

## The All-in-One X Server

Attachmate® Reflection® Suite for X 2011 offers X server technologies, terminal emulation software, and a file transfer client—all in one deployment package. This integrated solution lets you securely access mission-critical applications on UNIX and IBM systems from any Windows desktop, locally or across the globe. It renders rich, precise X graphics with unrivaled speed using new compression technology, and allows users to resume suspended X programs from any platform. Powerful, flexible, and comprehensive, this solution combines familiar legacy functionality with sophisticated next-generation capability.

### With Reflection Suite for X 2011, you can:

- Deploy a single product that meets the full spectrum of host access needs.
- Connect Windows users to graphical and text-based applications on IBM Mainframe, IBM AS/400, UNIX, Linux, and OpenVMS hosts.
- Display highly graphical 2D and 3D X applications with support for the latest X11 standards, including OpenGL 2.1, and XFree86 BigFont and Sync extensions.
- Suspend and resume X sessions across Windows, UNIX, Linux, and Mac platforms.
- Administer and deploy Reflection X Advantage sessions from a central location, and enable users to launch the program from a browser window.
- Add an extra layer of security in front of the host with secure token authorization support.\*
- Enable remote users to establish secure connections to X client applications behind the corporate firewall.
- Share X sessions in real time to collaborate with colleagues around the world.
- Access X applications remotely, with improved performance for high-latency and low-bandwidth networks.

### What's New in Reflection Suite for X 2011?

- *Compatible with Windows 7, Citrix Ready, and VMware Ready logos.*
- Support for current platforms and emerging virtualization technologies.
- Secure token authorization support for bolstered host security.\*
- Firewall-friendly remote domain connections.
- Automatic bandwidth and latency detection for improved performance.
- Support for next-generation hash algorithms to better secure data in motion.
- Native support for the 64-bit Windows platform.
- Reflection PKI Services Manager for easier certificate management.



## Product Highlights

### Standardize Your Host Access

Reflection Suite for X 2011 covers the full spectrum of host access needs in one package. This multipurpose solution allows you to standardize your PC X server software, your terminal emulator, and your FTP client on a single Windows platform. It provides connections to text-based and graphical X applications, and safely transfers the files that keep your business running.

### Access the Latest Linux Desktops

Reflection Suite for X 2011 allows users to display GNOME and KDE desktops from a Windows PC, a Mac OS X workstation, or another Linux workstation. Desktop sessions can be suspended

and resumed, or transferred to another workstation. And because Reflection Suite for X 2011 supports the RENDER extension, user display elements like fonts and menu items in X applications are quickly displayed with high fidelity.

### Find Project Continuity and Collaborative Freedom

What's more, Reflection Suite for X 2011 delivers enhanced security for remote users, enabling them to establish secure connections to X client applications behind the corporate firewall. And because these connections are channeled through only one firewall port, the attack surface is minimized and each remote connection is highly secure.

Today's mobile workforce must be able to start a project in the office and then pick it up later from someplace else. Users must also be able to collaborate with coworkers or partners in other locations, sharing documents or application user interfaces in real time. The Reflection Suite for X distributed architecture allows X applications to be launched, suspended, resumed, transferred, and shared.

**Get Precise 3D Graphics, Swiftly Rendered**

By automatically detecting and adjusting for low-bandwidth and high-latency network connections, Reflection Suite for X 2011 renders 2- and 3-dimensional graphics applications in high quality with unrivaled speed. Windows users can access powerful CAD/CAM, modeling, animation, and simulation applications that leverage the OpenGL API, and benefit from functions such as transformations, color, lighting, smooth shading, and texture mapping.

