adapters on the remote Host computer system.

Network Adapter Configuration has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Arp Always Source Route
- Arp Use Ether SNAP
- Caption
- Database Path
- Dead GW Detect Enabled
- Default IP Gateway[]

- Default TOS
- Default TTL
- Description
- DHCP Enabled
- DHCP Lease Expires
- DHCP Lease Obtained
- DHCP Server
- DNS Domain
- DNS Domain Suffix Search Order[]
- DNS Enabled For WINS Resolution
- DNS Host Name
- DNS Server Search Order[]
- Domain DNS Registration Enabled
- Forward Buffer Memory
- Full DNS Registration Enabled
- Gateway Cost Metric[]
- IGMP Level
- Index
- Interface Index
- IP Address[]
- IP Connection Metric
- IP Enabled
- IP Filter Security Enabled
- IP Port Security Enabled
- IPSec Permit IP Protocols[]
- IPSec Permit TCP Ports[]
- IPSec Permit UDP Ports[]
- IP Subnet[]
- IP Use Zero Broadcast
- IPX Address
- IPX Enabled
- IPX Frame Type[]
- IPX Media Type
- IPX Network Number[]
- IPX Virtual Net Number
- Keep Alive Interval
- Keep AliveTime
- MAC Address
- MTU

- Num Forward Packets
- PMTUBH Detect Enabled
- PMTU Discovery Enabled
- Service Name
- Setting ID
- Tcpip Netbios Options
- Tcp Max Connect Retransmissions
- Tcp Max Data Retransmissions
- Tcp Num Connections
- Tcp Use RFC1122 Urgent Pointer
- Tcp Window Size
- WINS Enable LM Hosts Lookup
- WINS Host Lookup File
- WINS Primary Server
- WINS Scope ID
- WINS Secondary Server

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Network Adapter Configuration information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Network Adapter Configuration	Win32_NetworkAdapterConfiguration

Network Adapters

Network Adapters provides you with a graphical view of settings for network adapters on the remote Host computer system.

Network Adapters has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Adapter Type
- Adapter Type ID
- Auto Sense
- Availability

- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Description
- Device ID
- Error Cleared
- Error Description
- GUID
- Index
- Install Date
- Installed
- Interface Index
- Last Error Code
- MAC Address
- Manufacturer
- Max Number Controlled
- Max Speed
- Name
- Net Connection ID
- Net Connection Status
- Net Enabled
- Network Addresses[]
- Permanent Address
- Physical Adapter
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Product Name
- Service Name
- Speed
- Status
- Status Info
- System CreationClass Name
- System Name
- Time Of Last Reset

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Network Adapter information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Network Adapters	Win32_NetworkAdapter

PCMCIA Devices

PCMCIA Devices provides you with a graphical view of settings for PCMCIA devices on the remote Host computer system.

PCMCIA Devices has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Description
- Device ID
- Error Cleared
- Error Description
- Install Date
- Last Error Code
- Manufacturer
- Max Number Controlled
- Name
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Protocol Supported
- Status
- Status Info
- System Creation Class Name
- System Name
- Time Of Last Reset

WMI Class

PC-Duo uses the following WMI Class to request/retrieve PCMCIA information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
PCMCIA Devices	Win32_PCMCIAController

Physical Disk

Physical Disk provides you with a graphical view of settings for physical disk drives on the remote Host computer system.

Physical Disk has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Bytes Per Sector
- Capabilities[]
- Capability Descriptions[]
- Caption
- Compression Method
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Default Block Size
- Description
- Device ID
- Error Cleared
- Error Description
- Error Methodology
- Firmware Revision
- Index
- Install Date
- Interface Type
- Last Error Code
- Manufacturer
- Max Block Size
- Max Media Size

- Media Loaded
- Media Type
- Min Block Size
- Model
- Name
- Needs Cleaning
- Number Of Media Supported
- Partitions
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- SCSI Bus
- SCSI Logical Unit
- SCSI Port
- SCSI Target Id
- Sectors Per Track
- Serial Number
- Signature
- Size
- Status
- StatusInfo
- System Creation Class Name
- System Name
- Total Cylinders
- Total Heads
- Total Sectors
- Total Tracks
- Tracks Per Cylinder

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Physical Disk information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Physical Disk	Win32_DiskDrive

Physical Memory

Physical Memory provides you with a graphical view of settings for physical memory on the remote Host computer system.

Physical Memory has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Bank Label
- Capacity
- Caption
- Creation Class Name
- Data Width
- Description
- Device Locator
- Form Factor
- Hot Swappable
- Install Date
- Interleave Data Depth
- Interleave Position
- Manufacturer
- Memory Type
- Model
- Name
- Other Identifying Info
- Part Number
- Position In Row
- Powered On
- Removable
- Replaceable
- Serial Number
- SKU
- Speed
- Status
- Tag
- Total Width
- Type Detail
- Version

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Physical Memory information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Physical Memory	Win32_PhysicalMemory

Printer

Printer provides you with a graphical view of settings for printers connected to the remote Host computer system.

Printer has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Attributes
- Availability
- Available Job Sheets[]
- Average Pages Per Minute
- Capabilities[]
- Capability Descriptions[]
- Caption
- Char Sets Supported[]
- Comment
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Current Capabilities[]
- Current Char Set
- Current Language
- Current Mime Type
- Current Natural Language
- Current Paper Type
- Default
- Default Capabilities[]
- Default Copies
- Default Language
- Default Mime Type
- Default Number Up
- Default Paper Type
- Default Priority
- Description
- Detected Error State

- Device ID
- Direct
- Do Complete First
- Driver Name
- Enable BIDI
- Enable Dev Query Print
- Error Cleared
- Error Description
- Error Information[]
- Extended Detected Error State
- Extended Printer Status
- Hidden
- Horizontal Resolution
- Install Date
- Job Count Since Last Reset
- Keep Printed Jobs
- Languages Supported[]
- Last Error Code
- Local
- Location
- Marking Technology
- Max Copies
- Max Number Up
- Max Size Supported
- Mime Types Supported[]
- Name
- Natural Languages Supported[]
- Network
- Paper Sizes Supported[]
- Paper Types Available[]
- Parameters
- PNP Device ID
- Port Name
- Power Management Capabilities[]
- Power Management Supported
- Printer Paper Names[]
- Printer State
- Printer Status
- Print Job Data Type

- Print Processor
- Priority
- Published
- Queued
- Raw Only
- Separator File
- Server Name
- Shared
- Share Name
- Spool Enabled
- Start Time
- Status
- Status Info
- System Creation Class Name
- System Name
- Time Of Last Reset
- Until Time
- Vertical Resolution
- Work Offline

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Printer information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Printer	Win32_Printer

SCSI

SCSI provides you with a graphical view of settings for SCSI devices connected to the remote Host computer system.

SCSI has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Caption
- Config Manager Error Code

- Config Manager User Config
- Controller Timeouts
- Creation Class Name
- Description
- Device ID
- Device Map
- Driver Name
- Error Cleared
- Error Description
- Hardware Version
- Index
- Install Date
- Last Error Code
- Manufacturer
- Max Data Width
- Max Number Controlled
- Max Transfer Rate
- Name
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Protection Management
- Protocol Supported
- Status
- Status Info
- System Creation Class Name
- System Name
- Time Of Last Reset

WMI Class

PC-Duo uses the following WMI Class to request/retrieve SCSI information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
SCSI	Win32_SCSIController

System Enclosure

System Enclosure provides you with a graphical view of settings for the system enclosure for the remote Host computer system.

System Enclosure has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Audible Alarm
- Breach Description
- Cable Management Strategy
- Caption
- Chassis Types[]
- Creation Class Name
- Current Required Or Produced
- Depth
- Description
- Heat Generation
- Height
- Hot Swappable
- Install Date
- Lock Present
- Manufacturer
- Model
- Name
- Number Of Power Cords
- Other Identifying Info
- Part Number
- Powered On
- Removable
- Replaceable
- Security Breach
- Security Status
- Serial Number
- Service Descriptions[]
- Service Philosophy[]
- SKU
- SMBIOS Asset Tag
- Status
- Tag
- Type Descriptions[]

- Version
- Visible Alarm
- Weight
- Width

WMI Class

PC-Duo uses the following WMI Class to request/retrieve System Enclosure information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
System Enclosure	Win32_SystemEnclosure

USB Ports

USB Ports provides you with a graphical view of settings for the universal serial bus for the remote Host computer system.

USB Ports has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Description
- Device ID
- Error Cleared
- Error Description
- Install Date
- Last Error Code
- Manufacturer
- Max Number Controlled
- Name
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Protocol Supported

- Status
- Status Info
- System Creation Class Name
- System Name
- Time Of Last Reset

WMI Class

PC-Duo uses the following WMI Class to request/retrieve USB information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
USB Ports	Win32_USBController

Video Controller

Video Controller provides you with a graphical view of settings for the video controller on the remote Host computer system.

Video Controller has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Accelerator Capabilities[]
- Adapter Compatibility
- Adapter DAC Type
- Adapter RAM
- Availability
- Capability Descriptions[]
- Caption
- Color Table Entries
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Current Bits Per Pixel
- Current Horizontal Resolution
- Current Number Of Colors
- Current Number Of Columns
- Current Number Of Rows
- Current Refresh Rate

- Current Scan Mode
- Current Vertical Resolution
- Description
- Device ID
- Device Specific Pens
- Dither Type
- Driver Date
- Driver Version
- Error Cleared
- Error Description
- ICM Intent
- ICM Method
- Inf Filename
- Inf Section
- Install Date
- Installed Display Drivers
- Last Error Code
- Max Memory Supported
- Max Number Controlled
- Max Refresh Rate
- Min Refresh Rate
- Monochrome
- Name
- Number Of Color Planes
- Number Of Video Pages
- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Protocol Supported
- Reserved System Palette Entries
- Specification Version
- Status
- Status Info
- System Creation Class Name
- System Name
- System Palette Entries
- Time Of Last Reset
- Video Architecture
- Video Memory Type

- Video Mode
- Video Mode Description
- Video Processor

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Video Controller information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Video Controller	Win32_VideoController

Video Monitor

Video Monitor provides you with a graphical view of settings for the video monitor connected to the remote Host computer system.

Video Monitor has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Availability
- Bandwidth
- Caption
- Config Manager Error Code
- Config Manager User Config
- Creation Class Name
- Description
- Device ID
- Display Type
- Error Cleared
- Error Description
- Install Date
- Is Locked
- Last Error Code
- Monitor Manufacturer
- Monitor Type
- Name
- Pixels Per X Logical Inch
- Pixels Per Y Logical Inch

- PNP Device ID
- Power Management Capabilities[]
- Power Management Supported
- Screen Height
- Screen Width
- Status
- Status Info
- System Creation Class Name
- System Name

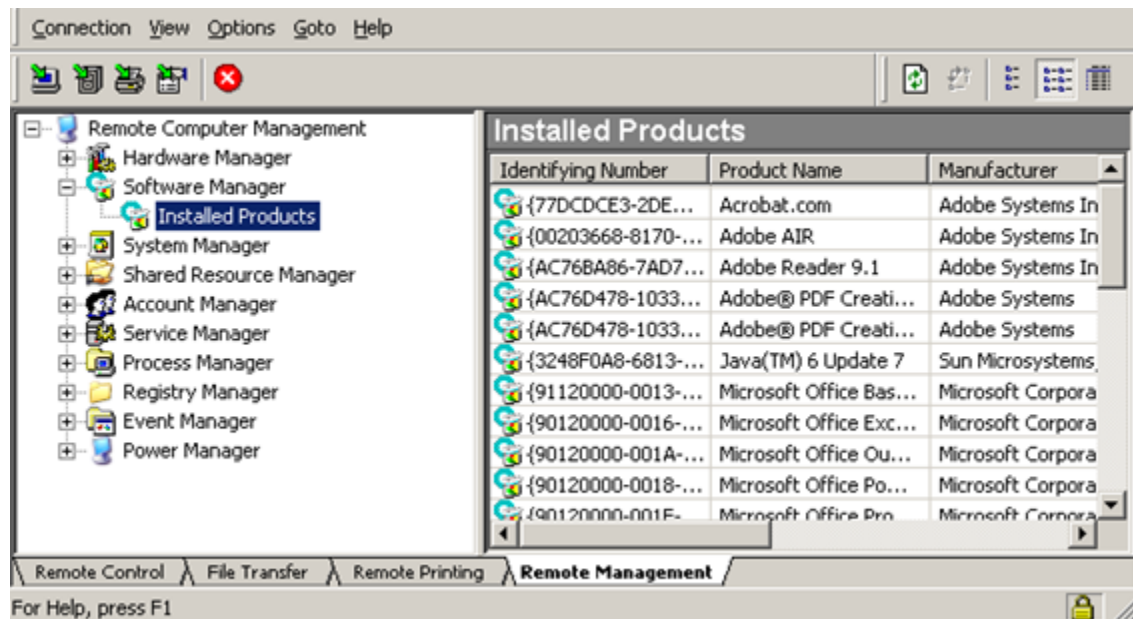
WMI Class

PC-Duo uses the following WMI Class to request/retrieve Video Monitor information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Video Monitor	Win32_DesktopMonitor

Software Manager

Software Manager provides you with a graphical view of the software applications that are installed on the remote Host computer.



Each software application has the following attributes (double-click on any service to get a popup window with table of attributes and values):

- Identifying Number
- Product Name
- Manufacturer
- Product Version
- File Path
- Assignment Type
- Caption
- Description
- Install Date and Time
- Install State
- Help Link
- Help Telephone
- Install Source
- Language
- Local Package
- Package Cache
- Package Code
- Package name
- Product ID
- Reg Owner
- Reg Company
- SKU Number
- Transforms
- URL Info About
- URL Update info
- Source File Image Type (WordCount)

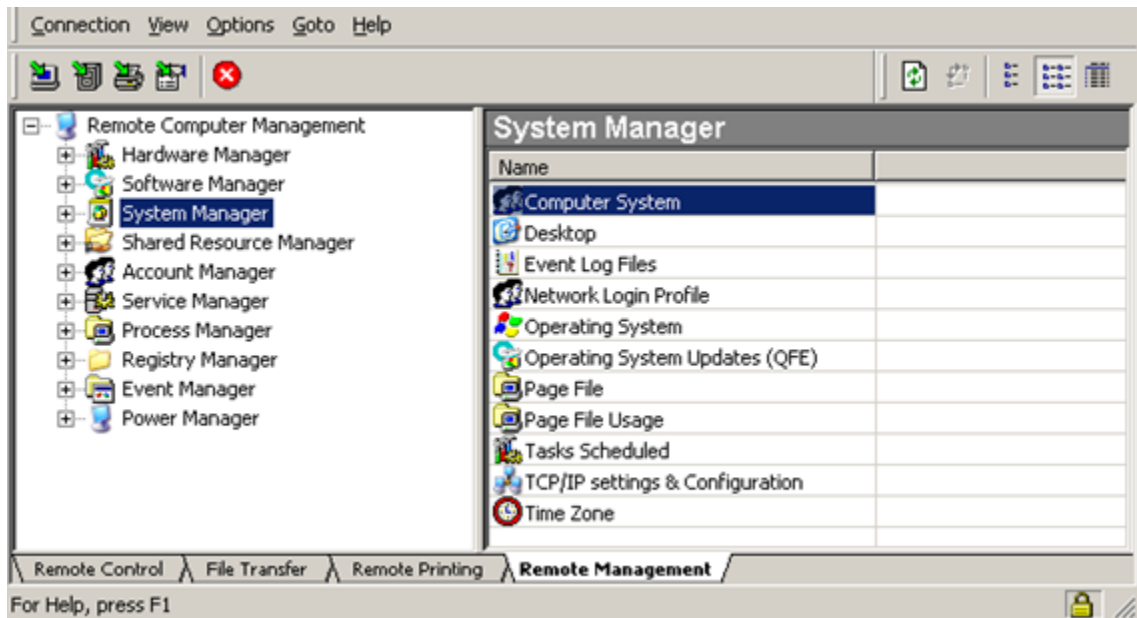
WMI Class

PC-Duo uses the following WMI Class to request/retrieve information about software applications installed on the remote Host computer:

Component	WMI Class
Products	Win32_Products

System Manager

System Manager provides you with a graphical view of various configuration settings on the remote Host computer.



