



Rumba+ Desktop 10.2

System Administrator Guide

Micro Focus
The Lawn
22-30 Old Bath Road
Newbury, Berkshire RG14 1QN
UK
<http://www.microfocus.com>

© Copyright 1984-2022 Micro Focus or one of its affiliates.

MICRO FOCUS, the Micro Focus logo and Rumba+ are trademarks or registered trademarks of Micro Focus or one of its affiliates.

All other marks are the property of their respective owners.

2022-08-25

Contents

| | |
|--|-----------|
| About This Guide | 8 |
| Additional information | 8 |
| Conventions used in this guide | 8 |
| Introducing Rumba+ | 9 |
| About Rumba+ | 9 |
| Rumba+ products | 9 |
| Host-specific features | 10 |
| Mainframe features | 10 |
| AS/400 features | 11 |
| UNIX and HP features | 11 |
| Core features | 13 |
| Multiple HLLAPI sessions | 13 |
| Enhanced security through SSL/SSH | 13 |
| Certificate Express Logon | 13 |
| Host sessions | 14 |
| Rumba+ printer | 14 |
| Copy and paste | 14 |
| File transfer | 14 |
| Screen displays | 15 |
| International keyboards | 15 |
| Supported VT features | 15 |
| Supported HP features | 15 |
| Automating your work | 16 |
| Rumba+ tools | 16 |
| Productivity tools | 16 |
| Configuration and maintenance | 18 |
| Developer tools | 18 |
| Planning Installation and Deployment | 20 |
| Windows terminology | 20 |
| Windows Installer service | 20 |
| Software requirements | 21 |
| Supported operating systems | 21 |
| Prerequisite software | 21 |
| Hardware requirements | 21 |
| Things to consider before installation | 21 |
| Deployment strategies | 22 |
| Migration issues and directory locations | 22 |
| Microsoft Host Integration Server (HIS) 2000 Server and Client | 22 |
| Changes to Rumba+ components | 22 |
| Installing Rumba+ | 23 |
| The installation process | 23 |
| Default path of user profile | 23 |
| Using the Setup wizard | 23 |
| Using the command line | 24 |
| Rolling back an installation | 27 |
| Changing Rumba+ | 27 |
| Repairing Rumba+ | 27 |
| Removing Rumba+ | 27 |
| Customizing setup | 28 |
| Using transforms | 28 |

| | |
|--|-----------|
| Windows Installer command line arguments | 30 |
| Distributing Rumba+ with SCCM | 32 |
| Uninstalling previous versions of Rumba+ | 32 |
| Preparing client computers for Windows Installer | 32 |
| Creating a Rumba+ deployment package | 32 |
| Advanced deployment issues | 33 |
| Rumba+ file locations | 33 |
| Using Rumba+ | 36 |
| Starting a session from the command line | 36 |
| Starting a session from a URI | 37 |
| Rumba+ folders | 37 |
| Using Rumba+ menus, toolbars, and the status bar | 38 |
| Enabling and disabling global commands | 38 |
| Customizing menus and toolbars | 38 |
| Mainframe status bar | 39 |
| AS/400 status bar | 39 |
| HP status bar | 40 |
| UNIX status bar | 40 |
| Rumba+ session profiles | 40 |
| About session profiles | 40 |
| Supplemental and interface configuration files | 41 |
| Migrating session profiles from Rumba+ 6.x or 7.x | 41 |
| Configuring session profiles | 42 |
| Rumba+ desktop profiles | 44 |
| About desktop profiles | 44 |
| Session profile locations | 44 |
| Creating and deploying sessions and settings with the MSS Administrative Console | 44 |
| Creating or modifying a centrally managed session | 45 |
| Making centrally managed sessions available to users | 45 |
| Using centralized management to deploy MSI Packages | 45 |
| HP keyboard key codes | 45 |
| Keys mapped to active default settings | 46 |
| Keys used to send 7-bit control characters | 46 |
| Codes sent by editing keys | 47 |
| Codes sent by arrow keys | 47 |
| Codes sent by numeric keypad keys | 48 |
| VT keyboard key codes | 48 |
| VT codes sent by top-row function keys | 48 |
| VT keys used to send 7-bit control characters | 49 |
| VT codes sent by editing keys | 50 |
| VT codes sent by arrow keys | 50 |
| VT codes sent by numeric keypad keys | 50 |
| Using Plus | 52 |
| Using the Screen Designer | 52 |
| How it works | 52 |
| Customization projects | 53 |
| Deploying a customization project | 53 |
| Using the Screen Designer command line | 53 |
| Generating Plus archives | 54 |
| Importing project files | 54 |
| Migrating customization projects from earlier versions of Plus | 55 |
| Mainframe File Transfer | 56 |
| Mainframe file transfer features | 56 |
| Sending and receiving files | 56 |
| Configuring your PC | 56 |

| | |
|---|-----------|
| Sending a file to the host | 56 |
| Receiving a file from the host: | 57 |
| Batch file transfers | 57 |
| File transfer registry settings | 57 |
| Using macros to transfer files | 58 |
| Creating a file transfer macro | 58 |
| IND\$FILE TRANSxx codes | 59 |
| AS/400 Getting Connected | 62 |
| Connecting to the host | 62 |
| Starting the connection process | 62 |
| Selecting an interface | 63 |
| Configuring the interface | 64 |
| Successful connection indicator | 64 |
| Other helpful features | 65 |
| Using the Rumba+ Router to configure an APPC link | 65 |
| Overview of Rumba+ Router | 65 |
| Connection Configuration dialog box | 65 |
| Setting up the connection | 66 |
| Rumba+ Router link types | 68 |
| Native TCP support | 71 |
| Rumba+ TCP architecture | 71 |
| Supported Rumba+ components | 72 |
| Configuring a TCP connection | 72 |
| Trace support for TCP applications | 72 |
| Configuring an MPTN connection | 72 |
| About MTPN | 72 |
| AS/400 considerations | 73 |
| MPTN parameters | 73 |
| Configuring a Microsoft SNA Server connection | 74 |
| Diagnostics | 74 |
| Configuring the AS/400 Communications tool | 74 |
| Connecting to the host | 75 |
| Interface page | 75 |
| Security page | 76 |
| Character page | 77 |
| Diagnostics page | 77 |
| AS/400 File Transfer | 78 |
| AS/400 File Transfer features | 78 |
| Installation | 78 |
| Using profiles | 78 |
| User files | 79 |
| Changing the library list on the AS/400 host | 79 |
| Copying the QDFTJOBDD file | 79 |
| Changing the library list in the QDFTJOBDD file | 80 |
| Updating the user profile | 80 |
| Creating a PC description file | 80 |
| Structure of the PC description file | 81 |
| Sample PC description file | 84 |
| Using SQL: Examples | 84 |
| Example 1: Using SELECT, WHERE, and ORDER BY | 85 |
| Example 2: Querying multiple files with JOIN BY | 86 |
| Example 3: Summarizing records with GROUP BY | 87 |
| AS/400 Client Application | 89 |
| AS/400 Client installation and availability | 89 |
| Before starting | 89 |

| | |
|--|------------|
| Interfaces supported | 89 |
| Rumba+ Submit Remote Command | 89 |
| HP and UNIX File Transfer | 91 |
| How to transfer files using Rumba+ HP and UNIX | 91 |
| Understanding the file transfer process | 91 |
| MPE file transfers | 92 |
| Using compatible file transfer protocol versions | 92 |
| 8-bit binary transparent communications | 92 |
| Using Rumba+ macros to transfer files | 92 |
| AS/400 and Mainframe Printers | 93 |
| AS/400 and mainframe printer features | 93 |
| Printing host documents on a PC printer | 93 |
| Viewing documents before printing | 93 |
| Monitoring and controlling printers and print jobs | 93 |
| AS/400 Printer Queues | 94 |
| Direct printing | 94 |
| Printer sharing and End print job | 94 |
| PC Printer Queues | 94 |
| Viewing print job history | 94 |
| Formatting printed documents | 95 |
| Host Print Transform | 95 |
| Font mapping | 95 |
| Character translation | 95 |
| Printer Session Manager | 96 |
| Using the command line | 96 |
| Examples | 97 |
| Using the Printer Session Manager | 97 |
| Administrative installation | 99 |
| Using Macros | 100 |
| Creating macros | 100 |
| Connect and disconnect macros | 100 |
| Specifying connect and disconnect macros | 100 |
| Rumba+ Macro Editor | 101 |
| Copying data between applications | 101 |
| Using variables | 101 |
| Running macros | 103 |
| Running standard or custom macros | 104 |
| Macros as Hotspots | 104 |
| Macros on your toolbars | 105 |
| Keyboard macros | 105 |
| Macro commands | 105 |
| Mainframe macro commands | 105 |
| AS/400 macro commands | 106 |
| HP and UNIX macro commands | 107 |
| Express Macro Language | 108 |
| Recording a macro | 108 |
| Running a macro | 109 |
| Connection Tools | 110 |
| Rumba+ APPC Configuration | 110 |
| Connections | 111 |
| International character set translation | 111 |
| AS/400 modes | 111 |
| Remote and local logical units | 112 |
| CPI-C side information file | 112 |
| Transaction programs | 112 |

| | |
|--|------------|
| Conversation security | 113 |
| Administrator override file | 113 |
| Description | 113 |
| Function | 113 |
| Local connection configuration | 114 |
| Creating a file | 114 |
| Editing existing files | 114 |
| Setting user access | 115 |
| Assessing workstation setup | 115 |
| Rumba+ AS/400 Communications | 116 |
| Overview | 116 |
| Configuring links | 117 |
| Rumba+ Communication Monitor | 117 |
| MSS Automated Sign-On | 118 |
| Prerequisites | 118 |
| Creating a connection macro | 118 |
| Creating a session profile | 119 |
| Configuring the session on the MSS | 119 |
| Authorizing access to the session | 119 |
| Diagnostic and Development Tools | 120 |
| Diagnostic tools | 120 |
| Rumba+ Trace | 120 |
| Rumba+ Tracer | 122 |
| Development tools | 122 |
| Rumba+ Development Edition for .NET FrameWork (RDE .NET) | 123 |
| Rumba+ Development Extension for Visual Studio | 123 |
| Rumba+ Desktop 64-bit applications support | 124 |
| Contacting Micro Focus | 125 |
| Further information and product support | 125 |
| Information we need | 125 |
| Contact information | 125 |
| MICRO FOCUS END USER LICENSE AGREEMENT | 127 |

About This Guide

The Rumba+ Desktop *System Administrator Guide* has been written to help system administrators to:

- Plan the deployment of Rumba+ Desktop
- Install Rumba+ Desktop
- Support end users
- Troubleshoot Rumba+ Desktop

Additional information

In addition to this guide, Rumba+ documentation consists of the Readme file and the Rumba+ Help.


Readme file The Readme file contains late-breaking information on Rumba+. There are many Rumba+ products and some of them might share the same Readme file. Therefore, the Readme file might contain information about other products, apart from the product you are currently installing.

Rumba+ Help The Help contains information on how to customize and use Rumba+. The Help does not include information on installing Rumba+. For information on installing, see [Installing Rumba+](#) on page 23.

To open the Help, select **Help > Rumba+ Help Topics**,

Conventions used in this guide

The following conventions are used in this guide:

| Item | Description |
|--|---|
| File names | File names and extensions appear in <code>monospace</code> type. |
| UI element | User interface elements appear in bold . |
|  Note: Note text | An item of interest. |
| Command line | Text that appears in the command line (either entered by the user or generated as a response to user entry) appears in <code>monospace</code> type. |
| Blue text | Cross-references to additional information appear blue text. |

Introducing Rumba+

This section provides a summary of the features that are included in Rumba+.

The section introduces the entire Rumba+ product line, which provides access to multiple host types: IBM mainframe, IBM AS/400, UNIX, and HP. Rumba+ can access one or all of these host types, depending on your individual needs.

About Rumba+

Rumba+ is a software suite that connects your users to information on multiple hosts and servers across your organization. You have a choice of protocols, such as TCP/IP and Rumba+ Router (MPTN).

All Rumba+ products operate on Windows 8.1 and 10, WTS, and Citrix Presentation Server. In addition to providing multiple access solutions, the product suite:

- Gives users tools with which they can view, print, and transfer data located anywhere in the organization. These tools help users attain a higher level of efficiency.
- Gives system administrators flexibility in deploying and maintaining Rumba+.
- Offers developers the functionality needed to quickly generate custom client/server solutions using ActiveX technology.

Rumba+ products are designed to meet specific access needs. Micro Focus produces and packages these products to support multiple or single host access needs, with multiple connection solutions. We also provide Rumba+ versions for popular LANs, and migration products that help you move from one Rumba+ product to another, as well as from competitor products to Rumba+.

Rumba+ products

The following table lists multiple-host Rumba+ products:

| Product | Description |
|--------------------------|---|
| Rumba+ Office | <ul style="list-style-type: none">• Supports IBM mainframe, IBM AS/400, Digital OpenVMS, UNIX systems, HP 3000 and 9000 systems.• Supports multiple servers and network protocols.• Supports display, printing, and file transfer capabilities for all hosts.• Provides browser-to-host connections and an integrated set of Internet applications. Requires multiple network protocols. |
| Rumba+ Citrix Edition | <ul style="list-style-type: none">• Supports IBM mainframe, IBM AS/400, Digital OpenVMS, UNIX systems, HP 3000 and 9000 systems.• Supports multiple servers and network protocols.• Supports display, printing, and file transfer capabilities for all hosts.• Provides browser-to-host connections and an integrated set of Internet applications. For Citrix XenApp, Microsoft App-V, Windows Terminal Server. |
| Rumba+ Mainframe Edition | <ul style="list-style-type: none">• Supports IBM mainframe.• Supports multiple servers and network protocols. |

| Product | Description |
|------------------------|---|
| Rumba+ AS/400 Edition | <ul style="list-style-type: none"> • Supports display, printing, and file transfer capabilities for the mainframe host. • Provides browser-to-host connections and an integrated set of Internet applications. • Supports IBM AS/400. • Supports multiple servers and network protocols, including native TCP/IP. • Supports display, printing, and file transfer capabilities for the AS/400 host. • Designed to maximize the file, print, and database serving capabilities of the AS/400 with such features as Shared Folders, Submit Remote Command, Virtual Print, Data Queues, and Rumba+ AS/400 Optimized Server Driver. • Provides browser-to-host connections and an integrated set of Internet applications. |
| Rumba+ UNIX-HP Edition | <ul style="list-style-type: none"> • Supports Digital OpenVMS and UNIX systems. • Supports multiple servers and network protocols. • Supports display, printing, and file transfer capabilities for the UNIX and VMS host. • Provides browser-to-host connections and an integrated set of Internet applications. • Supports HP 3000 and 9000 systems, and UNIX systems supporting HP terminal types. • Supports multiple servers and network protocols. • Supports display, printing, and file transfer capabilities, including MPE native file transfer, for the HP host. • Provides browser -to-host connections and an integrated set of Internet applications. |

Host-specific features

This section describes the features specific to individual Rumba+ host applications.

Mainframe features

The mainframe display is used to view host applications and transfer files. The mainframe printer is used to route jobs from the mainframe printer queue to a Windows printer. Both the mainframe display and printer use interfaces to connect to the host.

The table below describes the standard features and interfaces of Rumba+ Mainframe Edition:

| Feature | Description |
|---------------|--|
| Display | <ul style="list-style-type: none"> • Presents the traditional mainframe display terminals (3278/79) in a Microsoft Windows application: Rumba+ Desktop. • Includes GDDM support, which makes working with IBM mainframe graphics similar to using Windows graphics packages. • Users can run multiple host sessions, displaying and working with PC and host applications simultaneously. |
| File transfer | <ul style="list-style-type: none"> • Supports host file transfer programs IND\$FILE and SimXfer. |

| Feature | Description |
|----------------------------|---|
| | <ul style="list-style-type: none"> • Supports ASCII or binary transfers, Write Structured Field or Buffered data streams, EBCDIC-to-ASCII translation, and data compression. • Provides DOS-based, batch, and drag-and-drop file transfer features. |
| Switching system keyboards | <ul style="list-style-type: none"> • Allows switching keyboard displays as in Windows (Alt+Shift). |

The table below describes the standard features and interfaces of the Rumba+ printer:

| Feature | Description |
|---|---|
| Rumba+ Mainframe Printer (3287 emulation) | Allows users to route jobs from the mainframe printer queue to a Windows printer. |
| PC printer queues | Lists the printer queues for all network and local printers set up in Windows. Users can use PC Printer Queues to control Windows printers. |
| Print log | Lists documents that have been printed using the Rumba+ printer, including documents printed from the host as well as from PC applications. |

The table below describes the interfaces used to connect to the host:

| Feature | Description |
|------------------------|---|
| Microsoft SNA Server | Connects to mainframe hosts through a suite of integrated services. SNA Server acts as an SNA gateway using two types of connections, client-to-server and server-to-mainframe. |
| MPTN (SNA over TCP/IP) | Connects to a mainframe host using SNA APPC to communicate over TCP/IP networks. Provides transparent access to functions such as mainframe printing and file transfer. |
| TN3270E | Uses a TCP/IP protocol stack to connect to a mainframe host via a Telnet server. |

AS/400 features

The following features are available in the AS/400 display, printer, and AS/400 File Transfer:

- Spell checking
- Automatic hyperlink detection
- Automatic e-mail address detection

UNIX and HP features

When using Rumba+ UNIX-HP Edition, users perform the majority of their tasks with the host using the UNIX or the HP display. This includes viewing host applications, transferring files, and printing from the host. The UNIX display and the HP display connect to a host over a TCP/IP interface.

The table below describes the standard features for UNIX and HP:

| Standard feature | Description |
|------------------|---|
| Display | Presents the traditional VT display terminals in a Microsoft Windows application supporting the whole range of VT terminals from VT 52 to VT 420, as well as VT340 ReGIS, Sixel, SCO ANSI, BBS ANSI and Tektronix 4010/4014 graphics support. |

| Standard feature | Description |
|--|--|
| | Users can run multiple host sessions, displaying and working with host applications simultaneously. |
| File transfer | Supports Kermit, Text, and X-, Y-, Z-Modem file transfer protocols over all the supported interfaces. It supports a Rumba+ initiated mode where the user simply selects the protocol and file to be transferred, and Rumba+ provides the underlying commands to successfully transfer the file. |
| Enhanced security | Supports SSL 3.0 (Secure Sockets Layer), TLS (Transport Security Layer) 1.0, 1.1, 1.2, 1.3, and SSH (Secure Shell) to allow users to securely access applications and transfer data between their desktops and mainframe, AS/400 and UNIX systems, encrypting the session data stream to a host capable of supporting these protocols. |
| Switching system keyboards | Allows switching keyboard displays as in Windows (ALT+SHIFT). |
| Keyboard shortcut to open Split Display or History window. | Provides a keyboard shortcut (Ctrl+Shift+Z) to open the Split display and History window on a UNIX Display. |
| Double-click auto select | When connecting to UNIX and double-clicking data, the data is automatically selected and copied to the clipboard. When you right-click at the new location, the data is pasted without displaying the pop-up menu. |

The table below describes the standard features of the HP-UNIX printer:

| Standard feature | Description |
|--------------------------|---|
| Terminal-routed printing | Prints the display screen, selected text, and full color graphics, or routes print jobs from the host printer through the Windows print driver. |

The table below describes the interfaces used to connect to the host:

| Standard feature | Description |
|------------------|---|
| Async | Connects to a remote UNIX host through a phone line and a standard asynchronous modem or directly to the host or terminal controller using an RS-232 direct connection. |
| Telnet | Connects to the UNIX host using the TCP/IP protocol. |

The table below describes the standard features for HP:

| Standard feature | Description |
|------------------|---|
| Display | Presents the traditional HP terminal types in a Microsoft Windows application. Users can run multiple host sessions, displaying and working with host applications simultaneously. |
| File transfer | Supports Kermit, Text, and Xmodem, Ymodem, Zmodem file transfer protocols over all the supported interfaces, and a proprietary protocol to HP3000 servers running the MPE operating system. It supports a Rumba+ initiated mode where the user simply selects the protocol and the file to be transferred, and Rumba+ provides the underlying commands to successfully transfer the file. |

The table below describes the standard features of the HP printer:


| Standard feature | Description |
|--------------------------|---|
| Terminal-routed printing | Prints the display screen or selected text, or routes print jobs from the host printer through your Windows print driver. |

The table below describes the interfaces used to connect to the host:

| Standard feature | Description |
|------------------|--|
| Async | Connects to a remote HP host through a phone line and a standard asynchronous modem, or directly to the host or terminal controller using an RS-232 direct connection. |
| HP NSVT | Connects to an HP host using the proprietary HP protocol for Network Services Virtual Terminals (NSVT). |
| Telnet | Connects to the HP host using the TCP/IP protocol. |

Core features

This section provides an overview of the core features of Rumba+. You can find more specific information in other sections of this guide.

 **Note:** Which hosts you can connect to depends on which edition of Rumba+ you have installed. For example, Rumba+ AS/400 Edition enables you to connect to AS/400 hosts.

Rumba+ takes full advantage of the Windows graphical environment and tabbed browsing capabilities. Together, these features help improve user efficiency, and simplify the sharing and manipulation of data among multiple PC and host platforms.

You can use Rumba+ to:

- Access multiple host sessions simultaneously from the same window
- Switch system keyboards as you do in Windows (**Alt+Shift**)
- Copy and paste data between tabs or windows
- Capture screen data to a file
- Copy information to the Windows Clipboard (including, in Rumba+ Mainframe Edition, the ability to copy only unprotected fields)
- Use the History feature to maintain a larger list of recently performed operations and scroll back to them easily
- Rumba+ AS/400 Edition: Use long passwords to provide an additional authentication mechanism with stricter encryption and tighter security

Multiple HLLAPI sessions


You can run multiple HLLAPI sessions originating from the same profile. This is in addition to the API options currently available in Rumba+ .

Enhanced security through SSL/SSH

With the inclusion of SSL 3.0 (Secure Sockets Layer), TLS 1.0, 1.1, 1.2, 1.3 (Transport Security Layer), and SSH (Secure Shell) support, users can securely access applications and transfer data between their desktops and host systems, encrypting the session data stream to a host capable of supporting these protocols.

Certificate Express Logon

With the inclusion of Certificate Express Logon (CEL) support, users can securely logon to host applications without sending their user name and password to a host, where the host is capable of supporting this protocol.

 **Note:** When a user needs to choose a client certificate, the host disconnect timeout must be long enough for the user to do so.

Host sessions

Rumba+ runs on a single-user PC connected to a host, or on a local area network (LAN) with a gateway connection to a host. Rumba+ Mainframe Edition can also connect to a host using multiple Physical Unit IDs (PUIs) with a Token Ring or Ethernet connection. From a single window, you can run multiple host sessions using different connection types.

You can also retrieve data from one or more hosts and transfer it to PC applications or print the data.

Rumba+ printer

Rumba+ AS/400 and Mainframe Editions support a wide range of printer features, including the ability to:

- Save and print host screens
- Print to a disk
- Route screen output to a LAN print server for shared printing
- Use international character sets

Copy and paste

Rumba+ provides full interoperability between your host applications and other Windows applications. As well as normal copy and paste operations, you can use the Paste Link facility to automatically update the data in a Windows application whenever both it and a Rumba+ session to the host are open.

File transfer

The file transfer feature copies files between your PC and the host. Rumba+ allows you to navigate through the host file system, listing host and PC directories to simplify file selection and transfer. When you select the Rumba+ Initiated File Transfer feature, Rumba+ automatically starts the file transfer program on the host and sends or receives the file.

Mainframe file transfer

The file transfer feature copies files between your PC and the mainframe. The Send and Receive commands open a dialog box where you specify the file type, transfer protocol, and host environment for the file transfer. You can also choose to have Rumba+ start the file transfer protocol. The mainframe file transfer feature works transparently with SimXfer and most IBM host operating systems, including CICS, TSO, and VM/CMS.

The mainframe file transfer also provides abundant functionality such as support for ASCII or binary transfers, Write Structured Field or Buffered data streams, EBCDIC-to-ASCII translation, and data compression. Rumba+ also supports DOS-based, batch, and drag-and-drop file transfer features.

AS/400 file transfer

There are two ways to run file transfers from an AS/400 Display session:

- AS/400 File Transfer

This method sends data between the host and your PC. If the AS/400 host is not in passthrough mode, the **Send** and **Receive** commands open the **AS/400 File Transfer** window.

- Mainframe Passthrough

This method uses the AS/400 as an emulator to transfer files to and from a mainframe host. You must first connect Rumba+ to the AS/400, then run the emulator program on the AS/400 to connect to the mainframe. Rumba+ detects the passthrough state of the AS/400, so you can use the **Send** and **Receive** commands to transfer files between the mainframe host and your PC.

Screen displays

Rumba+ takes full advantage of the GUI capabilities of Windows to offer these features:

- Support of alternate screen sizes, adjusting the host application to fit within the window.
- Simultaneous display of applications in a variety of screen sizes without reconfiguring your PC software or modifying the host application.
- Customization of screen color schemes for existing host applications.



Note: Rumba+ Mainframe Edition supports alternate screen sizes for IBM models 2, 3, 4, and 5.

International keyboards

Rumba+ supports international PC and host keyboards, such as French, German, Norwegian, Swedish, Danish, Spanish, and Italian.

Rumba+ supports most types of PC keyboards. For example, the PC, AT, and Enhanced 101- and 102-Key. If you do not find your keyboard on the supported list, contact Micro Focus SupportLine.

You must install the appropriate keyboard driver (usually supplied with the keyboard or an international version of Windows) using the Windows Setup option.

Supported VT features

Rumba+ supports configuration of VT features and options through the keyboard, tool bar, and menus. Features available to you when using a VT terminal and keyboard are available from your PC using Rumba+. See [VT Keyboard Key Codes](#).

Rumba+ emulates the following VT terminal types:

- VT52
- VT100
- VT101
- VT125
- VT220
- VT240
- VT241
- VT320
- VT330
- VT340
- VT420 (paging available. Default if VT340 not installed)
- 401x (Tektronix graphics, includes 4010/44014. Automatic font adjustments occur when entering this mode)
- BBS ANSI
- SCO ANSI
- WYSE 50/60

You can select and configure the terminal you want to emulate.

Supported HP features

Rumba+ supports configuration of HP features and options through the keyboard, tool bar, and menus. Features available to you when using an HP terminal and keyboard are available from your PC using Rumba+.

Rumba+ emulates the following HP terminal types:

- HP70092
- HP70094
- HP70096
- HP70098
- HP2392A
- HP2394A

You can select and configure the terminal you want to emulate.

Automating your work

Rumba+ provides several powerful tools for automating host communications tasks.

- Macros

Rumba+ macros are used to automate simple tasks such as logging on, copying and pasting text between Rumba+ display windows and applications such as Microsoft Excel, or sending a sequence of commands to the host.

- Auto macros

You can save a macro as a connect or disconnect macro - a macro that automatically logs on or off each time you open or close the session profile in which it was created.

- VBA support

VBA support provides the ability to write more complex and powerful automation. VBA support uses standard VBA functionality, IDE and allows you to run, record, and edit macros from and to a common Macro Module shared between all sessions.

Rumba+ tools

All Rumba+ products contain the following tools:

- Productivity tools
- Configuration and maintenance tools
- Developer tools

More complex and powerful task automation is also provided by Rumba+ VBA support.

Productivity tools

Rumba+ applications contain tools that help end users eliminate time-consuming file and application manipulation. For example, with these tools, users can copy from a host database and paste to another application, like a spreadsheet or word processor. The **Paste Link** facility automatically updates the data in a Windows application whenever both it and a Rumba+ session to the host are open.

Other useful features include:

Office integration From within the Rumba+ desktop, users can instantly send the current screen text or image, fully or selectively into any Office item.

Microsoft Office .NET primary interoperability assemblies (PIA) enable .NET managed code to interact with an Office application's COM-based object model.

| Office version | PIA auto installer | Rumba+ support |
|----------------|--------------------|----------------|
| 2010 | Yes | Supported |
| 2013 | Yes | Supported |

| Office version | PIA auto installer | Rumba+ support |
|----------------|--------------------|----------------|
| 2016 | Yes | Supported |
| 2019 | Yes | Supported |
| 365 | Yes | Supported |

Session screens history tracking

Rumba+ introduces an embedded, fully visual way of tracking screens visited throughout a session. Users can go back to previously visited host screens and work on them. This ability is enhanced with search capabilities, database navigation, export and import support for session sharing, information sorting, and automatic or manual capturing options.

Toolbars enhancements

Support for user-defined, customized toolbars that can be undocked and ‘floated’, rather than just fixed and docked to the top of the application. Ability to define more types of buttons and the ability to export and import toolbars to and from files.

Enhanced desk management

The Rumba+ desktop is designed to support the tiling and repositioning of all session types within the Rumba+ desktop in an easy, dynamic, and intuitive way. The layout of the desktop can then be saved in a desktop profile to be reused when Rumba+ is restarted.

As a system administrator, you can help your users by:

- Automating log-on procedures by creating macros for them
- Setting up batch files that they can use to print multiple host screens to a PC printer (Print Area Setup)

Many of these features can help personalize the workplace. For example, you and your users can change the look of a Rumba+ display by customizing the display.