**Enjoy Easier Management—But Complex Security**

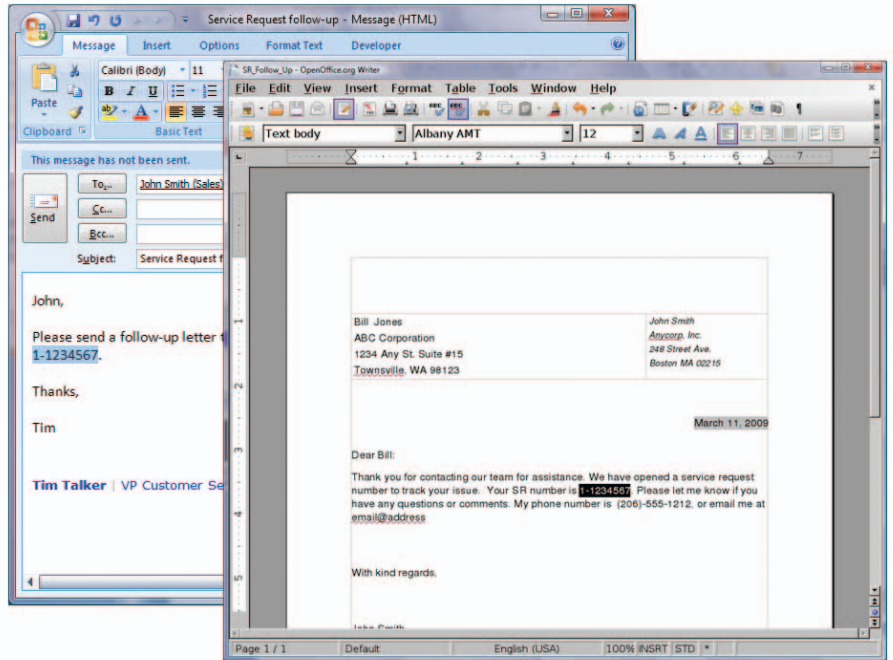
Reflection Suite for X 2011 is designed to help you meet both internal and external security requirements. In addition to providing the latest SSH and SSL/TLS encryption and authentication technologies, Reflection offers enhanced support for PKI—allowing you to centrally manage certificate functions and secure user authentication. And Reflection includes a crypto module validated against FIPS 140-2—one of the U.S. government's top security standards.

What's more, Reflection Suite for X 2011 lets you put an extra layer of security in front of the host with support for secure token authorization.\* Because users must authenticate to the management server using LDAP to receive a token, you can prevent host access by unauthorized users.

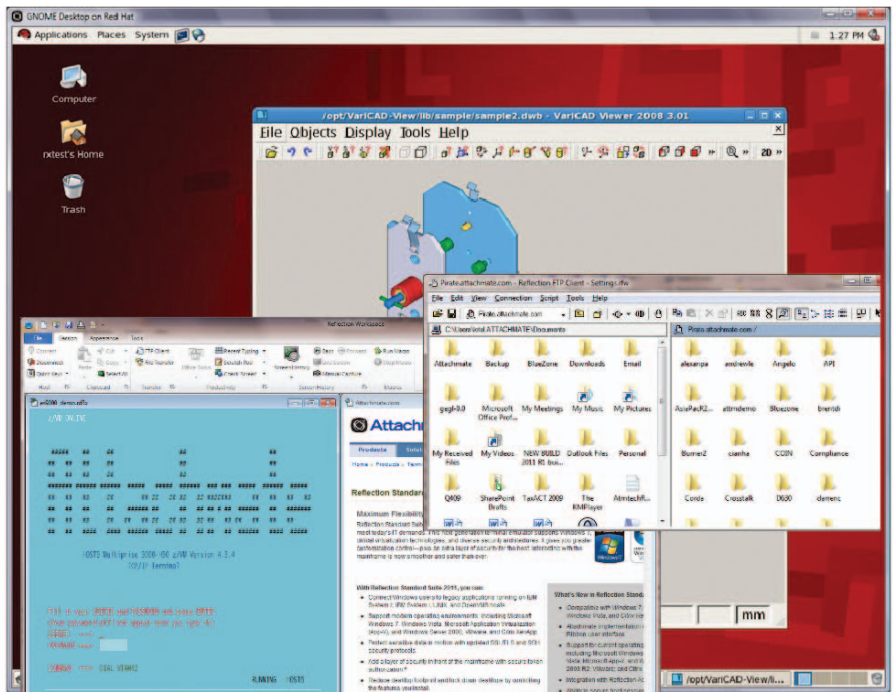
**Get Ready for Windows 7 and Office 2010**