- ◆ Select "Computer System" to view details about system settings on remote Host computer.
- ◆ Select "Desktop" to view details about desktop on remote Host computer.
- ◆ Select "Event Log Files" to view details about event log files system on remote Host computer.
- ◆ Select "Network Login Profile" to view details about network login profiles on remote Host computer.
- ◆ Select "Operating System" to view details about the operating system on remote Host computer.
- ◆ Select "Operating System Updates (QFE)" to view details about operating system updates on remote Host computer.
- ◆ Select "Page File" to view details about page file on remote Host computer.

- ◆ Select "Page File Usage" to view details about current usage profile of page file on remote Host computer.
- ◆ Select "Tasks Scheduled" to view details about current scheduled tasks for the remote Host computer.
- ◆ Select "TCP/IP Settings" to view details about TCP/IP connections to the remote Host computer.
- ◆ Select "Time Zone" to view details about time-related settings for the remote Host computer.

Computer System

Computer System provides you with a graphical view of system settings for the remote Host computer system.

Computer System has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Admin Password Status
- Automatic Reset Boot Option
- Automatic Reset Capability
- Boot Option On Limit
- Boot Option On Watch Dog
- Boot ROM Supported
- Bootup State
- Caption
- Chassis Bootup State
- Creation Class Name
- Current Time Zone
- Daylight In Effect
- Description
- DNS Host Name
- Domain
- Domain Role
- Enable Daylight Savings Time

- Front Panel Reset Status
- Infrared Supported
- Initial Load Info
- Install Date
- Keyboard Password Status
- Last Load Info
- Manufacturer
- Model
- Name Format
- Network Server Mode Enabled
- Number of Processors
- OEM Logo Bitmap
- OEM String Array
- Part Of Domain
- Pause After Reset
- Power Management Capabilities
- Power Management Supported
- Power On Password Status
- Power State
- Power Supply State
- Primary Owner Contact
- Reset Capability
- Reset Count
- Reset Limit
- Roles
- Status
- Support Contact Description
- System Startup Delay
- System Startup Options

- System Startup Setting
- System Type
- Thermal State
- Total Physical Memory
- User Name
- Wake Up Type
- Workgroup

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Computer System information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Computer System	Win32_ComputerSystem

Desktop

Desktop provides you with a graphical view of settings for the desktop on the remote Host computer.

Desktop has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Wallpaper
- Cursor Blink Rate
- Icon Title Size
- Screen Saver Timeout
- Border Width
- Caption
- Cool Switch

- Description
- Drag Full Windows
- Grid Granularity
- Icon Spacing
- Icon Title Face Name
- Icon Title Wrap
- Pattern
- Screen Saver Active
- Screen Saver Executable
- Screen Saver Secure
- Setting ID
- Wallpaper Stretched
- Wallpaper Tiled

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Desktop information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Desktop	Win32_Desktop

Event Log Files

Event Log Files provides you with a graphical view of currently available Event Log Files for the remote Host computer.

Each Event Log File has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Caption
- Access Mask

- Archive
- Compressed
- Compression Method
- Creation Class Name
- Creation Date
- CS Creation Class Name
- CS Name
- Description
- Drive
- Eight Dot Three File name
- Encrypted
- Encryption Method
- Extension
- File Name
- File Size
- File Type
- FS Creation Class Name
- FS Name
- Hidden
- Install Date
- In Use Count
- Last Accessed
- Last Modified
- Log File Name
- Manufacturer
- Max File Size
- Name
- Number Of Records
- Overwrite Outdated

- Overwrite Policy
- Path
- Readable
- Sources
- Status
- System
- Version
- Writeable

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Event Log File information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Event Log Files	Win32_NTEventLogFile

Network Login Profile

Network Login Profile provides you with a graphical view of currently available Network Login Profiles for the remote Host computer.

Each Network Login Profile has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Description
- Maximum Storage
- Account Expires
- Authorization Flags
- Bad Password Count
- Caption

- Code Page
- Comment
- Country Code
- Flags
- Full Name
- Home Directory
- Home Directory Drive
- Last Logoff
- Last Logon
- Logon Hours
- Logon Server
- Number of Logons
- Parameters
- Password Age
- Password Expires
- Primary Group ID
- Privileges
- Profile
- Script Path
- Setting ID
- Units Per Week
- User Comment
- User ID
- User Type
- Workstations

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Network Login Profile information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Network Login Profile	Win32_NetworkLoginProfile

Operating System

Operating System provides you with a graphical view of settings for the Operating System on the remote Host computer.

Operating System has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Caption
- Manufacturer
- Boot Device
- Build Number
- Build Type
- Code Set
- Country Name
- Creation Class Name
- CS Creation Class Name
- CSD Version
- CS Name
- Current Time Zone
- Data Execution Prevention_Available
- Data Execution Prevention_32 Bit Applications
- Data Execution Prevention_Drivers
- Data Execution Prevention_Support Policy
- Debug
- Description
- Distributed

- Encryption Level
- Foreground Application Boost
- Free Physical Memory
- Free Space in Paging Files
- Free Virtual Memory
- Install Date
- Large System Cache
- Last Boot Up Time
- Local Date Time
- Locale
- Max Number of Processes
- Max Process Memory Size
- Name
- Number of Licensed Users
- Number of Processors
- Number of Users
- Organization
- OS Language
- OS Product Suite
- OS Type
- Other Type Description
- PAE Enabled
- Plus Product ID
- Plus Version Number
- Primary
- Product Type
- Quantum Length
- Quantum Type
- Registered User

- Serial Number
- Service Pack Major Version
- Service Pack Minor Version
- Size Stored in Paging Files
- Status
- Suite Mask
- System Device
- System Directory
- System Drive
- Total Swap Space Size
- Total Virtual Memory Sizez
- Total Visible Memory
- Version
- Windows Directory

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Operating System information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Operating System	Win32_OperatingSystem

Operating System Updates (QFE)

Operating System Updates (Quick Fix Engineering) provides you with a graphical view of updates applied to the Operating System on the remote Host computer.

Each Operating System Update has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Caption

- CS Name
- Description
- Fix Comments
- Hot Fix ID
- Install date
- Installed By
- Installed On
- Service Pack In Effect
- Status

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Operating System Update information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Operating System Updates (QFE)	Win32_QuickFixEngineering

Page File

Page File provides you with a graphical view of the Page File for the remote Host computer.

The Page File has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Access Mask
- Archive
- Caption
- Compressed
- Compression Method
- Creation Class Name

- Creation Date
- CS Creation Class Name
- CS Name
- Description
- Drive
- Eight Dot Three File name
- Encrypted
- Encryption Method
- Extension
- File Name
- File Size
- File Type
- Free Space
- FS Creation Class Name
- FS Name
- Hidden
- Initial Size
- Install Date
- In Use Count
- Last Accessed
- Last Modified
- Manufacturer
- Maximum Size
- Path
- Readable
- Status
- System
- Version
- Writeable

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Page File information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Event Log Files	Win32_PageFile

Page File Usage

Page File Usage provides you with a graphical view of the current usage profile of the Page File for the remote Host computer.

Page File Usage has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Name
- Install Date
- Allocated Base Size
- Caption
- Current Usage
- Description
- Peak Usage
- Status
- Temp Page File

WMI Class

PC-Duo uses the following WMI Class to request/retrieve Page File information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Page File Usage	Win32_PageFileUsage

Tasks Scheduled

Tasks Scheduled provides you with a graphical view of current scheduled tasks for the remote Host computer.

Each scheduled task has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Caption
- Command
- Days Of Month
- Days Of Week
- Description
- Elapsed Time
- Installed Date
- Interact With Desktop
- Job ID
- Job Status
- Name
- Notify
- Owner
- Priority
- Run Repeatedly
- Start Time
- Status
- Time Submitted
- Until Time

WMI Class

PC-Duo uses the following WMI Class to request/retrieve scheduled task information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Scheduled Tasks	Win32_ScheduledJob

TCP/IP Settings

TCP/IP Settings provides you with a graphical view of settings for TCP/IP connections to the remote Host computer.

Each Event Log File has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Caption
- Name
- Description
- Connectionless Service
- Guarantees Delivery
- Guarantees Sequencing
- Install date
- Maximum Address Size
- Maximum Message Size
- Message Oriented
- Minimum Address Size
- Pseudo Stream Oriented
- Status
- Supports Broadcasting
- Supports Connect Data
- Supports Disconnect Data
- Supports Encryption
- Supports Expedited Data
- Supports Fragmentation
- Supports Graceful Closing
- Supports Guaranteed Bandwidth
- Supports Multicasting
- Supports Quality Of Service

WMI Class

PC-Duo uses the following WMI Class to request/retrieve TCP/IP Setting information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
TCP/IP Settings	Win32_NetworkProtocol

Time Zone

Time Zone provides you with a graphical view of time-related settings for the remote Host computer.

Time Zone has the following attributes (double-click on any attribute to get a popup window with table of attributes and values):

- Caption
- Bias
- Daylight Bias
- Daylight Day
- Daylight Day of Week
- Daylight Hour
- Daylight Millisecond
- Daylight Minute
- Daylight Month
- Daylight Name
- Daylight Second
- Daylight Year
- Description
- Setting ID
- Standard Bias
- Standard Day
- Standard Day Of Week

- Standard Hour
- Standard Millisecond
- Standard Minute
- Standard Month
- Standard Name
- Standard Second
- Standard Year

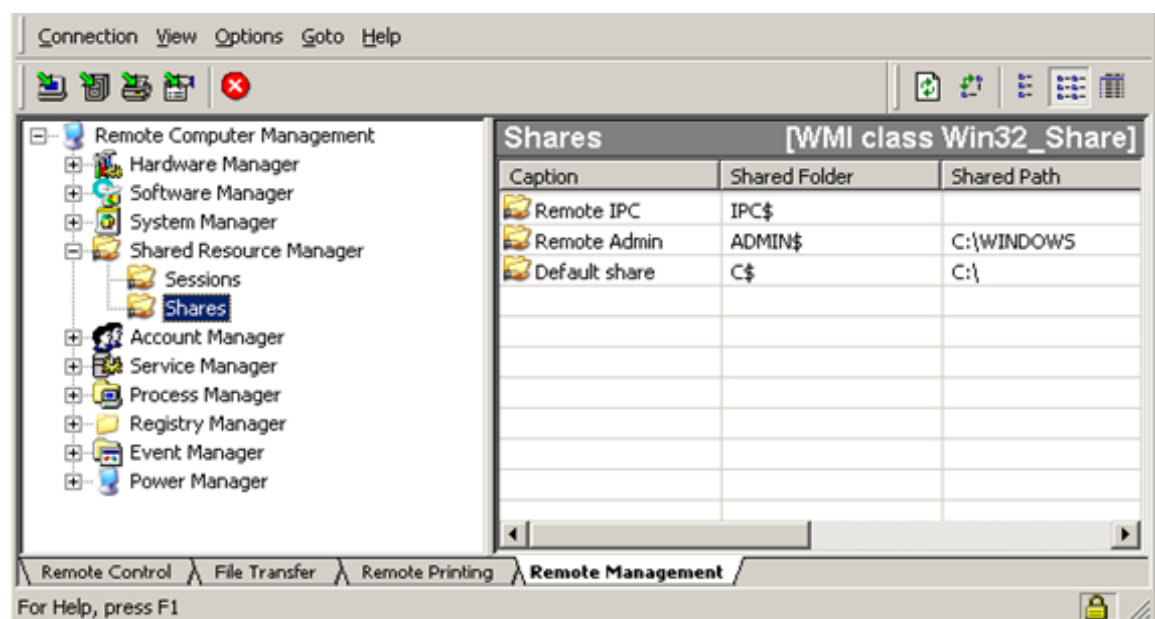
WMI Class

PC-Duo uses the following WMI Class to request/retrieve Time Zone information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available.

Component	WMI Class
Time Zone	Win32_TimeZone

Shared Resource Manager

Shared Resource Manager provides you with a graphical view of currently available shared resources (Shares) and any current network users with connections (Sessions) to the remote Host computer to access the shared resources.



Shares

A shared resource can be a disk drive, printer, interprocess communication, or other shareable device. Each shared resource has the following attributes (double-click on any shared resource to get a popup window with table of attributes and values):

- Caption
- Shared Folder
- Shared Path
- Comment
- Type
- Access Mask
- Allow Maximum
- Install date
- Maximum Allowed
- Status

Sessions

Each session has the following attributes (double-click on any session to get a popup window with table of attributes and values):

- Active Time
- Caption
- Client Type
- Computer Name
- Description
- Idle Time
- Install Date
- Name
- Resources Opened
- Session Type
- Status
- Transport name

- User Name

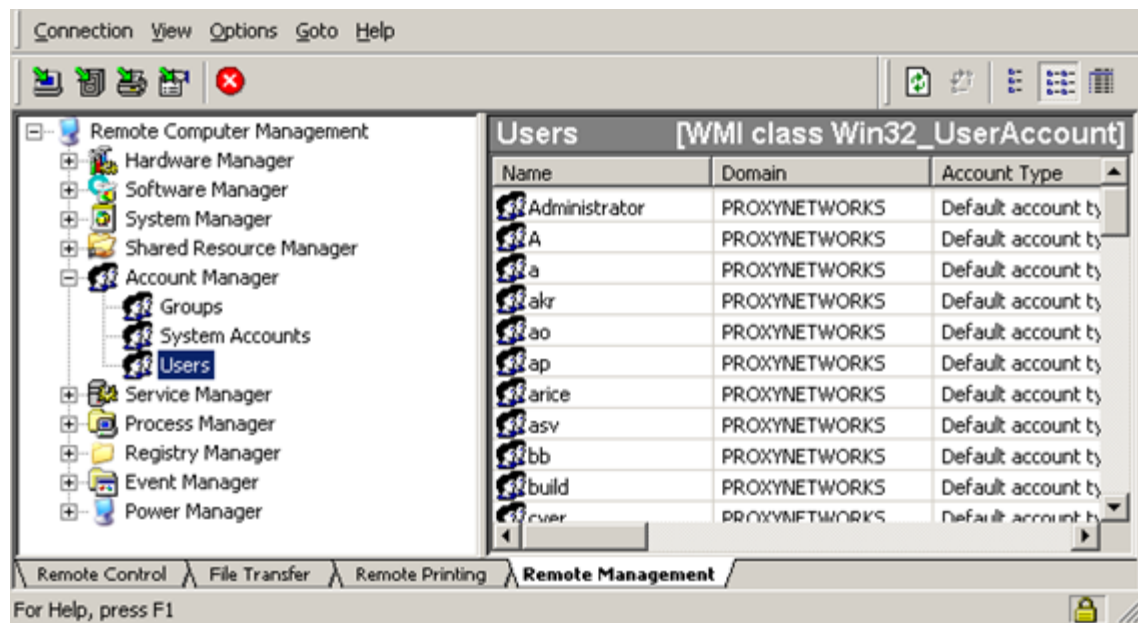
WMI Class

PC-Duo uses the following WMI Classes to request/retrieve Shared Resource information from the remote Host computer. Please consult these classes for more detailed information about the specific attributes and values for Shares or Sessions.