The following table describes the more important Rumba+ tools:

| Tool | Description |
|-----------------------|--|
| Rumba+ Desk | A tabbed interface to Rumba+ that makes it easy to manage several different sessions at once, even to different hosts. |
| Profiles | Saves Rumba+ customized display/printer and interface configuration information. Using profiles, a user can tailor a Rumba+ session for a specific host or application and save it for re-use. Session profiles save information relating to a single host session, whereas desktop profiles save a set of session profiles. |
| Print screen | Specifies how to print a screen within the Rumba+ window. Users can print to the Clipboard, current Windows printer, or to a file. Users can also designate printers and fonts, and view how the screen will look when printed. |
| Send screen | Activates the user’s installed mail or messaging system. Users can send a screen without exiting the Rumba+ window. |
| Print Area Setup | Sets up batch files to print multiple host screens to a PC printer. |
| Edit Clipboard | Supports data cutting, copying, and pasting activities. |
| Paste Area Setup | Sets up host screens to receive data pasted from the Windows Clipboard. Using this feature, users can paste data from a third-party application into multiple screens of a host application. |
| Title Bar | Customizes the title bar text for the Rumba+ window. |
| Configurable toolbars | Customizes the Rumba+ toolbar. You can create and modify toolbars to suit user needs and preferences. |
| Status bar | Toggles the 3D status bar on and off. |


| Tool | Description |
|--------------------|---|
| Customized display | Customizes the look of the Rumba+ window: fonts, colors, cursor settings, and more. |
| Keyboard mapping | Maps special terminal keys to the PC keyboard. Users can also select different keyboards and international keyboard options. |
| Capture Screen | Captures the current Rumba+ screen in a specified .txt file (or capture.txt if no file is specified). |
| Macros | Records a series of actions, such as keystrokes and commands. Once users record a macro, they can play it back to automate routine tasks. Users can assign macros to a Hotspot (see below), a Rumba+ toolbar button, or a key combination on the keyboard. |
| Hotspots | Makes any non-protected text on a host screen into a Hotspot and associates that text with a macro. When the user clicks on the Hotspot, the macro runs. |
| Customized menus | Customizes Rumba+ menus. For example, users can create new menu items that start non-Rumba applications. |
| Online help | Provides detailed instructions on how to use Rumba+. Users can browse the table of contents for information, or search for a specific term. |

Configuration and maintenance

The most common way to connect Rumba+ to a host is by selecting and configuring an interface from the Rumba+ display or printer. However, if you are connecting to an IBM mainframe or AS/400, there are additional tools available to you, as described in the following table:

| Application | Description |
|-------------------------------|---|
| APPC Configuration Utility | Provides advanced configuration options for most mainframe and AS/400 interfaces. Allows the configuration of the following APPC items: Remote and local logical units (LUs), Modes, transaction programs (TPs), CPI-C side information, and conversation security for TPs. |
| AS/400 Communications utility | Used primarily to configure connections for Shared Folders, Data Queues, Submit Remote Command, and AS/400 file transfers. |

Use the following diagnostic tools (available with all products) to monitor and troubleshoot Rumba+ connections on your network.

| Feature | Description |
|------------------------------|---|
| Trace Console | Traces and records communication sessions. Specifically: <ul style="list-style-type: none"> Data streams from the mainframe display and printer, AS/400 display and printer, UNIX display and HP display. SNA communications. Rumba+ display APIs, such as DDE, EHLLAPI, WinHLLAPI, EHNAPPC. Host system APIs, such as Data Queues, Shared Folders, AS/400 file transfers, and Submit Remote Command. |
| Rumba+ Communication Monitor | Displays an in-depth look at the connections of a workstation.  Note: Not available for Rumba+ UNIX-HP Edition. |

Developer tools

The AS/400 client applications, such as File Transfer, have APIs associated with them. Additionally, the Submit Remote Command is available as ActiveX controls.


Rumba+ consists of a family of ActiveX controls and Web-to-Host consists of both ActiveX controls and JavaBeans. You can use these ActiveX controls and JavaBeans to create new applications using languages such as Visual Basic, C++, and Java. Information and samples for using these components can be found on the Micro Focus Web site.

Planning Installation and Deployment

This section describes how to plan a Rumba+ installation.

Windows terminology


Before discussing Rumba+ setup, it is a good idea to understand some basic terminology and features of the Windows policy-based management environment.

| | |
|--|--|
| Roaming | Windows allows you to move from computer to computer, yet maintain your specific desktop profile. Your login information enables this particular feature because your profile information is located on a server. |
| Windows Installer file types | <p>The Windows Installer replaces previous installation methods, and enables cleaner installs and uninstalls, as well as repairs.</p> <p>The patch install package file (.msp) allows you to apply hot fixes to your Rumba+ product.</p> <p>The transform file (.mst) allows you to customize your Rumba+ installations. Before using the transform file, ensure you have the latest version of Windows Installer installed. For more information, see Windows Installer service and Customizing setup.</p> |
| Publishing and assigning with Intellimirror | <p>Administrators can publish Rumba+ to users or assign Rumba+ to users or computers. Administrators assign an application through Group Policy Objects. Assigned applications have installation persistence. When a user selects the program for the first time, it is installed. If a user uninstalls an assigned application, it will re-advertise immediately.</p> <p>Administrators publish an application by making it available to users who might want the application. With published applications, each user decides whether or not to install the application from Control Panel > Programs and Features.</p> <p> Note: You can only publish to users, not computers.</p> |
| Active Directory | Administrators deploy applications in Group Policy Objects (GPOs) that are associated with Active Directory containers such as sites, domains, and organizational units (OUs). |

Windows Installer service

Rumba+ requires the Windows Installer service to install any Rumba+ feature on a Windows operating systems. Using the Installer service requires less of your management time and allows you to design seamless deployment packages for Rumba+.

The Windows Installer service manages applications at the component level. It maintains reference counts in the form of a client list of product codes (rather than integers), so it can identify clients of the installed resource to synchronize counts. This allows clean and complete installs and uninstalls of Rumba+, whether simple or sophisticated.

 **Note:** A Rumba+ installation detects a previous Rumba+ 7.x or higher installation and uninstalls it before installing the current version.

Software requirements

The following software is required:

Supported operating systems

Rumba+ operates on PCs with the following operating systems, applications, and environments:

- 64-bit Windows 10 and 11
- 64-bit Windows Server 2016 and 2019, Windows 2022
- Windows Terminal Server (WTS)
- Citrix XenApp (formerly Presentation Server)
- Microsoft Application Virtualization (APP-V)

Prerequisite software

The following software is required:

- Microsoft .NET Framework 4.8
- Microsoft Visual C++ 2015-2022 Redistributable (x86)
- Microsoft Visual C++ 2015-2022 Redistributable (x64)
- Microsoft Visual C++ 2010 SP1 Redistributable (x86)
- Microsoft Visual Basic for Applications 7.1 (x86)
- Microsoft Visual Basic for Applications 7.1 (x86) English
- Microsoft Visual Basic for Applications 7.1 (x86) German
- Microsoft Visual Basic for Applications 7.1 (x86) French

To install these, run `RumbaPrerequisites.exe`.

Hardware requirements

The following hardware is required:

- 1 GB RAM
- Disk space (minimum): 2 GB

Things to consider before installation

When you install Rumba+, Setup prompts you for standard information. Plan your installation based on the following questions (not necessarily in this order):

- Is this a first-time installation, or is a previous version of Rumba+ installed?
- Will you need to uninstall a Rumba+ version?
- What type of installation will you select: Complete or Custom?
- To which hosts will you connect: AS/400, mainframe, HP, or UNIX?
- Will you be using Intellimirror for your distributed installs?
- Will you be using Microsoft System Center Configuration Manager (SCCM) for your distributed installs?
- Will you be using SCCM combined with Intellimirror?
- Will you customize the installation with your own transforms?
- Will you be installing on Windows Terminal Server (Citrix)? After installing Rumba+ on Windows Terminal Server, follow its vendor instructions on how to publish Rumba+ applications to your users.

Deployment strategies

As an administrator, how you deploy Rumba+ depends largely on the change and configuration management functions of your networks, whether simple or complex. [Installing Rumba+](#) on page 23 contains detailed deployment and customization information for your enterprise-wide Rumba+ installations.

| | |
|--|---|
| Server path | When you are doing any kind of administrative install, you need to know the Universal Naming Convention (UNC) path of the distribution point. |
| Complete or Custom installation | <p>These installation options allow you to control which Rumba+ features are installed. The features available depend on your Rumba+ edition.</p> <ul style="list-style-type: none">• Complete: Installs all Rumba+ features, without the opportunity to add or remove individual features.• Custom: Gives you the opportunity to add or remove individual features. |

Migration issues and directory locations

User-defined files and configuration files

User-defined files and configuration files reside in different locations in Rumba+ versions before 7.0. To support Windows roaming, we classify each of these files according to their scope and function. For example:

- Per user: Each user has their own version of a file and this file can roam with the user.
- Machine-specific: This file only relates to the machine that the product is currently installed on and cannot roam with the user.

These locations are configurable.

For detailed information on Rumba+ file locations on supported platforms, see [File locations](#).

Installations before Rumba+ 7.0

Rumba+ detects the existence of previous 32-bit Rumba+ and OnWeb Web-to-Host products. Installation does not continue until these are removed. For large SCCM deployments, it is strongly advised that you create separate SCCM packages for removing previous versions of the product and installing the new version.

Microsoft Host Integration Server (HIS) 2000 Server and Client

To configure a workstation to communicate with a Microsoft HIS 2000 server (formerly called Microsoft SNA server), you need to have two pieces of software on the workstation: the Microsoft HIS2000/SNA client, and the Rumba+ interface for the Microsoft SNA/HIS 2000 server. If you do not have the software for the Microsoft SNA client, you can download the client from Microsoft.

Changes to Rumba+ components

The Rumba+ Optimized Server ODBC driver has been moved into the AS/400 File Transfer subsystem.

The TP Director was included in previous versions of Rumba+ to map Local LU 6.2 information for APPC and/or CPIC Transaction Programs to a specific User ID. The TP Director is no longer installed as part of Rumba+, but can be installed separately using the `TPDirector.msi` file if required.

Installing Rumba+

This section is written for IT professionals and system administrators who want to customize, install, and deploy Rumba+.

The section contains instructions for installing Rumba+ on Windows with Microsoft Installer technology. Additionally, it contains information about:

- Installing, modifying, repairing, and uninstalling Rumba+.
- Customizing setup.
- Microsoft installer command line arguments.
- Transforms.

The installation process

Installation can be as simple as following the installation wizard on a single desktop, or as flexible as "push" and "pull" delivery options with transforms.

To modify the basic installer process, you must have a competent grasp of how to create transforms, and an authoring tool to do so, and/or are familiar with command line options.

You should already know what kind of installation you need and should already have gathered the information required. If not, see [Things to consider before installation](#).

Default path of user profile

Regardless of the installation type, the default path for the user profile and configuration folders is:

```
C:\Users\<UserLogon Name>\AppData\Local\Micro Focus\Rumba
```

If Web-to-Host is installed on the same computer, you cannot change the destination or user profile folder location as many files are shared by both products.

Using the Setup wizard

The first, and simplest, installation method is to use the Rumba+ Setup wizard. During this installation, you are asked to select a **Complete** or **Custom** installation. **Complete** is the default.

The Setup wizard:

- Transparently installs components for Rumba+ 64-bit Windows support.
- Transparently installs the RSS Client (for increased security) if it is not present on your system.
- Checks that there is sufficient disk space on your destination drive.
- Allows you to choose the product language (English, French, or German).
- Advises you of any Rumba+ prerequisites that are not currently installed on your computer.

Standalone installation

1. Double-click the appropriate `Rumba_<...>.exe` file. For example, `Rumba_Office.exe`. Provide the path for where the file contents should be extracted.
2. Follow the instructions in the Setup wizard.
3. Select the language version you want to install. The default is the operating system language. If the operating system language is not English, French, or German, English is used.

4. Choose a directory for Rumba+ to be installed to. Micro Focus recommend that you use the default directory. You can also choose the location for application data files.
5. Select the installation type: **Complete** or **Custom**.
 - **Complete**: Installs all Rumba+ components. This option requires the most disk space.
 - **Custom**: This option has the same default items selected as the **Complete** option, but allows you to add or remove individual components. The **Feature Description** panel to the right of the component selection box shows the amount of disk space required for each feature.

Setup creates a Micro Focus Rumba+ directory in your Windows **Start** menu from which you can access all the Rumba+ products and related tools that you have installed.

Administrative installation

1. Double-click the appropriate Rumba_<...> .exe file. For example, Rumba_Office.exe. Provide the <absolute_path> to where the file contents should be extracted.
2. Cancel all following wizards.
3. To install Rumba+ as an administrative installation, use the following command:

```
msiexec /a <absolute_path>\<Rumba_<...>.msi [TARGETDIR=<path>] [/q[n|b|r|f]]
```

Using the command line

An alternative installation method is to use the command line. This method provides you with various options.

Syntax

```
msiexec <INSTALLFLAG> <absolute_path>\<Rumba_install_file>.msi <msiFlags>
MRILANG=<Rumba_UI_language> INSTALLDIR=<Rumba_installation_folder>
PRIVATEDIR=<user_profile_folder> INTERFACEPRIVA
TEDIR=<interface_configurations_folder> CUSTOMIZEDDIRS=1
```

Parameters

| Parameter | Description | Required |
|--------------------------------|--|----------|
| <INSTALLFLAG> | Specifies whether to install or uninstall Rumba+: <ul style="list-style-type: none"> • Specify /i to install. • Specify /X to uninstall. | Yes. |
| <absolute_path> | Absolute path to the Rumba+ installation file. | Yes. |
| <Rumba_ +_install_file>.msi | The type of installation file in the form of: Rumba_<package>.msi for a licensed installation. Rumba_<package>_eval.msi for an evaluation installation. where <package> is one of: <ul style="list-style-type: none"> UNIX Office Mainframe Citrix | Yes. |

| Parameter | Description | Required |
|------------|--|---|
| | AS400 | |
| <msiFlag> | <p>Specifies the installation mode. Either or both of silent and with a log file.</p> <p>Silent:</p> <p>/q {n,b,r,f}</p> <p>This sets the user interface level:</p> <p>n - No UI. b - Basic UI. r - Reduced UI. f - Full UI (default).</p> <p>Log file:</p> <p>/l[i w e a r u c m o p v x + ! *] <log_file></p> <p>i - Status messages. w - Non-fatal warnings. e - All error messages. a - Start up actions. r - Action-specific records. u - User requests. c - Initial UI parameters. m - Out-of-memory or fatal exit information. o - Out-of-disk-space messages. p - Terminal properties. v - Verbose output. x - Extra debugging information. + - Append to existing log file. ! - Flush each line to the log file. * - Log all information, except for v and x options.</p> <p>/log <log_file> - Equivalent of /l* <log_file>.</p> | No. For either silent mode or to create a log file. |
| MRILANG | <p>Specifies the installation language:</p> <p>English: MRI2924 French: MRI2928 German: MRI2929</p> | No. If not, specified, the operating system language is used. |
| INSTALLDIR | Specifies the Rumba+ installation folder. | No. |
| PRIVATEDIR | Specifies a custom user profile folder. Default is %LocalAppData%\Micro Focus\RUMBA\. | No. |

| Parameter | Description | Required |
|---------------------|--|---|
| INTERFACEPRIVATEDIR | Specifies a custom interface folder. Default is %AppData%\Micro Focus\RUMBA\. | No. |
| CUSTOMIZEDDIRS | To be specified if PRIVATEDIR and INTERFACEPRIVATEDIR are specified. Value must be 1. | Yes, if PRIVATEDIR and INTERFACEPRIVATEDIR are specified. |

Examples

Standard installation

```
msiexec /i C:\Users\Admin\Desktop\Rumba_Office.msi
```

Standard uninstall

```
msiexec /x C:\Users\Admin\Desktop\Rumba_Office.msi
```

Silent installation with non-default Rumba+ INSTALLDIR

```
msiexec /i C:\Users\Admin\Desktop\Rumba_Office.msi /qn INSTALLDIR=C:\MyRumbaInstallDir
```

Silent German installation with non-default Rumba+ INSTALLDIR, custom user and interface folders

```
msiexec /i C:\Users\Admin\Desktop\Rumba_Office.msi /qn MRILANG=MRI2929  
INSTALLDIR=C:\MyRumbaInstallDir PRIVATEDIR=C:\MyPrivateDir  
INTERFACEPRIVATEDIR=c:\MyInterfacePrivateDir CUSTOMIZEDDIRS=1
```

Silent French installation with non-default Rumba+ INSTALLDIR, custom user folder and verbose log file

```
msiexec /i C:\Users\Admin\Desktop\Rumba_Office.msi /qn /lv C:\instLog.log  
MRILANG=MRI2928 INSTALLDIR=C:\MyRumbaInstallDir PRIVATEDIR=c:\MyPrivateDir  
INTERFACEPRIVATEDIR=c:\MyInterfacePrivateDir CUSTOMIZEDDIRS=1
```

Installing Rumba+ prerequisites silently

Silent installation without a log file

1. Double-click Rumba_Office.exe to extract Rumba+ prerequisites to a temporary location.
2. Dismiss any following wizards.
3. Run `<absolute_path>\RumbaPrerequisites.exe /s`.

Silent installation with a log file

1. Double-click Rumba_Office.exe to extract Rumba+ prerequisites to a temporary location.
2. Dismiss any following wizards.
3. Run `RumbaPrerequisites.exe /s /l <log_file>`.

Example

```
<absolute_path>\RumbaPrerequisites.exe /s /l C:\instLog.log
```

Rolling back an installation

When you are installing Rumba+ in any configuration using the Setup wizard, the installation process can completely roll back. That is, it undoes every operation that it performs during an installation, modification, repair, or removal. This is particularly helpful if you encounter a fatal error during an installer session. The computer can return to the precise state it was in before the installer session. This includes restoration of deleted or overwritten files, registry keys, and other resources.



Note: You cannot roll back a completed Rumba+ installation. You must uninstall the program to remove it.

Roll-back disk space requirements

The disk space for installing a specific feature can be twice the size of the net disk space consumption. Files that are deleted or overwritten during the course of an installation or removal are temporarily saved to a backup location so that they can be restored if necessary. After a successful installation, or installer operation, all temporary backup files are deleted.

Changing Rumba+

To change a Rumba+ installation:

1. Select **Control Panel > Programs and Features > Change**.

The Rumba+ Setup wizard starts.

2. Click **Next**.

The **Program Maintenance** window appears.

3. Click **Change**.

The **Custom Setup** window appears.

4. Make the changes you want.

Repairing Rumba+

To repair a Rumba+ installation:

1. Select **Control Panel > Programs and Features > Change**.

2. Click **Next**.

The **Program Maintenance** window appears.

3. Click **Repair**.

4. Follow the instructions in the wizard.

The Repair option can:

- Determine whether the requested components and feature are installed. If a component or feature are not installed, the installer checks for missing files and installs them.
- Check that all components in the requested feature are properly installed. The installer verifies the keypath of a given component to determine if that component is broken. If the keypath resource is missing, the installer performs an on-demand repair.

Removing Rumba+

To remove a Rumba+ installation, select **Control Panel > Programs and Features > Uninstall**.

Ensure that Rumba+ installation folders (normally `C:\Program Files (x86)\Micro Focus\Rumba` and `C:\Program Files\Micro Focus\Rumba`) were deleted during removal.



Notes:

- Web-to-Host uses some of the same files as Rumba+. If you also have Web-to-Host installed on your computer, the Rumba+ directory is not removed and should not be deleted manually.
- If you have other Micro Focus products installed on your computer, RSS Client files are not removed during the uninstall process. Removing them could cause another Micro Focus product to stop functioning.

Customizing setup

The **Custom** option of the Rumba+ Setup wizard allows you to select the features you want to install and customize your Rumba+ installation for individual, group, and enterprise-wide distributions. The wizard is self-explanatory and easy to understand.

You can either create transforms (.mst files) to modify the Rumba+ installation or use Windows Installer command line arguments.

For information about deploying Rumba+ information with SCCM, see [Distributing Rumba+ with SCCM](#) on page 32.

There are several ways to specify custom changes to the standard operations and behavior of the Setup program. Each of these methods affects a different aspect of the installation process. By combining them, you can effectively distribute Rumba+ to make full use of Intellimirror features as well as SCCM management capabilities.

Using transforms

A transform modifies the base installation package file at installation time. The transform remains cached on the computer and is applied to the base installation package whenever the Windows Installer service performs a configuration change (including repair) on Rumba+.

Transforms increase the flexibility of Rumba+ installations by applying changes to the installation database without altering the original database. For example, in organizations where different departments require different installations of Rumba+, the base package can be made available to everyone at one administrative installation point, with the appropriate customizing transforms separately distributed to each group of users.

Transforms cannot be applied to an already installed application, only at initial installation.

You can perform a run-from-source (RFS) installation using transforms. This means that only a small subset of files is installed on the user workstation. The bulk of the product is run directly from a central location, such as a shared network drive. This approach minimizes local computer disk requirements but increases network load.

You should be proficient at using a transform authoring tool to make full use of a Rumba+ distribution.



Caution: We recommend that you use transforms carefully because they expose a great deal of functionality and detail. Because each installation customized by a transform is unique, Micro Focus might not be able to support customers using such installations.

Before you run an installation with a transform, you must:

- Perform an administrative installation of Rumba+.
- Create the transform.

This section describes how to create a transform using InstallShield and Orca.

Performing an administrative installation

1. Select the location for the installation (RFS) directory. This is usually a shared directory on a network drive.

2. To protect the installation files, either specify read-only access to the directory for all users, or individually change the file attributes of all the installed files to read-only.
3. To create the administrative installation, use the following command:

```
msiexec /a <absolute_path>\<Rumba_install_file>.msi [TARGETDIR=<path>] [/q|n|b|r|f]
```

and specify the RFS directory as destination directory.

Creating a transform using InstallShield

1. Open InstallShield, then select **File > New**.

The **New Project** dialog box appears.

2. Click the **Windows Installer** tab.
3. Select **Transform**, type a name in the **Project Name** field, such as **MyTransform**, then click **Browse** to find to select the location for the transform.
4. Click **OK**.

The **Open Transform Wizard** wizard starts.

5. Click **Next**.

The **Transform Information** page appears.

6. Click **Browse** next to the **Base MSI File Name** field and select the Rumba+ .msi file.



Note: To extract an MSI, double-click the appropriate Rumba_<...> .exe file. For example, Rumba_Office.exe. Provide the <absolute_path> to where the file contents should be extracted.

7. Click **Next**.

The **Additional Transforms** page appears.

8. Click **Next**.

The **Create a Response Transform** page appears.

9. Click **Finish**. **MyTransform (Rumba.msi)** is created.
10. In InstallShield, click the **Installation Designer** tab.
11. Navigate to the **Organization > Setup Design** view.
12. Create the transform. For example:

- a) Right-click the features tree in the **Setup Design** view and select **New Feature** from the pop-up menu.
- b) Call the new feature **Transform**.
- c) Right-click the **Transform** feature in the **Setup Design** view and select **New Component** from the pop-up menu.

The created component is associated with the **Transform** feature by default.




Note: If you create the component from the **Components** view, you must associate it to the **Transform** feature manually. To do this:

1. Right-click the feature in the **Setup Design** view and select **Associate Components** from the pop-up menu.
2. Select the created component.
3. Click **OK**.
- d) Create a new registry key value for the transform to add to the Rumba.msi installation.

13. Save the transform.

Creating a transform using Orca

1. Start Orca.
2. Click **File > Open** and select the Rumba+ .msi file.
 -  **Note:** To extract an MSI, double-click the appropriate Rumba_<...> .exe file. For example, Rumba_Office.exe. Provide the <absolute_path> to where the file contents should be extracted.
3. Select **Transform > New Transform**.
4. Navigate to the table or tables you want to edit, then modify values or create new rows as appropriate.
5. Select **Transform > Generate Transform**.
6. In the **Save Transform As** dialog box, type a name for the transform and click **Save**.

The Rumba.msi transformed by window appears.

Creating a transform using WIX


Run the following command using the WIX tool `torch.exe`:

```
torch.exe <Full_name_of_base_MSI> <Full_name_of_MSI_Containing_Updates> -out
<Full_name_of_MST_file>
```

Windows Installer command line arguments

The following information is available in more detail from the Windows Installer SDK. The most common options and parameters are presented here to enable you to easily organize and customize your deployment options.

| Option | Parameters | Definition |
|--------|---|---|
| /i | {package ProductCode} | Installs or configures a product. |
| /a | package | Administrative installation option. |
| /f | [p][o][e][d][c][a][u][m][s][v]{package ProductCode} | Repairs a product. This option ignores any property values entered on the command line. <ul style="list-style-type: none"> p Reinstall only if file is missing. o Reinstall if file is missing or if an older version is installed. e Reinstall if file is missing or an equal or older version is installed. d Reinstall if file is missing or a different version is installed. c Reinstall if file is missing or the stored checksum does not match the calculated value. a Force all files to be reinstalled. u Rewrite all required user-specific registry entries. m Rewrite all required computer-specific registry entries. s Overwrite all existing shortcuts. |

| Option | Parameters | Definition |
|--------|---|---|
| | | v Run from source and recache the local package. |
| /x | {package ProductCode} | x Uninstalls a product. |
| /L | [i][w][e][a][r][u][c][m][p][v][+][!] <i>logfile</i> | Specifies the path to the log file. The following flags are: i Status messages w Non-fatal warnings e All error messages a Startup of actions r Action-specific records u User requests c Initial user interface parameters m Out-of-memory p Terminal properties v Verbose output |
| /p | <i>PatchPackage</i> | Applies a patch. To apply a patch to an installed administrative image you must combine options as follows: /p PatchPackage /a package |
| /q | {n b r f} | In conjunction with /i (install) or /x (uninstall), sets the user interface level. qn No user interface. qb Basic user interface. qr Reduced user interface with modal dialog box displayed at the end of installation. qf Full user interface with modal dialog box displayed at end of installation. qn+ No user interface except for modal dialog box displayed at end of installation. qb+ Basic user interface with modal dialog box displayed at end of installation. qb- Basic user interface with no modal dialog boxes.  Note: /qb+- is not a supported user interface level. The modal dialog box does not display if the user cancels the installation. |

Distributing Rumba+ with SCCM

The mechanics of Microsoft System Center Configuration Manager (SCCM) administration are beyond the scope of this document. It is assumed that you are familiar with the standard operations of the SCCM family.



Note: SCCM was previously known as Systems Management Server (SMS).

Uninstalling previous versions of Rumba+

Before you can deploy this version of Rumba+, you must uninstall any previous versions that are currently installed.

The easiest way to uninstall Rumba+ varies according to the version of SCCM you have installed. In some versions of SCCM the easiest way to uninstall previous versions is to include a response file (`response.ini`) or definition file (`.pdf`) in a command line as part of an uninstallation deployment package. In this case, if you do not have the previous-version documentation and the `.pdf` or response file (or files) of your previous Rumba+ installation, you must create a new response file.

In other versions of SCCM, the easiest method is to create a task sequence to run the uninstallation. Refer to the documentation for your SCCM version.

Preparing client computers for Windows Installer

After you have uninstalled a previous Rumba+ version, ensure that Windows Installer is resident on client computers before installing the current version of Rumba+. If Windows Installer is not installed, you must install it.

Installing Windows Installer requires administrative rights on client computers. To install Windows Installer, use the installer setup program, `InstMSI.exe`.



Note: Command line options are case sensitive.

You can also create a program dependency in an SCCM deployment package which installs the Microsoft Installer service immediately before a Rumba+ installation, on an on-demand basis.

You can download the Microsoft Installer SDK from: <http://www.microfocus.com/docs/links.asp?nx=platsdk>

Creating a Rumba+ deployment package

Before creating a Rumba+ deployment package, consider:

- Source and distribution points.
- Will this be an on-demand installation?
- How your collections should be configured.
- Whether clients have the correct rights, or whether to configure package access accounts.
- Will you configure the user interface to be used by the clients?

You can use the SCCM New Package wizard to create a deployment package.

Identifying a package source directory

The directory where you install an administrative installation becomes the package source directory. Any additional files, such as Rumba+ profiles or transforms, must also be copied to this location. The results of the administrative installation, plus any modifications you make, are propagated to the specified distribution point servers. SCCM clients can then install the package from the distribution point servers.

Advanced deployment issues

- System restarts
Because Rumba+ determines if a computer must be restarted at installation time, the safest option is to configure SCCM to perform the restart.
- Program removal
Rumba+ is registered in **Control Panel > Programs and Features**. This allows SCCM to remove the application automatically.

Rumba+ file locations

Preinstalled files

| | |
|--------------|---|
| default.mnc | C:\ProgramData\Micro Focus\Rumba |
| SmpleAs4.rmc | C:\Program Files (x86)\Micro Focus\Rumba\As400\Macro |
| SmpleHP.rmc | C:\Program Files (x86)\Micro Focus\Rumba\Hp\Macro |
| SmpleTSO.rmc | C:\Program Files (x86)\Micro Focus\Rumba\Mframe\Macro |
| SmpleVM.rmc | C:\Program Files (x86)\Micro Focus\Rumba\Mframe\Macro |
| SmpleVT.rmc | C:\Program Files (x86)\Micro Focus\Rumba\Vt\Macro |

Run-created files

| | |
|--------------|--|
| default.mnc | C:\Users\ <i><user></i> \AppData\Roaming\Micro Focus\Rumba |
| config.ehn | C:\Users\ <i><user></i> \AppData\Roaming\Micro Focus\Rumba |
| RumbaTRC.CFG | C:\Users\ <i><user></i> \AppData\Roaming\Micro Focus\Rumba |

Macros

| | |
|----------------|---|
| .rmc, .js, .vb | C:\Users\ <i><user></i> \AppData\Local\Micro Focus\Rumba \AS400\Macro |
| | C:\Users\ <i><user></i> \AppData\Local\Micro Focus\Rumba\HP\Macro |
| | C:\Users\ <i><user></i> \AppData\Local\Micro Focus\Rumba\MFrame \Macro |
| | C:\Users\ <i><user></i> \AppData\Local\Micro Focus\Rumba\VT\Macro |

User toolbars

The user toolbars that were used in previous releases are now saved within individual session profiles and cannot be shared.