Reflection Suite for X 2011 offers a terminal emulation component optimized to take full advantage of Windows 7 and Microsoft Office 2010 security and productivity features. With support for Trusted Locations, User Account Control (UAC), the Microsoft Ribbon user interface, VBA, .NET, and Windows Error Reporting (WER), Reflection Suite for X 2011 makes it easy for you to maximize your Microsoft investment.

\* Requires Reflection Administrator, an optional component.



You can seamlessly copy and paste text and graphics between Windows and UNIX-based applications.



You can access graphical X window environments, run terminal-based applications from UNIX and IBM hosts, and transfer files—all with a single product installation.

## TECHNICAL SPECIFICATIONS

### Product Components

- Reflection X Advantage 4.0
- Reflection X 14.1
- Reflection for UNIX and OpenVMS 2011 terminal emulation
- Reflection for IBM® 2011 terminal emulation
- Reflection Secure FTP Client

### REFLECTION X ADVANTAGE

#### Operational Modes

- Standalone X server (traditional)
- NEW - Remote session support for improved performance
- Domain mode (distributes workload and connectivity across multiple tiers)

#### Domain Mode Features

- Centralized X client, X server, and X session configuration storage
  - Support for multiple authentication types (Windows, PAM, LDAP, internal)
- Performance optimizations for high-latency and low-bandwidth networks
- Leave a persistent X session
- Join a suspended X session
- Transfer an X session to a different workstation (same or different platform)
- Fault tolerance (resume X sessions lost due to a workstation crash or network outage)
- Load balance X sessions across multiple servers
- NEW • Firewall-friendly remote domain connections

#### X Server Display

- X11 compliance
- Support for multiple X displays and X screens
- X session sharing to multiple users (application and desktop)
- Multiple monitor support:
  - Negative coordinates support
- Color depths: 1, 4, 8, 24, and 32
- TrueColor, DirectColor, and PseudoColor server visual support
- Support for local and remote window managers, including GNOME, KDE, and CDE
- Backing store and save under support
- Web-based access to X sessions
- IPv4 and IPv6 support

#### Session and Client Launching

- XDMCP (direct, indirect, and broadcast)
- Extensive client connection options, including SSH, Telnet, rexec, rsh, and rlogin
- NEW • New command line options for unique startup scenarios

### Copy and Paste

- Copy and paste text and graphics between X clients and local Microsoft Windows applications
- Copy and paste text between X clients

### Font Support

- X11R5/X11R6 font server
- Automatic connection to font server
- Support for TrueType, Unicode, and international fonts
- Support for double-byte fonts, including Chinese
- Automatic font substitution

### Keyboard Support

- International keyboard support
- Adaptive regional keyboard selection based on system locale setting
- Host keyboard emulation for Sun, HP, IBM, SCO, and DEC (including LK450)

### X Extensions Support

- NEW • Support for latest relevant X extensions, including RENDER, XFree86 BigFont, and Sync

### OpenGL/GLX

- Support for OpenGL 2.1 and GLX 1.4
- Overlay plane support
- Accelerated 3D hardware support

### Security

- SSH encryption:
  - SSH X client launching
  - X11 forwarding
  - Password, keyboard interactive, and public key authentication
  - SSH key generation and management
- NEW - Support for HMAC-SHA256 and -SHA512 algorithms.
- TLSv1 encryption between all distributed components
- Host-based security to determine which clients can connect to the X server
- FIPS 140-2 validated cryptographic module (Certificate #1048)
- Adheres to Federal Desktop Core Configuration (FDCC) and United States Government Configuration Baseline (USGCB) security policy requirements
- PKI support via Reflection PKI Services Manager
- NEW • Establish secure connections to X applications from outside the corporate firewall