Component	WMI Class
Shares	Win32_Share
Sessions	Win32_Session

Account Manager

Account Manager provides you with a graphical view of currently available user, group and system accounts on the remote Host computer.



Groups

Each group account has the following attributes (double-click on any group to get a popup window with table of attributes and values):

- Name
- Caption

- Description
- Domain
- Install Date
- Local Account
- SID
- SID Type
- Status

System Accounts

Each system account has the following attributes (double-click on any system account to get a popup window with table of attributes and values):

- Name
- Caption
- Description
- Domain
- Install Date
- Local Account
- SID
- SID Type
- Status

Users

Each user account has the following attributes (double-click on any user to get a popup window with table of attributes and values):

- Name
- Domain
- Account Type
- Description
- Caption

- Disabled
- Full Name
- Install Date
- Local Account
- Lockout
- Password Changeable
- Password Expires
- Password Required
- SID
- SID Type
- Status

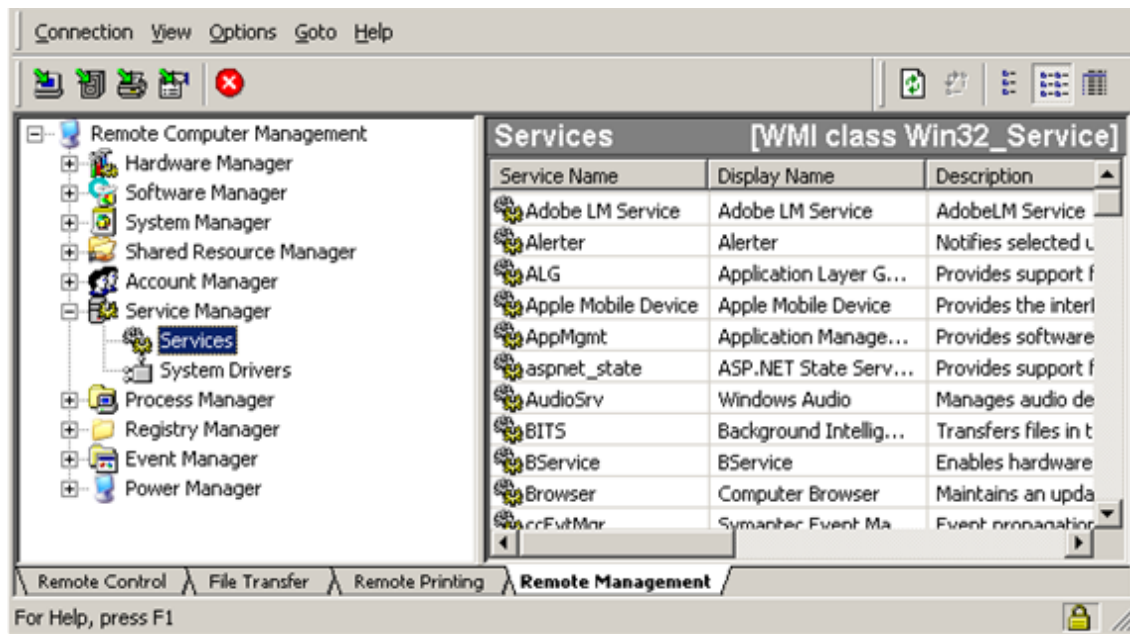
WMI Class

PC-Duo uses the following WMI Classes to request/retrieve account information from the remote Host computer. Please consult these classes for more detailed information about the specific attributes and values available for each account type.

Component	WMI Class
Groups	Win32_Group
System Accounts	Win32_SystemAccount
Users	Win32_UserAccount

Service Manager

Service Manager provides you with a graphical view of currently available services and system drivers on the remote Host computer.



Services

Each service has the following attributes (double-click on any service to get a popup window with table of attributes and values):

- Service Name
- Display Name
- Accept Pause
- Accept Stop
- Check Point
- Creation Class Name
- Description
- Desktop Interact
- Display Name
- Error Code
- Exit Code
- Install Date
- Path Name

- Process ID
- Service Specific Exit Code
- Service Type
- Started
- Startup Type
- Start Name
- State
- Status
- System Creation Class Name
- LogOn As
- Tag ID
- Wait Hint

Commands

You can apply any of the following commands by right-clicking on any service and selecting the command from the context menu:

Command	Description
Start	Start a service that is currently stopped
Stop	Stop a service that is currently started
Restart	Stop and then start a service that is currently started

System Drivers

Each system driver has the following attributes (double-click on any service to get a popup window with table of attributes and values):

- Name
- Description
- Path Name
- Accept Pause
- Accept Stop

- Display Name
- Creation Class Name
- Desktop Interact
- Caption
- Error Control
- Exit Code
- Install Date
- Service Specific Exit Code
- Service Type
- Started
- Start Mode
- Start Name
- State
- Status
- System Creation Class Name
- System Name
- Tag ID

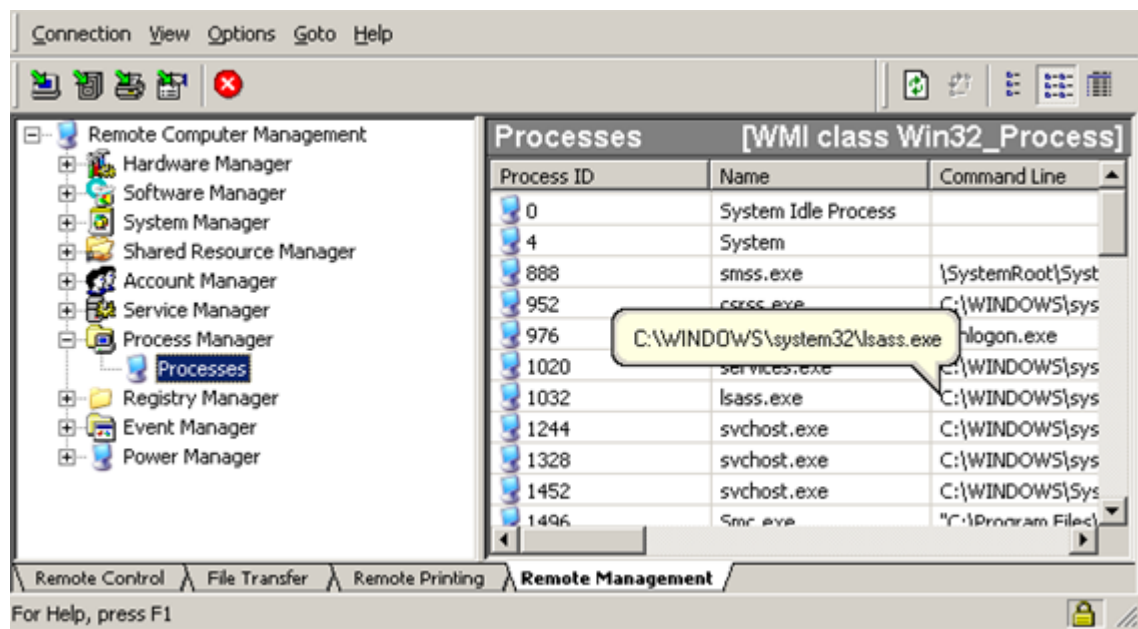
WMI Class

PC-Duo uses the following WMI Classes to request/retrieve Service and System Driver information from the remote Host computer. Please consult these classes for more detailed information about the specific attributes and values available for each service.

Component	WMI Class
Services	Win32_Service
System Drivers	Win32_SystemDriver

Process Manager

Process Manager provides you with a graphical view of currently running processes on the remote Host computer.



Each process has the following attributes (double-click on any process to get a popup window with table of attributes and values):

- Process ID
- Name
- Command Line
- Started
- Description
- Executable Path
- Parent Process ID
- Session ID
- Priority
- Handle Count
- Thread Count
- Kernel Mode Time
- User Mode Time

- Current Working Set
- Minimum Working Set
- Maximum Working Set
- Peak Working Set
- Page File Usage
- Peak Page File Usage
- Virtual Bytes
- Virtual Bytes Peak
- Read Operation Count
- Write Operation Count
- Other Operation Count
- Read Transfer Count
- Write Transfer Count
- Other Transfer Count
- Page Faults
- Private Page Count

Commands

You can apply any of the following commands by right-clicking on any process and selecting the command from the context menu:

Command	Description
End Process	Kill a running process

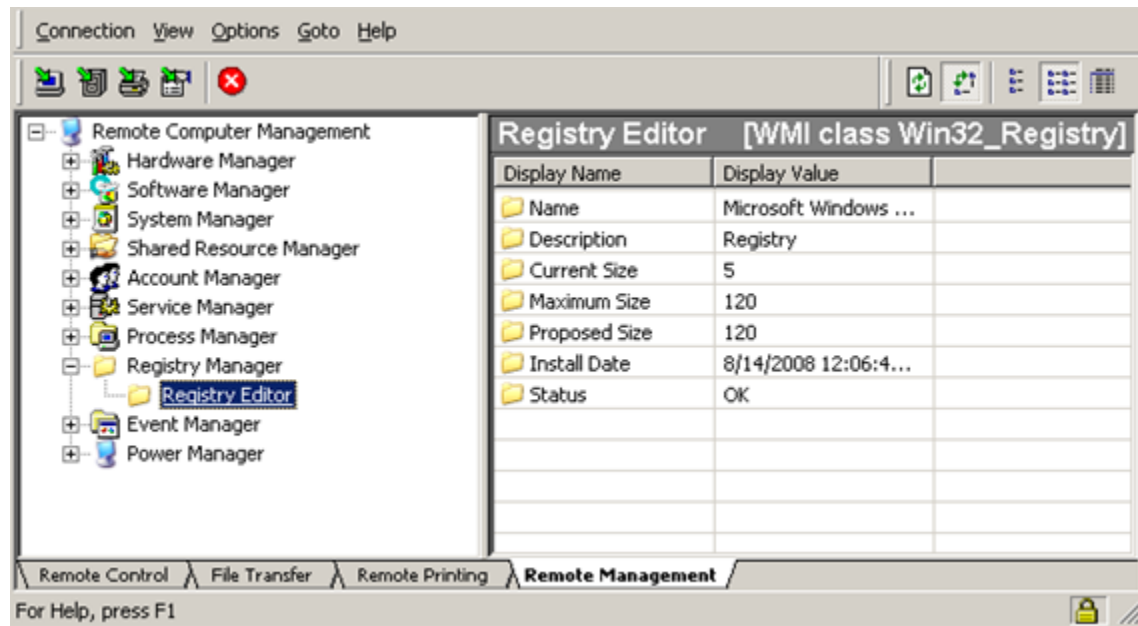
WMI Class

PC-Duo uses the following WMI Class to request/retrieve process information from the remote Host computer. Please consult this class for more detailed information about the specific attributes and values available for each process.

Component	WMI Class
Process Scan	Win32_Process

Registry Manager

Registry Manager provides you with a graphical view of currently available Registry keys on the remote Host computer.



Registry keys are organized into the following hives:

- ◆ "HKEY_CLASSES_ROOT"
- ◆ "HKEY_LOCAL_MACHINE"
- ◆ "HKEY_USERS"
- ◆ "HKEY_CURRENT_CONFIG"

Each Registry key has the following attributes (double-click on any Registry key to get a popup window with table of attributes and values):

- Name
- Type
- Data

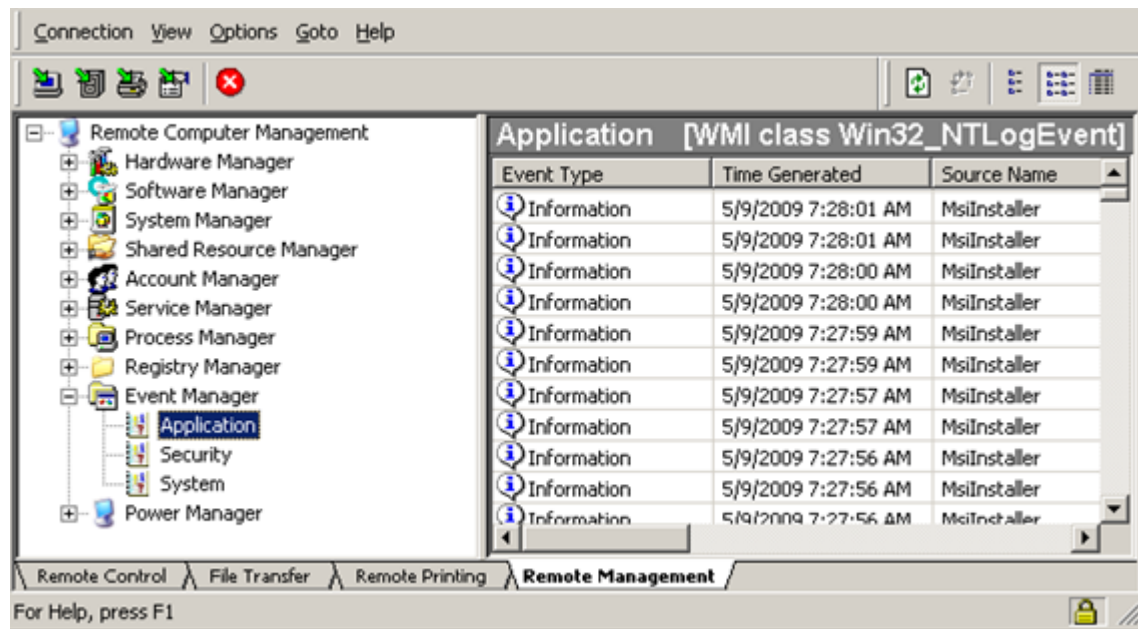
Commands

You can apply any of the following commands by right-clicking on any Registry key and selecting the command from the context menu:

Command	Description
Delete	Delete an existing registry key
Modify	Modify attributes of an existing registry key
New > Key	Create a new registry key
New > String Value	Specify String Value for a new registry key
New > Dword Value	Specify Double Word Value for a new registry key
New > Expanded String	Specify Expanded String Value for a new registry key

Event Manager

Event Manager provides you with a graphical view of the Application, Security and System logs kept on the remote Host computer.



Event Logs

A Windows computer records events in three kinds of logs:

◆ **Application Log:** The application log contains events logged by applications or programs. For example, a database program might record a file error in the application log. Program developers decide which events to monitor.

◆ **Security Log:** The security log records events such as valid and invalid logon attempts, as well as events related to resource use such as creating, opening, or deleting files or other objects. An administrator can specify what events are recorded in the security log. For example, if you have enabled logon auditing, attempts to log on to the system are recorded in the security log.

◆ **System Log:** The system log contains events logged by Windows system components. For example, the failure of a driver or other system component to load during startup is recorded in the system log. The event types logged by system components are predetermined by Windows.