Default session profiles

| | |
|------|---|
| .prf | C:\Users\ <i><user></i> \AppData\Roaming\Micro Focus\Rumba \Defaults |
|------|---|

User session profiles

| | |
|-------|---|
| .rsda | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\as400 |
| .rsdh | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\HP |
| .rsdm | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\MFrame |
| .rspa | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\as400 |
| .rspm | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\MFrame |
| .rsdu | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\VT |

Plus project files

| | |
|------------------------|--|
| Plus project directory | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\Plus \Projects |
| .rdar | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\Plus \Rules |

Desktop profiles

Default path:

| | |
|-------|--|
| .rdps | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba |
|-------|--|

Print preview

Default path:

| | |
|------|---|
| .rpf | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\AS400 |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\HP |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\MFrame |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\VT |

Keyboard map

| | |
|------|--|
| .map | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba |
|------|--|

Transferred files

| | |
|---|---|
| ? | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\AS400 |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\HP |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\MFrame |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\VT |

Hotspots library

| | |
|------|---|
| .hsp | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba \AS400\Macro |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\HP\Macro |
| | C:\Users\ <i>user</i> \AppData\Local\Micro Focus\Rumba\MFrame \Macro |

C:\Users*<user>*\AppData\Local\Micro Focus\Rumba\VT\Macro

Help files

.chm

English C:\Program Files (x86)\Micro Focus\Rumba\Help
\MRI2924

French C:\Program Files (x86)\Micro Focus\Rumba\Help
\MRI2928

German C:\Program Files (x86)\Micro Focus\Rumba\Help
\MRI2929

Font mapping file

.lcs

C:\ProgramData\Micro Focus\Rumba

Using Rumba+

This section describes how to use some of the main features of Rumba+.

Starting a session from the command line

Syntax

```
RumbaPage.exe <path>\<session_desktop_profile> /Display:MFrame /  
Host:<IP_or_host_name> /Port:<port_number> /forcenewinstance
```

where:

| | |
|--|--|
| <path> | is the absolute path to a saved session or desktop profile. Only required when specifying a profile. |
| <session_desktop_profile> | The name of a saved session or desktop profile. Optional. |
| Display | specifies the type of session. Currently supports MFrame and AS400. Optional. |
| <IP_or_host_name> | specifies the IP address or name of the host to connect to. Can be used with /Display:MFrame or /Display:AS400 for which it is required. |
| <port_number> | the port number to connect to. Can be used with /Display:MFrame or /Display:AS400 for which it is required. |
| forcenewinstance | forces a new Rumba+ instance to start. Optional. |



Notes:

- If there is a syntax error or if a required parameter is not supplied, Rumba+ starts as if no parameters were supplied.
- Session profiles and desktop profiles cannot be set to Auto-Connect. If such a profile is specified, an error occurs and all parameters are ignored.
- If a desktop profile is specified, Display, Host, and Port must not be used. Otherwise, an error occurs and all parameters are ignored.

Examples

```
RumbaPage.exe /Display:MFrame /Host:<IP_or_host_name> /Port:<port_number>
```

Starts a default session and attempts to connect to the specified host and port.

```
RumbaPage.exe <path>\<session_profile> /Display:MFrame /  
Host:<IP_or_host_name> /Port:<port_number>
```

Opens the specified session profile (including all keyboard mapping and color settings) and attempts to connect to the specified host and port.

```
RumbaPage.exe <path>\<desktop_profile>
```

Opens the specified desktop profile.

Starting a session from a URI

As a system administrator, you can create a web page that has links to session profiles that you provide for your users.

Users click one of the provided links. Rumba+ Desktop starts automatically and loads the selected session profile.

Syntax:

```
mfrumbalaunch://file:///<PATH>[?CreateLocalCopy=true/false]
```

HTML examples:

```
<a href="mfrumbalaunch://file:///C:\Users\<username>\AppData\Local\Micro Focus
\Rumba\MFrame\test.rsdm?CreateLocalCopy=TRUE">Local Link Full Path AND
CreateLocalCopy=true</a>
```

```
<a href="mfrumbalaunch://file:///C:\Users\<username>\AppData\Local\Micro Focus
\Rumba\MFrame\test.rsdm?CreateLocalCopy=false">Local Link Full Path AND
CreateLocalCopy=false</a>
```

```
<a href="mfrumbalaunch://file:///C:\Users\<username>\AppData\Local\Micro Focus
\Rumba\MFrame\test.rsdm">Local Link Full Path</a>
```

```
<a href="mfrumbalaunch://file:///\\<network_path>\test.rsdm">Local Link
Network Path</a>
```

```
<a href="mfrumbalaunch://file:///<username>Session.rsdm">Local RELATIVE
Path</a>
```

```
<a href="mfrumbalaunch://http://<ip_address>/test/
<username>Session.rsdm">Remote Link File Name</a>
```

```
<a href="mfrumbalaunch://http://<username>/test/
MFDspFor<username>.rsdm">Remote Link File Name for <username></a>
```



Note: If you specify the optional parameter `?CreateLocalCopy=true`, a local copy of session profile is created and stored in the user's `<RumbaPrivateDir>\Temp` folder. This local copy is deleted when the sessions closes.

Rumba+ folders

You can access Rumba+ programs from **Start > Programs > Micro Focus Rumba+ Desktop**. This includes the **Rumba+ Desktop Tools** folder. Exactly what programs are available depends on which components you installed.

The **Rumba+ Desktop Tools** folder contains tools for system administrators, such as:

- Micro Focus Rumba+ DesktopAPPC Configuration
- Micro Focus Rumba+ Desktop AS400 Communications
- Micro Focus Rumba+ Desktop Communication Monitor
- Micro Focus Rumba+ Desktop Engine
- Micro Focus Rumba+ Desktop Submit Remote Command
- Micro Focus Rumba+ Desktop Trace

Using Rumba+ menus, toolbars, and the status bar

You can Rumba+ commands to perform most of your host tasks. The status bar provides you with information about Rumba+ and the state of the host.

You can streamline your work environment by customizing Rumba+ menus and the toolbar. For example, you can add icons to launch external applications, or remove menu commands and toolbar buttons that you do not use.

Enabling and disabling global commands

Global commands are all Rumba+ Desktop commands which are not host-specific. For example, **Create New Session** and **Open Screen Designer**.



Note: Before you enable or disable global commands on menus, ensure that you close all open host session windows.

To enable and disable global commands:

1. Right-click the toolbar and select **Customize** from the pop-up menu.

The **Global Commands Availability** window appears.

2. To enable a command, check the command. To disable a command, uncheck the command.
3. When you have finished, click **OK**.
4. In the **Customize** window, click **Close**.



Notes:

- If you disable the **Command Availability** command, the **Customize** command is also disabled. This means that you can no longer enable and disable global commands. To re-enable the **Command Availability** command:
 1. Edit the following file with an ASCII editor, such as Notepad:
`%LOCALAPPDATA%\Micro Focus\Rumba\Rumba.config`
 2. Find the following element:

```
<IsCommandsConfiguratorEnabled Type="Boolean">False</IsCommandsConfiguratorEnabled>
```
 3. Replace `False` with `True`.
 4. Save the file and exit.
- If you disable the **Save** or **Save As** commands, you are still offered the option to save a session profile when you close a host session.
- If you disable a command that is associated with a toggle button, such as **Plus Mode**, the button is also disabled.

Customizing menus and toolbars

To customize commands available within a profile:

1. Open the Rumba+ display or printer session containing the menus that you want to change.
2. Select **View > Toolbars**. The **Customize** dialog box opens.
3. On the **Toolbars** page, create and rearrange custom toolbars with the commands you use most often.

Use the **Commands** page to add commands to the standard toolbar or to change the availability of commands within the interface.



Note: If you make the **View > Toolbars** command unavailable, you cannot make further changes.

- On the **Commands** page, select **Rearrange Commands > Modify Selection > New Button** to create new toolbar buttons of different types.

Toolbars can be docked, undocked, and floated. They can also be imported from and exported to files. Toolbar buttons can be chosen from several types.

Mainframe status bar

| Status bar area | Function |
|--------------------|--|
| Status field | Displays general Rumba+ status information. |
| Operator | Indicates the operator's application session owns the screen. |
| SSL | Indicates whether your session uses an SSL (Secure Sockets Layer) connection. This field applies only to TCP/IP connections. |
| APL | Indicates whether or not the host is in APL mode. |
| NUMFLD | Indicates whether or not the cursor is currently in a numeric field. |
| LU# | Shows the Logical Unit (LU) number. |
| OVR | Indicates whether Overstrike or Insert mode is chosen. |
| CAP | Indicates whether Caps Lock is on or off. |
| NUM | Indicates whether the Number Lock is on or off. |
| W | Indicates whether Word Wrap is on or off. |
| Cursor coordinates | Lists the row and column position of the cursor. |
| Bell | Indicates whether modern controls available on a given screen.. |

AS/400 status bar

| Status bar area | Function |
|------------------|---|
| Description area | <ul style="list-style-type: none"> Connected: The status of the host connection. If the host is not connected, the description area is blank. Toolbar button function: If the mouse cursor points to a toolbar button, the description area displays a description of the function performed by the toolbar button. Menu command function: If the context-sensitive help cursor points to a menu command, the description area displays a description of the function performed by the menu command. |
| SA | System available. When lit, this indicates that the host is operating and available to the PC. |
| MW | Message waiting. When lit, the host has one or more messages waiting for you. |
| KS | Keyboard shift. When lit, the keyboard is in shift mode. |
| IM | Insert mode. When lit, Insert is on. Characters can be inserted into a field without typing over the existing data. |
| II | Input inhibited. When lit, keyboard input is not being accepted by the AS/400. Try pressing the Error Reset key. If it is still highlighted, the system is processing your request. |
| KB | Keyboard buffer. This indicator is only displayed when you are waiting for the Input Inhibited indicator to go off so that keystrokes that are buffered can be processed. To clear keystroke buffering, press the Error Rest key. |

| Status bar area | Function |
|--------------------|---|
| Session Name | Displays the name of the server to which the Rumba+ session is connected. |
| Cursor coordinates | Lists the row and column position of the cursor. |
| Bell | Indicates whether modern controls available on a given screen.. |

HP status bar

| Status bar area | Function |
|--------------------------|---|
| Communications interface | Displays the communications interface you have selected, the server name (if applicable), and whether or not the session is connected to the host. |
| Terminal type | Shows the type of terminal this session is emulating, and other kinds of status information applicable to the terminal. Information appears if the terminal is in hold or wait conditions or if it is off-line. |
| Cursor coordinates | Lists the row and column position of the cursor. |

UNIX status bar

| Status bar area | Function |
|---------------------------|---|
| Communications interface | Displays the communications interface you have selected, the server name (if applicable), and indicates whether the session is connected to the host. |
| Terminal type | Shows the type of VT this session is emulating, and other types of status information applicable to the terminal. Information appears if the terminal is in hold or wait conditions, is off-line, or if you are composing a character sequence. |
| Cursor coordinates | Lists the row and column position of the cursor. If you are using VT420 emulation, it also indicates the page number. |
| Numeric/ Application mode | Toggles the state of the terminal's numeric keypad between numeric mode and application mode (which is not the same as the PC NUMLOCK feature). |

Rumba+ session profiles


A session profile is a special configuration file used to store your settings for a specific session. You can customize the settings for a particular host connection to meet your particular needs and preferences, then save your settings in a session profile. When you open the profile, the Rumba+ session is configured with settings you designate.

Session profiles also provide a method for easily deploying standardized Rumba+ sessions to users. You can create session profiles for customized host display and printer sessions.

All session profiles are stored in a subfolder of the `AppData` folder. For example, an AS/400 profile would be stored in:

```
C:\Users\\AppData\Local\Micro Focus\Rumba\AS400
```

The subfolders are named `as400`, `HP`, `Mframe`, and `VT` (for UNIX host session profiles).

 **Note:** Each session profile opens as a separate tab in the Rumba+ display. This gives you the flexibility of being able to open several different profiles in one window. You can save multiple sessions in one configuration file as a desktop profile.

About session profiles

Session profiles contain specific information about the Rumba+ session including:

- Interface selection and configuration
- Display settings, including color, font, and status bar options
- Keyboard maps and alternative character set selection
- Macros

When you change your Rumba+ environment, you can save those changes in a new or existing profile. Rumba+ stores session profile data in a binary format.

Session profiles are host-specific. The file extension for the different hosts are as follows:

| Host | File extension |
|-------------------|----------------|
| AS/400 | .rsda |
| AS/400 Printer | .rspa |
| HP | .rsdh |
| Mainframe | .rsdm |
| Mainframe Printer | .rspm |
| UNIX | .rsdu |

Supplemental and interface configuration files

There are also supplemental files that work together with session profiles. These supplemental files contain configuration or other important data unique to a feature. For example, the `hotspot.hsp` file is a supplemental file. It is also a Hotspot file, and it contains all the data required to run a series of predefined keystrokes.

Interface configuration files are a special class of supplemental files. They are saved in separate files with the `.cfg` extension. You may have more than one of these interface files if you use multiple host connections.

For details on the locations of these files, see [Installing Rumba+](#) on page 23.

The supplemental files and their default extensions are:

| File type | Extension |
|----------------------------|----------------|
| Interface configuration | .cfg |
| Keyboard map | .map |
| Macro script | .rmc, .js, .vb |
| Hotspot | .hsp |
| Menu configuration | .mnc |
| Toolbar | .rtbr |
| Screen Designer project | .rsdp |
| Screen Designer definition | .rdar |

Migrating session profiles from Rumba+ 6.x or 7.x

Session profiles that were created using Rumba+ versions 6.x or 7.x can be migrated to Rumba+ 10.2. To do this:

1. Open the profile in Rumba+ in 6.x or 7.x.
2. Click **Tools > Menu**, then click the **Preview** tab.
3. Ensure that the **Gray disabled items** option is selected.

4. Save the profile.
5. Upgrade to Rumba+ 10.2.

Configuring session profiles

You can configure session profiles outside of a host session by using a client code or scripting language such as VBScript.

Currently supported parameters are:

- Host name / address
- Connection port
- Basic security (RSS SSL on/off)
- LU / Device name (for mainframe and AS/400 sessions)

Exposed objects, methods and properties are described in the **Rumba Configuration Objects Library**.

Configuration objects

RumbaConfigurator

The root object creatable by **ProgId MicroFocus.RumbaConfigurator**.

Methods:

RumbaSessionConfiguration **OpenSessionProfile**(String *profile*)

If succeeds, returns Rumba+ session profile object for the specified session profile. Otherwise Nothing / null.

If the **profile** parameter has one of the following values:

- MainframeDisplay
- MainframePrinter
- AS400Display
- AS400Printer
- UnixDisplay
- HPDisplay

the corresponding default session profile is opened (if exists).

If the **profile** parameter does not contain a full path (file name only), the profile is assumed to be found in the default Rumba+ private folder according to the file extension. For example, MFrame for .rdsm for and .rspm, VT for .rsdu.

RumbaSessionConfiguration

The object representing Rumba session profile.

Properties:

RumbaSessionOverriddenParameters **OverriddenParameters**

Gets Rumba+ session profile overridden parameters object.

RumbaSSLSessionOverriddenParameters * **SSLOverriddenParameters**

Gets Rumba+ SSL session profile overridden parameters object.

RumbaSessionOverriddenParameters

Rumba+ session profile overridden parameters object. All its properties are write-only.

Properties:

String **HostName** – Overrides configured host name / address.

Integer **Port** – Overrides configured host port number.

Boolean **SSL** – True/False; overrides configured connection security (for Rumba+ Security Services only).

String **DeviceName** – Overrides configured device / LU name (for mainframe and AS/400 sessions)

RumbaSSLSessionOverriddenParameters

Rumba+ SSL session profile overridden parameters object. All properties are write-only.

Properties:

Boolean **RequireStrictServerAuthentication** - True/False; Overrides configured flag Require Strict Server Authentication (for Rumba+ Security Services only).

Boolean **EnforceValidityDates** - True/False; Overrides configured flag Enforce Validity Dates (for Rumba+ Security Services only).

Boolean **RequireTrustedChain** - True/False; Overrides configured flag Require Trusted Chain (for Rumba+ Security Services only).

Boolean **ExplicitSSL** - True/False; Overrides configured flag Explicitly Negotiate About Security (for Rumba+ Security Services only).

Boolean **InteractiveMode** - True/False; Overrides configured flag Explicitly Interactive Mode (for Rumba+ Security Services only).

String **ClientCertificateName** - Overrides configured client certificate name (for Rumba+ Security Services only).

Sample test case

1. Start Rumba+ Desktop.
2. Open a mainframe session.
3. Configure a connection to `csimvs`.
4. Save the session profile as `C:\Work\Test\MFDisplay.rsdm`.
5. Create a new text file called `RumbaConfiguratorTest.vbs` (VBScript file) with the following content:

```
file = "C:\Work\Test\MFDisplay.rsdm"

Set configurator = CreateObject("MicroFocus.RumbaConfigurator")

Set profile = configurator.OpenSessionProfile(file)

If Not profile Is Nothing Then

Set overrides = profile.OverriddenParameters
overrides.Port = 992
overrides.SSL = True
Else

MsgBox("Can't open file " + file)
End If
```

6. Double-click `RumbaConfiguratorTest.vbs` to run it.
7. Open `C:\Work\Test\MFDisplay.rsdm` and connect. Ensure an SSL connection is established.
8. Edit `RumbaConfiguratorTest.vbs` to change its content as follows:

```
file = "C:\Work\Test\MFDisplay.rsdm"

Set configurator = CreateObject("MicroFocus.RumbaConfigurator")

Set profile = configurator.OpenSessionProfile(file)
```

```

If Not profile Is Nothing Then

Set overrides = profile.OverriddenParameters
overrides.Port = 2320
overrides.SSL = False
overrides.DeviceName = "TCPD0010"
Else

MsgBox("Can't open file " + file)
End If

```

9. Double-click `RumbaConfiguratorTest.vbs` to run it.

10. Open `C:\Work\Test\MFDisplay.rsdm` and connect. Check the connection with the specified port and device name.

Rumba+ desktop profiles

A set of multiple session profiles can be saved as a single Rumba+ desktop profile. This allows you to provide a standard set of tabbed sessions to your users, minimizing the amount of configuration needed for each individual user.

By default, Rumba+ desktop profiles are stored with the file extension `.rdps` in the following folder:

```
C:\Users\<user>\AppData\Local\Micro Focus\Rumba
```

About desktop profiles

Desktop profiles contain specific information about a Rumba+ instance, including:

- The set of session profiles used and their layout
- Any customized tab names
- Any vertical and horizontal tab groups

A desktop profile does not contain any information about which Rumba+ interface is used.

Session profile locations


A Rumba+ desktop profile contains references to the locations of all the session profiles that it includes. The locations of any session profiles that are in a different folder to the desktop profile are stored as absolute paths. If a desktop profile is to be deployed on machines other than the one on which it was saved, all the relevant session profiles should be contained within the same folder as the desktop profile.

Creating and deploying sessions and settings with the MSS Administrative Console

You can use the Micro Focus Management and Security Server (MSS) to define terminal emulation sessions, configure and save session settings, then manage and configure secure settings for those sessions.

System administrators can configure all aspects of a Rumba+ desktop environment, including:

- Session profiles
- Desktop profiles
- Keyboard mapping
- Macros

 **Note:** Centralized management must be enabled in the **Rumba+ Options** on a user's local machine.

To use the MSS to deploy a package file:

1. Create the .MSI package file.
2. Use MSS Package Manager to upload the file.
3. Use MSS Assign Access to associate the file with specific users or user groups.

When a user next starts Rumba+, the package file is automatically downloaded to their local machine.

Creating or modifying a centrally managed session

You can create and manage Rumba+ sessions from the MSS Administrative Console. Sessions that you create in this way are saved to the server and can be made available to users from the server and modified at any time.

For instructions about adding or modifying sessions, see the *Management and Security Server Administrator Guide*, in the [Host Access Management and Security Server Documentation](#).

Making centrally managed sessions available to users

After you have saved sessions to the centralized management server, you can make these sessions available to users who have Rumba+ installed on their workstation. Users can launch these sessions in the same way they launch locally created sessions. When Centralized Management is configured, each time a user opens the workspace:


Rumba+ contacts the server and prompts for user credentials (if required by the server).

Sessions that are available to the user are downloaded to the user data directory.

For instructions about making sessions available to users, see the *Management and Security Server Administrator Guide*, in the [Host Access Management and Security Server Documentation](#).

Using centralized management to deploy MSI Packages

Use the Administrative Console to upload companion install packages (.msi) to the Administrative Server for deployment to specified users. Companion install packages can be created in the Installation Customization Tool or other MSI creation tools, and can include toolbars, macros, keyboard maps, and settings files.

 **Note:** You can simplify deployment of MSI packages by saving your customized sessions as compound session document files.

These packages are automatically deployed to a user's desktop when the user logs on to the Management and Security Server or starts a Rumba+ session with Centralized Management enabled.

For instructions about configuring, uploading, or updating a package, see the *Management and Security Server Administrator Guide*, in the [Host Access Management and Security Server Documentation](#).

HP keyboard key codes

The HP keyboard sends a predefined escape sequence for each of its special keys. For example, editing keys and numeric keys. Most applications written for use with HP terminals expect to use these escape sequences. If your application is looking for a different escape sequence, you can program this sequence to a keyboard string, and map that keyboard string to a key sequence on your PC.

The tables in this section list the codes sent for each of the defined keyboard keys.

Keys mapped to active default settings

| Legend | Key |
|------------------|-----|
| Line modify | F1 |
| Modify all | F2 |
| Block mode | F3 |
| Remote mode | F4 |
| Type ahead | F5 |
| Memory lock | F6 |
| Display function | F7 |
| Auto line feed | F8 |

F1 through F8 are local function keys that do not send codes, except when configured to do so. These keys are mapped to activate default softkeys. To see the key mappings:

1. Select **Options > SoftKeys** in the HP Display.
2. In the **SoftKeys Settings** dialog box, select **User Defined**.
3. Click **OK**.

Keys used to send 7-bit control characters

| Control character mnemonic | ASCII value | Key pressed with Ctrl (all modes) |
|----------------------------|-------------|-----------------------------------|
| SOH | 1 | A |
| STX | 2 | B |
| ETX | 3 | C |
| EOT | 4 | D |
| ENQ | 5 | E |
| ACK | 6 | F |
| BEL | 7 | G |
| BS | 8 | H |
| HT | 9 | I |
| LF | 10 | J |
| VT | 11 | K |
| FF | 12 | L |
| CR | 13 | M |
| SO | 14 | N |
| SI | 15 | O |
| DLE | 16 | P |
| DC1 | 17 | Q (see note below) |
| DC2 | 18 | R |

| Control character mnemonic | ASCII value | Key pressed with Ctrl (all modes) |
|----------------------------|-------------|-----------------------------------|
| DC3 | 19 | S (see note below) |
| DC4 | 20 | T |
| NAK | 21 | U |
| SYN | 22 | V |
| ETB | 23 | W |
| CAN | 24 | X |
| EM | 25 | Y |
| SUB | 26 | Z |



Note: 7-bit control codes sent only when XON/OFF support is off.

Codes sent by editing keys

| Key | Code sent |
|---------------|-----------|
| Delete char | ESC P |
| Insert line | ESC L |
| Delete line | ESC M |
| Insert char | ESC Q |
| Prev char | ESC V |
| Next | ESC U |
| Clear line | ESC K |
| Clear display | ESC J |

To view these codes, select **Tools > Show Host Keyboard** in the HP Display.

These codes are only sent when **Transmit Escape Sequences to Host** is enabled. To do this.:

1. Select **Options > Terminal**.
2. On the **Advanced** tab, check **Transmit Escape Sequences to Host**.
3. Click **OK**.

Codes sent by arrow keys

| Key | Cursor mode | Application mode |
|-------|-------------|------------------|
| Up | ESC A | ESCA |
| Down | ESC B | ESCB |
| Right | ESC C | ESCC |
| Left | ESC D | ESCD |

These codes are only sent when **Transmit Escape Sequences to Host** is enabled. To do this.:

1. Select **Options > Terminal**.
2. On the **Advanced** tab, check **Transmit Escape Sequences to Host**.

3. Click **OK**.

Codes sent by numeric keypad keys

| Key | Numeric | Application |
|-------|----------|-------------|
| 0 | 0 | ESC Q Ins |
| 1 | 1 | ESC F End |
| 2 | 2 | ESC B Down |
| 3 | 3 | ESC U PgDn |
| 4 | 4 | ESC D Left |
| 5 | 5 | |
| 6 | 6 | ESC C Right |
| 7 | 7 | ESC h Home |
| 8 | 8 | ESC A Up |
| 9 | 9 | ESC V Pg Up |
| - | (minus) | |
| , | (comma) | |
| . | (period) | ESC P Del |
| Enter | CR LF | |



Note: In Character mode, the code goes directly to host. In Format/Block mode, the code goes to the host only when the user presses **ENTER**.

VT keyboard key codes

The VT keyboard sends a predefined escape sequence for each of its special keys. For example, function keys, editing keys, and numeric keys. Most applications written for VT terminals expect to see these escape sequences. If your application is looking for a different escape sequence, you can program this sequence to a keyboard string and map that keyboard string to a key sequence on your PC.

The tables in this section list the codes sent for each of the defined keyboard keys.

VT codes sent by top-row function keys

| Legend | Key number | Code sent |
|---------|------------|-----------|
| Hold | F1 | CSI 11~ |
| Print | F2 | CSI 12~ |
| Set-Up | F3 | CSI 13~ |
| Session | F4 | CSI 14~ |
| Break | F5 | CSI 15~ |
| F6 | F6 | CSI 17~ |
| F7 | F7 | CSI 18~ |

| Legend | Key number | Code sent |
|-----------|------------|-----------|
| F8 | F8 | CSI 19~ |
| F9 | F9 | CSI 20~ |
| F10 | F10 | CSI 21~ |
| F11 (ESC) | F11 | CSI 23~ |
| F12 (BS) | F12 | CSI 24~ |
| F13 (LF) | F13 | CSI 25~ |
| F14 | F14 | CSI 26~ |
| Help | F15 | CSI 28~ |
| Do | F16 | CSI 29~ |
| F17 | F17 | CSI 31~ |
| F18 | F18 | CSI 32~ |
| F19 | F19 | CSI 33~ |
| F20 | F20 | CSI 34~ |

F1 through F5 are local function keys that do not send codes, except when configured to send codes. To see the assigned local keys in the UNIX Display:

1. **Options > Terminal.**
2. Click the **Key Assignments** tab.

VT keys used to send 7-bit control characters

| Control character mnemonic | ASCII Value | Key pressed with Ctrl (all modes) |
|----------------------------|-------------|-----------------------------------|
| SOH | 1 | A |
| STX | 2 | B |
| ETX | 3 | C |
| EOT | 4 | D |
| ENQ | 5 | E |
| ACK | 6 | F |
| BEL | 7 | G |
| BS | 8 | H |
| HT | 9 | I |
| LF | 10 | J |
| VT | 11 | K |
| FF | 12 | L |
| CR | 13 | M |
| SO | 14 | N |
| SI | 15 | O |
| DLE | 16 | P |

| Control character mnemonic | ASCII Value | Key pressed with Ctrl (all modes) |
|----------------------------|-------------|-----------------------------------|
| DC1 | 17 | Q (see note below) |
| DC2 | 18 | R |
| DC3 | 19 | S (see note below) |
| DC4 | 20 | T |
| NAK | 21 | U |
| SUN | 22 | V |
| ETB | 23 | W |
| CAN | 24 | X |
| EM | 25 | Y |
| SUB | 26 | Z |



Note: 7-bit control codes sent only when XON/OFF support is off.

VT codes sent by editing keys

| Key | Code sent |
|-------------|-----------|
| Find | CSI 1~ |
| Insert here | CSI 2~ |
| Remove | CSI 3~ |
| Select | CSI 4~ |
| Prev | CSI 5~ |
| Next | CSI 6~ |

VT codes sent by arrow keys

| Key | Cursor mode | Application mode |
|-------|-------------|------------------|
| Up | CSI A | SS3A |
| Down | CSI B | SS3B |
| Right | CSI C | SS3C |
| Left | CSI D | SS3D |

VT codes sent by numeric keypad keys

Numeric keypad mode setting (DECNM), ANSI mode.

| Key | Numeric | Application |
|-----|---------|-------------|
| 0 | 0 | SS3 p |
| 1 | 1 | SS3 q |
| 2 | 2 | SS3 r |

| Key | Numeric | Application |
|-------|-------------------------|-------------|
| 3 | 3 | SS3 s |
| 4 | 4 | SS3 t |
| 5 | 5 | SS3 u |
| 6 | 6 | SS3 v |
| 7 | 7 | SS3 w |
| 8 | 8 | SS3 x |
| 9 | 9 | SS3 y |
| - | (minus) | SS3 m |
| , | (comma) | SS3 l |
| . | (period) | SS3 n |
| ENTER | CR or CR LF (see below) | SS3 M |
| PF1 | SS3 P | SS3 P |
| PF2 | SS3 Q | SS3 Q |
| PF3 | SS3 R | SS3 R |
| PF4 | SS3 S | SS3 S |

In keypad numeric mode, `ENTER` sends the same codes as `RETURN`. You can use line feed/new line mode (LNM) to change the code sent by `RETURN`. When LNM is reset, pressing `RETURN` sends one control character (CR). When LNM is set, pressing `RETURN` sends two control characters (CR, LF).