### Administrative Tools

- X Manager:
  - Single tool to manage multiple X clients and servers

### Administrative Console:

- Web console for centralized administration of settings files
- Web-based deployment of settings files and updates
- Remote administration of domain servers
- Session and connection monitoring
- Detailed logging at multiple levels
- Common X client command lines specialized for host platform
- NEW • Secure token authorization support\*
- Java Web Start for deploying, updating, and starting the software using an intranet browser window

### International Support

- User interface and help localized into English, French, German, and Japanese
- Supports all front-end processing input styles, including inline "on-the-spot" input
- Implements a local front-end processor for character composition in any language
  - Supports XIM (X11R5) protocol
- Supports double-byte fonts, including Japanese, Korean, and Chinese
- Configure user interface language on the fly

### REFLECTION X 14.1

#### X Server Display

- X11 compliance
- Support for multiple X displays and X screens
- Multiple monitor support
- NEW - Negative coordinates support
- Color depths: 1, 8, 24, and 32
- Broad server visual support, including TrueColor, PseudoColor, GrayScale, StaticColor, and StaticGray
- Support for local and remote window managers, including GNOME, KDE, and CDE
- Sun X server compatibility settings
- Backing store and save under support
- IPv4 and IPv6 support

#### Session and Client Launching

- XDMCP (direct, indirect, and broadcast)
- Extensive client connection options, including SSH, Telnet, Kerberized Telnet, rexec, rsh, rlogin, and PCX\$SERVER

#### Copy and Paste

- Copy and paste text and graphics between X clients and Microsoft Windows applications
- Copy and paste text between X clients
- Text, area, and window selection modes
- Copy to Windows printers and graphics editors



## TECHNICAL SPECIFICATIONS (continued)

### Font Support

- X11R5/X11R6 font server with local font caching
- Automatic connection to font server
- Support for TrueType, Unicode, and international fonts
- Automatic font substitution

### Keyboard Support

- Graphical keyboard mapping
- International keyboard support
- Host keyboard emulation for Sun, HP, IBM, SCO, and DEC (including LK450)

### Mouse Support

- 3Dconnexion SpaceMouse Plus and SpacePilot support
- 3-button emulation
- Wheel-mouse scroll support for buttons 4 and 5

### X Extensions Support

- Support for latest relevant X extensions, including RENDER

### OpenGL/GLX

- Support for OpenGL 2.1 and GLX 1.4
- Overlay plane support
- Accelerated 3D hardware support

### Security

- Support for SSL/TLS
- FIPS 140-2-validated cryptographic module (Certificate #1027)
- Adheres to Federal Desktop Core Configuration (FDCC) and United States Government Configuration Baseline (USGCB) security policy requirements
- PKI support built to meet DoD standards:
  - PKCS #11 support
  - U.S. DoD Common Access Card (CAC) support
  - Online Certificate Status Protocol (OCSP) support
  - Certificate Revocation Lists (CRL)
  - Intermediate certificate storage through LDAP
  - Reflection Certificate Manager
- Reflection Key Agent accepts SSH keys and certificates for single sign-on authentication
- SSH encryption:
  - SSH X client launching
  - X11 forwarding
  - Command line SSH utilities (ssh, scp, and sftp)
  - Port forwarding (tunneling) for TCP/IP ports through secure channel
  - Integrated multihop SSH configuration support