Event Records

Each event recorded in the logs has the following attributes (double-click on any event record to get a popup window with table of attributes and values):

- Event Type
- Time Generated
- Source name
- Category
- Event Code
- User
- Computer Name
- Logfile
- Message
- Category String
- Data
- Event Identifier
- Insertion Strings
- Record Number
- Time Written
- Type

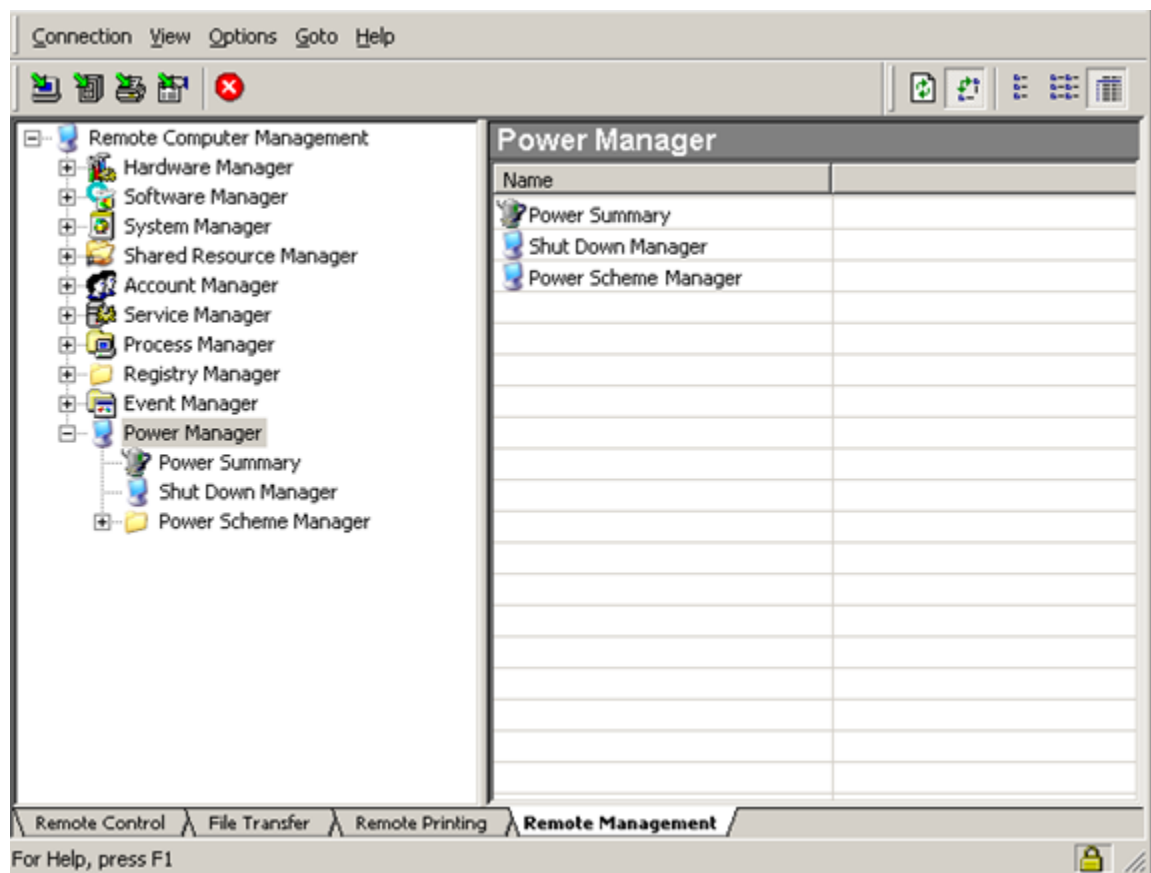
WMI Class

PC-Duo uses the following WMI Classes to request/retrieve event log information from the remote Host computer. Please consult these classes for more detailed information about the specific attributes and values available for each event record.

Component	WMI Class
Application Log	Win32_NTLogEvent
Security Log	Win32_NTLogEvent
System Log	Win32_NTLogEvent

Power Manager

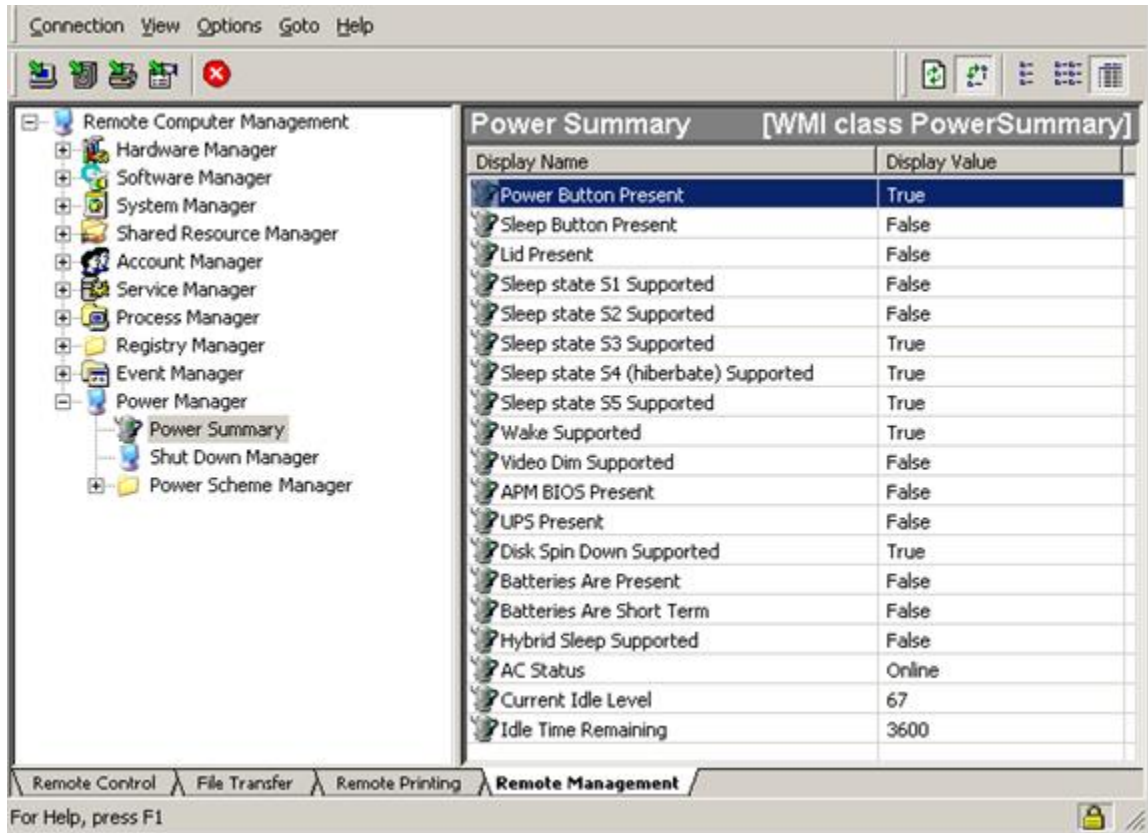
Power Manager provides you with a graphical view of power management options on the remote Host computer.



- ◆ Select "Power Summary" to view summary of current power settings on remote Host computer.
- ◆ Select "Shutdown Manager" to view options to shutdown, reboot or logoff current console user on remote Host computer.
- ◆ Select "Power Scheme Manager " to view and edit power scheme settings for remote Host computers running Windows Vista, Windows 7, Windows Server 2008, Windows Server 2012 or Windows Server 2016. In general, the computer has a single power scheme that applies to all the user accounts on the system.

Power Summary

Power Summary provides you with a graphical view of the current power settings for the remote Host computer.



Power Summary has the following attributes:

- Power Button Present
- Sleep Button Present
- Lid Present
- Sleep state S1 Supported
- Sleep state S2 Supported
- Sleep state S3 Supported
- Sleep state S4 (hibernate) Supported
- Sleep state S5 Supported

- Wake Supported
- Video Dim Supported
- APM BOPS Present
- UPS Present
- Disk Spin Down Supported
- Batteries Are Present
- Batteries Are Short Term
- Hybrid Sleep Supported
- AC Status
- Current Idle Level
- Idle Time Remaining

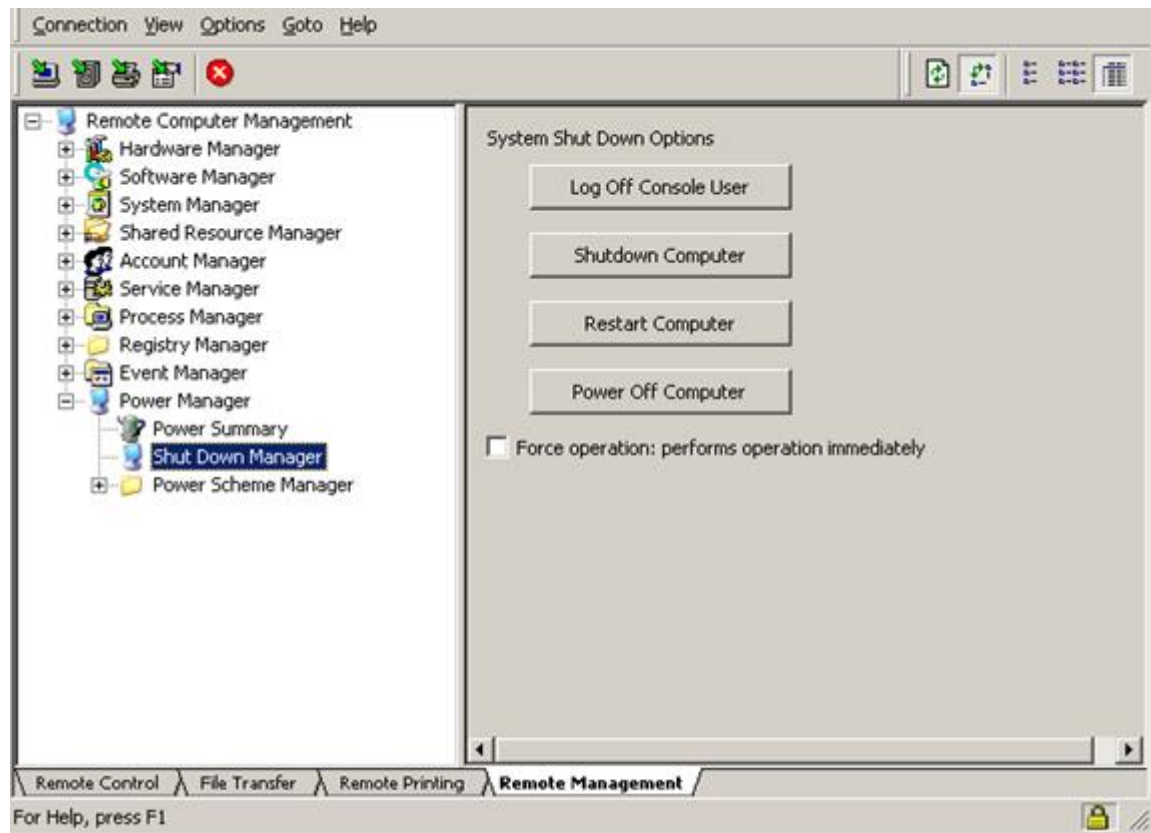
Power Management Structure

PC-Duo uses the following Power Management Structure to request/retrieve power capabilities of the remote Host computer. Please consult this structure for more detailed information about the specific attributes and values available.

Component	Structure
Power Management Structures	System_Power_Capabilities

Shutdown Manager

Shutdown Manager provides you with a graphical view of the options available to shutdown, reboot or logoff the console user from the remote Host computer.



Commands

You can apply any of the following commands to the remote Host computer by clicking on the corresponding button:

Command	Description
Log Off Console User	Stop current session for logged on user on remote Host computer
Shutdown Computer	Shutdown remote Host computer
Restart Computer	Shutdown and restart remote Host computer
Power Off Computer	Shutdown and power off remote Host computer

Select the **Force operation** option to make the selected command apply immediately and without response from logged on user.

Power Scheme Manager - XP

Power Scheme Manager - XP provides you with a graphical view of the current settings for power schemes for various user accounts on a remote Host computer running Windows XP or Windows Server 2003.

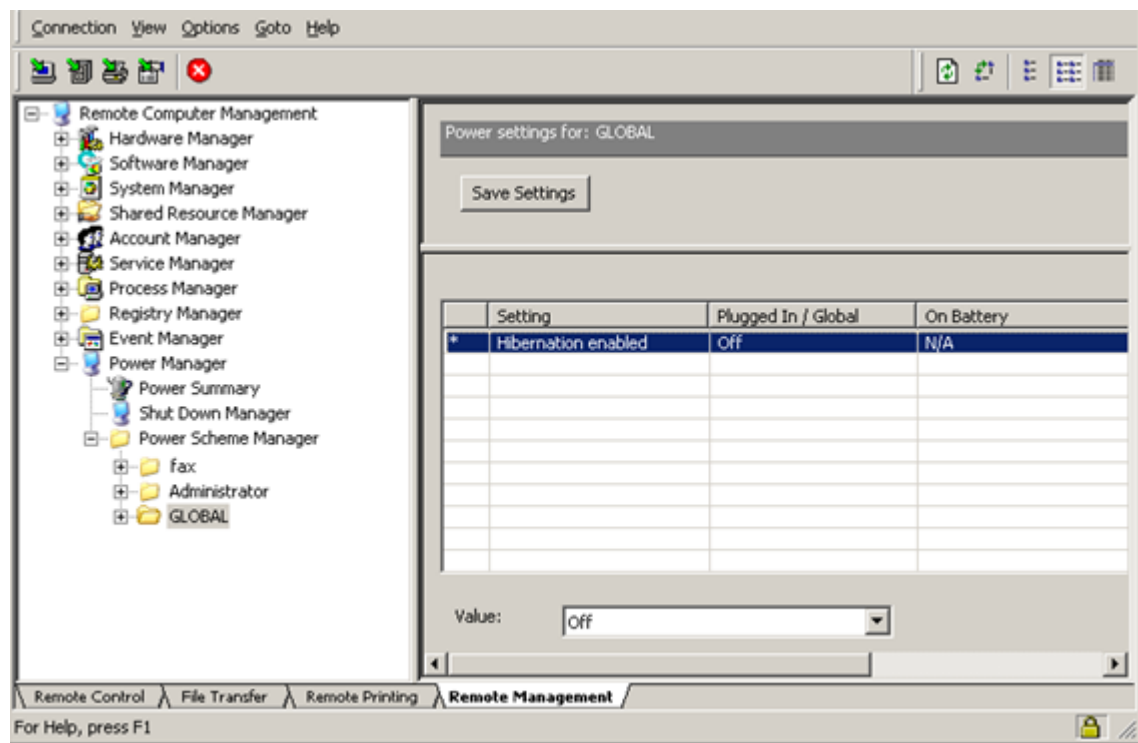
In general, power settings on Windows XP or Windows Server 2003 fall into one of 3 categories:

- ◆ Global settings which apply across the system
- ◆ User account-specific settings defined in a power scheme
- ◆ User account-specific settings not defined in a power scheme

Note: Changes to power settings will not take affect until after current user logs out and logs back in.