Using Plus

This section describes how to use some of the main features of Plus.

You can use Plus to increase end user productivity by customizing mainframe and AS/400 screens with modern controls. These controls include buttons, labels, images, check boxes, edit boxes, drop-down lists, radio buttons and Web links.

Using the Screen Designer

You use the Screen Designer to create or manage a screen customization project to be used in a Plus session.

You can do this in one or both of the following ways:

Using individual screens

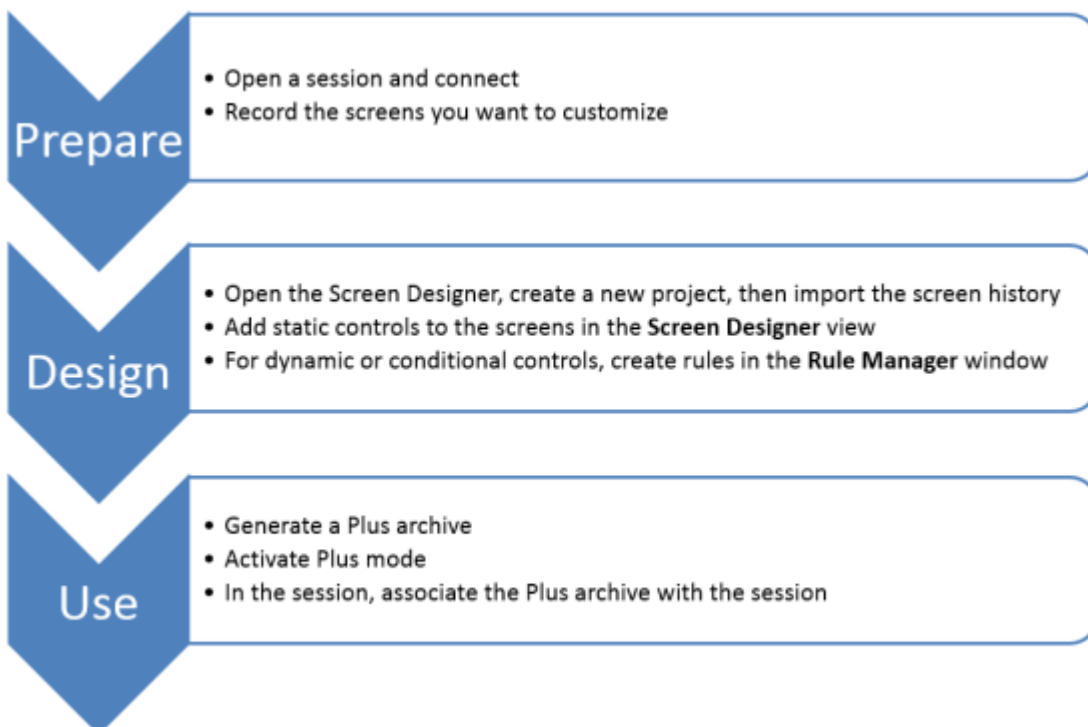
You can identify each screen of the specific host session uniquely and customize each screen individually.

Using the Rule Manager

You use the Rule Manager to create conditional actions (rules). At run-time, the data of each screen of a specific host session is passed through a set of rules to produce modern controls on the screen.

How it works

The figure below provides an overview of what you do to create and use a customization project:



Customization projects

A customization project comprises:

- A folder with the project name, for example, `..\MyProject`.
- A configuration file, `MyProject.rsdp`, used to store screen customization.
- Other related files.

When you open file the `MyProject.rsdp` file in the Screen Designer, you see the Rumba+ screens that you have customized with modern controls.

Customization projects provide a method for easily distributing Plus customizations among developers. You can create customization projects for mainframe and AS/400 sessions.

By default, all customization projects are stored in a sub-folder of the `AppData` folder. For example:

```
C:\Users\<user>\AppData\Local\Micro Focus\Rumba\Plus\Projects
```

Deploying a customization project

When you finish a customization project, you generate a customization package file (`.rdar`) from the Screen Designer and associate it with a Plus host session.

Using the Screen Designer command line

You can use the Screen Designer command line to:

- Create one or more Plus archive files from Screen Designer project files.
- Import multiple projects to a current Screen Designer project.

Syntax

```
<Install_Dir>\Plus\ScreenDesigner\RumbaScreenDesignerCLI.exe [/P  
<project_file_path> | /L <project_file_list_path>] [/O <output_dir>][/S] | /I  
<config_file> | /?
```

where:

| | |
|--|---|
| <code><Install_Dir></code> | is the folder where the Screen Designer is installed. |
| <code>/P <project_file_path></code> | is the fully qualified path to a single project file. |
| <code>/L <project_file_list_path></code> | is the fully qualified path to a file that contains a list of project files. Each path and file name must be on a separate line. You can use the pound sign (#) to comment out a line. |
| <code>/O <output_dir></code> | is the fully qualified path of where to export the Plus archives. Optional. If not specified, the <code><Install_Dir>\Plus\ScreenDesigner</code> folder is used. |
| <code>/S</code> | saves the project after the Plus archive is created. |
| <code>/I <config_file></code> | is the fully qualified path of the configured list of projects to import. |
| <code>/?</code> | shows this information on the screen. |

Generating Plus archives

Syntax

```
<Install_Dir>\Plus\ScreenDesigner\RumbaScreenDesignerCLI.exe [/P  
<project_file_path> | /L <project_file_list_path>] [/O <output_dir>][[/S]
```

Example: Generating a single Plus archive

```
RumbaScreenDesignerCLI.exe /P C:\Users\<user_name>\AppData\Local\Micro Focus  
\Rumba\Plus\Projects\TableTest\TableTest.rsdp /O C:\Users\<user_name>\AppData  
\Local\Micro Focus\Rumba\Plus\Rules /S
```

Example: Generating multiple Plus archives

```
RumbaScreenDesignerCLI.exe /L C:\Screen Designer\Projects\ProjectList.txt /O  
C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Rules /S
```

Example project file list contents:

```
C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects\ul\ul.rsdp  
#C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects\unique  
\unique.rsdp  
C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects\TableTest  
\TableTest.rsdp  
C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\longtable3\longtable3.rsdp  
C:\work\rumba_mobile\TestApplications\TestPlanAppCSIMVS\TestAppCSIMVS  
\TestAppCSIMVS.rsdp
```



Note: You can use the pound sign (#) to comment out a line.

Importing project files

Syntax

```
<Install_Dir>\Plus\ScreenDesigner\RumbaScreenDesignerCLI.exe /I <config_file>
```

Example

```
<Install_Dir>\Plus\ScreenDesigner\RumbaScreenDesignerCLI.exe /I C:\Screen  
Designer\Projects\ImportFileList.txt
```

Example project file list contents:

```
duplicateresource=ckb  
baseproject=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\MergeProjects1\MergeProjects1.rsdp  
project=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\MergeProjects2\MergeProjects2.rsdp  
project=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\MergeProjects3\MergeProjects3.rsdp  
project=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\MergeProjects2\MergeProjects2.rsdp  
project=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\al\al.rsdp  
project=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\WYSIWYG\WYSIWYG\WYSIWYG.rsdp  
saveto=C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus\Projects  
\MergeProjects20
```

where:

duplicateresource specifies copy options for duplicate resources:

| | |
|------------|----------------------------|
| cr | Copy and replace. |
| dc | Do not copy. |
| ckb | Copy, but keep both files. |

baseproject is the base project that the projects will be imported to.

project is the absolute or relative path to the project file.

saveto is the path of the resulting merged project. If not specified, the base project is used. If the project does not exist, a new project is created at that location with a name matching the folder name. For example, if the path is:

```
C:\Users\<user_name>\AppData\Local\Micro Focus\Rumba\Plus  
\Projects\MergeProjects20
```

the created project is called MergeProjects20.

Migrating customization projects from earlier versions of Plus

1. On the Rumba+ menu bar, select **Plus > Open Screen Designer**
2. On the Screen Designer menu bar, select **File > Open Project**.
3. Select the customization project file and click **Open**.
4. Select **File > Save**.

Mainframe File Transfer

This section provides a general overview of the Rumba+ Mainframe File Transfer program. For detailed information, refer to the online Help.

Mainframe file transfer features

Mainframe file transfer copies files between your PC and the mainframe. The **Transfer > Send** and **Transfer > Receive** commands open a setup window where you specify the file type, transfer protocol, and host environment for the file transfer. You can also choose to have Rumba+ initiate the file transfer protocol.

Rumba+ for the mainframe works transparently with most IBM host operating systems, including CICS, TSO, and VM/CMS. This allows an application on one platform to access and use data on another platform.

Rumba+ simplifies the file transfer process by using typical Windows menus and dialog boxes. It reads and lists PC and host files, and lets you transfer files in the background. You can also perform file transfers using the configurable tool bar.

To start a transfer, Rumba+ submits a command to a host file transfer program. The most common host program used is called `IND$FILE`.

Mainframe file transfer provides a number of features, such as support for:

- ASCII or binary transfers
- Write Structured Field or Buffered data streams
- EBCDIC-to-ASCII translation
- Data compression
- DOS-based, batch, and drag-and-drop file transfer

Sending and receiving files

Transferring files between a PC and mainframe is straightforward once you have configured your PC. Unless you want to change the way you transfer files, you do not have to reconfigure your machine each time you want to send or receive files.

Configuring your PC

1. Connect to the host.
2. Click **Transfer > Configure** .
3. In the **File Transfer Configuration** dialog box, select **TSO**, **CMS**, or **CICS** as the destination host environment.



Note: If you click **Templates**, the **File Transfer Template Configuration** dialog box appears. For more information on how to set up a template, see [Using file transfer templates](#).

After configuring your PC (and setting up a template, if required), you are ready to transfer files.

Sending a file to the host

1. Connect to the host.

2. Click **Transfer > Send** .

The **Transfer - PC to Host** dialog box appears.

3. In the **Host File** frame, specify the required host file information. The fields vary, depending on the destination host environment.
4. In the **PC File** frame, specify the PC file to send to the host.
5. In the **Data Type** frame, click the appropriate data type options.
6. Click **Transfer** to send the file, or click **Accept** to save the settings for future use.

Receiving a file from the host:

1. Connect to the host.
2. Click **File > Receive** .
3. In the **Host File** frame, select the host file you to transfer to your PC.
4. In the **PC File** frame, select an existing destination file name or enter a new destination file name, and then select a PC directory.
5. In the **Data Type** frame, click the appropriate data type options.
6. Click **Transfer** to send the file, or click **Accept** to save the settings for future transfers.

Batch file transfers


You can use batch files to transfer several files between your PC and the mainframe host. A batch file consists of two main components: a batch list, and send or receive commands. The batch list groups send and receive commands that you can run from your batch file. You can have several batch lists within one batch file, and several commands within each batch list.

File transfer registry settings

When you install an upgrade version of Rumba+ for the Mainframe over an existing 16-bit version, the installation program converts settings that were previously in the `rumba.ini` file into Windows registry entries

The table below lists the old file transfer `rumba.ini` settings, the new Windows Registry entry, and describes the purpose of each setting.

| This <code>rumba.ini</code> setting | Converts to this Windows registry entry | Purpose |
|-------------------------------------|---|---|
| [FTX] Blank Screen | BlankScreen (DWORD) | Specifies whether the screen should be blank while Rumba+ displays the File Transfer Configuration dialog box. When the dialog box first appears, the screen is frozen. When the dialog box closes, the screen refreshes with the current buffer contents. |
| [FTX] NOPA1 | NOPA1 (DWORD) | Disables the PA1 key from being automatically sent to the host following a TSO file transfer or file list command. Some host applications, such as session managers, reserve the PA1 key for special functions. Enabling the NOPA1 setting prevents |

| This rumba.ini setting | Converts to this Windows registry entry | Purpose |
|------------------------|---|---|
| | | <p>Rumba+ from interfering with these host applications. NOPA1=0 means disabled. NOPA1=1 means enabled.</p> <p> Note: For compatibility with older versions of Rumba+, the value NOPA1=2 is supported as an alternative for the ListcatWithATTN setting.</p> |
| [FTX] ListcatWith ATTN | ListcatWith ATTN (DWORD) | <p>Overrides the default behavior of sending a PA1 following a LISTCAT command. Rumba+ issues the LISTCAT command internally to generate the file list in the File Transfer dialog box. When ListcatWithATTN is specified, the LISTCAT command is terminated by sending an Attention key, rather than a PA1, to the host. To disable the setting, assign the value 0. To enable the setting, assign the value 1.</p> |
| [FTX]IND_Timeout | IND_Timeout (DWORD) | <p>Adjusts file transfer responsiveness by specifying the amount of time to wait before timing out during a file transfer command. The setting specifies the timeout in milliseconds.</p> |
| [FTX] List_Timeout | List_Timeout (DWORD) | <p>Adjusts file transfer responsiveness by specifying the amount of time to wait before timing out during a file list command. The setting specifies the timeout in milliseconds.</p> |

Using macros to transfer files

You can use the Rumba+ Macro Editor to create macros to automate and simplify file transfer procedures for your users.

Creating a file transfer macro

To create a file transfer macro:

1. Select **Tools > Edit Macro** .
2. On the lower toolbar, click the **File Transfer Send** icon or the **File Transfer Receive** icon depending on whether you want to send or receive a file.
3. Configure the file transfer as needed, then click **OK**.
4. On the Macro Editor toolbar, select **File > Save**.
5. Give the macro a name, then click **OK**.

IND\$FILE TRANSxx codes

The most common host file transfer program is IBM's `IND$FILE`. This program uses a set of `TRANSxx` codes, which convey information about particular key file transfer transactions. The table below describes the various codes used by the `IND$FILE` program.

| TRANSXX code | Description |
|--|---|
| TRANS00 Error in file transfer: file transfer canceled | Indicates that an error occurred in the file transfer operation that was detected by the CICS file transfer transaction. This may be an error in the data being transferred, or an unidentified system error. Examine the file for incorrect format or bad data, and check the installation procedure and the setup of all the components involved. Try the file transfer again. |
| TRANS01 File Transfer command being processed | Informs you that the file transfer transaction is currently being processed. |
| TRANS02 Number of bytes of file transferred so far ==> xxxx | The file transfer transaction is currently being processed, and this code informs you of the number of bytes of information transferred so far. |
| TRANS03 File transfer complete | The file transfer transaction has completed normally and the file has been transferred without any errors detected. Examine the data in the file to determine if the operation was implemented correctly. |
| TRANS04 File transfer complete, with records segmented | <p>The file transfer transaction completed successfully, but at least one of the records of data sent to the host was longer than the maximum allowed (32767). The record has been broken into more than one segment, each of which appears as a separate item in the Temporary Storage queue. The error may have occurred because the CRLF option was used when the file did not contain logical records.</p> <p>Check the contents of the file being uploaded, and the options used, then try the file transfer transaction again. Alternatively, use the <code>BINARY</code> option to transfer the data "as is" from the 3270 to the host without interpretation. Interpret the data in the host.</p> |
| TRANS05 Personal computer filespec incorrect: | File transfer has been canceled. The PC file specified is incorrect. Verify the file and try the file transfer transaction again. |
| TRANS06 Command incomplete: | File transfer canceled. The file transfer command entered was incomplete. Verify the command and try the file transfer transaction again. |
| TRANS07 Cannot link to host: | File transfer canceled A link cannot be established with the host. Check the status of the host, or refer to the user for more information. |
| TRANS09 Error reading file from damaged personal computer disk: file transfer canceled | The specified PC file resides on a damaged disk. Copy the file to an undamaged medium and try the file transfer transaction again. . |

| TRANSXX code | Description |
|---|---|
| TRANS10 Host has not responded within timeout period | The host did not respond within the allotted amount of time. Check the status of the host, or refer to the user guide for more information. |
| TRANS11 Lost contact with host: file transfer canceled | Re-establish a host connection and try the file transfer transaction again. |
| TRANS12 Error writing to damaged or full personal computer disk: file transfer canceled | The specified PC disk is damaged or full. Examine the disk for damage and ensure that it contains enough space to receive the transferred data. Try the file transfer transaction again. |
| TRANS13 Error writing file to host: file transfer canceled | An error occurred while writing the file to the host. Refer to the user's guide for more information. |
| TRANS14 Error reading file from host: file transfer canceled | An error occurred while reading the file from the host. Refer to the user guide for more information. |
| TRANS15 Host storage unavailable: file transfer canceled | The CICS file transfer transaction could not obtain enough storage in which to place its own control blocks, I/O buffers, or save areas. Make more storage available to the transaction and try the operation again. |
| TRANS16 Incorrect request code: file transfer canceled | The command that started the file transfer operation did not specify GET or PUT. The command is rejected. Check the parameters used to invoke the file transfer operation and correct them. Re-attempt the File Transfer transaction. |
| TRANS17 Invalid file name: file transfer canceled | The file name specified is invalid. Verify the file name and try the file transfer transaction again. |
| TRANS18 Incorrect option specified: file transfer canceled | An incorrect file transfer option was specified. Verify all options selected and try the file transfer transaction again. |
| TRANS19 Error handling host file: file transfer canceled | An error occurred while handling the host file. Refer to the user guide for more information. |
| TRANS21 Not enough personal computer memory available: file transfer canceled | Not enough memory is available on your PC to proceed with the file transfer. Close one or more applications and try the file transfer transaction again. |
| TRANS22 Host session identifier incorrect: file transfer canceled | The host session identifier specified is incorrect. Verify the identifier and try the file transfer transaction again. |
| TRANS23 Activity specified not a host session: file transfer canceled | The activity specified is not a host session. Verify the activity and try the file transfer transaction again. |
| TRANS24 | Autokey operation in progress: file transfer canceled Wait for the autokey operation to complete, then try the file transfer transaction again. |
| TRANS25 Keyboard inhibited: file transfer canceled | The keyboard has been inhibited. Refer to the user guide for more information. |
| TRANS26 Unrecoverable system error: file transfer canceled | An unrecoverable system error occurred. Check the installation procedure and the setup of all the components involved. Try the file transfer transaction again. |

| TRANSXX code | Description |
|--|---|
| TRANS27 Communication sequence with host disrupted: file transfer canceled | Communication between your PC and the host was disrupted. Re-establish a host connection and try the file transfer transaction again. |

AS/400 Getting Connected

This section is intended to help you configure and maintain Rumba+ AS/400 Display and Printer connections. To do this, you use the Rumba+ **Connection Configuration** dialog box.



Notes:

- To configure connections for features such as AS/400 file transfer and shared folders, use the AS/400 Communications tool. See [Using the AS/400 Communications tool](#).
- To build a configuration file for the Rumba+ SNA engine, use the APPC Configuration tool. See [Rumba+ APPC Configuration](#) on page 110.

There is more to connecting to a host than just having the physical elements in place. When you start a Rumba+ AS/400 session, you create a specific relationship between the host link and the interface options you configure.

The first time you make the host connection, you define these relationships following the steps outlined below. Afterwards, Rumba+ uses your customized parameters to configure the new session environment for you.

Connecting to the host

The connection procedures described here provide an overview of the tasks you must complete to configure an AS/400 interface for the first time.

1. Start the AS/400 Communications tool. To do this, select **Start > All Programs > Micro Focus Rumba+ Desktop > Rumba+ Desktop Tools > Rumba+ Desktop AS400 Communications**.
2. In the **Rumba+ AS/400 Communications** dialog box, click the **Interface** tab.
3. In the **Installed Interface** box, select an interface.
4. Click **Configure**, then configure the interface.

Use the four pages of the **Rumba+ AS/400 Communications** dialog box to:

- Configure your connection for different types of interfaces.
- Set security options.
- Support an array of character sets.
- Display error messages for diagnostic purposes.

Starting the connection process

To start configuring an AS/400 host connection, open the **AS/400 Connection Configuration dialog box**. To do this, in an AS/400 Display, select **Connection > Configure**.

The **General** page is the main page. The name and number of additional pages that are displayed depend on which interface you choose.

The name of the interface currently selected on the **General** page appears on one tab (for example, **Rumba+ Router**) and, for all but the **TN5250** and **Demo Host** interfaces, a **Security** tab is displayed as well.

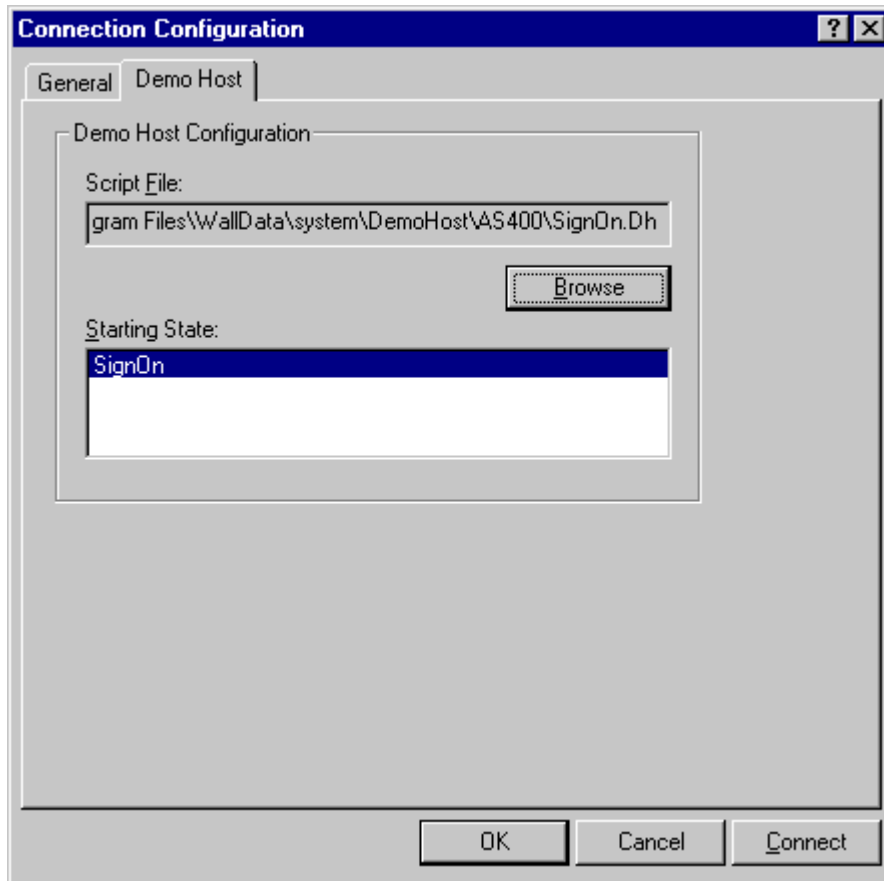
Procedures for configuring each interface are described in the online Help.

The Demo Host

The Demo Host lets you communicate with a simulated host through a series of Rumba+ conversations previously recorded with the Data Stream Analyzer (DSA) Trace system.

When you use this host, Rumba+ sends commands to a program emulating a host. The host program responds with the corresponding 5250 data stream segments, based on your keyboard or mouse input.

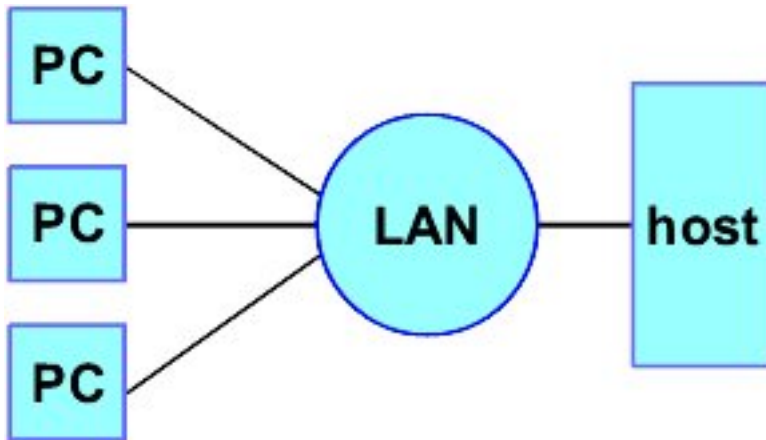
The Demo Host is especially useful for training purposes. You do not have to configure the host or the session parameters to use the Demo Host.



! **Important:** These fields are initialized with defaults based on data from your current profile, if available, or from system defaults. They are the recommended settings and should not be changed except for special circumstances. Selecting an inappropriate starting state could result in undesirable behavior.

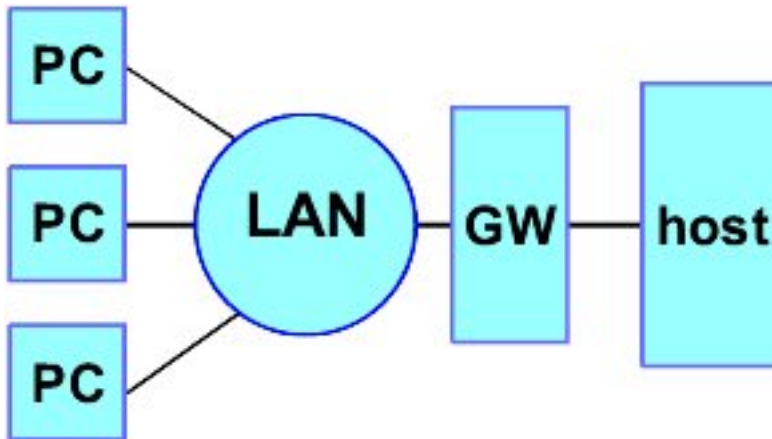
Selecting an interface

When establishing a host connection, you need to determine which interface to use. By matching your network topology with one of the examples below, you can start choosing the most appropriate interface.



LAN Direct is used when the LAN is directly connected to a host. Examples of this connection type are listed below:

- MPTN (SNA over TCP/IP) - a Rumba Router link type
- TN5250
- LAN gateway



Using a LAN gateway connection, the LAN is connected first to a gateway, usually for protocol conversion. IPX and NetBIOS are two examples of protocols that require gateways, because neither are native to normal host environments. An example of this connection type is Microsoft SNA Server.

Configuring the interface

After you have determined which interface best suits the needs or constraints of your connection requirements and network topology, you need to tell Rumba+ how to find your host and how your host can find you (the client).

To do this, you use the **Connection Configuration** dialog box. The best initial approach is to leave the settings of the majority of the fields used to specify client and host data at their default values.

The connection configuration parameters required depend on the interface you select. For Rumba+ Router link types, the **Rumba+ Router** page displays additional tabs for you to specify configuration values.

Successful connection indicator

When the host connection is established, the status bar description area reads *Connected*.

When the cursor is moved around the screen, the description area shows the last command selected.

The status bar displays SA (system available) in the first status box to indicate that the AS/400 is ready to respond.

Other helpful features

In addition to the connection methods already discussed, Rumba+ has additional features designed to save you time, make the connection task easier, and help you understand the entire process better.

The administrator override file

A high priority for any system administrator is standardizing system configurations. When you create an administrator override file, you provide a set of well-defined parameters that each user can access. This tool can significantly reduce the time spent setting up and troubleshooting workstations.

An administrator override file is a configuration file you create, then place on the network. Users can access this file for connection information to SNA-type machines. If the connection information changes, you can use the administrator override feature to make one central change.

Using the Rumba+ Router to configure an APPC link

The Rumba+ Router supports Advanced Peer to Peer Networking (APPN), and the Common Programming Interface for Communications (CPI-C). Workstations using the Rumba+ Router can connect to AS/400s over a LAN or direct physical connection.

This section provides an overview of the procedures used to specify the settings for a host connection using the Rumba+ Router.

Overview of Rumba+ Router

Using the Rumba+ Router provides you with support for a wider range of client-based applications and connectivity types. By processing API commands on the client workstation, the Rumba+ Router takes advantage of the benefits of distributed computing to enhance both the performance and flexibility of the applications you use to interact with your AS/400 host.

There are common elements within both the **Connection Configuration** and **Link Configuration** dialog boxes, regardless of which Rumba+ Router link type you use to make a connection. Because of this, specifying settings does not vary on the **Rumba+ Router** and **Security** pages in the **Connection Configuration** dialog box, nor on the AS/400 **AS/400 Link** and **Advanced** pages of the **Link Configuration** dialog box.

When you select the Rumba+ Router, the **Connection Configuration** dialog box displays the **Rumba+ Router** and **Security** tabs in the second and third tab positions.

When you click the **Rumba+ Router** tab and add a new connection, you see the **Link Configuration** dialog box. This has three pages:

- The first is always **AS/400 Link**.
- The second one changes to the name of the link type that you select.
- The third is always **Advanced**.

Connection Configuration dialog box

Workstation users normally use the **Connection Configuration** dialog box to configure the connection from an AS/400 display or printer session. This is instead of using:

- The **Rumba+ APPC Configuration** tool, which is more suited for creating configuration files for SNA interfaces.

- The **Rumba+ AS/400 Communications** tool, which is used to configure host connections for Rumba+ client applications.