- Password, keyboard interactive, public key (user key and X.509 certificates), and Kerberos authentication
- Smart card support through PKCS #11 interface
- SSH key agent
- Key generation and conversion (RSA-1, RSA, and DSA) utility
- Easy uploading of users' public keys to SSH servers
- SSH connection reuse
- Standard SSH configurations
- Reflection Kerberos Client:
  - Secure authentication
  - Datastream encryption (DES and 3DES) for Telnet and FTP
  - Support for ticket forwarding and renewal
  - Compatible with Microsoft and Leash32 credentials caches
  - Standard Kerberos configurations
  - Support for Kerberos KDCs using TCP or UDP
- SSL/TLS Telnet encryption

### Administrative Tools

- X Manager:
  - Single tool to manage multiple X clients and servers
  - Consolidated view of all configuration settings
- X Profiler:
  - Default value configuration for each Reflection X setting
  - End-user configuration lockdown
- Quick-start tools:
  - X Client Wizard
  - Client-connection and server configuration templates
- X protocol trace and replay utility with custom filters for troubleshooting, user training, or presentation
- Support for Windows administration features:
  - Windows Installer (MSI)
  - Active Directory
  - Roaming user and multiple user profiles
  - Group Policy
  - Application self-repair

### International Support

- User interface and help localized into English, French, German, and Japanese
- Supports all front-end processing input styles, including inline "on-the-spot" input
- Implements a local front-end processor for character composition in any language
  - Supports XIM (X11R5) and XIMP (X11R4) protocols
- Supports double-byte fonts, including Japanese, Korean, and Chinese

## REFLECTION FOR UNIX AND OPENVMS 2011

### Emulation Types

- VT terminals (including Japanese)
- Support for numerous host character sets, including UTF-8 (Unicode)
- Wyse 50+, Wyse 60, SCO-ANSI, and BBS-ANSI
- Linux console, AT386, IBM 3151, xterm, and VT-UTF8
- ReGIS (VT340, VT330, VT241, and VT240) and Tektronix graphics terminal emulation

### Network Protocols

- IPv4 and IPv6 support
- SOCKS client support
- Extensive Telnet options with support for threaded I/O; Line mode; NAWS (option 31); and Local Echo, including Telnet option 45 (Suppress Local Echo)
- Support for serial connections

### File Transfer

- WRQ Reflection proprietary protocol, FTP, Kermit, Xmodem, and Zmodem
  - ASCII, binary, and labels/image support

### Security

- Support for SSL/TLS, Kerberos, and SOCKS
- FIPS 140-2-validated cryptographic module (Certificate #1027)
- Adheres to Federal Desktop Core Configuration (FDCC) and United States Government Configuration Baseline (USGCB) security policy requirements
- PKI support built to meet DoD standards:
  - PKCS #11 support
  - U.S. DoD Common Access Card (CAC) support
  - Online Certificate Status Protocol (OCSP) support
  - Certificate Revocation Lists (CRL)
  - Intermediate certificate storage through LDAP
  - Reflection Certificate Manager
- Reflection Key Agent accepts SSH keys and certificates for single sign-on authentication
- SSH encryption:
  - SSH X client launching
  - X11 forwarding
  - Command line SSH utilities (ssh, scp, and sftp)
  - Port forwarding (tunneling) for TCP/IP ports through secure channel
  - Integrated multihop SSH configuration support



## TECHNICAL SPECIFICATIONS (continued)

- Password, keyboard interactive, public key (user key and X.509 certificates), and Kerberos authentication
- Smart card support through PKCS #11 interface
- SSH key agent
- Key generation and conversion (RSA-1, RSA, and DSA) utility
- Easy uploading of users' public keys to SSH servers
- SSH connection reuse
- Standard SSH configurations
- Reflection Kerberos Client:
  - Secure authentication
  - Datastream encryption (DES and 3DES) for Telnet and FTP
  - Support for ticket forwarding and renewal
  - Compatible with Microsoft and Leash32 credentials caches
  - Standard Kerberos configurations
  - Support for Kerberos KDCs using TCP or UDP