Global Settings

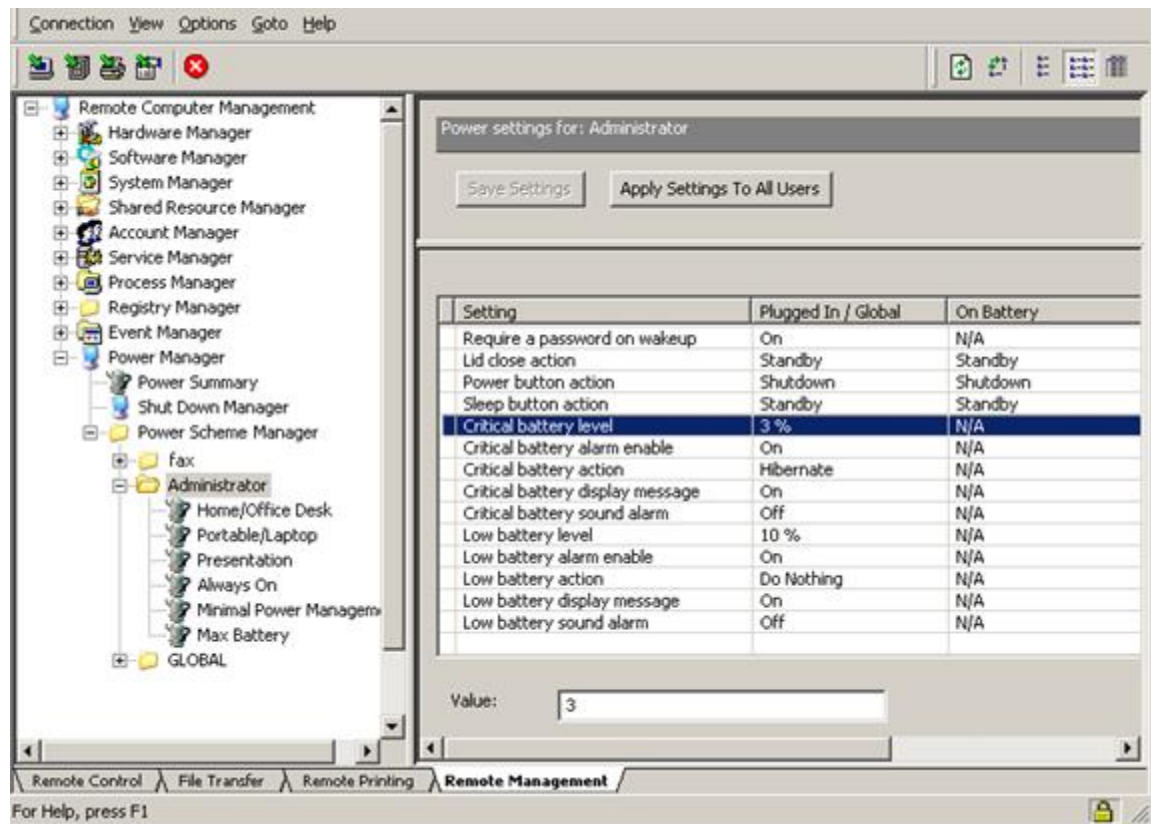
If Power Scheme Manager detects any global power settings, a Global node will appear under Power Scheme Manager in the navigation tree. If this Global node is selected, a list of global power settings and their current values will be presented:



To edit a global setting, highlight the setting and select a value from the dropdown box that appears at the bottom. An asterisk will appear in the first column next to any values that have been changed. Click the **Save Settings** box to apply the changes.

User Account Settings - Not in Power Scheme

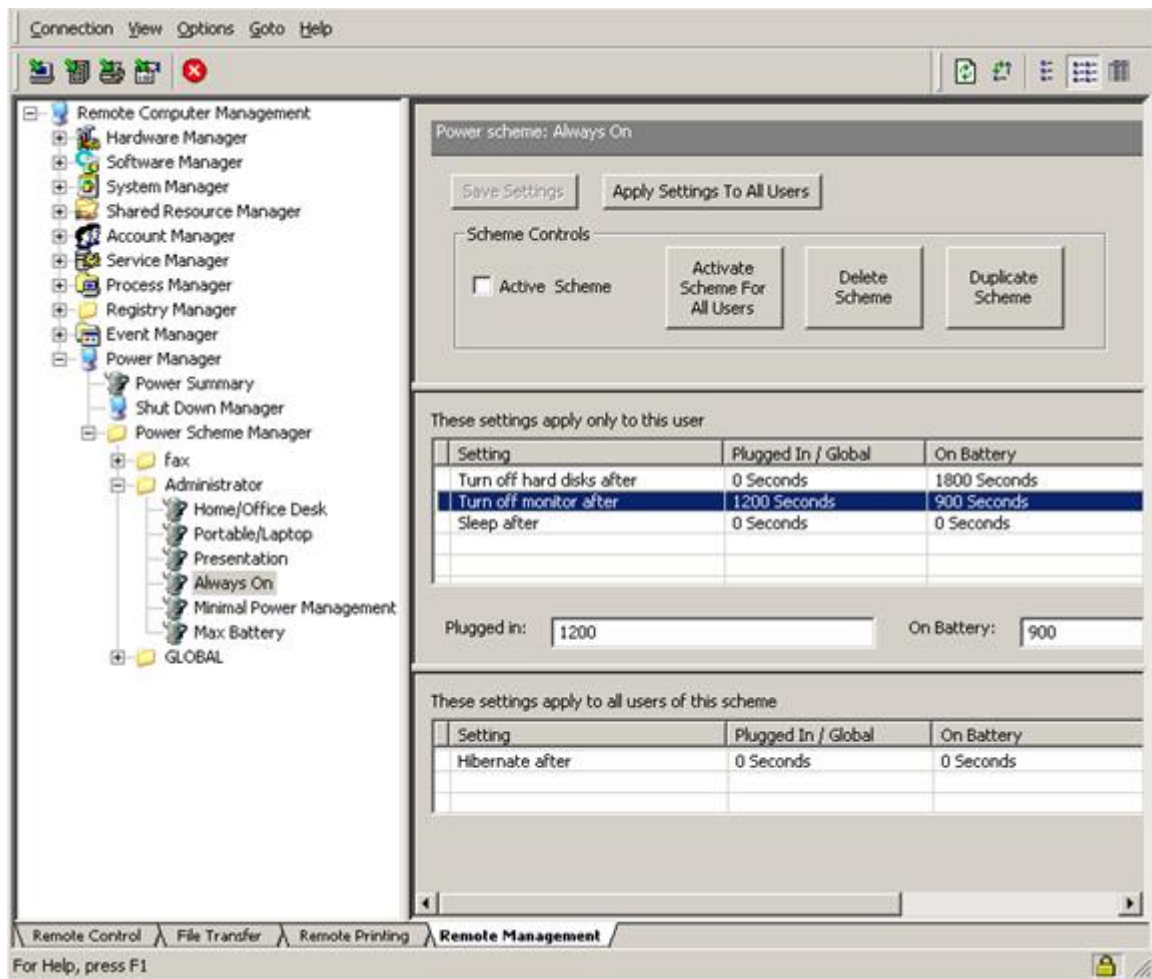
Some power settings are user account-specific but are not defined in power schemes. To view/edit these settings, click on a user account node in the navigation tree under Power Scheme Manager and a list of these settings will appear.



Any changes to these settings can be applied just to the selected user account (**Save Settings**) or to all user accounts (**Apply Settings to All Users**).

User Account Settings - Power Scheme

Under each user account node, a list of default and custom power scheme configurations will appear. Click on one of these schemes to view/edit the settings:



Power scheme settings are divided into two subgroups:

- ◆ Power scheme settings that apply only to this user account
- ◆ Power scheme settings that apply all user accounts that use this power scheme

You can view/edit settings in either subgroup as described above.

Commands

You can apply any of the following commands to the power scheme by clicking on the corresponding button:

Command	Description
Active Scheme	Make this the active power scheme for this user account
Activate Scheme for All Users	Make this the active power scheme for all user accounts on this system
Delete Scheme	Delete this power scheme from this user account

Duplicate Scheme

Create a new custom power scheme with the same values

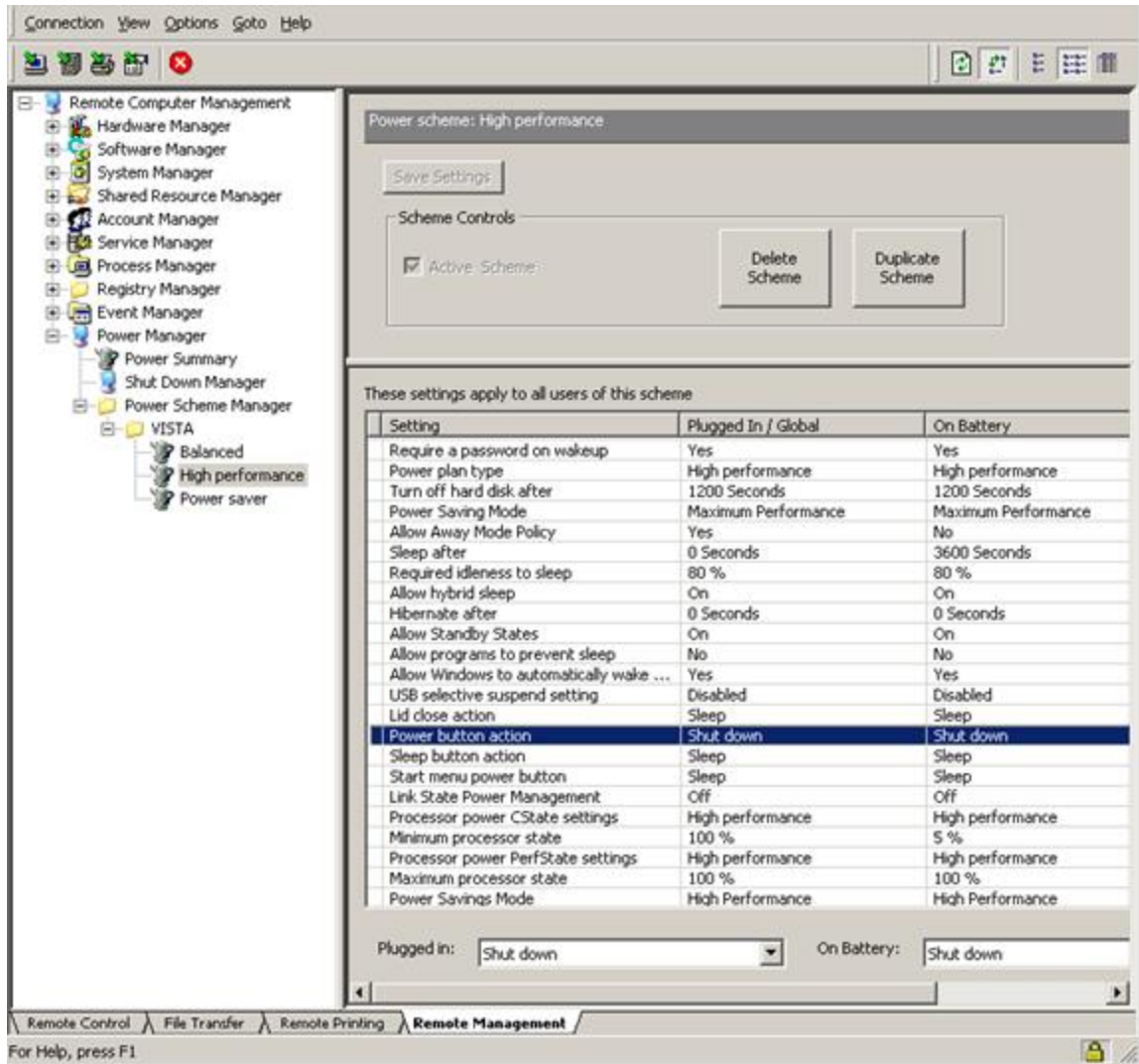
Power Scheme Manager - Vista/Win7

Power Scheme Manager - Vista/Win7 provides you with a graphical view of the current settings for power schemes on a remote Host computer running Windows Vista or Windows 7.

In general, the computer has a single power scheme that applies to all the user accounts on the system.

Power Scheme Settings

Under the Power Scheme Manager node, the system name will appear. Under this node, a list of default and custom power scheme configurations will appear. Click on one of these schemes to view/edit the settings:



To edit a power scheme setting, highlight the setting and select a value from the dropdown box that appears at the bottom. An asteric will appear in the first column next to any values that have been changed. Click the **Save Settings** box to apply the changes to this power scheme

Commands


You can apply any of the following commands to the power scheme by clicking on the corresponding button:





Command	Description
Active Scheme	Make this the active power scheme for this system
Delete Scheme	Delete this power scheme from this system
Duplicate Scheme	Create a new custom power scheme with the same








values





Menu options




The following table describes menu commands and, in some cases, their equivalent tool bar icons in the PC-Duo Master Connection Window. The menu items and icons that display depend on which tab you select.

Menu	Command	Tool bar icon	Description
Connection	Properties		Opens a window that displays the information about the remote connection.
	Disconnect		Closes a connection to one or more of the PC-Duo services to the remote Host computer. If you choose Remote Control , the Master Connection Window closes.
	Begin Recording		Starts a recording of the screen display of the remote Host computer. The Master must connect to the Host through a Gateway to enable recording.
	Stop Recording		Stops a recording of the screen display of the remote Host computer. The completed recording will be accessible on the Gateway through which the Master connected to the Host.
	Add to Favorites		Adds the Host computer to which you are connected to the Favorites list on the PC-Duo Master console window.

Edit	Add to Cycling Monitor Hosts		Adds the open Host computer (from the Remote Control tab on the Master Connection Window) to the Cycling Monitor Hosts list on the PC-Duo Master console window.
	Reboot Host		Restarts a remote Host computer running DOS or Windows 3.1. Use the Start > Shut Down command to reboot remote Host computers running later versions of Windows.
	Exit		Terminates the connection to the current Host and closes the Master Connection Window.
	Input Control		Gives keyboard and mouse control of the Host computer to the remote user of a PC-Duo Gateway-managed connection.
	Send Keystroke		Sends a predefined key combination to the Host computer as though it were entered on the keyboard of the remote Host computer when you are connected to it for remote control. This is useful for sending special key combinations such as CTRL-ALT-DEL.
	Request Screen Refresh		Sends command to remote Host computer to refresh screen capture.
	Auto-Share Clipboard		Automatically copies the contents of the clipboard between the remote Host computer and the local computer when you view the Remote Control tab.
	Get Clipboard from Host		Copies the contents of the clipboard on the remote Host computer to the clipboard on your local computer when you view the Remote Control tab.

View	Send Clipboard to Host		Copies the contents of the clipboard on your local computer to the clipboard on the remote Host computer when you view the Remote Control tab.
	Copy Host Screen		Copies a selected region of the Host computer display in the Master Connection Window to the clipboard on your local computer from the Remote Control tab.
	Menu Bar		Toggles whether the menu bar is displayed in the Master Connection Window.
	Tool Bar		Toggles whether the tool bar is displayed in the Master Connection Window.
	Page Header		Toggles whether the heading is displayed in the Master Connection Window.
	Tabs		Toggles whether tabs are displayed in the Master Connection Window.
	Status Bar		Toggles whether the status bar is displayed in the Master Connection Window.
	Remote Control Page		Toggles whether the Remote Control tab is displayed.
	File Transfer Page		Toggles whether the File Transfer tab is displayed.
	Remote Printing Page		Toggles whether the Remote Printing tab is displayed.
	Remote Management Page		Toggles whether the Remote Management tab is displayed.
	Fit to Window		Scales the image of the Host computer display to fit the size of the Connection Window.