The installed interfaces that appear in the **Connection Configuration** dialog box include:

- Demo Host
- Rumba+ Router
- TN5250
- Microsoft SNA Server (if the SNA client is installed)

Setting up the connection

Setting up connections with the Rumba+ Router generally involves three steps:

1. Configure the Rumba+ Router interface.
2. Choose a link or connection type.
3. Configure the link type.

Because the settings you can specify vary so widely depending on which link type you choose, each link type is discussed. The **Rumba+ Router** and **Security** pages do not change for each link type. The remainder of this section outlines what you can specify on these pages.

The screenshot shows the 'Connection Configuration' dialog box with the 'RUMBA Router' tab selected. The dialog is divided into three main sections: 'AS/400 Information', 'Session Information', and 'PC Information'. At the bottom are 'OK', 'Cancel', and 'Connect' buttons.

| Section | Field/Control | Value |
|---------------------|---------------|-------------------------------------|
| AS/400 Information | System Name | CEESKO* |
| | Add | Button |
| | Set Default | Button |
| | Remove | Button |
| | Discover | Button |
| Session Information | Auto Sign-on | <input checked="" type="checkbox"/> |
| | Device Name | [Empty text box] |
| PC Information | PC Name | PKENT2 |
| | Network Name | APPN |
| | Import | Button |
| Dialog Buttons | | OK, Cancel, Connect |

Rumba+ Router page

The table below describes the parameters of the **Rumba+ Router** page in the **Connection Configuration** dialog box.

| Parameter | Description |
|----------------------------|--|
| AS/400 Information | Use this group box to select or edit an existing configuration, or add a new configuration to the System Name list. Configurations are not displayed in the System Name list until you have added them. |
| System Name | Lists all the currently configured systems. Click the down arrow to select a system. |
| Set Default | Designates the selected system as your default connection, which will be used automatically unless another system is selected before connecting. The default system is displayed in the System Name list with an asterisk (*). |
| Add | Configures a new connection. The new connection will be displayed in the System Name list after you have added it. |
| Remove | Deletes a configured connection. If you delete the default system, you must select or configure a new system before connecting. |
| Properties | Opens the Link Configuration dialog box for the selected connection. You can edit the available parameters and save the changes to the configuration. |
| Session Information | Use the controls in this group to specify how user information for this session is specified. |
| Auto sign-on | When you check this box, your connection information is used for the host sign-on. |
| Device Name | You can add an optional device name that will override the default device name used for this session. In most cases, the device name defaults to your PC system name followed by S1 or P1. Instead of using the default, you can enter a device name which the AS/400 uses to recognize this session. |
| PC Information | Lists the information that is used when connecting your PC with the AS/400. |
| PC Name | Add the name you use to log on to your network. This corresponds to the controller ID configured on the AS/400, and can be up to eight characters, including A-Z, 0-9, @, #, and \$. |
| Network Name | Add the name of the network you are using to connect. For example, you may be using APPN. On the AS/400, this corresponds to the local network ID, and can be up to eight characters, including A-Z, 0-9, @, #, and \$. This identifies the AS/400 on the network. |

You can find step-by-step procedures for configuring individual interfaces and link/connection types in the online Help.

The interface Help files are a self-contained unit with information on requisite stacks, configuration procedures, and troubleshooting information (including most error messages associated with an interface). When necessary, the Help also assists you in locating values for interface parameters defining the local PC and the remote host.

Security page

The table below describes the parameters on the **Security** page of the **Connection Configuration** dialog box.

| Parameter | Description |
|---|--|
| Sign-on Features | |
| Use Common Sign-on | Uses the specified user ID and password as sign-on information for all systems. |
| AS/400 Sign-ons | Lists the currently known AS/400 systems for which you have configured security settings. You must add systems on the Interfaces page before you can configure security settings for them. |
| Add | Sets up security for a new system. |
| Change | Changes the security settings for the selected system. |
| Delete | Deletes the security settings for the selected system. |
| Enable Caching of User IDs and Passwords | Enables the storing of the user ID and password for the currently configured system until you reboot your PC. If you check this option, you do not have to enter your user ID and password for subsequent connections unless you reboot. |

Rumba+ Router link types

To configure an AS/400 Rumba+ Router link, you use the **Link Configuration** dialog box. To open the dialog box:

1. Select **Connection > Configure**. The **Connection Configuration** dialog box appears.
2. In the **Installed Interfaces** list, select **Rumba+ Router**.
3. On the **Rumba+ Router** page, select the system name from the drop-down list.
4. Click **Properties**. The **Link Configuration** dialog box appears.

AS/400 Link page



The table below describes the parameters on the **AS/400 Link** page of the **Link Configuration** dialog box.

| Parameter | Description |
|---------------------------|---|
| AS/400 Information | |
| System Name | <p>Displays the alias for the AS/400. This name is added to the list of configured connections on the Rumba+ Router page.</p> <p>For example, if you connect to a computer called S1001234, you could call the computer Bill instead of S1001234. By default, this name is used as the LU Name on the Advanced page, although you can change this at any time.</p> <p>To change the System Name or other connection parameters later, select it from the System page, then click Properties. If you are going through an adjacent network node (system) via an APPN connection to another system, enter the name of the target system.</p> |
| Link Type | <p>Displays the link types you can use to connect. You must select a link type to complete the connection configuration.</p> <p>Your choice of link type depends on your hardware and software configuration, as well as the type of connection</p> |

| Parameter | Description |
|-----------|--|
| | you need. If you do not know which link type to use, check with your system administrator. |

Advanced page



The table below describes the parameters on the **Advanced** page of the **Link Configuration** dialog box.

| Parameter | Description |
|---------------------|---|
| LU Name | <p>Displays the name of the AS/400's logical unit. This is not an alias. This is the actual name of the AS/400 and is used to make the connection. The LU Name corresponds to the System Name on the Rumba+ Router page. The System Name, however, can be an alias, while the LU Name is always the actual name of the AS/400.</p> <p>This name can be up to eight characters, including A-Z, 0-9, @, #, and \$.</p> |
| Network Name | <p>Identifies the network you are connecting over. The Network Name corresponds to the local network ID on the AS/400, and can be up to eight characters, including A-Z, 0-9, @, #, and \$.</p> <p>This name is used to identify the AS/400 on the network.</p> |

Link types

The table below describes types of link that the Rumba+ Router supports.

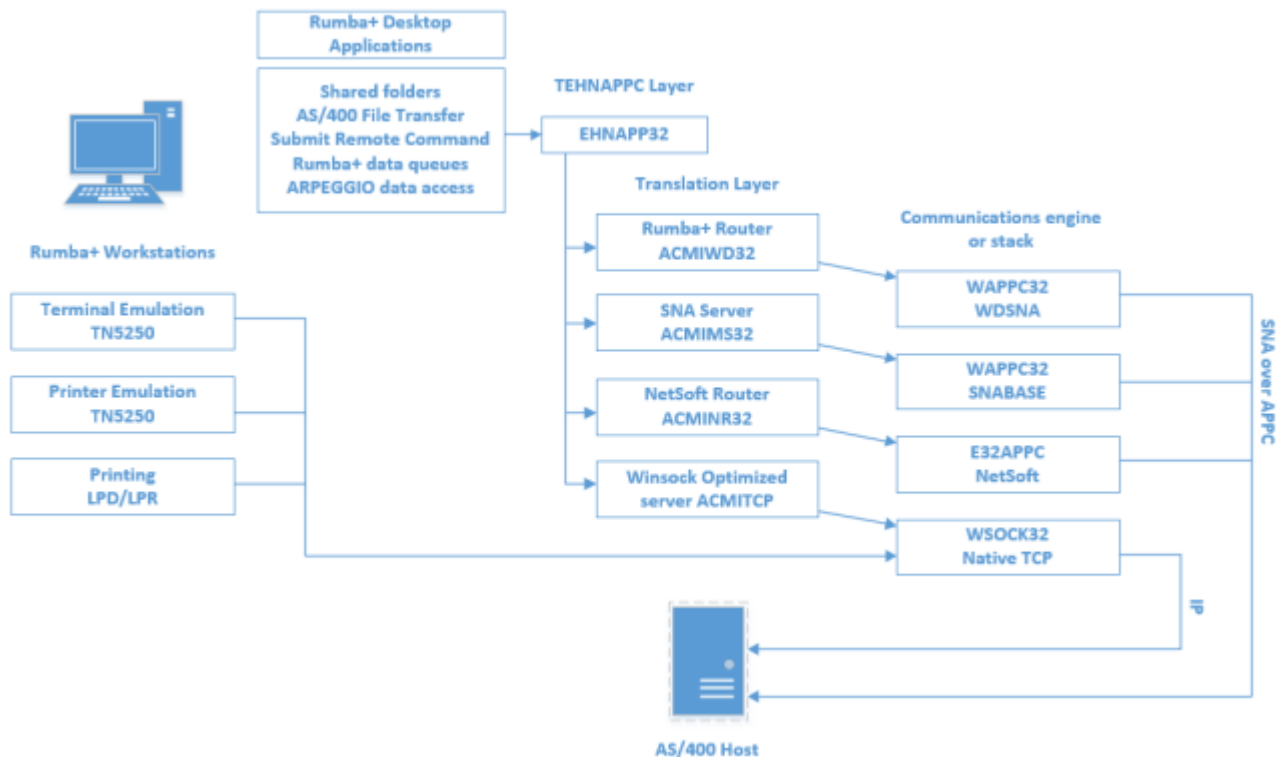
| Link Type | Function |
|------------------------|--|
| APPN | Connects to an AS/400 host by using an existing network connection as a node. For example, an APPN connection between your PC and an AS/400 host can be used to access another AS/400 host that does not have a direct physical connection to your PC. |
| MPTN (SNA over TCP/IP) | Connects to an AS/400 host using SNA or APPC to communicate over TCP/IP networks. The full capability of the Rumba+ APPC engine is used over an existing TCP/IP backbone, linking client workstations to the host and providing transparent access to functions such as AS/400 printing and file transfer. |

Native TCP support

Rumba+ supports AS/400 access via native TCP for a number of client applications. With the implementation of this feature, Rumba+ provides support for the complete range of client applications. Companies moving to TCP/IP networking can still give their users access to key AS/400 applications which are important for user productivity.

Rumba+ TCP architecture

The figure below shows the data flow from your workstation to your AS/400:




Rumba+ Winsock support allows you to use your existing TCP/IP connection as the link between the **AS/400 File Transfer** tool or **Submit Remote Command** and your host.

Rumba+ AS/400 Display and AS/400 Printer also provide display and printer support directly over TCP/IP.

Supported Rumba+ components

The table below describes the functions performed by the Rumba+ components that use native TCP.

| Component | Function |
|--|---|
| Display | |
| Rumba+ AS/400 Edition Display & TN5250 interface | Presents the traditional AS/400 display terminal in a Microsoft Windows application: the Rumba+ desktop. Users can run multiple host sessions, displaying and working with host applications simultaneously. |
| Printing | |
| Rumba+ AS/400 Printer | Includes standard features such as AS/400 printer queues, PC printer queues, and print log.  Note: Printing with TCP/IP is now available using TN5250. |
| File Transfer | |
| AS/400 File Transfer | Transfers files or selected data between the AS/400 host and your PC. |

Configuring a TCP connection

The procedure for configuring your host connection depends on which desktop application you use:

- If you plan to use Data Access, use the 32 bit ODBC program, in Windows Control Panel, to define and manage a data source for the Rumba+ AS/400 Optimized Server ODBC driver. If you need to configure a Rumba+ APPC connection, click **Configure Rumba+ APPC**.
- If you plan to use TN5250, use the **Connection Configuration** dialog box to configure a Rumba+ Router TN5250 host link.

Trace support for TCP applications

To obtain trace data from your host connection, use the Rumba+ Trace tool.

For more information, see [Rumba+ Trace](#) on page 120.

Configuring an MPTN connection

The options you can specify on the **MPTN Configuration** page of the **Link Configuration** dialog box vary a great deal depending on which link type you use. This section discusses the options you specify to configure a host connection using the Rumba+ Router and an MPTN link type.

About MTPN

In this guide, the MPTN interface is described as a LAN direct connection type.

Multi-Protocol Transport Networking (MPTN) is an open architecture that allows integration of multiple-vendor and multiple-protocol environments.

The primary advantage of MPTN is that you can use either SNA or APPC to communicate over TCP/IP networks. This means that you can use the full capability of the Rumba+ APPC engine over your existing TCP/IP backbone. Effectively, this links your client workstation directly to the AS/400, providing transparent access to functionality, such as AS/400 printer and file transfer.

Rumba+ MPTN supports various APIs:

- EHNAPPC
- CPIC
- APPC

Various applications work with Rumba+ MPTN:

- Database applications
- Printer configurations
- AS/400 Display
- AS/400 File Transfer

AS/400 considerations

Before you can connect to an AS/400 using the MPTN interface, the AS/400 must be set up to use TCP/IP. For your AS/400 to communicate using TCP/IP, it must be running OS/400, Version 3.0, Release 1 (or later).



Note: This is an absolute requirement. Earlier versions of the operating system do not allow you to properly configure TCP/IP addresses for either your AS/400 or your client workstations.

MPTN parameters

The screenshot shows a dialog box titled "Link Configuration" with three tabs: "AS/400 Link", "MPTN Configuration", and "Advanced". The "MPTN Configuration" tab is selected. It contains three sections: "TCP/IP Domain Name" with a text field for "Remote Host Name"; "Security" with a checkbox for "Use Host APPN Remote Location List"; and "MPTN Options" with a checked checkbox for "KeepAlive". At the bottom are "OK" and "Cancel" buttons.

The table below describes the parameters on the **MPTN Configuration** page of the **Link Configuration** dialog box.

| Parameter | Description |
|---|---|
| TCP/IP Domain Name | |
| Remote Host Name | Type the remote host name or IP address you want to access. |
| Security | |
| Use Host APPN Remote Location List | When checked, the system name sent with your connection request is the Link Name/Remote LU Name you entered for this workstation. When unchecked, the system name sent with your connection request is MPTN . You can use this security option when you configure a connection to an AS/400 host that uses APPN Remote Location List security. |
| MPTN Options | |
| KeepAlive | Specifies whether host KeepAlive settings are negotiated as part of the connection process. |

Configuring a Microsoft SNA Server connection

In this guide, the Microsoft SNA Server interface is described as a LAN gateway connection type.

Before running Rumba+ with the Microsoft SNA Server interface, you must:

- Run the Microsoft-supplied configuration utility and configure the workstation as an APPC client.
- Run the supplied `snabase.exe` utility to start communication between the workstation and the Microsoft SNA Server.

Diagnostics

You can use the following tools to diagnose connection problems that your users might encounter when trying to establish a host connection:

Rumba+ Trace Traces and records SNA and link layer communication sessions. These trace options can have an impact on your system performance, so it is best to use them as a filter to sift through your communication sessions when isolating a problem.

Rumba+ Event Viewer Works in the background collecting information at timed intervals that you can set, and keeps an event log organized by Data, Time, Source, Event ID, Type, and Computer.



Note: The Rumba+ Event Viewer is very similar in appearance and functionality to the Windows Event Logger.

Configuring the AS/400 Communications tool

You use the Rumba+ AS/400 Communications tool to configure host connections for:

- AS/400 File Transfer
- Shared Folders application and API
- Data Queues API
- Submit Remote Command API

- Virtual Print application and API

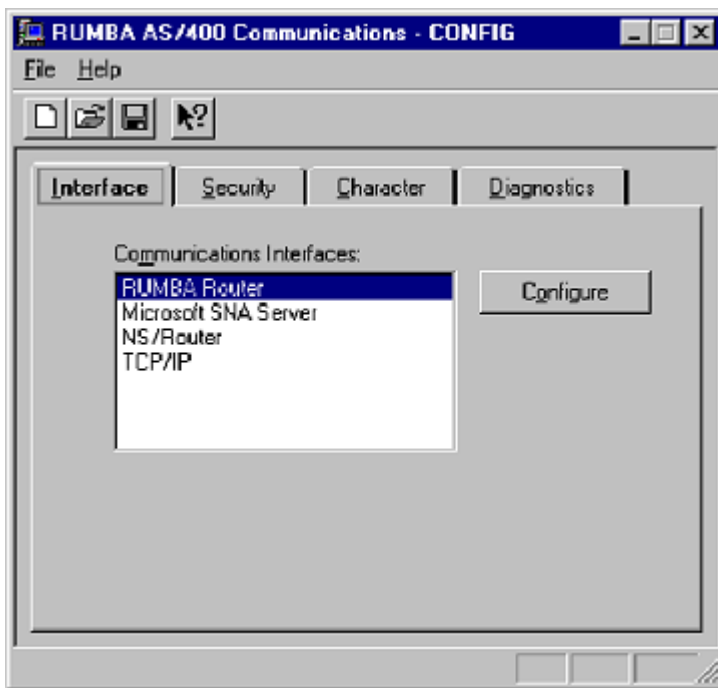
Configurations are saved as a file with an .ehm extension. You can create multiple configuration files for each interface that you use.

Connecting to the host

The connection is configured from the **Connection** menu.

1. Select the **Connection > Configure**.
2. Select the interface to use.
3. Click **Properties** and configure the interface, if required.
4. Click **Connect**. After connecting to the host, you can save your settings as a profile.

Interface page



The table below describes the parameters on the **Interface** page of the **Rumba+ AS/400 Communications** dialog box.

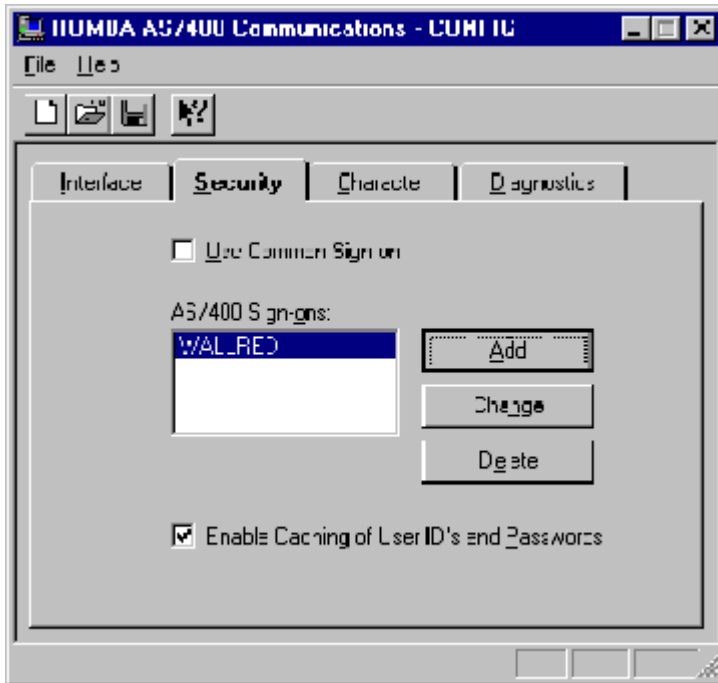
| Procedure | Description |
|----------------------------------|--|
| Communications Interfaces | Lists the installed communication interfaces. Select which type of communication interface to use when connecting this profile to the host. |
| Configure | Configures the selected interface (displays the Rumba+ Router dialog box). If the interface has already been configured, you do not need to do so again, unless you want to make changes. |

Procedures for using the Rumba+ Router and configuring other communication interfaces can be found in:

[Using the Rumba+ Router to configure an APPC link](#) on page 65

[Security page](#) on page 68

Security page



The table below describes the parameters on the **Security** page of the **Rumba+ AS/400 Communications** dialog box.

| Parameter | Description |
|--|---|
| Use Common Sign-on | Uses the specified User ID and Password as sign-on information for all systems. |
| AS/400 Sign-ons | Lists the current AS/400 systems you have configured security settings for. You must add systems on the Interfaces page before you can configure security settings for them. |
| Add | Sets up security for a new system (displays the Add System Sign-on dialog box). |
| Change | Changes the security settings for the selected system. |
| Delete | Deletes the security settings for the selected system. |
| Enable Caching of User ID's and Passwords | Enables storing of the user ID and password for the currently configured system until you reboot your PC. If you check Enable Caching of User IDs and Passwords , you not have to enter your user ID and password for subsequent connections, unless you reboot. |

Add System Sign-on dialog box

| Parameter Name | Description |
|---------------------------|--|
| AS/400 System Name | Lists the selected system name. |
| User ID | Becomes the user ID that is required when signing on to the selected system. |
| Password | Becomes the password that is required when signing on to the selected system. This is optional, unless a |

| Parameter Name | Description |
|------------------------|---|
| | password is required by the system you are connecting with. |
| Verify Password | Verifies the correct spelling of your password. An error message is displayed if this password does not match the first password you entered. |
| OK | Saves any changes you have made and closes the dialog box. |
| Cancel | Ignores any changes you have made and closes the dialog box. |
| Reset | Removes changes and restores the original settings. |

Character page

The table below describes the parameters on the **Character** page of the **Rumba+ AS/400 Communications** dialog box.

| Parameter | Description |
|---|--|
| Host Character and Set/Code Page | Displays all the character sets and corresponding code pages available for the AS/400 display. |

Diagnostics page

The table below describes the parameters on the **Diagnostics** page of the **Rumba+ AS/400 Communications** dialog box.

| Parameter Name | Description |
|---------------------------------------|--|
| Display EHNAPPC Error Messages | Displays additional diagnostic error message boxes when a communications error occurs. These do not replace standard error messages. |

AS/400 File Transfer

This section provides a general overview of the Rumba+ AS/400 File Transfer program, together with reference information.

Rumba+ AS/400 File Transfer sends data between the host and the PC. Users can run AS/400 File Transfer to send host files or selected host data to the PC, work with the data in a PC application, then run AS/400 File Transfer to send the modified PC data back to the AS/400.

In addition to AS/400 File Transfer, you can also transfer files using Mainframe Passthrough.

For detailed information on configuring individual and batch file transfers, see the online Help.

AS/400 File Transfer features

AS/400 File Transfer provides multiple options for transferring data between the AS/400 host and the PC. You can:

- Create, open, and save file transfer settings in a profile
- Run individual or multiple (batch) file transfers
- Transfer text or database files from the PC to the AS/400
- Use drag-and-drop to transfer host data to the PC display, the printer, or to a PC file
- Transfer complete host files to the PC or use SQL to transfer only the information you need
- Display libraries you can access on the host, and add libraries for the current file transfer session
- Specify decimal, date, and time formats for the transferred data
- Remove End-of-File (EOF) characters from host files before sending to the PC
- Specify transfer options such as **Run minimized**, **Monitor percent complete**, **Notify when complete**, **Close when complete**, **Truncate records**, **Truncate spaces**, and **Auto Run**.
- Forward host files to an e-mail address

Installation

AS/400 File Transfer is included in the default installation of Rumba+ AS/400 Edition. When performing a custom installation of Rumba+ AS/400 Edition, you can select or deselect the **AS/400 File Transfer** option.

After installing AS/400 File Transfer on a workstation, you can create and distribute customized file transfer profiles that your users can run easily.

Using profiles

You can simplify the file transfer process for your users by creating and distributing profiles for all data transfers that need to be run regularly. For example, users might need to create weekly reports or spreadsheets based on host data. To automate the file transfer program, go through the following steps:

1. Analyze the problem.

Which users transfer data to and from the host on a frequent or regular basis? What kinds of transferred data do they need? How would they best benefit from an automated file transfer procedure?

2. Design individual file transfer profiles.

Based on your analysis, create customized file transfer profiles to meet the individual needs of your users. This includes configuring:

- The default communications interface for AS/400 File Transfer
- Transfer options such as **Run minimized**, **Notify when complete**, and Monitor percent complete
- The location and format of the data files on the PC and the host

3. Use SQL statements if appropriate.

When sending AS/400 data to the PC, you can use SQL statements to transfer only the AS/400 data that users need, instead of transferring complete files. You can also sort, group, summarize, and perform mathematical calculations on the transferred data.

4. Create batch transfers that run multiple file transfers in a single step.

You can group individual file transfer profiles in a batch profile so users can run the specified transfers in a single step. Batch transfers can also be scheduled to run once, or on a daily, weekly, or monthly basis.

5. Use the **Auto Run** option to run file transfers from the Windows Desktop.

When you save individual or batch transfer profiles with the **Auto Run** option, users can run their file transfer profile by simply double-clicking a shortcut on the Windows Desktop.

User files

The table below describes the different types of user file that are associated with Rumba+ AS/400 File Transfer and which are stored in the user's private directory:

| File name | Description |
|-----------|--|
| .btf | Batch transfer profile for multiple file transfers |
| .fdf | File description file (required when sending database files from the PC to the AS/400) |
| .rto | Transfer profile for a single file transfer |
| .tfr | PC Support/Client Access file transfer profile (upload) |
| .tto | PC Support/Client Access file transfer profile (download) |

Changing the library list on the AS/400 host

When AS/400 File Transfer starts, Rumba+ reads the QDFTJOB (default job description) file on the AS/400 and displays the list of libraries included in this file. To display other host libraries which your users have access to, you must change the QDFTJOB file. You can change the file for the entire system or for a single user.

To change the QDFTJOB file of a single user:

1. Copy the QDFTJOB file into a new host library.
2. Change the library list as needed in the copied QDFTJOB file.
3. Update the user profile to reflect the new QDFTJOB file. Generally, the host uses the QDFTJOB file in the QGPL library by default.

To change the QDFTJOB file for the entire system, follow only the instructions [Changing the library list in the QDFTJOB file](#).

If you need to change the QDFTJOB file during a file transfer session, select **Transfer > Request Libraries** to update the current library list.

Copying the QDFTJOB file

1. At the AS/400 command line, type WRKJOB, then press **F4**. The **Work with Job Descriptions** screen appears.

2. At **Job Description**, type QDFTJOBDB.
3. At **Library**, type QGPL
4. Press **Enter**.
5. Under **Opt**, type 3 to copy the file, then press **Enter**.

The **Create Duplicate Object** screen appears.

6. At **To Library**, type the new library name for the copied file, then press **Enter**.

Changing the library list in the QDFTJOBDB file

1. At the AS/400 command line, type WRKJOBDB, then press **F4**. The **Work with Job Descriptions** screen appears.
2. At **Job Description**, type QDFTJOBDB.
3. At **Library**, type the name of the new library containing the copied QDFTJOBDB file.
4. Press **Enter**.
5. Under **Opt**, type 2 to make changes to the file, then press **Enter**.

The **Change Job Description** screen appears.

6. Press **F10** and **Page Down**.
7. Under **Initial Library List**, at **+ for more values**, type the plus sign (+) and type the names of the host libraries you want to list.
8. Press **Enter** twice.

Updating the user profile

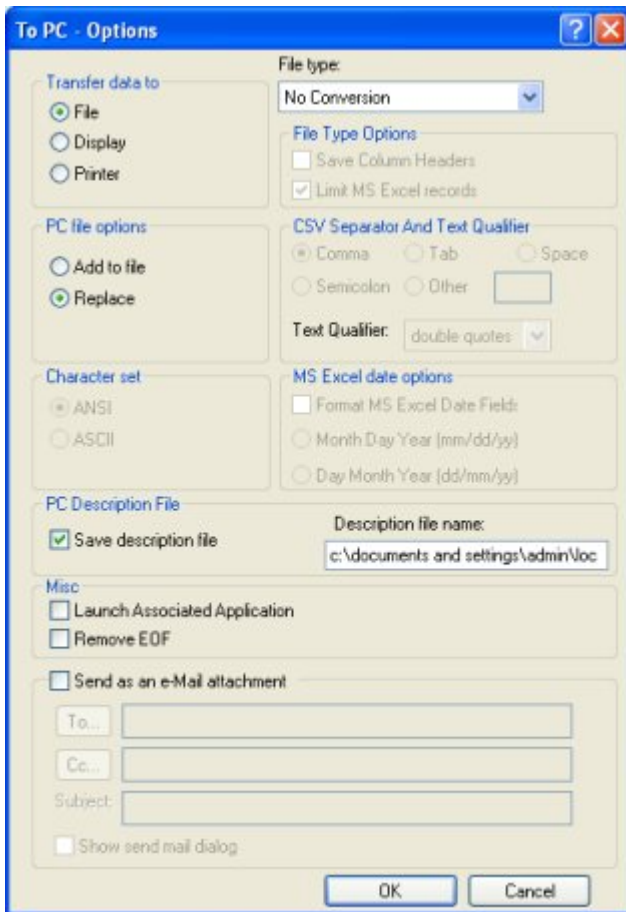
1. At the AS/400 command line, type CHGUSRPRF, then press **Enter**.
2. At **User Profile**, type the name of the profile to change.
3. Press **F10**, then press **Page Down** twice.
4. Under **Job Description**, at **Library**, type the name of the library containing the new QDFTJOBDB file, then press **Enter**.

Creating a PC description file

When sending a PC database file to the AS/400, file and field descriptions for both the AS/400 system and the PC file are required. The host uses this information to correctly identify and interpret the field data.

The PC description file (.fdF) contains information describing the PC database file. It is a text file that identifies the file data type (such as text or DIF), and contains field data including the name, data type, and length of each field in the transferred file.

When transferring data from the AS/400, you can create a PC description file automatically by checking **Save description file** in the **To PC - Options** dialog box:



Conversely, the PC description file is required when sending a PC database file to the host. If necessary, you can use a text editor to create a PC description file, following these conventions:

- Use ASCII format.
- Use a carriage return and line feed to end each record.
- Tab characters can be used, but they will be treated as spaces.
- Place an End-of-File (EOF) character at the end of the file.
- Recommended naming convention: Use the same name as the PC database file you are transferring, but with an `.fdf` extension.