### Productivity

- Integration with Microsoft Office
- Application, desktop, and Internet search support
- Screen History
- Scratch Pad
- Advanced cut/copy/paste
- Keyboard and mouse mapping or remapping
- NEW** • Triple-mouse-click support

### Printing

- Windows or host control
- Network, local, or print-to-disk
- ReGIS color graphics support
- Print logging
- Fixed pitch TrueType and printer font
- Serial device to host communications
- Line-drawing characters

### Programming and Automation

- NEW** • Embeddable .NET control
- Native .NET API
- Integration between Reflection .NET API and Microsoft Visual Studio IDE
- VBA support
- Macro recorder for VBA
- Programmatic access to over 400 properties and methods via Reflection API
- Microsoft OLE Automation
- EXTRA! Basic and Reflection Basic macro runtime and editing
- Reflection Command Language (RCL)
- NEW** • Support for encrypted EXTRA! Basic macros

### User Interface

- NEW** • Browser UI mode
- Attachmate implementation of the Microsoft Ribbon user interface
- Classic mode interface for EXTRA! and Reflection
- Ribbon customization utility
- Tabbed or windowed Multiple Document Interface (MDI)
- Configurable tabs, including colors, renaming and more
- Local and online HTML Help
- Customizable hotspots
- Full-screen terminal mode
- Graphical keyboard mapping
- Full-color editing

### Administrative Tools

- Granular UAC support
- Integration with Reflection Administrator:\*
  - Web console for centralized administration of settings files
  - Web-based deployment of settings files and updates
- Windows Error Reporting (WER) support
- Centralized management of settings files using Group Policy
- Application customization tool for settings and installation files (including MSI)
- Support for Windows administration features:
  - Windows Installer (MSI)
  - Active Directory
  - Roaming user and multiple user profiles
  - Group Policy
  - Application self-repair

### International Support

- English, French, German, Spanish, Italian, Japanese, and Brazilian Portuguese languages
- Localized keyboards, displays, and printers
- Support for standard input-method editors

## REFLECTION FOR IBM 2011

### Emulation Types

- IBM System z (Mainframe):
  - 3270 text and graphics terminals and printers
- IBM System i (AS/400):
  - 5250 terminals and printers

### Network Protocols

- IBM System z (Mainframe):
  - TN3270E and SSL/TLS
- IBM System i (AS/400):
  - TN5250E and SSL/TLS
- IPv4 and IPv6 support
- SOCKS client support

### File Transfer

- IND\$FILE, APVUFILE, DISOSS, SQL data query, LIPI, and batch file transfer

### Security

- Support for SSL/TLS and SOCKS
- FIPS 140-2-validated cryptographic module (Certificate #1027)
- Adheres to Federal Desktop Core Configuration (FDCC) and United States Government Configuration Baseline (USGCB) security policy requirements
- NEW** • Data masking on 3270 and 5250 host screens
- NEW** • Ability to prevent non-secure host connections
- PKI support built to meet DoD standards:
  - PKCS #11 support
  - U.S. DoD Common Access Card (CAC) support
  - Online Certificate Status Protocol (OCSP) support
  - Certificate Revocation Lists (CRL)
  - Intermediate certificate storage through LDAP
  - Reflection Certificate Manager
- Privacy filters
- Trusted Locations
- Automatic Kerberos sign-on (System i)
- Express Logon Feature (System z)

### Productivity

- Integration with Microsoft Office
- NEW** • Micro Focus Rumba and IBM PComm session file, keyboard, and macro support
- Application, desktop, and Internet search support
- Screen History
- Spell Check and Auto Correct
- Scratch Pad
- Recent Typing
- Auto Expand and Auto Complete
- Advanced cut/copy/paste
- Keyboard and mouse mapping or remapping
- NEW** • Triple-mouse-click support

### Printing

- IBM System z (Mainframe):
  - 3287 (LU1 and LU3)
- IBM System i (AS/400):
  - 3812, 3912, and 5553 printer emulation
  - Host Print Transform