	Fit 1-to-1		Specifies that one pixel of the Host computer display corresponds to exactly one pixel on the display of the local computer.
	Full Screen		Displays the screen output from the remote Host computer using either the entire desktop or the current monitor screen on the local computer. To return to the local computer display, click the Full Screen button on the floating palette, or press F11 in the Master Connection Window.
	Open Chat Window		Opens a Chat window in which text messages can be sent to Host and to any other Masters connected to that Host.
	Options	Keyboard Mapping	Opens the Keyboard Mapping window , which lets you define the key combinations that you can enter on the local computer to initiate keystrokes on the Host computer.
		Connection Window Settings	Displays the Connection Window Settings dialog, which contains settings for various tabs in the Master Connection Window.
		Suppress Host Mouse & Keyboard	Check Suppress Host Mouse & Keyboard option from the Remote Control tab of Master Connection Window to request that the remote Host computer mouse and keyboard be disabled. If this request is granted, the user at the remote Host computer cannot operate that computer when you connect to it through PC-Duo Master. You maintain exclusive control throughout your Master Connection Window.
GoTo	Remote Control Page		Makes the Remote Control tab active.

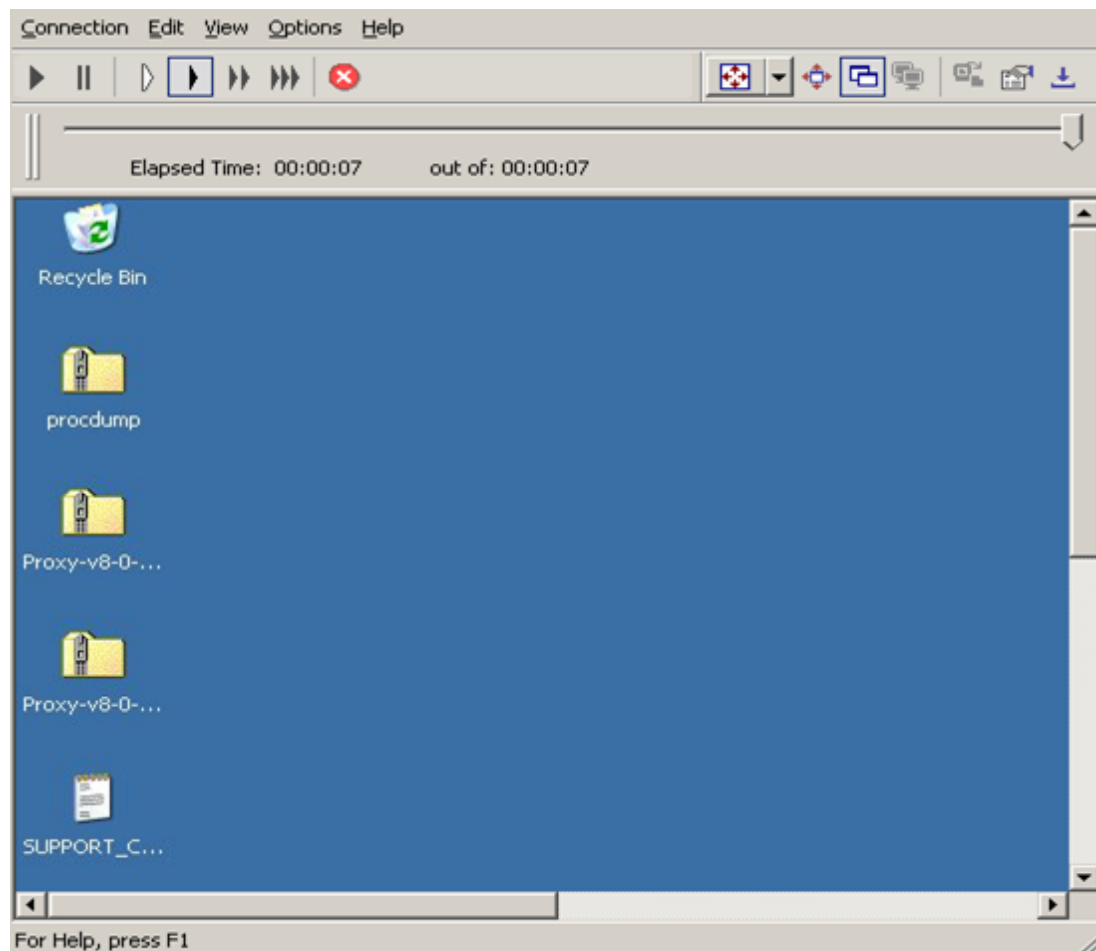
Help	File Transfer Page		Makes the File Transfer tab active.
	Remote Printing Page		Makes the Remote Printing tab active.
	Remote Management Page		Makes the Remote Management tab active.
	Help Topics		Opens the PC-Duo Master online help system.
	Vector Networks Home Page		Opens the Vector Networks home page in a browser window.
	Check for Updates and Maintenance Releases		Opens a web page with information about recent updates and new releases of Vector software.
	Purchase Additional Licenses		Opens a web page to purchase license(s) for PC-Duo Master.
	Order Technical Support Contract		Opens a web page to purchase Maintenance & Support contracts from Vector Networks.
	About PC-Duo Master		Displays version number and license key information for PC-Duo Master.

Playback Window Operation

PC-Duo screen recordings can be played back in a Playback window that pops up as a separate window from PC-Duo Master.













The following elements in the window provide information about the playback you are watching:

- ◆ The Title bar displays the name of the managed Host on which you recorded screen activity, followed by the date and time of the recording.
- ◆ The Slider represents the playback in process. To go to an earlier or later part of the playback, click and drag  to another position on the slider.
- ◆ The Time increments field displays the following measurements in *XX:YY:ZZ*, where *X* represents hours, *Y* represents minutes, and *Z* represents seconds.
 - ◆ **Elapsed Time** indicates how much of the recording has played.
 - ◆ **Out of** indicates the total time of the recording.
- ◆ The Playback area plays the recording.



Tool bar options

Table below summarizes the functions of icons available on the tool bar for the Playback window:

Icon	Function
	Resumes a paused playback.
	Pauses the playback.
	Plays back the recording at half the speed of the original activity.
	Plays the recording.
	Plays back the recording at twice the speed of the original activity.
	Plays back the recording at triple the speed of the original activity.
	Closes the Playback window.
	Displays the screen output from the remote Host computer using either the entire desktop or the current monitor screen on the local computer. To return to the local computer display, click the Full Screen button on the floating palette, or press F11 in the Master Connection Window.
	Scales the image of the Host computer display to fit the size of the Connection Window.
	Specifies that one pixel of the Host computer display corresponds to exactly one pixel on the display of the local computer.
	Copies a selected region of the Host computer display in the Master Connection Window to the clipboard on your local computer from the Playback window.
	Go to the Playback Window Settings tab to modify the display settings for the Playback

window.



Exports the recording from the proprietary PRXREC format to WMV.

Playback options

Recordings can be played back from the following source locations:

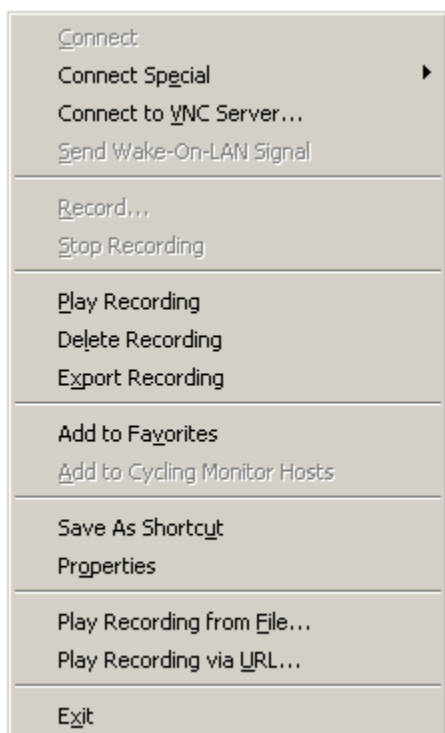
- ◆ From the PC-Duo Gateway, which streams the recording in real-time over a network connection to the Playback window.
- ◆ From a PC-Duo recording file that has been saved with the `.PrxRec` extension to the local drive.
- ◆ From any standard web server, which streams the recording in real-time over HTTP or HTTPS to the Playback window.

Play a recording from the PC-Duo Gateway

To play a recording from the PC-Duo Gateway:

- 1 Select the recording you want to play.
- 2 Right-click the recording and choose **Play Recording** or choose **Connection > Play Recording** from the menu.

The Playback window opens and the recording begins to play.

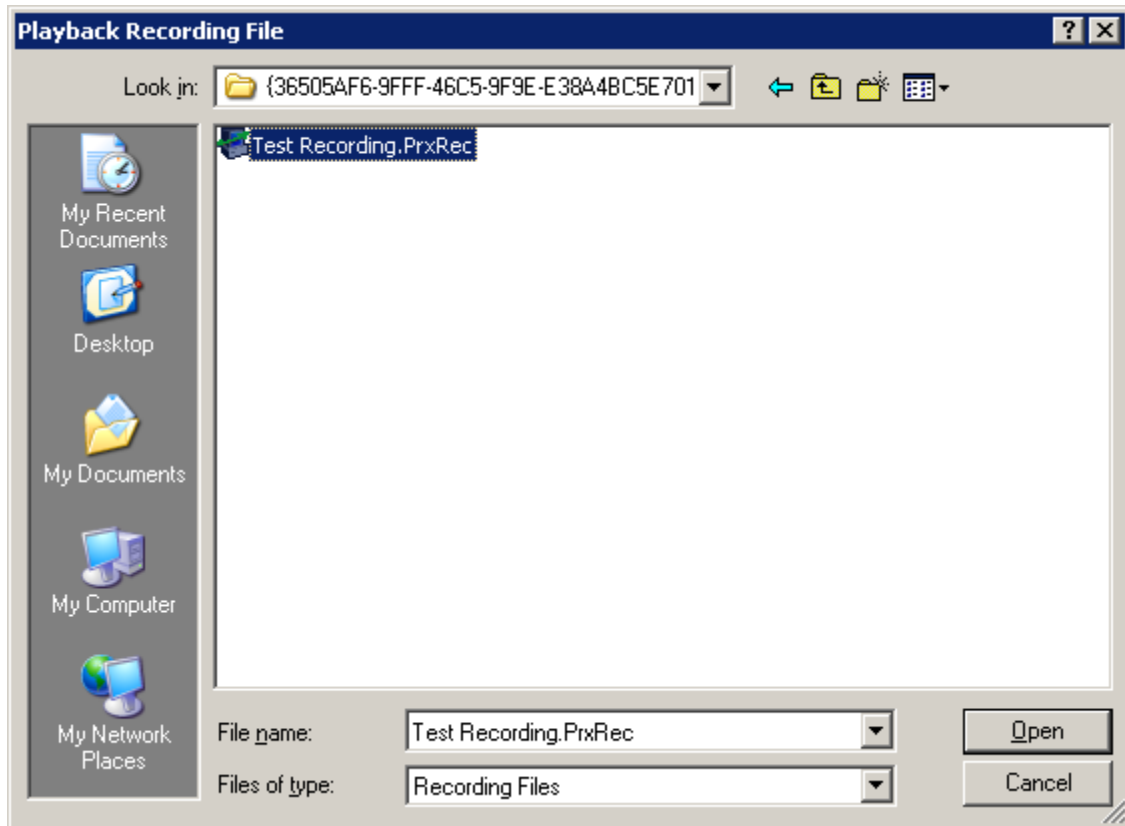


Play a recording from a local disk file

By default, recordings are stored by the PC-Duo Gateway at a location configured by the Gateway Administrator (which may or may not be accessible through a network share). If

recordings are moved to another machine, you can use PC-Duo Master to play that recording locally:

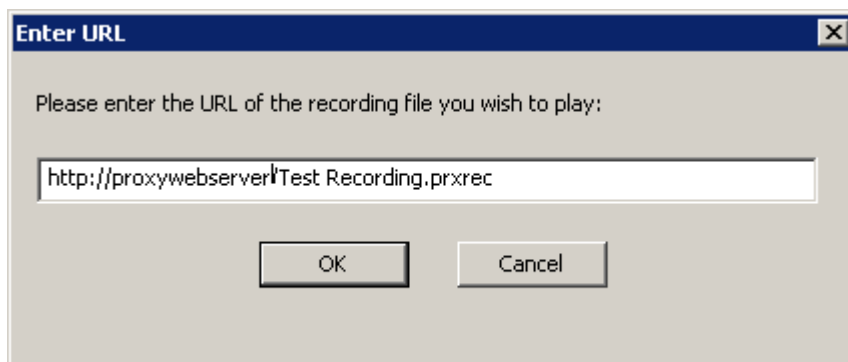
- 1 Choose **Connection > Play Recording from File...** from the menu. Find recording in the explorer window that pops up
- 2 Click **Open** and the Playback window will pop up and start playing the recording.



Play a recording from a web server

By default, recordings are stored by the PC-Duo Gateway at a location configured by the Gateway Administrator (which may or may not be accessible through a network share). If recordings are moved to a location accessible by a standard web server, you can use PC-Duo Master to play that recording via standard URL:

- 1 Choose **Connection > Play Recording via URL...** from the menu. Find recording in the explorer window that pops up
- 2 Click **OK** and the Playback window will pop up and start playing the recording.



The following syntax can be used to specify the URL of the recording file you wish to play:

- ◆ `http://<webservername>/<recordingfile.prxrec>` (default port is 8080)
- ◆ `http://<webservername:port>/<recordingfile.prxrec>`
- ◆ `https://<webservername>/<recordingfile.prxrec>`
- ◆ `https://<username.password@webservername>/<recordingfile.prxrec>`

If URL is specified using HTTPS, the Master will attempt to validate the server's certificate, and will display a warning dialog if the certificate has any errors.

If server requires authentication, and no username or password is specified in the URL, the Master will present the current logged on user's credentials to the webserver; if the default credentials are not accepted, a username/password dialog will appear.

Recordings played via URL or from a local file store will appear in the Master's History tab and can be added to the Favorites tab. From either location, they can be played again, deleted or exported (and converted to .wmv format).

Note the following limitations:

Note: If the server has a certificate error, the error action (i.e. to accept the certificate) is not stored in History or Favorites. The only way to export a recording from URL with a certificate error is from within the Playback window.

Note: Playback via URL does not have access to metadata about the recording, i.e. workstation ID, user name, date/time started, etc., so those fields are blank in the properties dialog. The exception is duration, which is shown by default.

Play a recording using command line utility

The Playback window can be invoked by using the Master command line with following syntax:

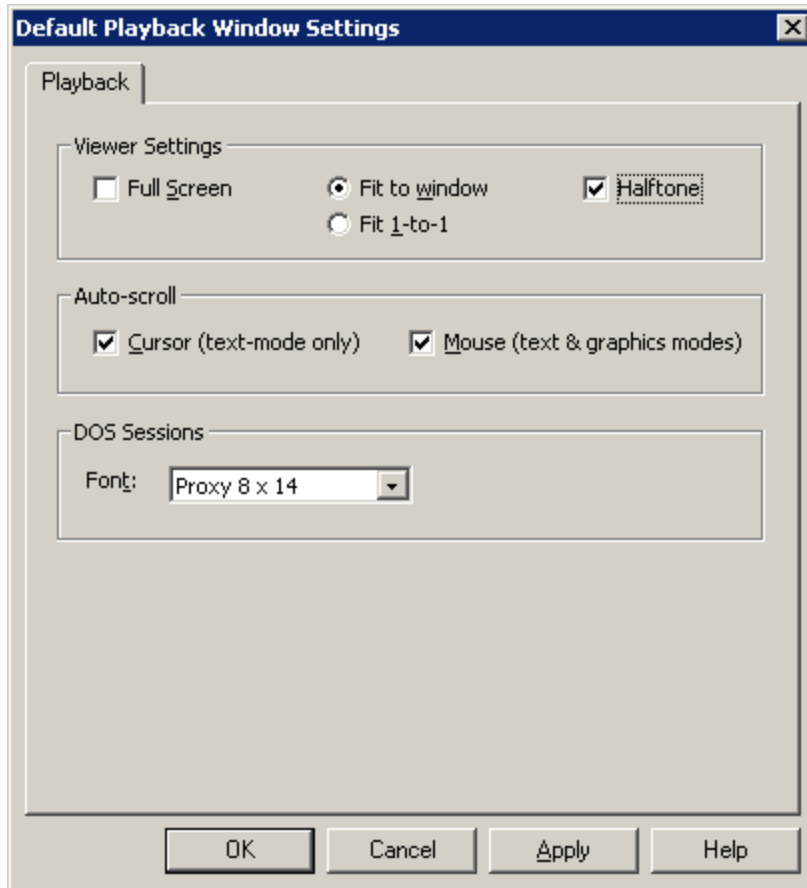
- ◆ `proxy.exe /g"<Gateway>" /r"<sessionID>"` (GUID sessionID of recording)
- ◆ `proxy.exe <recordingfile.prxrec>` (recording file in local file store)

◆ `proxy.exe http://<webservername:port>/<recordingfile.prxrec>`
(recording file accessible via URL on webserver)

The standard command line options `/u<username>` and `/x<password>` can be used to provide specific credentials if default credentials of current logged-on user are not sufficient. See "Command line syntax examples" for more information.