Structure of the PC description file

The PC description file contains four types of information that describe the PC database file:

- PCFDF
- PCFT file type
- PCFO (optional time, date, and decimal formats)
- PCFL entries (field name, data type, length) for each database field

These information types are described below.

PCFDF

Identifies this file as a description file.

PCFT file type

Identifies the file type of the PC database file.

| Indicator | File type |
|-----------|----------------------------------|
| 1 | ASCII |
| 3 | BASIC sequential (CSV) |
| 5 | Data Interchange Format (DIF) |
| 6 | No-conversion file |
| 7 | Reserved (DBCS version only) |
| 8 | DOS random type 2 |
| 9 | Binary Interchange Format (BIFF) |
| 10 | Tab-delimited text |

PCFO

Optional PC time, date, and decimal format entries.

| Indicator | Time format name | Time format |
|-----------|--|--|
| 1 | HMS | hh:mm:ss |
| 2 | International Standards Organization (ISO) | hh.mm.ss |
| 3 | USA standard (USA) | hh:mm AM or PM |
| 4 | European (EUR) | hh.mm.ss |
| 5 | Japan Industrial Standard, Christian Era (JIS) | hh.mm.ss |
| 6 | DDS | Format given by AS/400 file attributes |
| 7 | DFT | Host job default |
| * | Unspecified | Host job default |

| Indicator | Time Separator |
|-----------|--------------------------------|
| 1 | Colon (:) |
| 2 | Period (.) |
| 3 | Comma (,) |
| 4 | Blank () |
| 5 | Null (N) |
| 6 | Default (D) (host) |
| * | Unspecified (host job default) |

| Indicator | Date format name | Date format |
|-----------|------------------|-------------|
| 1 | MDY | mm/dd/yy |
| 2 | DMY | dd/mm/yy |
| 3 | YMD | yy/mm/dd |
| 4 | Julian | yy/ddd |
| 5 | ISO | yyyy-mm-dd |
| 6 | USA | mm/dd/yyyy |

| Indicator | Date format name | Date format |
|-----------|------------------|---------------------------------------|
| 7 | EUR | dd.mm.yyyy |
| 8 | JIS | yyyy-mm-dd |
| 9 | DDS | Format given by AS/400 file attribute |
| 10 | DFT | Host job default |
| * | Unspecified | Host job default |

| Indicator | Date Separator |
|-----------|--------------------------------|
| 1 | Slash (/) |
| 2 | Dash (--) |
| 3 | Period (.) |
| 4 | Comma (,) |
| 5 | Blank () |
| 6 | Null (N) |
| 7 | Default (D) (host) |
| * | Unspecified (host job default) |

| Indicator | Decimal Separator |
|-----------|----------------------------------|
| 1 | Period (.) |
| 2 | Comma (,) |
| 3 | Default (D) (PC country default) |
| * | Unspecified (PC default used) |

PCFL entries

Describes the database fields. Include one PCFL entry for each field in the database. Each entry consists of:

- Personal Computer Field Length (PCFL)
- The field name (maximum 10 characters)
- A number designating the data type
- The field length in characters
- PCFL entries

| Indicator | Data type |
|-----------|---------------------------------------|
| 1 | ASCII |
| 2 | ASCII numeric |
| 3 | Hexadecimal |
| 4 | Binary |
| 5 | Zoned |
| 6 | Packed |
| 7 | BASIC integer |
| 8 | BASIC single-precision floating point |
| 9 | BASIC double-precision floating point |

| Indicator | Data type |
|-----------|---------------|
| 10 | EBCDIC |
| 11 | EBCDIC zoned |
| 12 | EBCDIC packed |

Sample PC description file

The following is a sample PC description file with commentary:

| File entry | Comment |
|------------------------------------|--|
| PCFDF | PC description file |
| PCFT 9 | PC file in BIFF format |
| PCFO 7,6,10,7,* Option Settings | Host default date and time formats |
| PCFL BINARY 9 7/2 | The first field, BINARY, is double-precision floating point and 7 characters in length, precise to 2 decimal places. |
| PCFL CHAR 1 10 | The second field, CHAR, is an ASCII field and has a length of 10 characters. |
| PCFL ZONED 9 8/4 | (The other fields in the database are interpreted as above.) |
| PCFL PACKED 9 11/2 | |
| PCFL HEX 3 10 | |
| PCFL DATE 1 8 | |
| PCFL TIME 1 8 | |

Using SQL: Examples

When transferring data from the AS/400 host to the PC, you can use the system default to transfer complete files, or you can use SQL to send specific AS/400 data. You can use SQL to transfer data from specified fields and records in one or more host files, sort the transferred data, and perform simple calculations on the transferred data.

This section contains three short examples of how to use SQL to query data. The examples demonstrate various query keywords using sample data from an imaginary grocery store. There are three example queries:

- Example 1 is a simple query using SELECT, WHERE, and ORDER BY.
- Example 2 selects data from three files using JOIN BY.
- Example 3 transfers summary records using GROUP BY and HAVING.

To build a query, you must first specify the AS/400 data file(s) in the **Lib/File(Member)** box on the main AS/400 File Transfer screen. These examples use three sample AS/400 files named PRODUCT, SUPPLIER, and SUPPROD in a library named GROCERY. The first few records of each file are listed in the following tables.

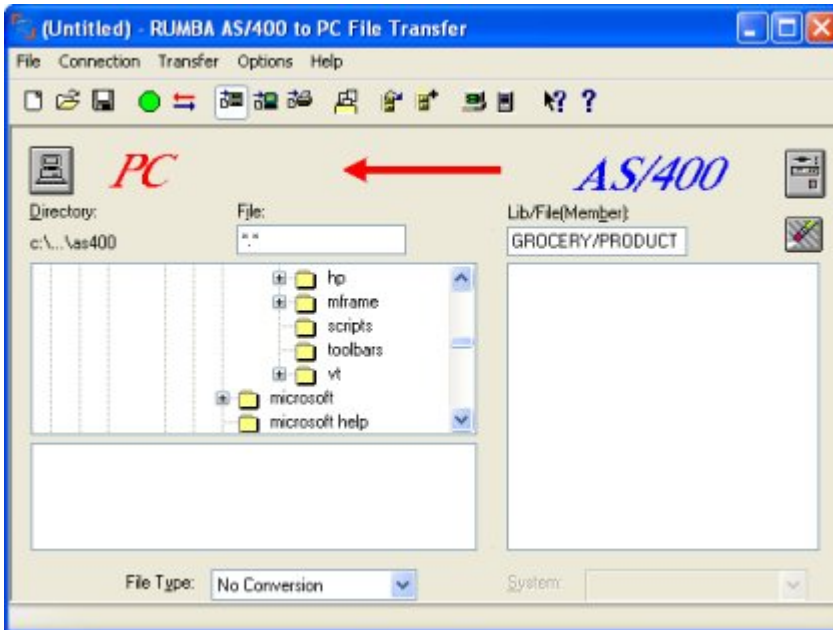
| ProdCat | ProdID | ProdDesc | ProdName | ProdQuant |
|-----------|-----------|------------|--------------------------------|-----------|
| 100570265 | 129930113 | Wild Berry | Summerbrook Wild Berry Seltzer | 84 |

| ProdCat | ProdID | ProdDesc | ProdName | ProdQuant |
|-----------|-----------|--------------------|---------------------------------|-----------|
| 100570265 | 129930513 | Apple-Cran | Summerbrook Apple-Cran Seltzer | -9 |
| 100570265 | 129935223 | Black Currant | Olympia Black Currant Seltzer | 125 |
| 100570267 | 129935423 | Sparkling Lemonade | Olympia Sparkling Lemonade | 7 |
| 100570262 | 761837634 | Cherry Lime | Olympia Cherry Lime Soda | 54 |
| 100570263 | 761831637 | Cranberry Ice Tea | Crystal Falls Cranberry Ice Tea | 302 |
| 100570263 | 761831635 | Diet Peach Ice Tea | Crystal Falls Diet Peach Tea | 79 |
| 100570263 | 761831636 | Diet Rasp Ice Tea | Crystal Falls Diet Rasp Ice Tea | 110 |
| 100570263 | 761831638 | Lemon Ice Tea | Crystal Falls Lemon Ice Tea | 218 |
| 100570100 | 165712111 | Mineral Water | Whisper Rain Mineral Water | 22 |
| 100570262 | 165712115 | Mango Passion soda | Dave's Mango Passion soda | -22 |

Example 1: Using SELECT, WHERE, and ORDER BY

To transfer a list of all available types of tea drinks sorted alphabetically:

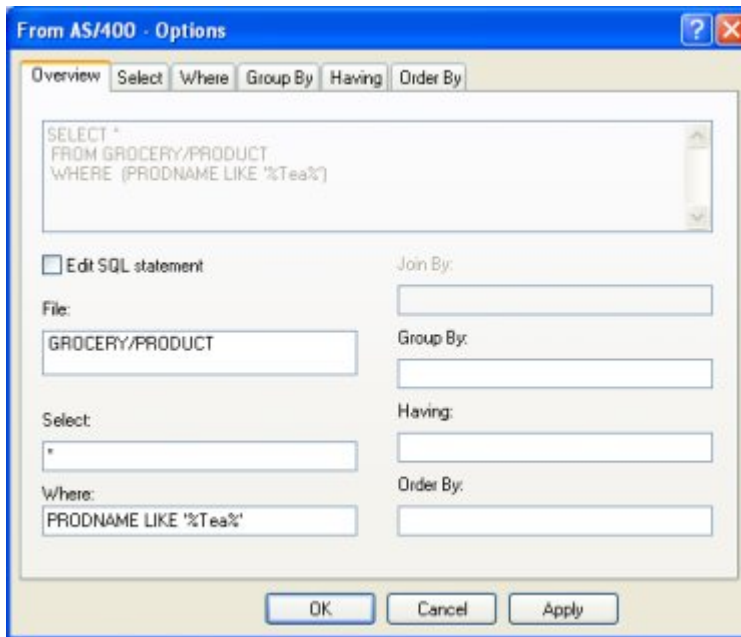
1. Specify the GROCERY/PRODUCT file in the **Lib/File(Member)** field on the main file transfer screen, then open the **From AS/400 - Options** dialog box:



2. Verify that the **Select** field on the **Overview** page contains an asterisk (*). This indicates that all fields in the PRODUCT file will be transferred.
3. To transfer all records containing the string Tea, type the following string in the **Where** field:

```
PRODNAME LIKE ` %Tea% `
```

The % character is a wildcard indicating any number of characters:



4. To sort the data in ascending order by the type of drink, type the following string in the **Order By** field:

PRODDDESC

5. Click **Apply** to update the query fields:

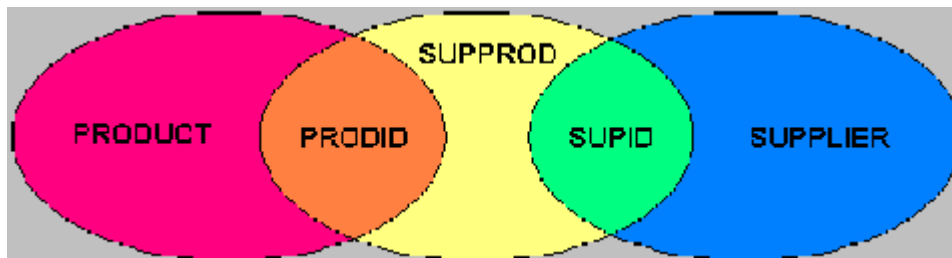
```
SELECT *
FROM grocery/product
WHERE (PRODNAME LIKE '%Tea%')
ORDER BY PRODDDESC
```

The resulting records are:

| | ProdID | ProdDesc | ProdName | ProdQuant |
|-----------|-----------|--------------------|---------------------------------|-----------|
| 100570263 | 761831637 | Cranberry Ice Tea | Crystal Falls Cranberry Ice Tea | 302 |
| 100570263 | 761831635 | Diet Peach Ice Tea | Crystal Falls Diet Peach Tea | 79 |
| 100570263 | 761831636 | Diet Rasp Ice Tea | Crystal Falls Diet Rasp Ice Tea | 110 |
| 100570263 | 761831638 | Lemon Ice Tea | Crystal Falls Lemon Ice Tea | 218 |

Example 2: Querying multiple files with JOIN BY

This query finds the suppliers and prices for a given product. Multiple files are joined so they can be queried as if they were one file. This is necessary because the GROCERY library stores data in separate files linked by common fields, rather than using one large file: The PRODUCT and SUPPROD files share the ProdID field, and the SUPPROD and SUPPLIER files share the SupID field.



With `JOIN BY`, the relationships between files become part of the query. Without joining the files, you would need three queries to get the same result: one for product ID, one for product cost, and one for supplier name.

To find the suppliers and prices for Dave's Mango Passion soda:

1. Specify the `GROCERY/PRODUCT`, `GROCERY/SUPPROD`, and `GROCERY/SUPPLIER` files in the **Lib/File(Member)** field on the main file transfer screen, then open the **From AS/400 - Options** dialog box.
2. To transfer only the product name, product cost, and supplier name fields, type the following string in the **Select** field on the **Overview** page:

```
T1.ProdName, T2.ProdCost, T3.SupName
```

3. To join records in the three files by the product ID and supplier ID, type the following string in the **Join By** field:

```
T1.PRODID = T2.PRODID AND T2.SUPID = T3.SUPID
```

4. To search all records with the string "Mango Passion", type the following string in the **Where** field:

```
T1.PRODNAME = 'Dave's Mango Passion soda'
```

5. Click **Apply** to update the query fields.

The **Query** box at the top of the **Overview** page displays the complete query statement:

```
SELECT T1.ProdName, T2.ProdCost, T3.SupName
FROM grocery/product, grocery/supprod, grocery/supplier
WHERE (T1.PRODID=T2.PRODID AND T2.SUPID=T3.SUPID)
AND (T1.PRODNAME='Dave's Mango Passion soda')
```

The resulting records are:

| | ProdCost | SupName |
|---------------------------|----------|--------------------|
| Dave's Mango Passion soda | 3.00 | Kolb Bros. |
| Dave's Mango Passion soda | 2.90 | D & C Distributors |
| Dave's Mango Passion soda | 2.85 | Silves Wholesale |

Example 3: Summarizing records with GROUP BY

What is the least expensive mineral water product? To answer this question, you must obtain the product costs from multiple suppliers for all mineral water products in each vendor's product line, then average the costs, group the data by vendor, and sort the data by cost.

With SQL, you can use summary records to obtain the answer by running a single query. The `PRODUCT` file includes a `ProdCat` (product category) field in which all mineral water products are identified by the value 100570100. The `ProdName` field contains the vendor name.

To transfer a summary record for each product name:

1. Specify the `GROCERY/PRODUCT`, `GROCERY/SUPPROD`, and `GROCERY/SUPPLIER` files in the **Lib/File(Member)** field on the main file transfer screen, then open the **From AS/400 - Options** dialog box.
2. To transfer a summary record of the average cost and the product name field, type this string in the **Select** field on the **Overview** page:

```
AVG(T2.PRODCOST), T1.PRODNAME
```

3. To join records by product ID and supplier ID, type the following string in the **Join By** field:

```
T1.PRODID = T2.PRODID AND T2.SUPID = T3.SUPID
```

4. To search records that are mineral water products, type the following string in the **Where** field:

```
T1.PRODCAT =100570100
```

5. To perform summary calculations on records of the same product name, type the following string in the **Group By** field:

```
T1 . PRODNAME
```

6. To sort the results from lowest to highest product cost, type the following string in the **Order By** box:

```
AVG(T2 . PRODCOST)
```

7. Click **Apply** to update the query fields.

The **Query** box at the top of the **Overview** page displays the complete query statement:

```
SELECT AVG(T2.PRODCOST), T1.PRODNAME
FROM grocery/product, grocery/supprod, grocery/supplier
WHERE (T1.PRODID=T2.PRODID AND T2.SUPID=T3.SUPID)
AND (T1.PRODCAT='100570100')
GROUP BY T1.PRODNAME
ORDER BY AVG(T2.PRODCOST)
```

The resulting records are:

| ProdCost | |
|-------------------------------|------|
| Whisper Rain Mineral Water | 3.00 |
| Maple Falls Mineral Water | 3.17 |
| Mt. Baker Sparkling Water | 3.35 |
| Panda Mineral Water | 3.62 |
| Panda Sparkling Lemon Essence | 3.81 |
| Panda Sparkling Lime Essence | 3.81 |

AS/400 Client Application

An additional feature available in Rumba+ Office and Rumba+ AS/400 Edition is the AS/400 Client Application: Rumba+ Submit Remote Command (application and API)

The AS/400 Client Application brings many powerful features and possibilities to your desktop. Rumba+ Submit Remote Command allows you to start and control non-interactive programs on your AS/400 host system without opening a display session.

The associated AS/400 Client APIs are development tools. With these APIs and a high-level programming language such as C, C++, or Visual Basic, you can develop custom PC applications which incorporate the functionality of the Rumba+ AS/400 Client Application. Before you can use the AS/400 Client APIs, you must install the Legacy API help and header files.

AS/400 Client installation and availability

The AS/400 Client Application is included under an express installation of Rumba+ AS/400 Edition. However, you can select or deselect the application by performing a custom installation. The AS/400 Client Application is listed under the AS/400 branch in the **Select Features** dialog box of the installation program.

Before starting

Before using the AS/400 Client application, you must configure an interface to connect with an AS/400 via the Rumba+ AS/400 Communications tool or the APPC Configuration tool. These tools reside in the Rumba+ Desktop Tools folder. For instructions on using these tools, see [Connection Tools](#).



Note: If you have already configured an interface with the Rumba+ AS/400 Display or Printer, you do not need to reconfigure the interface with either of the tools.

Interfaces supported

The Rumba+ AS/400 Client Application requires an interface that supports full LU 6.2 capabilities. These interfaces include:

- Rumba+ Router (only MPTN supported).
- Microsoft SNA Server - All connection subtypes for the Microsoft SNA Server Client are supported.



Note: The Microsoft SNA Server Client software must already be installed and configured, and the Microsoft SNA Server itself must be correctly configured and functional.

- TCP/IP - If your AS/400 operating system supports Optimized Server (V3 R1 or higher), you can connect Rumba+ AS/400 Client Applications over TCP/IP.

Rumba+ Submit Remote Command

Use the Rumba+ Submit Remote Command tool to start and control non-interactive programs on an AS/400 host from your PC without opening an AS/400 display session. Commands can be sent individually or together, and they can be saved in an ASCII file for re-submission. Return codes are received but program data cannot be returned from the host system.

For an example of using Submit Remote Command, imagine your accounts receivable department prints a group of reports every morning which requires them to enter a series of AS/400 commands. You can streamline the process in the following way:

1. Use the **Rumba+ Submit Remote Command** window to create an ASCII file of AS/400 commands.
2. Click **Send All**.



Note: If you already have a command file, open it in the **Rumba+ Submit Remote Command** window, then click **Send All**.

The Submit Remote Command utility also has a command line interface which allows you, for example, to execute Submit Remote Command from a PC batch file and send AS/400 commands in a specified `.txt` file.

The Rumba+ Submit Remote Command tool is located under **Start > All Programs > Micro Focus Rumba+ Desktop > Rumba+ DesktopRumba+ Tools**. Submit Remote Command is also a legacy API and available as an ActiveX control in the Rumba+ ObjectX Development Kit.

HP and UNIX File Transfer

Rumba+ gives you easy, complete, and transparent access to HP and UNIX host applications.

How to transfer files using Rumba+ HP and UNIX

You can use the Rumba+ HP file transfer feature, to copy files from a PC to an HP host or from an HP host to a PC.

Similarly, you can use the Rumba+ UNIX file transfer feature to copy files from a PC to a UNIX or VMS host, or from a UNIX or VMS host to a PC. Rumba+ works transparently with any UNIX or VMS host operating system.

Rumba+ simplifies the file transfer setup process by using typical Windows menus and dialog boxes. It reads and lists PC and host files, and lets you transfer files in the background. You can also perform file transfers using the configurable toolbar.

Understanding the file transfer process

Rumba+ uses protocol-driven transfer methods. The specific details of the protocols are not important to users, but the protocols specified on the PC must match those used by the host computer. For example, Rumba+ does not work if the host attempts to transfer using the Kermit file transfer protocol and the user selects **Text** as the transfer protocol to be used. To minimize such conflicts, Micro Focus strongly recommends using the **Rumba+ Initiated** option (see below) and using macros (see [Using Rumba+ macros to transfer files](#) on page 92).

Here is an overview of the steps you must follow to transfer files:

1. Select **Transfer > Send** or **Transfer > Receive**.
2. On the **Setup** page, specify the file type, transfer protocol, and host environment. You can also have Rumba+ initiate the file transfer operation by checking **Rumba+ Initiated** (see below). For example, *sz* is used for sending files to the host via Zmodem.

When you choose a file transfer protocol, Rumba+ provides a configuration page corresponding to that protocol. For example, if you choose the **Text** transfer protocol, the **Text Configuration** tab is displayed.

3. Click the tab that is associated with the transfer protocol you have chosen, then specify the information needed by the transfer protocol.
4. Click the **Files to Transfer** tab and select the files you want to transfer.
5. Click **OK**.

About the Rumba+ Initiated option:

The user must know which protocols are supported by the host. If the protocol chosen by the user is not supported by the host, Rumba+ does not work. Also, the host must be at a command prompt, ready to accept the transfer command before you attempt a file transfer.

When the option is checked:

- You can specify the name of the host transfer program for Rumba+ to use when automatically initiating the transfer.
- Rumba+ provides some standard commands based on the protocol selected. If the local setup is different, commands can be entered that are specific to the site. Whatever is entered in the **To Host Program Name** or **From Host Program Name** fields is sent to the host exactly as it is typed.
- If the correct host is not specified, you will not see any host file information when you view the **Files to Transfer** tab.

The **Rumba+ Initiated** option is not available for **Text** file transfers or when **Other** is selected in the **Host Environment** list.



Note: If the host is a VMS system and the full program name is given, Rumba+ defines a foreign command to start the program.

MPE file transfers

For HP sessions only, file transfer capabilities are now available for systems using the MPE host environment. When you are connected in MPE mode, HPXFER is the only protocol available. MPE file transfers are always **Rumba Initiated**.

MPE file transfers require special setup by the host administrator. Follow these steps to set up MPE file transfers:

1. In the registry, create a new value:

```
HKEY_LOCAL_MACHINE\SOFTWARE\WallData\Office\HP\MPEBOOTSTRAP
```

The type of the value is `DWORD` and the value should be set to 1.

2. When the **File Transfer** dialog box appears, a new button labeled **BootStrap** will be visible.
3. Click **BootStrap** to transfer the `WALLXFER.BIN` configuration file to the MPE system.
4. After the `WALLXFER.BIN` file is on the host, set its file permissions to execute (`x`) and move it to the `PUB.SYS` group.
5. Once the file has been transferred for the first time, the **BootStrap** functionality should be disabled by deleting the registry key or changing its value to 0.



Note: This procedure must be done once for each MPE system you will use to transfer files.

Using compatible file transfer protocol versions

Rumba+ might have trouble supporting particular freeware or shareware versions of a given file transfer protocol. For example, there are many public domain versions of Xmodem and Ymodem which are known to implement the protocols incorrectly. Ensure that you are using a file transfer protocol version that is current and well-supported by a known and reputable vendor.

8-bit binary transparent communications

File transfers are performed using an 8-bit binary transparent protocol. A transparent channel is a communication method and medium that does not use any of the byte values for control of the channel itself. An 8-bit channel does not use any of the bits in an 8-bit character set for control of the channel (for parity, for example) and can transmit all 256 codes in the character set. This is important when transferring data that contains anything that is not printable text in the data stream.

If the channel you are using is not transparent, the Kermit protocol performs the most reliable file transfer.

Channels less than 8-bits wide are not supported.

Using Rumba+ macros to transfer files

Because many Rumba+ users are not familiar with file transfer procedures, it's a good idea to configure macros they can use for the file transfers they commonly perform. The Rumba+ macro utility allows you to automate many Rumba+ functions, including file transfers.

AS/400 and Mainframe Printers

This section provides a general overview of the Rumba+ AS/400 and mainframe printers.

AS/400 and mainframe printer features

With the Rumba+ printer, you can route jobs from your printer queue to the Windows printer of your choice. You can also:

- Preview documents before printing.
- Save documents to print later.
- Print to a file.
- Change page layout, formatting, and printer properties.
- Use the **PC Printer Queues** display and the **AS/400 Printer Queues** display to monitor and control printers and print jobs.
- Use the **Print Log** display to monitor completed print jobs.
- Use advanced printer features such as font mapping and character translation.
- Install the Rumba+ AS/400 printer as a Windows system service.

Printing host documents on a PC printer

When you have configured and connected the Rumba+ printer, you can send host print jobs to your current Windows printer by simply opening the host application, then printing the document as usual. You can also preview documents and save them to print later, print to a file, or change the page layout, formatting, and printer properties.

If you try a Rumba+ printer operation, but have not installed a Windows printer, the Printer Wizard automatically prompts you to install a Windows printer and guides you through the installation process. Normally, you add printers by selecting **Devices and Printers** from the Windows **Start** menu or Control Panel.

Viewing documents before printing

You can use Print Preview to review page layout and formatting, change Windows printer properties, or save documents to print later. When Print Preview is active, a picture of each printed document displays on the screen before the document is sent to the printer.

Monitoring and controlling printers and print jobs

This describes how you can:

- Monitor and control current print jobs.
- Control your Windows printers.

AS/400 Printer Queues

The AS/400 Printer Queues feature is available only on hosts with operating systems of OS/400 V3R1 or later. This display lists the AS/400 printer queues to which you have access, along with the print jobs in each printer queue, and the status of each job.

You can:

- Customize the display to list only the print jobs you are interested in.
- Toggle this display on and off by choosing AS/400 Printer Queues on the View menu.



Note: AS/400 Printer Queues will not work if the transaction program (TP) on the host has not been started. The command to start all host servers is: `strhostsvr *all` The command to start the Network Print Server TP is: `strhostsvr *netprt`

Direct printing

Mainframe only

With Direct printing, you can print both unlimited characters per line, and graphic data streams without interpretation by the printer driver. Host data is translated from EBCDIC to ASCII and sent directly to the printer, bypassing the printer driver.



Note: When Direct printing is active, print preview does not work. The print job goes to the printer without any preview.

Printer sharing and End print job

Mainframe only

Use the **Printer sharing** option (default) or the **End print job** option to specify how Rumba+ recognizes the end of a host print job.

With printer sharing, the current print job is released when Rumba+ receives the Change Direction Indicator (CDI) that is usually sent with the SNA End Bracket command to indicate the end of a print job.

You can use printer sharing for most host print applications. However, some host applications do not send an `Unbind` command to signal the end of the print job. If you encounter pagination problems, or if host print jobs terminate before document printing is complete, then use the **End print job** option.

With **End print job**, if the host does not send an `Unbind` command at the end of the print job, Rumba+ waits for the user-specified timeout period, then releases the print job if data is not received.

PC Printer Queues

This display lists the printer queues for all network and local printers set up in your Windows Print Manager. Information is displayed for all print jobs (not only jobs from the host) and for all users. See the online help for procedures on using this display to:

- Pause, resume, restart, cancel, and purge print jobs.
- Add, delete, and change printers.
- Change Windows printer properties.

Viewing print job history

The **Print Log** display lists documents that have printed on the PC printer, including documents printed from host as well as from PC applications, saved print previews, documents that did not print due to errors, and held or canceled documents. Information displayed includes:

- Name of the host system.
- Device name of the PC printer.
- PC printer type.
- Status of the print job, or location if the print job was saved.
- Number of pages.
- Date and time the job was processed.

Formatting printed documents

The way a printed document looks is affected by the capabilities of the target PC printer, the printer driver, Rumba+ formatting options, and host print file values. You can use the format specified by the host, the default Windows format for the PC printer (LU1 print jobs only), or you can customize the format by specifying options such as text styles, page orientation, scaling, margins, spacing, and print quality.

Host Print Transform

AS/400 only

The Host Print Transform feature is available only on hosts with operating systems of OS/400 V2R3 or later. Host Print Transform changes the AS/400 print data to the ASCII format needed by a particular PC printer before the data is sent to the Rumba+ AS/400 printer. The Rumba+ AS/400 printer then passes the data directly to the PC printer. In this way, the Rumba+ printer and Windows printer drivers are minimally involved in the process.

To use Host Print Transform, follow these steps before connecting the Rumba+ AS/400 printer:

1. Select **Connection > Configure**, then select **Rumba Router** from the **Installed Interfaces** list.
2. Click the **Rumba+ Router** tab.
3. Click **Transform**.
4. In the **Host Transform** frame, select **Enabled**, then change the configuration parameters as needed.
5. Click **OK**, then **OK** in the **Connection Configuration** dialog box.

You can also configure Host Print Transform directly on the AS/400 host.

Font mapping

When a host document is sent to the PC printer, it includes both text and format information. The format information includes the font size and style of the printed document. When the document prints, the closest matching font is selected from those available on the PC printer.

From the **Options** menu, select **Font Mapping**.

From the **Font Mapping** dialog box, you can select a specific Windows font, type size, and style for each font sent from the host. You can also:

- Create multiple font map files and associate each with a different profile, to be used with different printers
- Use only PC printer fonts, to speed printing

Character translation

When printing host documents on a PC printer, host EBCDIC characters are translated to ANSI characters. Each national language has its own unique character translation table. By default, your character translation table is associated with the Host Character Set you selected when configuring your printer profile.