### Programming and Automation

- NEW** • Embeddable .NET control
- Native .NET API
- Integration between Reflection .NET API and Microsoft Visual Studio IDE
- VBA support



## TECHNICAL SPECIFICATIONS (continued)

- Macro recorder for VBA
- Programmatic access to over 400 properties and methods via Reflection API
- Microsoft OLE Automation
- HLLAPI, eHLLAPI, and WinHLLAPI
- EXTRA! Basic and Reflection Basic macro runtime and editing
- NEW** • Support for encrypted EXTRA! Basic macros

### User Interface

- NEW** • Browser UI mode
- Attachmate implementation of the Microsoft Ribbon user interface
- Classic mode interface for EXTRA! and Reflection
- Ribbon customization utility
- Tabbed or windowed Multiple Document Interface (MDI)
- Configurable tabs, including colors, renaming, and more
- Local and online HTML Help
- Segoe for Attachmate font (for a consistent user experience with Windows 7)
- Customizable screen sizes for 3270 host applications
- Word wrap
- Customizable hotspots
- Graphical keyboard mapping
- Full-color editing

### Administrative Tools

- Granular UAC support
- Integration with Reflection Administrator:\*
  - Web console for centralized administration of settings files
  - Web-based deployment of settings files and updates
- Windows Error Reporting (WER) support
- Centralized management of settings files using Group Policy
- Application customization tool for settings and installation files (including MSI)
- Support for Windows administration features:

- Windows Installer (MSI)
- Active Directory
- Roaming user and multiple user profiles
- Group Policy
- Application self-repair

### International Support

- English, French, German, Spanish, Italian, Japanese, and Brazilian Portuguese languages
- Support for Chinese Simplified/Traditional, Korean, and Japanese code pages
- Localized keyboards, displays, and printers
- Support for standard input-method editors

### COMMON SPECIFICATIONS

#### File Transfer

- Reflection Secure FTP Client:
- NEW** - Support for SFTP 4.0 to ensure proper translation of international characters
- SSH, SSL/TLS, SOCKS, and Kerberos security protocols
- Extensive firewall support
- File browsing on z/OS hosts with TSO data sets
- Save FTP client sessions in Layouts
- Management of FTP settings via Reflection Administrator \*
- IPv4 and IPv6 support
- Change UNIX file permissions with FTP client
- SFTP downloads resume after interruption
- Support for a wide variety of FTP servers, including IBM System z, IBM System i, UNIX, NetWare, Unisys, HP 3000, and OpenVMS
- FTP site wizard
- Site-to-site transfer between FTP servers
- Export/import settings in XML format

- Wildcard filters
- Automation tools (script recorder and Microsoft OLE Automation)
- Drag and drop file transfers directly to the desktop

### Operating Systems and Platforms

- Microsoft Windows 7\*\*
- Microsoft Windows Vista\*\*
- Microsoft Windows XP
- Microsoft Windows Server 2003 Terminal Services
- Microsoft Windows Server 2008 Terminal Services
- Mac OS X 64-bit\*\*\*
- Linux 32-bit and 64-bit\*\*\*
- Solaris 32-bit and 64-bit\*\*\*
- Solaris SPARC 32-bit\*\*\*
- HP-UX PA-RISC 32-bit and 64-bit\*\*\*
- HP-UX Itanium 64-bit\*\*\*
- Citrix XenApp
- Microsoft App-V
- VMware

\* Reflection Administrator is an optional component.

\*\* 32- and 64-bit editions.

\*\*\* Reflection X Advantage only.

## About Attachmate

Attachmate delivers advanced software for terminal emulation, legacy modernization, managed file transfer, and enterprise fraud management. With our technologies, more than 65,000 businesses worldwide are putting their IT assets to work in new and meaningful ways. [www.attachmate.com](http://www.attachmate.com)



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