Playback window settings

To control the display of the PC-Duo Master Playback window, choose **Options > Playback Window Settings** to open the Playback Window Settings tab.



The settings in this window are for viewing, scrolling, and displaying a recording playback:

- ◆ **Viewer Settings** determine how activity on a remote computer is displayed.
 - ◆ **Full Screen** displays the playback using the entire monitor screen on the local computer.
 - ◆ **Fit to window** scales the image of the playback to fit the size of the PC-Duo Master Playback window.
 - ◆ **Fit 1-to-1** specifies that one pixel of the playback corresponds to exactly one pixel on the display of the local computer.
 - ◆ Select **Halftone** to improve the quality of the display when the Master is in Fit to Window mode.

Note: The Halftone option affects only the way the screen is rendered by the Master, and may increase CPU usage on the Master.

Select these options from the **View** menu and toolbar icons, .

◆ **Auto-scroll** settings determine if the window scrolls when the cursor or mouse reaches a boundary.

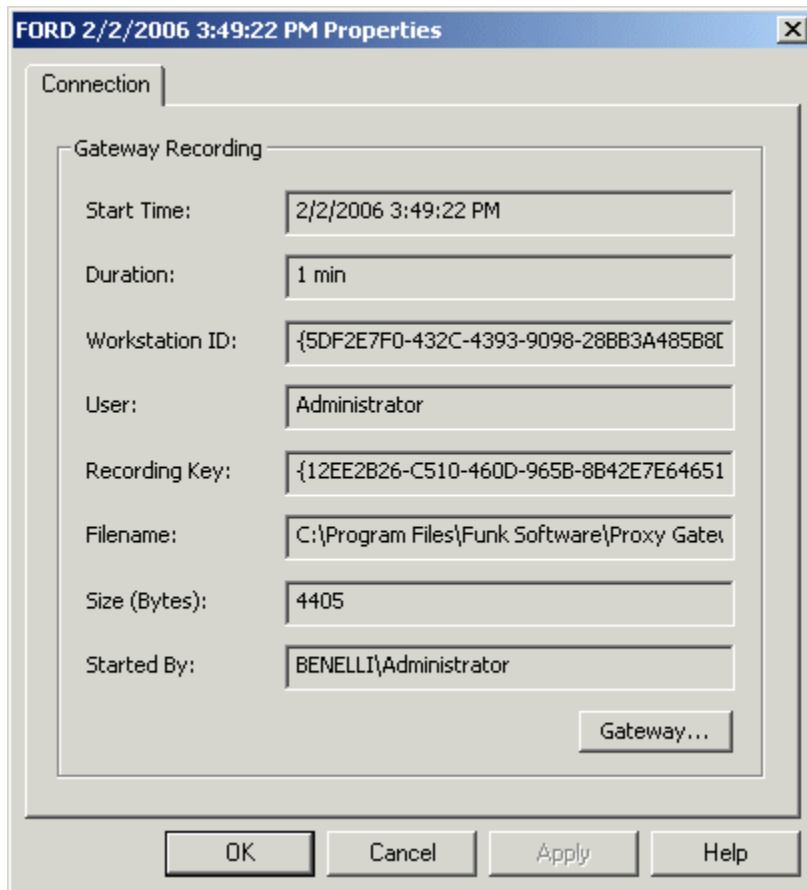
- ◆ **Cursor (text-mode only)** - automatically scrolls when the cursor comes to an edge of the Playback Window when you hold the CTRL key down.
- ◆ **Mouse (text & graphics mode)** - automatically scrolls when the mouse comes to an edge of the Playback Window when you hold the CTRL key down.

◆ The **DOS Sessions** setting determines the **Font** that the Master uses when it displays a DOS session on the Host. Each choice consists of combination of two elements, typeface and point size.

Recording properties

View the properties of a recording from two windows:

- ◆ In the PC-Duo Master window, right-click a recording and choose **Properties**.
- ◆ In the Playback window, choose **Connection > Properties**.



The following properties of a recording are listed in the Connection tab.

- ◆ **Start Time**
- ◆ **Duration**
- ◆ **Workstation ID**
- ◆ **User**
- ◆ **Recording Key**
- ◆ **Filename**
- ◆ **Size (Bytes)**
- ◆ **Started By**
- ◆ **Gateway**

Gateway properties

To record screen activity on a Host, the Host must be connected to a PC-Duo Gateway. When you view the properties of a recording and click **Gateway**, the properties of the PC-Duo Gateway that managed that connection are displayed.



The image shows a Windows-style dialog box titled "Gateway Properties". It has two tabs: "Connection" and "Connect As", with "Connect As" currently selected. The dialog contains several input fields and a checkbox. The "Display Name" field is set to "GWS". The "Protocol" dropdown is set to "UDP/IP" and the "Port" dropdown is set to "<Standard>". The "Gateway Specifier" field is set to "152.1.1.1". The "Station Name" field is set to "GWS". The "Network Address" field is set to "152.1.1.1". There is an unchecked checkbox labeled "Use encryption". A "Find Gateway..." button is located at the bottom right of the main input area. At the very bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

Field	Value
Display Name	GWS
Protocol	UDP/IP
Port	<Standard>
Gateway Specifier	152.1.1.1
Station Name	GWS
Network Address	152.1.1.1
Use encryption	<input type="checkbox"/>

Delete options

To delete a recording from the Host Recordings list on the PC-Duo Gateway, follow these steps

- 1 In the **Host Recordings** list, select each recording that you want to delete.
- 2 Right-click and choose **Delete Recording** or choose **Connection > Delete Recording** from the menu. The recording is removed from the **Host Recordings** list and deleted from the PC-Duo Gateway.

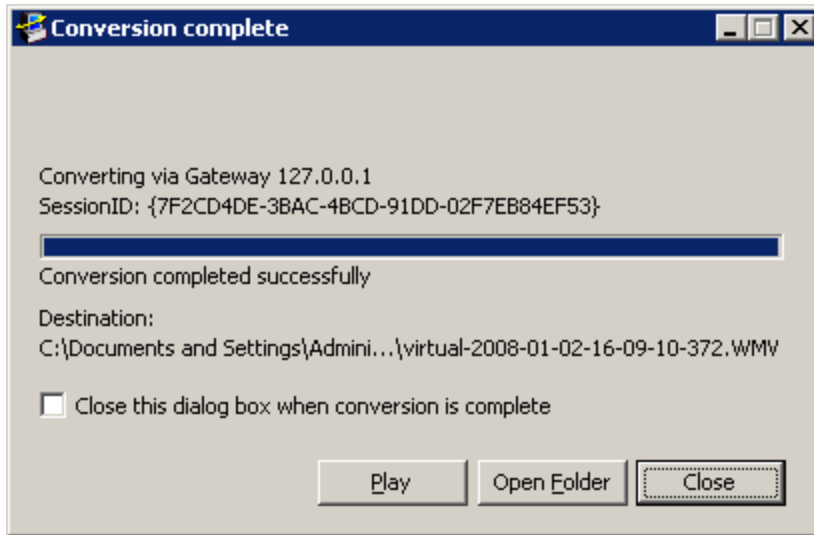
To delete a recording from a local drive, you must use Windows Explorer to find and delete the `.PrxRec` file from the computer.

Recording format options

From the PC-Duo Master Playback window, you can convert a recording to Microsoft .wmv format and save it to your file system.





From the Connection menu, select **Export Recording**




A Windows dialog box will appear to let you choose where to save the converted recording. Once the conversion begins, a status box will appear to indicate when the conversion is complete.



Menu options

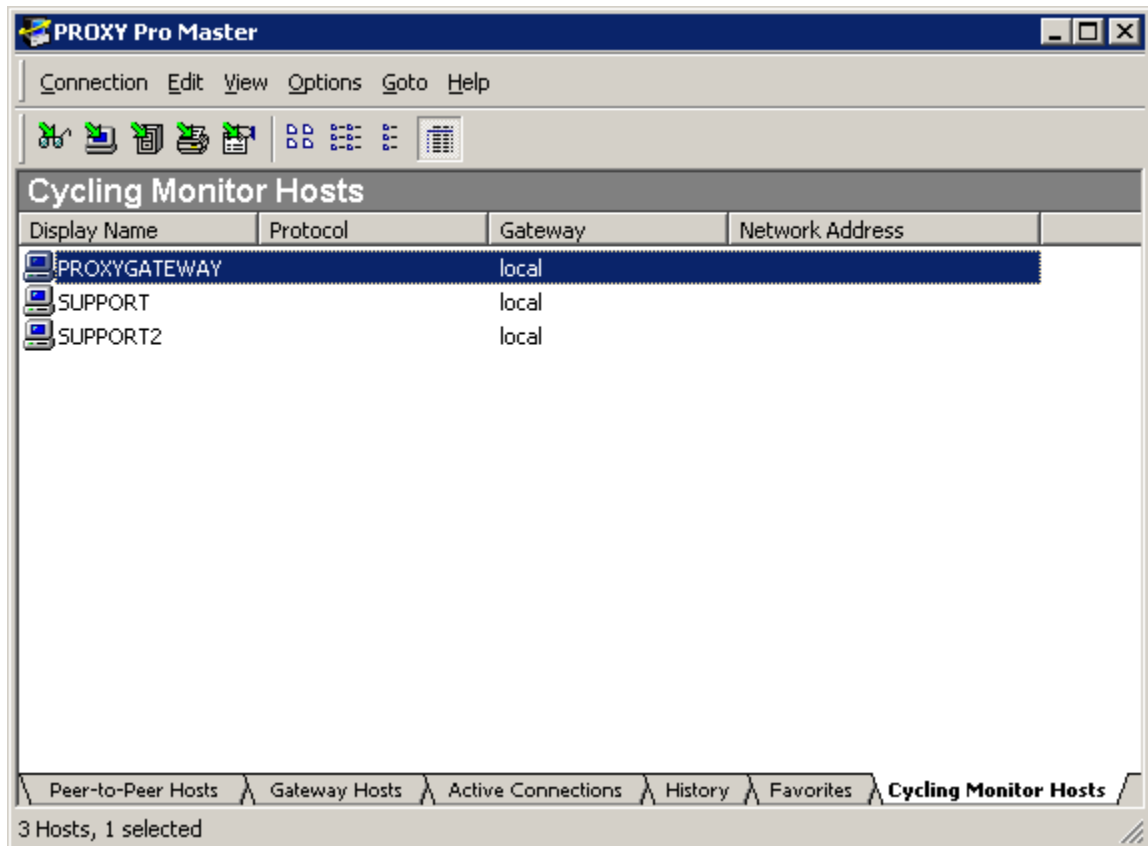
Table below describes menu commands and tool bar icons in the PC-Duo Master Playback window:

Menu	Command	Tool bar icon	Description
Connection	Disconnect; Exit		Closes the PC-Duo Master Playback window.
	Export Recording to WMV		Exports the recording from the proprietary PRXREC format to WMV.
Edit	Copy Host Screen		Copies selected region or text to the clipboard on your local computer.
View	Menu Bar		Toggles whether the menu bar is displayed in the PC-Duo Master Playback window.
	Tool Bar		Toggles whether the tool bar is displayed in the PC-Duo Master Playback window.
	Playback Position		Toggles whether the position indicator is displayed in the PC-Duo Master Playback window.
	Page Header		Toggles whether the heading is displayed in the PC-Duo Master Playback window.
	Status Bar		Toggles whether the status bar is displayed in the PC-Duo Master Playback window.
	Fit to Window		Scales the image of the playback to fit the size of the PC-Duo Master Playback window.

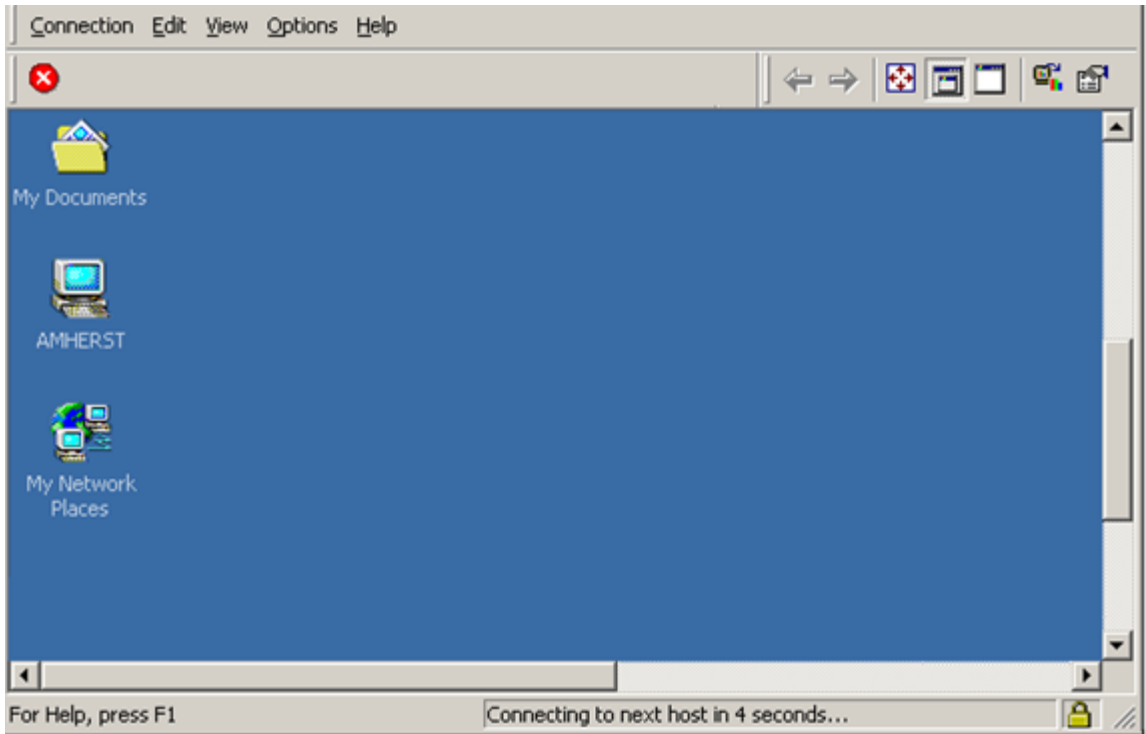
	Fit 1-to-1		Specifies that one pixel of the playback corresponds to exactly one pixel on the display of the local computer.
	Full Screen		Displays the playback using either the entire desktop or a specific monitor on the local computer.
Options	Keyboard Mapping		Opens the Keyboard Mapping window, which lets you define the key combinations that you can enter on the local computer to initiate keystrokes on the Host computer.
	Playback Window Settings		Displays the Playback Window Settings dialog, which contains the settings for the Playback window.
Help	Help Topics		Opens the PC-Duo Master online help system.
	Home Page		Opens the PC-Duo home page in a browser window.
	Vector Networks Home Page		Opens the Vector Networks home page in a browser window.
	Register PC-Duo		Opens a web page that you can use to register your copy of PC-Duo Master.
	Purchase PC-Duo		Opens a web page from which you can purchase your copy of PC-Duo Master.
	About PC-Duo Master		Displays version number of PC-Duo Master.