If your application requires that characters be translated differently than the default table, you can create a customized translation table to meet your needs. The customized table is saved in association with your printer profile. You can also create multiple customized translation tables to use with different profiles.

Printer Session Manager

Printer Session Manager is an alternative tool to the Rumba+ mainframe printer.

The tool is designed to run as a Windows service. It manages printer queues for a group of session profiles saved previously to a dedicated folder.

The Printer Session Manager:

- Does not have a user interface.
- Reports events into Windows Event Viewer under **Application and Services Logs > Micro Focus Printer Session Manager**. Each event displays session profile name in the **Source** column.
- Can be managed from the command line.

Using the command line

The Printer Session Manager can be managed from the command line

Syntax

```
PrinterService.exe [-Service] [-UnregServer] [-Auto] [-Account [<domain>/<user>]] [-Pwd [<password>]] [-Profiles [<profile_directory>]] [-Help]
```

Parameters

-Service

Register service. [1]

-UnregServer

Unregister service. [1]

-Auto

The service is started automatically by the service control manager when the system starts. Used with **-Service**.

-Account [<domain>/<user>]

The name of the account under which the service should run. Used with **-Service** and **-Pwd**. [2] [3]

-Pwd [<password>]

The password to the account name specified by the account parameter. Used with **-Service** and **-Account**. [2]

-Profiles [<profile_directory>]

The directory containing mainframe printer session profiles. [1]

-Help

Displays the Help.



Notes:

1. Administrator rights are required.
2. Failed if logon failed for the provided account and password.
3. The account must be granted "Log on as a service" rights:

[http://technet.microsoft.com/en-us/library/cc794944\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc794944(v=ws.10).aspx)

<http://support.microsoft.com/kb/266280>

Examples

Register a service

A service is registered to start manually with Logon as local system account:

```
PrinterService.exe -Service
```

Register a service to start automatically

A service is registered to start automatically with Logon as local system account:

```
PrinterService.exe -Service -Auto
```

Register a service to start automatically with Logon Account of local user Administrator with password qwerty

A service is registered to start automatically with Logon as local administrator:

```
PrinterService.exe -Service -Auto -Account .\ Administrator -Pwd qwerty
```

Register a service to start automatically with Logon Account of user Alex from domain Corpdom with password 123456

A service is registered to start automatically with Logon as Domain\Alex:

```
PrinterService.exe -Service -Auto -Account Domain\Alex -Pwd 123456
```

Unregister a service

```
PrinterService.exe -UnregServer
```

Set the session profiles directory to C:\Working Directory\MFProfiles

```
PrinterService.exe -Profiles "C:\Working Directory\ MFProfiles"
```

Register a service to start automatically with Logon Account of user Alex from domain Domain with password 123456 and set the profile directory C:\Working Directory\ MFProfiles

```
PrinterService.exe -Service -Auto -Account Domain\Alex -Pwd 123456 -  
Profiles "C:\Working Directory\ MFProfiles"
```

Using the Printer Session Manager

1. Create profiles for mainframe printer sessions and save them in a dedicated folder. For example:

```
C:\Working Directory\MFProfiles
```

2. Register Printer Session Manager with one of the command lines, containing the following options:

```
-Service  
-Account  
-Pwd  
-Profiles
```

3. Start the service **Micro Focus** from the Windows Services Management Console.

When it starts, the Printer Session Manager launches an instance of the Mainframe Printer (without interface) for each profile it discovers in the dedicated folder. In this way, the Printer Session Manager allows you to print mainframe files without explicitly running Rumba+ Mainframe Printer instances.

Administrative installation

1. Double-click the appropriate Rumba_<...> .exe file. For example, Rumba_Office.exe. Provide the <absolute_path> to where the file contents should be extracted.
2. Cancel all following wizards.
3. To install Rumba+ as an administrative installation, use the following command:

```
msiexec /a <absolute_path>\<Rumba_<...>.msi [TARGETDIR=<path>] [/q[n|b|r|f]]
```

Using Macros

By automating complex and common tasks, both you and your users can make Rumba+ do more for you. You can use macros to simplify your work. Macros record a series of actions, such as keystrokes and commands to automate tasks.

Use macros in conjunction with hotspots, custom toolbar buttons, and keyboard shortcuts to complete tedious log-on procedures and other common tasks with a single mouse click or key stroke. Plus

For example, distributing macro files and Hotspot libraries to your users provides them with valuable production tools that they do not even have to take the time to create.

VBA support provides the ability to write more complex and powerful automation. VBA support uses standard VBA functionality, IDE and allows you to run, record, and edit macros from and to a common Macro Module shared between all sessions.

Creating macros

Macros record a series of actions, such as keystrokes and commands. Once you record a macro, you can play it back to automate routine tasks. For example, with the click of a button, a macro can connect your PC to a host, test the return strings, and then start an application.

There are two ways to create a macro:

- Select **Tools > Record Macro**, then perform your keystrokes and commands. Be sure to save the sequence as a macro file after recording.
- Select **Tools > New Macro > RMC**, then build a sequence of commands with the Macro Editor.

To combine the speed of recording macros with the power of written command lines, record the basics, then use the Macro Editor to edit and add to the macro sequence. For details about macro commands, see [Macro Commands](#).

Connect and disconnect macros

Connect macros run automatically each time you connect to a host. For example, the connect macro could contain commands to enter a User ID and password, choose menu items, and open a host application. You can distribute to your users macros that automatically log them on and take them to the correct host application.

For a connect macro to work, the communications interface must be properly configured, and the macro must be saved from within the profile with which it is to be used.

Disconnect macros run automatically each time you disconnect from the host. For example, the disconnect macro could run another program on the connected host before logging out. It is important to note that, if you have a disconnect macro defined, you do not disconnect from the host until after the macro has been performed. If you are disconnected from the host because the physical connection has been broken, then the disconnect macro does not run.

Specifying connect and disconnect macros

Any given profile can have only one connect and one disconnect macro. To specify that a macro automatically runs upon connecting or disconnecting:

1. From the **Tools** menu, choose **Edit Macro**. This opens the Macro Editor dialog box.
2. Select a macro from the **Macro Name** box.
3. Under the **Play Macro On** area, check either the **Connect** or **Disconnect** box.
4. Select **Save** from the **File** menu to save the macro, and close the Macro Editor.

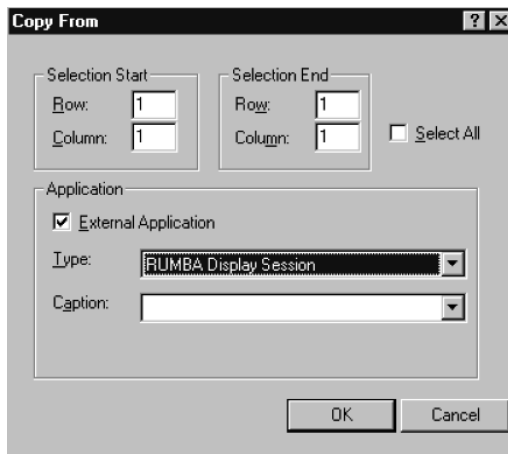
Rumba+ Macro Editor


Recording keystrokes and commands may not always produce the macros you need to accomplish complex tasks. When it does not, use the Rumba+ Macro Editor to work with all the macro commands and create complex macros using advanced macro features. [Macro Commands](#) shows the various commands available for each host.

You cannot record many of the macro commands, such as **Pause Macro**, **Goto Label**, **Compare Values**, **Message**, and **Prompt**, because they are not commands or keystrokes. For example, you may need a macro that pauses between two macro commands to give the host enough time to respond.

Copying data between applications

You can use **Copy From** and **Paste To** commands in the Macro Editor to designate an area of a display screen to be copied from one application and pasted into another application. To do this, you need to specify the application and the location (in terms of rows and columns) from which the data should be copied, and the application and location to which it should be pasted.



 **Note:** If you select Microsoft Excel as the application type when using either the **Copy From** or **Paste To** macro, the dialog box changes and you must provide additional information in the **File** and **Worksheet** fields.

Using variables

Variables are one of the most powerful macro features. Using variables is like writing your own macro-driven application. With variables, you can create interactive macros that respond to user input and perform specific sets of commands.

To open the **Variable Setup** dialog box:

1. Select **Tools > Edit Macro** to open the **Macro Editor** dialog box.
2. Right-click in the macro display area.
3. Choose **Variable Setup** from the popup menu.

In the **Variable Setup** dialog box, you can select a variable, such as a password or user ID, and define its value based on host screen information, static text, and user input. The variable values are available for the **Type**, **Message**, **Compare Values**, **Goto Label**, and **Prompt** commands.

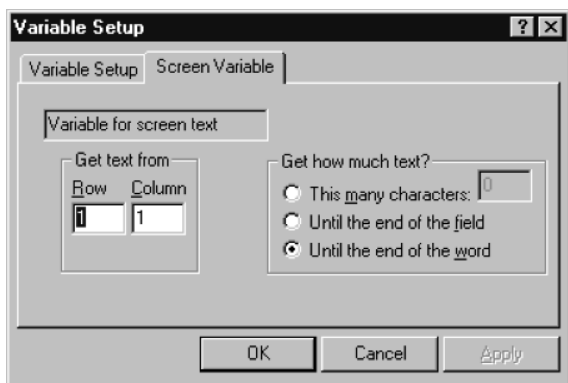
For example, you could create a prompt dialog box to request a password from a user, then save it as a variable. The variable containing the user password is then available for any **Type**, **Compare Values**, and **Message** commands you have included in the macro sequence. For example, you could use a **Compare Values** command to check the password, then end the macro or even disconnect the PC from the host.

Example

The following example shows you how to define a screen variable and use it to execute specific actions based on a variable returned by PROFS.

This is a long example, which contains examples of creating several different kinds of macro commands. If you are unfamiliar with macros, we recommend that you create the macro contained in the example to familiarize yourself with the macro editor and macro command syntax.

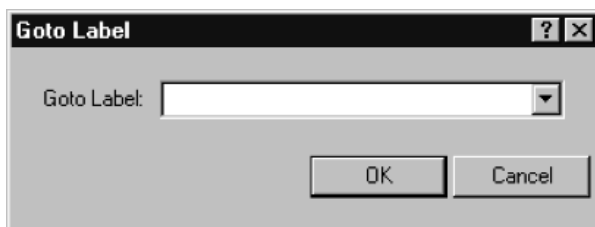
1. Select **Tools > New Macro > RMC**.
2. In the **Macro Name** field, type `Flow Example`.
3. Right-click in the macro display area, and choose **Variable Setup** from the pop-up menu to open the **Variable Setup** dialog box.
4. Select **Variable for screen text** from the **Variables** list.
5. Select **Screen Variable** from the **Variable Types** list.
6. Click the **Screen Variable** tab.



7. Change the **Get text from Column** value to 78.
8. In the **Get how much text?** frame, select **This many characters**, and type 3 in the box.
9. Click **OK** to save the settings.

This gets 3 characters from the screen at row 1, column 78 and saves them as a variable that your macro can use.

10. Open the **Goto Label** dialog box.



11. Select **Variable for screen text** from the list, then click **OK**.
12. Open the **Message** dialog box. Type `Screen Unknown` and click **OK**.
13. Open the **Goto Label** dialog box. Type `Macro End` and click **OK**.
14. Open the **Label** dialog box. Type `A00` and click **OK**.
15. Open the **Message** dialog box. Type `PROFS Main Screen` and click **OK**.

16. Open the **Receive** dialog box.
 - a) Type `Mail Waiting` in the **Find text** box.
 - b) Under **Screen Position**, select **Only at row, column**, and type 24 and 69 in the **Row** and **Column** boxes.
 - c) In the **Timeout** frame, select **Seconds**, and type 30 in the box.
 - d) In the **Otherwise** box, type `NoMail`.
 - e) Click **OK**.
17. Open the **Message** dialog box. Type `You have mail` and click **OK**.
18. Open the **Label** dialog box. Type `NoMail` and click **OK**.
19. Open the **Goto Label** dialog box. Type `Macro End` and click **OK**.
20. Open the **Label** dialog box. Type `C00` and click **OK**.
21. Open the **Message** dialog box. Type `You are on the Open Mail Screen` and click **OK**.
22. Open the **Goto Label** dialog box. Type `Macro End` and click **OK**.
23. Open the **Label** dialog box. Type `E01` and click **OK**.
24. Open the **Message** dialog box. Type `You are reading a message` and click **OK**.
25. Open the **Label** dialog box. Type `Macro End` and click **OK**.
26. Add `Exit Macro` to end of macro.
27. Select **File > Save**, then close the Macro Editor.

Your completed macro should look like this:

-  Goto Label [Variable for screen text]
-  Message "Screen Unknown"
-  Goto Label "Macro End"
-  Label: A00
-  Message "PROFS Main Screen"
-  Receive at (24, 69) "Mail Waiting"
-  Message "You have Mail"
-  Label: NoMail
-  Goto Label "Macro End"
-  Label: C00
-  Message "You are on the Open Mail Screen"
-  Goto Label "Macro End"
-  Label: E01
-  Message "You are reading a message"
-  Label: Macro End
-  Exit Macro

This macro looks at the current **PROFS** screen and returns a message box containing a description of what was found. You can use this macro as a model to test different macro functions.

Running macros

This section assumes that you have created your macros. It tells you and your users how to run the standard Rumba+ macros and your custom macros in any of the several ways.

Running standard or custom macros

- Select **Tools > Run Macro**, then select the macro you want to run.
- Associate a macro with a Hotspot, then click the Hotspot text on the host screen to run the macro.
- Assign a macro to a toolbar button, then click the button to run the macro.
- Link a macro to a keystroke, then type the keys to run the macro.
- Macros can also be run from other macros. When editing the **Run** application command, select **Macro Files** from the **Files of Type** list. Choose the macro you want to run. When the macro comes to this command, it pauses, runs the new macro, then runs the remainder of the originating macro.

Each host application type has a default macro directory.

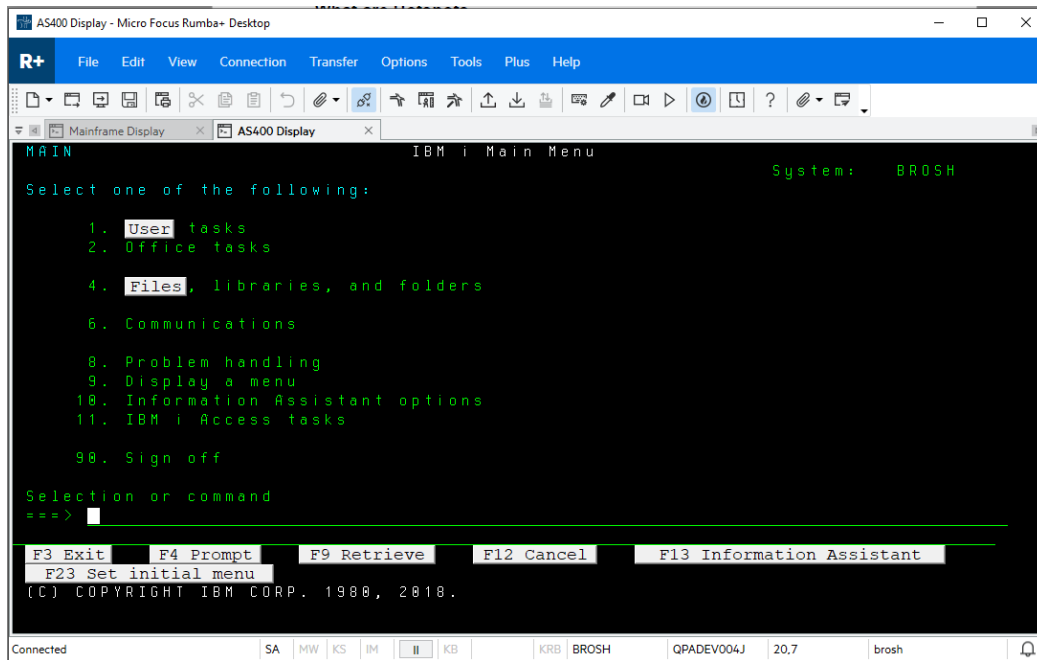
Macros as Hotspots

Hotspots are words or sentences on the host screen that run macros when clicked. Hotspots add point-and-click capability to host screens, making them more like the other Windows applications. Instead of requiring users to master complicated command line statements, you can distribute Hotspot libraries to enable users to click through host screens with fewer errors and more efficiency.

You can find procedures for creating and editing Hotspots in the online Help.

What are Hotspots

You can make any non-protected text on a host screen into a Hotspot and associate that text with any macro. The host screen shows Hotspots as 3D buttons:



When you click a Hotspot button, the macro runs.

For example, you could make the text in a list of options into Hotspots that automatically enter the appropriate option when clicked.

Macros on your toolbars

Macros can be linked to toolbar buttons, and incorporated into your standard Rumba+ toolbar or placed on custom toolbars. With custom toolbar macros, your users can accomplish complex key sequences and commands without errors and without even touching their keyboards.

Keyboard macros

If your users do not like switching between keyboard and mouse as they work, they can link macros to keystrokes. Without even taking their hands off the keyboard, your users can run the macros you distribute which create shortcut keys for complex key sequences.

Distributing keyboard files

The keyboard files are stored in the %LocalAppData%\Micro Focus\Rumba*hostname* folder as .map files. To distribute keyboard files, you must distribute the .map file and any corresponding macro files (.rmc and .mac) that are linked to mapped keys.

Macro files are stored in %LocalAppData%\Micro Focus\Rumba*hostname*\Macro folder

Macro commands

The macro commands available for each host type differ slightly. The following tables list the macro commands available for each host. Each table lists the macro command, followed by a brief description of its function.

Mainframe macro commands

An asterisk (*) indicates macro commands that you cannot record, but can create and edit in the Macro Editor.

Connect

Connect the PC to the mainframe host.

Compare Values*

Compare two character strings or variables, and perform the specified commands based on the results.

Cursor Position

Position the cursor on the host screen.

Disconnect

Disconnect the PC from the mainframe host.

Exit Macro

End the macro sequence.

File Transfer Receive

Receive the specified file transfer.

File Transfer Send

Send the specified file transfer.

Goto Label*

Jump to the specified **Label** command in the macro sequence.

Keystroke

Send a function key to the host application.

Label*

Create a marker in the macro sequence to which a Goto **Label** command can jump.

Message*

Show a dialog box with the specified message.

Pause Macro*

Pause the macro sequence for the specified number of seconds.

Prompt*

Create a dialog box that prompts the user for input.

Receive

Search the host screen for the specified characters.

Run Application*

Run an application on the local PC.

Copy From

Copy selected areas of a display screen to the clipboard for pasting into an application or display screen.

Paste To

Paste clipboard information to an open application or session.

Type

Send the specified characters or variable to the host screen.

AS/400 macro commands

An asterisk (*) indicates macro commands that you cannot record, but can create and edit in the Macro Editor.

Connect

Connect the PC to the AS/400 host.

Compare Values*

Compare two character strings or variables, and perform the specified commands based on the results.

Cursor Position

Position the cursor on the host screen.

Disconnect

Disconnect the PC from the AS/400 host.

Exit Macro

End the macro sequence.

Goto Label*

Jump to the specified **Label** command in the macro sequence.

Keystroke

Send a function key to the host application.

Label*

Create a marker in the macro sequence to which a **Goto Label** command can jump.

Message*

Show a dialog box with the specified message.

Pause Macro*

Pause the macro sequence for the specified number of seconds.

Prompt*

Create a dialog box that prompts the user for input.

Receive

Search the host screen for the specified characters.

Copy From

Copy selected areas of a display screen to the clipboard for pasting into an application or display screen.

Paste To

Paste clipboard information to an open application or session.

Run Application*

Run an application on the local PC.

Type

Send the specified characters or variable to the host screen.

HP and UNIX macro commands

An asterisk (*) indicates macro commands that you cannot record, but can create and edit in the Macro Editor.

Connect

Connect the PC to the UNIX or HP host.

Compare Values*

Compare two character strings or variables, and perform the specified commands based on the results.

Disconnect

Disconnect the PC from the UNIX or HP host.

Exit Macro

End the macro sequence.

File Transfer Receive

Receive the specified file transfer.

File Transfer Send

Send the specified file transfer.

Goto Label*

Jump to the specified **Label** command in the macro sequence.

Keystroke*

Send a function key to the host application.

Label*

Create a marker in the macro sequence to which a **Goto Label** command can jump.

Message*

Show a dialog box with the specified message.

Pause Macro*

Pause the macro sequence for the specified number of seconds.

Prompt*

Create a dialog box that prompts the user for input.

Receive

Search the host screen for the specified characters.

Run Application*

Run an application on the local PC.

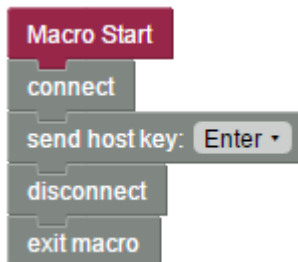
Type

Send the specified characters or variable to the host screen.

Express Macro Language

An alternative to using Rumba+ macros is to use Express Macro Language (EML) macros. EML is a new, code-free macro language that can be shared across mainstream Micro Focus emulators. You can therefore create an EML macro in one product and use it in another.

To create an EML macro, you use the EML Editor which is a visual editor where you drag and drop blocks of code onto a canvas and plug them together to obtain the function you want. For example:



An advantage of using the EML Editor is that you cannot make syntax errors. If an error would be caused by joining two blocks together, the editor would not allow you to join the blocks. You can simply concentrate on the logical flow of the macro.

After you have created a macro, you save it as a JavaScript (.js) file.

For more information about EML and how to create EML macros, see the EML online Help.

Recording a macro

1. Select **Tools > Record Macro**.
2. Perform the steps you want to record, such as logging on and opening a host application.
3. To stop recording, select **Tools > Record Macro** again.

The **Save Macro** window appears.

4. In the **Macro Name** field, type a name for the macro.
5. Select **EML** from the drop-down list.

The macro file is saved with a file extension of .js and the EML Editor appears. The macro is shown in the form of connected blocks.



Note: If you do not want the editor to appear automatically, you can change this in the **Rumba+ Desktop Options** dialog box.

6. Select **File > Exit**.



Note: It is not possible to record Rumba+ FTP actions.

Running a macro

1. Select **Tools > Run Macro**.

The **Select a Macro** dialog box appears.

2. Select the **EML** macro you want to run, then click **OK**.

The macro runs.



Tips:

- To interrupt a macro while it's playing, select **Tools > Cancel Macro**.
- To assign runtime properties to your macros, select **Tools > Macro Properties**.

Connection Tools

Rumba+ Desktop Tools provides you with have a set of utilities designed to boost your productivity. This section provides overviews and tips for the most commonly used Rumba+ Tools:

- Rumba+ APPC Configuration
- Rumba+ administrator override file
- Rumba+ AS/400 Communications
- Rumba+ Communication Monitor
- MSS Automated Sign-On



Note: For details of additional Rumba+ Tools, see the online Help.

The following summarizes the purpose and supported hosts for each of these administrator utilities:

- Rumba+ APPC Configuration
Simplify the process of creating connections throughout your network.
Applies to mainframe and AS/400.
- Rumba+ administrator override file
Implement a single configuration file for multiple users and reduce the time required for setting up and troubleshooting workstations.
Applies to mainframe and AS/400.
- Rumba+ AS/400 Communications
Simplify the process of creating communication sessions throughout your network.
Applies to AS/400.
- Rumba+ Communication Monitor
A workstation-connection monitor you can use to analyze the current status of each configured link.
Applies to mainframe and AS/400.
- MSS Automated Sign-On
Configures automated sign-on for mainframe 3270 sessions.
Applies to mainframe.

Rumba+ APPC Configuration

The APPC Configuration tool helps you build a configuration file for the Rumba+ SNA engine. This configuration file defines the elements listed below. Each of these elements is discussed in this section.

- Connections
- AS/400 modes
- Remote and local logical units
- CPI-C side information file
- Transaction programs
- Conversation security

The figure below shows the **Rumba+ APPC Configuration** window:

Because the Rumba+ APPC Configuration tool uses a feature-rich graphical user interface, when you make an addition, change, or deletion, you only need to select a box and click a button.

The Rumba+ APPC Configuration tool saves configuration parameters in a file with a `.cfg` extension. You can save as many configurations as you need for distribution later, or you can build an administrator override configuration file for your users.

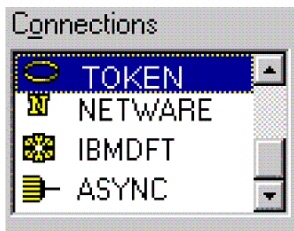
With the Rumba+ APPC Configuration Tool, you can set values for different local and remote environments. For CPI-C, you can add or modify side information entries. You also have the option of assigning user IDs and passwords to incoming remote transaction programs.

Connections

Use the Rumba+ APPC Configuration tool to name connections and add interfaces quickly and without error.

Working in the background, the tool creates a local LU name (logical unit name) for your connection from your network name and control point name. As a default, the tool inserts your computer name for the control point name.

The Rumba+ APPC Configuration tool allows you to easily add an interface connection. The **Connections** box allows you to identify the interface used for your connection.



International character set translation

The Rumba+ APPC Configuration tool works with the international character set specified in the regional settings for your workstation. This translation is accomplished using codepage tables stored in the `Program Files(x86)\Micro Focus\Rumba\System\Charsets` folder.

These tables work with Rumba+:

- The character set that Rumba+ uses is determined by the country that is specified in the > **Region and Language** window.
- EBCDIC to ANSI translation (or mapping) for your workstation is based on the codepage table currently in use.
- The `Program Files(x86)\Micro Focus\Rumba\System\Charsets` folder contains files called `chr2exxx.gen`, where `xxx` is the locale code. For example, 037 is the code for USA.

To modify the character mapping for a specific language, use a text editor to modify the corresponding `chr2exxx.gen` file. There are no registry settings or `.ini` file settings to make or change.

AS/400 modes

AS/400 mode descriptions define a number of session characteristics. These characteristics include the:

- Maximum number of sessions.
- Maximum number of conversations.
- Pacing values for request and response units.

By using the mode description as an APPC system object, you can reduce the number of separate configuration definitions. The Rumba+ APPC Configuration tool offers several pre-configured modes. When

in doubt, `QPCSUPP` is the AS/400 default, although `#BATCH` offers the best compromise in communication performance and cost.

Remote and local logical units

The Rumba+ APPC Configuration tool simplifies the task of managing remote and local logical unit (LUs). A local LU represents the local workstation, while the a LU represents the local workstation conversation partner.

LU properties

Because the concept of the LU has evolved, it is easier to understand the LU by looking at its properties:

- Sessions have LUs at each end.
- To establish a session, a client must have the server's LU name, which is known as the remote LU.
- In a hierarchical network, an LU has a defined global address that it uses to route data.
- You can assign different LU names to a host's different subsystems.



Note: An LU name does not signify a machine or program name, it designates the role a machine or program has within a network. For example, an LU name can designate a network server.

Logical unit configuration tips

Here are a few tips to consider when you use the Rumba+ APPC Configuration tool to add or change logical units:

- For a computer client, the LU name default can be the computer name. The Rumba+ APPC Configuration tool does this automatically in the configuration process.
- For a server, consider using an LU name alias based on the function, rather than the computer name. This minimizes disruption if the function is moved to another computer.
- When you are connected to a subarea SNA network, finding an LU name is problematic because you do not have network node services. In this case, you must configure a remote LU and associate it with a route.

CPI-C side information file

You can use the Rumba+ APPC Configuration tool to easily create and edit side information files. Previously, when using APPC/LU 6.2 verbs, programmers had to supply the parameters that described the network environment. With CPI-C, these parameters are called out from a side information file.

The Rumba+ APPC Configuration tool uses a straightforward process to create a side information file. One thing to remember is that the side information file is the last part of the configuration process. First you must define the:

- Network environment.
- Session characteristics.
- Remote LU information.

Transaction programs

You can add a transaction program (TP) by naming and associating it with an executable file or command line. The TP can then have:

- A path to the executable program.
- An auto-start option.
- Optimum security.
- Queueing.

- Timeouts.
- PreLaunch Counts.

The TPs you add with the Rumba+ APPC Configuration tool must fulfill the APPC/LU 6.2 requirements of:

- Being invoked by the LU 6.2 ATTACH call.
- Using conversations to communicate with a remote transaction program.
- Establishing many conversations with one or more remote transaction programs using distinct sessions.

Conversation security

If you have secured the local TP, use the Rumba+ APPC Configuration tool's Conversation Security feature to assign user IDs and passwords to incoming TPs.

When an incoming TP attempts to allocate a conversation with the local TP, the local TP reads the user ID and password. If there is a match, the incoming TP is allowed to access the local TP.

Administrator override file

A high priority for any system administrator is the standardization of system configurations. When you create an administrator override file, you provide a set of well-defined parameters that each user can access. This tool can significantly reduce the time spent setting up and troubleshooting workstations.

Description

An administrator override file is a configuration file you create, then place on the network. Your users can access this file for connection information to SNA-type machines. If the connection information changes, you can use the administrator override feature to make one central change.

For example, when you introduce a new AS/400 to your network, you only have to add the AS/400 information to one administrator override file on your network. The next time a user pulls up the configuration dialog in the AS/400 display or Rumba+ APPC Configuration tool, the new AS/400 appears, configured and ready to go.



Note: The administrator override file does not contain the control point name that is used for the connection. This name comes from the user's machine.

Function

The Rumba+ SNA engine, AS/400 Display, and Rumba+ APPC Configuration tool can all look at two configuration files at the same time and extract pertinent information from each file.