Cycling Monitor Window Operation

PC-Duo Master Cycling Monitor allows you to serially check in on a list of Host computers that you create on the **Cycling Monitor Hosts** tab of the PC-Duo Master window.



This window is similar to the PC-Duo Master Connection Window, except that you cannot remotely control any of the active remote connections from it. Instead, the PC-Duo Master Cycling Monitor window will start with the Host at the top of the Cycling Monitor Hosts list, make a connection to that Host, display the Host screen for a predetermined interval, and then move on to the next Host on the list.



Note that a countdown of cycling span interval time remaining is displayed in the status bar in the bottom right hand corner.



The following options are available for managing the Cycling Monitor window:







- ◆ “Cycling Monitor window settings”
- ◆ “Menu options”

NOTE: Depending on how PC-Duo Host (or PC-Duo Gateway) is configured, your credentials may be restricted from monitoring one or more Host computers on your cycling monitor list.

Tool bar options



Table below summarizes the functions of icons available on the tool bar for the Cycling Monitor window:




Icon	Function
	Closes the Cycling Monitor window.
	Change the Cycling Monitor window to show the previous Host computer on the Cycling Monitor Hosts list.


	Change the Cycling Monitor window to show the next Host computer on the Cycling Monitor Hosts list.
	Displays the screen output from the remote Host computer using the entire monitor screen on the local computer. To return to the local computer display, click the Full Screen button on the floating palette, or press F11 in the Master Connection Window.
	Specifies that one pixel of the Host computer display corresponds to exactly one pixel on the display of the local computer.
	Scales the image of the Host computer display to fit the size of the Connection Window.
	Copies a selected region of the Host computer display in the Master Connection Window to the clipboard on your local computer from the Cycling Monitor window.
	Go to the Cycling Monitor Settings tab to modify the display settings for the Cycling Monitor window.

Menu options

The following table describes menu commands and tool bar icons in the Cycling Monitor window.

Menu	Command	Tool bar icon	Description
Connection	Properties		Opens a window that displays the information about the remote connection.
	Connect to		Closes a connection to one or more of the PC-Duo services to the remote Host computer. If you choose Remote Control , the Master Connection Window closes.
	Next Host		Change the Cycling Monitor window to show the next Host computer on the Cycling Monitor Hosts list.
	Previous Host		Change the Cycling Monitor window to show the previous Host computer on the Cycling Monitor Hosts list.
	Start Cycling		Adds the Host computer to which you are connected to the Favorites list on the PC-Duo Master console window.
	Stop Cycling		Adds the open Host computer (from the Remote Control tab on the Master Connection Window) to the Cycling Monitor Hosts list on the PC-Duo Master console window.
	Exit		Terminates the connection to the current Host and closes the Master Connection Window.

Edit	Cycling Monitor Hosts		Gives keyboard and mouse control of the Host computer to the remote user of a PC-Duo Gateway-managed connection.
	Copy Host Screen		Copies a selected region of the Host computer display in the Master Connection Window to the clipboard on your local computer from the Remote Control tab.
View	Menu Bar		Toggles whether the menu bar is displayed in the Master Connection Window.
	Tool Bar		Toggles whether the tool bar is displayed in the Master Connection Window.
	Page Header		Toggles whether the heading is displayed in the Master Connection Window.
	Tabs		Toggles whether tabs are displayed in the Master Connection Window.
	Fit to Window		Displays the screen output from the remote Host computer using the entire monitor screen on the local computer. To return to the local computer display, click the Full Screen button on the floating palette, or press F11 in the Master Connection Window.
	Fit 1-to-1		Specifies that one pixel of the Host computer display corresponds to exactly one pixel on the display of the local computer.
	Full Screen		Scales the image of the Host computer display to fit the size of the Connection Window.

Options	Keyboard Mapping		Opens the Keyboard Mapping window , which lets you define the key combinations that you can enter on the local computer to initiate keystrokes on the Host computer.
	Cycling Monitor Settings		Displays the Cycling Monitor Settings dialog, which contains settings for Cycling Monitor window.
Help	Help Topics		Opens the PC-Duo Master online help system.
	Vector Networks Home Page		Opens the Vector Networks home page in a browser window.
	Check for Updates and Maintenance Releases		Opens a web page with information about recent updates and new releases of PC-Duo software.
	Purchase Additional Licenses		Opens a web page to purchase license(s) for PC-Duo Master.
	Order Technical Support Contract		Opens a web page to purchase Maintenance & Support contracts from Vector Networks.
	About PC-Duo Master		Displays version number and license key information for PC-Duo Master.

Command Line Configuration

The command line from the Windows command prompt, **Start > Run > cmd**, can be used to run PC-Duo Master and manually perform any of the following tasks:

- ◆ Use commands to set up connections to specific Host computers.
- ◆ Use command line scripts to make connections to specific Host computers whose configuration is specified in a shortcut file (a file with a .PRX4 extension).
- ◆ Run a script to connect automatically to the remote Host computer with PC-Duo Master preconfigured.
- ◆ Specify a PC-Duo Host recording file, with a .PrxRec extension, to be played in a Playback Window.

The command line can also be used to manage configuration options, including the following:

- ◆ Specify the Host computer in terms of address, port, and protocol.
- ◆ Customize the title bar of the ["Connection Window operation"](#) that appears when you make a remote connection.
- ◆ Provide the name of the shortcut file for opening connections.

The syntax for using the command line is as follows:

```
proxy.exe [/option"values"] [ ShortCutFile | RecordingFile ]
```

With this syntax, follow the command `proxy.exe` with a sequence of configuration option/value pairs (do not include brackets). Specify the option with a forward slash ('/') followed by one letter. If you specify a value that has a space or a special character, the value must be in quotes. Optionally, you can include the name of a shortcut file to specify all other configuration parameters for the connection. The shortcut file extension must be .PRX4. See ["Command line options"](#).

The following is an example of the PC-Duo Master command line syntax.

```
proxy.exe /PUDP /S198.186.166.124 MyShortcut.prx4
```

If you have created and specified a shortcut file called `MyShortcut.prx4`, use this syntax to run `MyShortcut.prx4` with its ["Default Connection Window Settings"](#), and open a connection to a remote Host computer at 198.186.166.124, using the UDP/IP protocol and the standard port. All other configuration parameters are specified in the shortcut file.

- ◆ "Command line option values and syntax"
- ◆ "Command line syntax examples"

Command line options

Command line options can be used to customize your remote connection configuration.

All command line options consist of a one-letter option specification, preceded by a forward slash ('/'). Follow each command immediately by a command value surrounded by double quotes, with no space between the one-letter command and its value. If you do not have any special characters such as blank spaces in your option values, you do not have to use quotes.

Command options are not case-sensitive; for example, /W and /w are the same command.

The command options are as follows:

- ◆ /H opens a custom remote Host computer connection, but hides the PC-Duo Master console window when you open it. Note that /H does not hide any instances of PC-Duo Master that are already open.
- ◆ /M starts a new instance of PC-Duo Master, even if one is already open and running.
- ◆ /P specifies the network protocol and nonstandard listening port required by your remote Host computer.
- ◆ /S specifies Host information. For a peer-to-peer connection, use this command to specify the Host computer name or network address in the syntax required by the protocol you choose. For remote connections through a PC-Duo Gateway, use the PC-Duo Gateway syntax of this command to specify your Host computer key. See ["Connection tab"](#).
- ◆ /G specifies the PC-Duo Gateway to connect to for a remote connection. With this option, you must also use the PC-Duo Gateway syntax for /S to specify a Host computer key associated with a Host computer. The specified PC-Duo Gateway must be configured to manage the specified Host computer.
- ◆ /U specifies a user name that your remote Host computer or PC-Duo Gateway requires. You must configure PC-Duo Host on your remote Host computer to accept this user name (and corresponding password).
- ◆ /V specifies a DNS name or IP address of a VNC server to connect to for a remote connection.
- ◆ /W specifies a title other than the default for the ["Master Connection Window"](#).
- ◆ /X provide a password for your remote connection.
- ◆ <recordingfile.prxrec> specifies a local screen recording file to be played
- ◆ <http://webserver:port/recordingfile.prxrec> specifies a screen recording file located at a webserver to be played over HTTP (or HTTPS).

If you do not specify one or more of these connection options in a command line, PC-Duo Master relies on the connection values in the current PC-Duo Master console window, or the default configuration values if you have not yet configured the product.

Command line option values and syntax

The values that you can assign to a command line option depend on the option. For example, /H /M take no values.

The following values can be assigned to the other command line options as listed in table below.

Command	Value(s)	Notes or Syntax
/P (No port specification)	TCP UDP IPX	For TCP/IP protocol. No quotes required. For UDP/IP protocol. No quotes required. For IPX protocol. No quotes required. The default (standard) port is assigned in each case.
/P (With port specification)	<i>Protocol name port</i> pair (see above for the allowed protocol name values). The entire phrase is in quotes.	Syntax: <i>/P"Protocol_name Port_number"</i> Example: <i>/P"TCP 5001"</i> The vertical bar is required as a separator for the protocol/port number pair.
/U	String value for username in quotes.	Typically, the required format is <i>/U"domain\user_name"</i> , as in <i>/U"ACME\george"</i> .
/X	String value for the password in quotes.	Example: <i>/X"foo"</i>
/W	String value for the new title in quotes.	Example: <i>/W"Stock Traders"</i>
/G	String value for the PC-Duo Gateway name in quotes.	When you specify the PC-Duo Gateway, you must also specify the Host computer using the Host key Gateway syntax for /S, as described for Gateway-managed connections. When you specify the PC-Duo Gateway and protocol (using /P), the protocol applies between the local PC-Duo Master computer and the PC-Duo Gateway.
/S	In quotes, the string value for the station name, DNS name, or network address specifier for peer-to-peer Host computer connections.	The peer-to-peer syntax depends on your protocol specification.

/V	In quotes, the string value for the station name, DNS name, or network address specifier for VNC server connections.	Examples: /PTCP /V"192.168.160.138" /PTCP /V"Mac VNC Server"
/PTCP /S or /PUDP /S	<i>network_address</i> <i>station_name</i> <i>dns_name</i>	Examples: /PUDP /S"192.168.160.138" /PTCP /S"jackson" /PTCP /S"jackson.acme.com"
/PIPX /S	@node @network:node "station_name" "net- work:station_name" "	Examples: /PIPX /S@1B13DAE9 /PIPX /S@20:1B13DAE9 /PIPX /S"Dell P200" /PIPX /S"2:Dell"
/S	In quotes, the string value for the Host key for remote connections through a PC-Duo Gateway: ◆ "w={host_key}" ◆ "u=host_key"	The Gateway syntax depends on the managed Host specification: Use <i>u</i> for a logged-in user, and <i>w</i> (with curly braces) for a workstation. NOTE: The <i>u</i> and <i>w</i> that you use for the PC-Duo Gateway syntax of /S are independent of the /U and /W commands. To find the Host key, navigate to the managed Hosts tab of the PC-Duo Master console window. Select the PC-Duo Gateway and display its list of managed Host computers. Right-click the desired Host computer, and select Properties . The Host key displays.
/G /S	<i>Gateway_Name</i> and <i>Workstation_Host_Key</i> or <i>Gateway_Name</i> and <i>User_Name</i>	Examples: /G"Gateway1" /S"w={6F93DF16-8352-46EB-ADDF-7FD752EA72FA}" /G"Gateway1" /S"u=ACME\george"
/R	<i>Gateway_Name</i> and <i>SessionID</i>	Specify a GUID session ID of recording on a Gateway to be played: /G"Gateway1" /R"{92E3970A-682E-4B93-B4A4-925F96E89E85}"

Command line syntax examples

Table below describes a set of full command-line calls.

Examples of syntax for command lines

Command	Explanation
<pre>proxy.exe /PUDP /U"ACME\george" /X"foo" /S"jackson.acme.com"</pre>	<p>Opens both the PC-Duo Master console window and the PC-Duo Master Connection window, connecting to a computer whose DNS name is <code>jackson.acme.com</code> using the UDP/IP protocol, valid username, <code>ACME\george</code>, and password <code>foo</code>.</p>
<pre>proxy.exe /PIPX /X"foo" /S"Dell P200"</pre>	<p>Uses the IPX protocol to connect to a computer named <i>Dell P200</i> with the configured PC-Duo Host password <code>foo</code>.</p>
<pre>proxy.exe /P"IPX 5001" /S@20:1B31DAE9</pre>	<p>Uses the IPX protocol to connect to a computer on network <code>20</code> with IPX address <code>1B31DAE9</code>, using port <code>5001</code> and the local computer user credentials. Note that to specify the port, you must separate the protocol/port number pair with a vertical bar <code> </code> and put the entire group in quotes.</p>
<pre>proxy.exe /PTCP /S"192.168.160.138"</pre>	<p>Uses the TCP/IP protocol to connect to a remote Host computer with network address <code>192.168.160.138</code>, using the local computer user credentials.</p>
<pre>proxy.exe /PTCP /S"jackson"</pre>	<p>Uses the TCP/IP protocol to connect to a remote Host computer named <i>jackson</i> with local computer user credentials. All other PC-Duo Master console window configuration parameters are specified in the current configuration of PC-Duo Master.</p>
<pre>proxy.exe /PTCP /S"jackson" jackson.prx4</pre>	<p>Uses the TCP/IP protocol to connect to a remote Host computer named <i>jackson</i> with local computer user credentials. All other PC-Duo Master console window configuration parameters are specified in the PC-Duo Master shortcut file named <code>jackson.prx4</code>.</p>
<pre>proxy.exe /PTCP /W"Jackson" /Sjackson</pre>	<p>Uses the TCP/IP protocol to connect to a remote Host computer named <i>jackson</i> with local computer user credentials. The resulting Connection Window is titled <i>jackson</i>.</p>

<pre>proxy.exe /H /PUDP /S"jackson"</pre>	Uses the UDP/IP protocol to connect to a remote Host computer named <i>jackson</i> with local computer user credentials, and hides the PC-Duo Master console window for this connection.
<pre>proxy.exe jackson-2008-04- 24.prxrec</pre>	Opens a Playback window to play the recording file "jackson-2008-04-24.prxrec" from local file store
<pre>proxy.exe http://MyIIS:8080/jackson- 2008-04-24.prxrec</pre>	Opens a Playback window to play the recording file "jackson-2008-04-24.prxrec" from webserver "MyIIS" over port 8080
<pre>proxy.exe /P"TCP 5900" /V"Mac VNC Server"</pre>	Uses the TCP/IP protocol to connect to a VNC server on a remote Host computer with DNS name "Mac VNC Server".