When you configure connections to an SNA-type server, the Control Point Name (also known as the "PC Name" in the AS/400 environment) makes one workstation unique from another workstation. The administrator override file contains the link information. This includes, but is not limited to the:

- Network name.
- Destination address.
- Remote LU.
- Side information.

Use the local configuration file to store information applicable only to the workstation.



Note: Mainframe connection definitions are not supported by the administrator override file. To understand why, consider the following:

- Connection definitions for the Rumba+ Router and AS/400 display are shareable objects. That is, the parameters for an AS/400 connection definition and the AS/400 remote LU Definition can be

common to all users globally. The configuration parameters that are specific to a single workstation are located in the local LU definition.

- Connection definitions for a mainframe connection are not shareable objects. As an example, for a mainframe display DLC connection, each user must have an individual and unique PUID as part of the connection definition. If you tried to create an administrator override file for this connection, all users would share a single block ID and PUID, and only one user could connect at a time.

Local connection configuration

You can still configure connections locally even if the administrator override file is set. You can enable administrator override in the Rumba+ APPC Configuration tool and still create link configurations that you store on the workstation in a local configuration file. However, there are restrictions. You are able to configure local connections only when they have a different connection name and remote LU alias from any other link residing in the administrator override file. See [Configuration files precedence](#).

Also, similar to document printing, the AS/400 display shows only connections configured in the administrator override file, and users can only connect to these administrator override configured connections.

File precedence

The locally-administered configuration file is referenced in the registry as `HKEY_LOCAL_MACHINE\Software\WALldata\ConfigFile`

The configuration files exist so users can provide their configuration preferences within the communications environment.

The system-administered configuration file is referenced in the registry key as `HKEY_LOCAL_MACHINE\Software\WALldata\Sna\AdminOverrideConfigFile`.

You can use the administrator override configuration file as a set of configuration elements that will override all other configurations. Any configuration element you specify within `AdminOverride-ConfigFile` will then take precedence over the corresponding element contained in `ConfigFile`. This means that if collisions occur between the elements of the `ConfigFile` and `AdminOverrideConfigFile`, the winner will be the `AdminOverrideConfigFile`.

For example: if `ConfigFile` contains an MPTN link definition named NETRED and `AdminOverrideConfigFile` contains an SDLC link definition named NETRED, then `AdminOverrideConfigFile`'s SDLC link definition will replace the `ConfigFile`'s MPTN link definition.

Creating a file

Creating an administrator override file that multiple users can access is not very different than creating a local configuration file for one user. The only difference is that you store the file on a shared network drive.

1. From any machine that already has Rumba+ installed, configure the necessary connections using the Rumba+ APPC Configuration tool.
2. Save the file as you normally would for a local machine (note the file name in the title bar).
3. Ensure that each connection is valid by connecting to each link configured.
4. Once you are confident that you have a working configuration file, copy the file to a shared directory on the network. Ensure that each intended user has access to this drive.



Note: Change the file attributes to R/O, This prevents users from accidentally corrupting the file.

Editing existing files

If an administrator override configuration file already exists and is currently being accessed by users, we recommend the following as the safest editing method:

1. Copy the current administrator override configuration file and rename it.
2. Change the R/O attribute (if set) to R/W so that the changes you make can be saved.
3. From the Rumba+ APPC Configuration tool menu bar, select **Open**. Select the configuration file.
4. Make the changes you want.
5. Save the file.
6. Once you are confident that you have a working configuration file, replace the existing administrator override configuration file with the new one.



Note: Change the administration override configuration file's attributes to R/O. This will prevent a user from accidentally corrupting the file.

Setting user access

1. From the **Rumba+ Desktop Tools** program group, start the Rumba+ Desktop APPC Configuration tool.
2. Select **File > Advanced**.
3. Check **Use Administrator Override Configuration**.
4. Enter the full path of the configuration file that you want the users to access, or click **Browse** to select it.
5. Optional: To ensure that the next person gets the same configuration, select **Make configuration available to all users of this machine**. This uses the `\\HKEY\LOCAL_MACHINE\` registry instead of the `\\HKEY\CURRENT_USER` registry.
6. Select **File > Save**.
7. Close the APPC Configuration tool.

When you specify the path, we strongly recommend that you use the Universal Naming Convention (UNC) instead of a mapped drive letter. If you use the UNC, the connection does not rely on a mapped drive letter that could be overwritten or corrupted.



Notes:

- If you use **Browse**, the path is returned in UNC format.
- If the Rumba+ APPC Configuration tool cannot find the file you specified in the path for the administrator override file, a warning is displayed. The situation might be that the workstation is not currently attached to the network, or that the user does not have permission to access the server that you specified in the path. If so, and the path is correct, choose to continue and exit.
- From the operating system's ComputerName, the Rumba+ APPC Configuration tool extracts a default control point name for the local configuration file. If you want to, you can specify another control point name by simply changing the field. Any changes you make to the control point name are also made automatically to the local LU name.
- You must use a `.cfg` extension on the file name. If you do not specify an extension, the Rumba+ APPC Configuration tool appends `.cfg` to the file name. The Rumba+ APPC Configuration tool supports both 10.2 format file names and long file names.

Assessing workstation setup

The best tool to use to determine if you have set up a workstation correctly is the Rumba+ Communications Monitor.

If you selected the APPC Client package install, Rumba+ Communications Monitor appears in the **Rumba+ Desktop Tools** program group. If the APPC Client was not installed, Rumba+ Communications Monitor is still installed, but does not appear in the program group. In this case, you can run the program directly:


```
C:\Program Files(x86)\Micro Focus\Rumba\System\nof.exe
```

Rumba+ Communications Monitor starts the Rumba+ SNA engine and displays the information that the Rumba+ SNA engine interprets. Rumba+ Communications Monitor should display the connections that you configured in the administrator override file.

File limitations

While the Rumba+ SNA engine has the ability to use Rumba+ administrator override configuration files, the Rumba+ AS/400 display and AS/400 printer are the only display-type services that currently use this feature.

The **AS/400 Connection Configuration** dialog box allows users to see and connect only to links that you configured in an administrator override configuration file. Local files cannot be accessed.

 **Note:** If your company creates transaction programs that use the Rumba+ SNA engine, the administrator override file still works.

Configuration-free workstations

With Rumba+ Tools, you can have self-configuring workstations. By using SCCM or a batch file, each new workstation looks for its:

- Administrator override file.
- Local configuration file.

Rumba+ AS/400 Communications

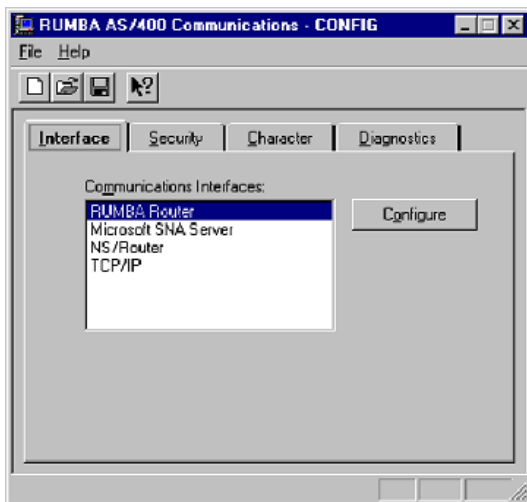
You can use Rumba+ AS/400 Communications to locate other AS/400 systems and to configure or change host connections and link interfaces for the:

- Application Program Interface (API).
- Submit Remote Command application and API.

Overview


The configuration settings for the AS/400 Communications tool are saved in a `.ehh` file. You can save multiple configurations under different `.ehh` files for later use. The configuration file can be especially useful when you are setting up data queues for users who do not have Rumba+ AS/400 display or printer capability.

The figure below shows the **AS/400 Communications - CONFIG** dialog box:



The table below maps the major tasks you perform with the AS/400 Communications tool to the appropriate page in the dialog box:

| To ... | Go to ... |
|--|-------------------------|
| Configure communication interfaces | Interface page |
| Configure link interfaces | Interface page |
| Add AS/400 sign-ons | Security page |
| Select a foreign language's host character set | Character page |
| Display APPC error messages | Diagnostics page |

 **Note:** If you use Rumba+ AS/400 Communications to configure EHNAPPC, all non-display and non-printer sessions use the same configuration parameters. For example, if you configure EHNAPPC to connect to BIGSYS via APPC token ring for Data Queues, all other hosts (except for Display, Printer, and possibly RDA) will connect via APPC token ring.

Configuring links

To use Rumba+ AS/400 Communications to configure links:

1. Click the **Interface** tab.
2. Select a communications interface, then click **Configure**.
For specific information on configuring, refer to the online Help.
3. Select a system name, then click **Add**.
4. Select a link.
5. Click the **link interface** tab, then add or change configuration values as needed.
6. Select **File > Save**.

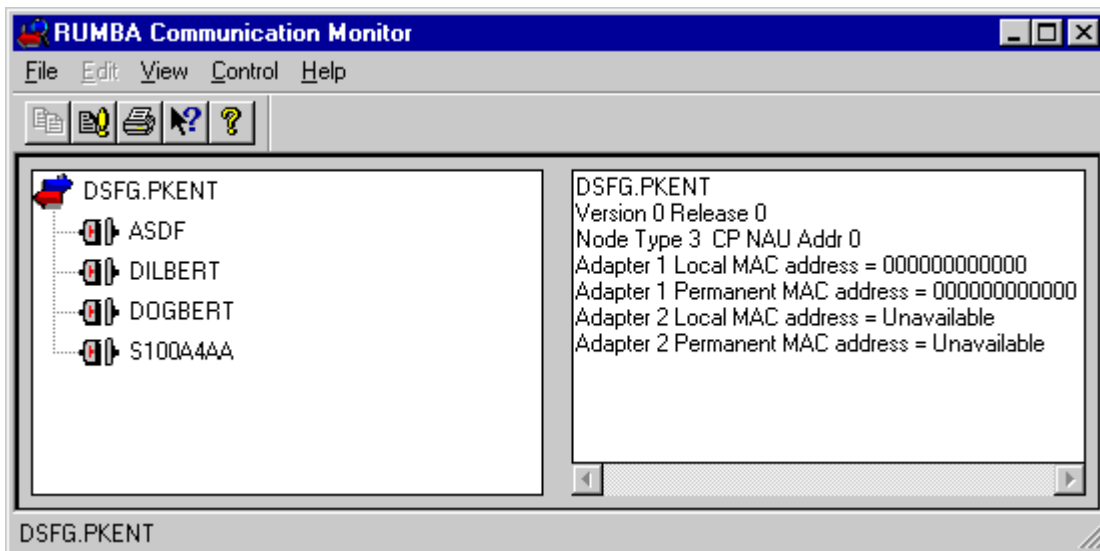
By default, the configuration is saved as an `.ehn` file.

Click the **Advanced** tab to specify an LU with a name different than your system's LU.

Rumba+ Communication Monitor

Rumba+ Communication Monitor helps you monitor, troubleshoot, and optimize your network. Also, you can view non-configured system links.

Rumba+ Communication Monitor displays what the Rumba+ SNA engine finds. The left pane shows that the APPN link is not connected and the right pane gives detailed information about the link:





Note: You can use Rumba+ Communication Monitor to start and stop links (either by the menu or by right-clicking your mouse). However, we recommend that, in normal circumstances (when you have a transaction program in process or an open Rumba+ Display session), you start and stop links and sessions from your Rumba display session.

MSS Automated Sign-On

You can configure Automated Sign-On for mainframe 3270 sessions. To do this, you:

- Create a connect macro and distribute it to the appropriate users.
- Create a session profile.
- Configure the session on the MSS.
- Authorize access to the session.

Prerequisites

- MSS is installed.
- The MSS Automated Sign-On Add-In is installed.
- Centralized management is enabled in **Rumba+ Desktop Options**.

Creating a connection macro

To create an Automated Sign-On macro:

1. Select **Tools > Record Macro**.
2. Perform the necessary steps to log onto a host application.
3. To stop recording, select **Tools > Record Macro**.

The **Macro Editor** appears.

4. In the **Name** field, type a name for the macro.
5. In the **Key Name** field, type a 4-digit identifier for the macro.
6. Optional: Under **Play Macro On**, check **Connect**.
7. Insert the **Call External Provider** command before a **Type** statement where the user ID is provided.



Note: The exact position in the macro for the command depends on the application concerned and how the application ID is provided:

- As a string.
- Taken from a screen.
- As a prompt.

The **Call External Provider** dialog box appears.

8. Select **[MSS-AutoSignOnProvider]** from the **Select Provider** list.
9. Provide the application ID for **[MSS-AutoSignOnProvider]** as an input parameter.
10. Click **OK**.
11. Double-click the **Type** statement that recorded the user name.

The **Type** dialog box appears.

12. Select **[MSS-AutoSignOnProvider: Username]** from the **Characters to send** list.
13. Click **OK**.
14. Delete the **Type** statement that recorded the password.
15. Right-click and select **Add > Type**.

The **Type** dialog box appears.

16. Select **[MSS-AutoSignInProvider: Password]** from the **Characters to send** list.
17. Click **OK**.
18. On the **Macro Editor** toolbar, select **File > Save**.
The macro is saved with the file name and a file extension of **.RMC**.
19. Distribute the macro to the appropriate users.

Creating a session profile

1. Start a mainframe session.
2. Configure the host.
3. Select **File > Save Session Profile**.
The **Save Session Profile** window appears.
4. Type a name in the **File name** field.
Make a note of the file name you used.
5. Click **OK**.

Configuring the session on the MSS

1. Start the MSS Administrative WebStation.
2. Click **Manage Sessions** in the navigation pane.
3. In the **Manage Sessions** pane, click **Add**.
4. In the **Add New Session** pane, select **Rumba+** in the **Windows-Based** list.
5. Type a name for the session in the **Session name** box. Use the same name as the saved session profile.
6. Click **Continue**.
7. In the **Configure a Windows-Based Rumba+ session** pane, click **Browse** in the Rumba+ session profile section.
8. Select the saved session profile, then click **OK**.
9. Click **Save Settings**.

Authorizing access to the session

The way you authorise users for a session depends on the access control configuration of the MSS.

To authorise a user or group, click **Assign Access** in the navigation pane, then use the online Help to associate them to the session you want.

When users next start Rumba+, the session profile is automatically downloaded to their local machine. They can then open the profile in the normal way.



Note: By default, session profiles are downloaded to:

C:\<user_name>\AppData\Local\Micro Focus\Rumba\MSS Sessions

Diagnostic and Development Tools

This section gives you overviews and tips for the Rumba+ diagnostic and development tools.

Diagnostic tools

The diagnostic tools available in the **Rumba+ Tools** program folder provide you with a set of powerful and cost-effective features that are designed to boost your productivity.

Rumba+ Trace

Rumba+ Trace combines several trace options in a single tool. When you troubleshoot a problem for a user, you can ask them to trace and record communication sessions with Rumba+ Trace. Later, you can selectively play back the binary data file to troubleshoot the problem. This section discusses the following aspects of working with Rumba+ Trace:

- API options
- Difficult troubleshooting tasks
- Display software code version
- Playback display and printer data stream trace

By default, all APIs are selected for trace, but you can limit trace data and select only the APIs you want to trace. There are two guidelines for this decision:

- Trace options can have an impact on system performance, so you may want to use the trace APIs as filters when isolating a known problem.
- When diagnosing a problem, it often requires many types of trace information to effectively investigate the system state. You may want to select all APIs (default) to capture all available information and direct output to an unformatted file to send to Micro Focus SupportLine.

API options

Rumba+ Trace provides the following API options:

- Mainframe Display Data Stream (DSA)
- Mainframe Printer Data Stream (DSA)
- AS/400 Display Data Stream (DSA)
- AS/400 Printer Data Stream (DSA)
- UNIX/HP Display Data Stream (DSA)
- SNA Communications (includes APPC, CPI-C, LU 6.2, ACSSVC, and SNA)
- Micro Focus EHNAPPC (a standard AS/400 interface for APPC)
- Link Layer Communications for all network architecture drivers
- Rumba+ Display APIs (includes DDE, EHLLAPI, and WinHLLAPI)
- Host System APIs (includes Submit Remote Command)
- Rumba+ Event Viewer



Note:

- To view trace data while running the trace, ensure you select **Options > Display**. This is selected by default.
- Only 1000 lines of the most recent data is displayed.

- The formatted file is distinct from the display file and carries more data. When large amounts of trace data are being saved, a larger trace buffer size tends to prevent trace buffer overruns. The default size is 8 MB.

Difficult troubleshooting tasks

When there is a network problem, but you do not know what to trace, you can trace all APIs and save the data in a binary file. Later, this data can be replayed, and you can analyze the sequence of data from API-to-API. With this sequence in hand, you can isolate where the problem is occurring and then replay the specific API data.

1. Start Rumba+ Trace.
2. Select **Options > Configuration**.
The **Configure Tracing Parameters** dialog box appears.
3. Click **Select All**.
4. Click the **Output** tab, then check **Binary File**.
5. In the **Binary Output** field, type the path and file name to which you want to save the API data flow (use the extension `*.bin`).
6. Click **OK** to close the **Configure Tracing Parameters** dialog box.
7. Reproduce the problem that you are trying to troubleshoot.
8. Select **Trace Options > Configuration**.
9. On the **Output** page, uncheck **Binary File**.
10. Click the **API Selection** tab, choose the APIs you want to analyze.
11. Click the **Advanced** tab. Under **Binary File Replay**, type the name of the file you saved (or browse button to it).
12. Click **Replay Now** to view the API data flow.

Displaying software code version

Rumba+ Trace contains a useful feature that can give you an all-inclusive software code version report that covers `.cfg`, `.dll`, `.exe`, and `.ini` files:

Select **Options > Code Version Snapshot**.

If you use this feature, you might want to run it either before or after you complete your trace, because this report is extensive and takes time to run.

Playing back display and printer data stream trace

You can use Rumba+ Trace to record the AS/400 or mainframe display and printer data streams. You can then analyze and change the data, as well as add rules of behavior on key actions and change labels. This feature is especially useful for troubleshooting problems, or when you need to create a demonstration host for training or marketing purposes.

1. Start Rumba+ Trace.
2. Select **Options > Configuration**.
3. On the **API Selection** page, select a single display or printer data stream to record.



Note: The Demo Host can play back only one output file at a time, so ensure that you only choose one script at a time.

4. Click the **Output** tab, check **Formatted File**, then type the path and name of the file you want to create (use the extension `*.fmt`).
5. Click **OK** to close the **Configure Tracing Options** dialog box.
6. Reproduce the problem or demonstrate the Rumba+ feature you want to record.

7. Close Rumba+ Trace then start a Rumba+ display or printer session.
8. Select **Connection > Configure**.
9. Select **Demo Host** from the **Installed Interfaces** list.
10. Click the **Demo Host** tab.
11. In the **Script file** field, type in the path and name of the file you saved (or you can use the **Browse** button to navigate to it).
12. Click **Connect** to demonstrate the feature or problem you recorded.

Rumba+ Tracer

Rumba+ Tracer allows users to record information about a program's execution. This information is typically used by programmers for debugging purpose. Depending on the type and detail of information contained in a trace log, the information is also used by experienced system administrators or technical support personnel, and software monitoring tools to diagnose common problems with software.



Hidden fields: By default, the contents of hidden fields do not appear in trace results. This is useful to protect security-sensitive information, such as passwords.

To disable this feature:

1. Create a `TraceSecurity` value of type `DWORD` under the appropriate registry key:
 - `WallData\Office\Mframe\` for mainframe sessions
 - `WallData\Office\AS400\` for AS/400 sessions
2. Set the value of `TraceSecurity` to 1.

Trace files can be produced by Rumba+ components which have been provided with additional code for generating binary output trace files. The file can be viewed using the `TraceView` and `tracefmt` utilities, which are part of the [Windows Driver Kit \(WDK\)](#), formerly known as the Driver Development Kit (DDK). Only `TraceView` and `tracefmt` need to be installed from the WDK.

TraceView A graphical viewer for viewing trace files. In addition to trace files, it requires debug information in the shape of `.tmf` files generated by Rumba+.

Tracefmt Converts binary trace files to text files which can be viewed by any text viewer.

To start tracing:

1. Open a command window.
2. At the system prompt, enter:

```
RumbaTrace.cmd start
```

3. To stop tracing, enter:

```
RumbaTrace.cmd stop
```

The binary output trace file is stored in the `%temp%` folder.

The `RumbaTrace.cmd` script is part of the Rumba+ installation and is stored in the Rumba+ `System` folder.

You do not need to restart Rumba+ after running `RumbaTrace.cmd`.

Development tools

This section introduces the Rumba+ Development Edition for .NET Framework (RDE .NET) and Rumba+ Development extension for Visual Studio.

Rumba+ Development Edition for .NET Framework (RDE .NET)

A set of controls and components that enable developers to build applications which incorporate Rumba+ displays.



Note: Although RDE controls appear in the Visual Studio Toolbox for Visual Basic, C#, and Visual C++ projects, they can be used only for C# and Visual Basic projects .

Rumba+ Development Extension for Visual Studio

This extension is provided separately and provides objects for developers to use in .NET code to add mainframe and AS/400 printing, HLLAPI, macros and FTX functionality to your Visual Studio projects. RDE .NET controls appear in the Microsoft Visual Studio Toolbox as Mainframe, AS/400, UNIX and HP displays.

The extension provides objects for developers to use in .NET code to add mainframe and AS/400 printing, HLLAPI, macros and FTX functionality to your Visual Studio projects. The extension also provides:

- Rumba+ project templates for different session types
- Integration with the Visual Studio Toolbox for adding RDE.NET functionality with easy drag and drop.
- A menu item that allows one-click loading of dozens of examples with full source code included.
- Visual Studio code snippets for writing program code more quickly, easily, and reliably.
- 'Intellisense' support which provides auto-completion help information and short descriptions for all properties, methods, interfaces, and enumerations.
- RDE Tracer to monitors calls to RDE properties, methods, and events for easy application tracking. A tracer class has been added to each display control, which has two methods: start and stop. Once started, all RDE methods, properties, and events used by developers are logged to a log file, together with their respective parameters and returns values, for easy understanding of the RDE procedures at run-time.
- Full documentation of the RDE.NET API with a description of building you first RDE.NET application.

Before installing the extension



Prerequisites:

- If you have Visual Studio 2012, 2013, 2015, or 2017 installed, you must install the Microsoft .NET Framework 4.7.1 Developer Pack.
- If you have Visual Studio 2019 installed, you must install Microsoft .NET Framework 4.7.2 Targeting Pack.
- If you have Visual Studio 2022 installed, you must install Microsoft .NET Framework 4.8 Targeting Pack.

Installing RDE

1. Close all open instances of Visual Studio.
2. Run `RumbaDevelopersEditionVisualStudioAddIn.msi` and follow the instructions in the Setup wizard.
3. Open each supported Visual Studio version you want to use the RDE from, then enable the Micro Focus RDE extension via Extensions Manager.
4. Close Visual Studio, then re-open it to start working with RDE.

The RDE extension is installed per user to each supported Visual Studio version detected on the machine.

You can remove the extension from the machine by choosing **Start > Control Panel > Programs and Features**.

To install RDE to all supported versions of Visual Studio, use the following command:

```
msiexec /i <full_path_to_RumbaDevelopersEditionVisualStudioAddIn.msi> /qn
```

Silent uninstall

To uninstall the extension, use the following command line:

```
Msiexec /x RumbaDevelopersEditionVisualStudioAddIn.msi /qn
```

Rumba+ Desktop 64-bit applications support

Rumba+ Desktop integrates 64-bit components allowing you to continue using your current RDE or HLLAPI applications in a Windows 64-bit environment.

For detailed information, see the *Micro Focus Rumba+ 64-Bit* guide.

Contacting Micro Focus

Our Web site gives up-to-date details of contact numbers and addresses.

Further information and product support

Additional technical information or advice is available from several sources.

The product support pages contain a considerable amount of additional information, such as:

- The *Product Updates* section of the Micro Focus Customer Care Web site, where you can download fixes and documentation updates.
- The *Examples and Utilities* section of the Micro Focus Customer Care Web site, including demos and additional product documentation.
- The *Support Resources* section of the Micro Focus Customer Care Web site, that includes troubleshooting guides and information about how to raise an incident.

To connect, enter <https://www.microfocus.com/en-us/support> in your browser.



Note: Some information may be available only to customers who have maintenance agreements.

If you obtained this product directly from Micro Focus, contact us as described on the Micro Focus Web site, www.microfocus.com. If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

Also, visit:

- The Micro Focus Community Web site, where you can browse the Knowledge Base, read articles and blogs, find demonstration programs and examples, and discuss this product with other users and Micro Focus specialists.
- The Micro Focus YouTube channel for videos related to your product. .

Information we need

However you contact us, please try to include the information below, if you have it. The more information you can give, the better Micro Focus Customer Care can help you. But if you don't know all the answers, or you think some are irrelevant to your problem, please give whatever information you have.

- The name and version number of all products that you think might be causing a problem.
- Your computer make and model.
- Your operating system version number and details of any networking software you are using.
- The amount of memory in your computer.
- The relevant page reference or section in the documentation.
- Your serial number. To find out this number, look in the subject line and body of your Electronic Product Delivery Notice email that you received from Micro Focus.

Contact information

Our Web site gives up-to-date details of contact numbers and addresses.

Additional technical information or advice is available from several sources.

The product support pages contain considerable additional information, including the *Product Updates* section of the Micro Focus Customer Care Web site, where you can download fixes and documentation updates. Go to [Micro Focus Product Updates](#).

To connect, enter <https://www.microfocus.com/en-us/home/> in your browser to go to the Micro Focus home page, then click **Support & Services > Support**. Type or select the product you require from the product selection dropdown, and then click **Support Login**.

If you are a Micro Focus Customer Care customer, please see the *Welcome to Customer Care* document that includes information about downloading and licensing your product, contacting Customer Care, and about reporting an incident. You can download it from our Web site. Support from Micro Focus may be available only to customers who have maintenance agreements.

MICRO FOCUS END USER LICENSE AGREEMENT

IMPORTANT: LICENSOR PROVIDES LICENSED SOFTWARE TO LICENSEE UNDER THIS END USER LICENSE AGREEMENT (THE “AGREEMENT”). THIS AGREEMENT GOVERNS LICENSEE’S INSTALLATION AND USE OF THE VERSION OF THE LICENSED SOFTWARE IDENTIFIED IN THE APPLICABLE PRODUCT ORDER, OR IF NOT ACQUIRED VIA A PRODUCT ORDER, LICENSEE’S INSTALLATION OR USE OF THE LICENSED SOFTWARE CONSTITUTES ACCEPTANCE OF THIS AGREEMENT. **THE TERMS AND CONDITIONS OF THIS AGREEMENT MAY BE DIFFERENT FROM THE AGREEMENT(S) THAT ACCOMPANIED EARLIER RELEASES OF THE LICENSED SOFTWARE. PLEASE READ THIS AGREEMENT CAREFULLY BEFORE PROCEEDING, AS IT MAY CONTAIN ADDITIONAL RESTRICTIONS ON YOUR USE OF THE SOFTWARE. THIS AGREEMENT SUPERSEDES AND CONTROLS OVER ANY OTHER TERMS PROVIDED TO LICENSEE REGARDING LICENSEE’S USE OF THE LICENSED SOFTWARE, WHETHER WRITTEN OR ORAL, AS PART OF A SIGNED AGREEMENT (INCLUDING, BUT NOT LIMITED TO, MASTER AGREEMENTS AND PORTFOLIO TERMS, UNLESS A DIFFERENT AGREEMENT IS EXPRESSLY REFERENCED IN A PRODUCT ORDER OR EXECUTED BY LICENSOR AND LICENSEE SPECIFYING THAT IT APPLIES TO THE VERSION OF THE LICENSED SOFTWARE TO WHICH THIS AGREEMENT RELATES), A CLICK-WRAP AGREEMENT PROVIDED WITH THE LICENSED SOFTWARE OR OTHERWISE (SUCH TERMS REFERRED TO AS THE “OTHER AGREEMENT”), EVEN IF SUCH OTHER AGREEMENT WAS EMBEDDED WITHIN PREVIOUSLY LICENSED SOFTWARE.** LICENSOR RESERVES THE RIGHT TO UPDATE, AMEND, AND/OR MODIFY THIS AGREEMENT FROM TIME TO TIME, AND MAY INCLUDE SUCH UPDATED AGREEMENT WITH OR EMBEDDED IN FUTURE VERSIONS OF THE LICENSED SOFTWARE. PLEASE DIRECT ANY QUESTIONS TO THE MICRO FOCUS LEGAL DEPARTMENT AT LEGALDEPT@MICROFOCUS.COM.

ENTERING INTO THIS AGREEMENT DOES NOT CONSTITUTE A SALES TRANSACTION. THE SALE OF A LICENSE TO SOFTWARE PRODUCTS TAKES PLACE UNDER PRODUCT ORDERS WHICH (UNLESS OTHERWISE STATED IN THE PRODUCT ORDER) INCORPORATE THE TERMS OF THIS AGREEMENT.

Capitalized terms in this Agreement are defined as follows:

“Additional License Authorization” or **“ALA”** means the additional specific software license terms that govern the authorized use of a given software product of Licensor, including requirements for any non-production use rights described in the Non-Production Licensing Guide, and License Options available for that software product, along with additional terms or conditions applicable to a given License Option, all of which are made a part of this Agreement. The applicable Additional License Authorization for the Licensed Software is either attached hereto or can be found here: <https://software.microfocus.com/en-us/about/software-licensing> by product name and version; all references in this Agreement to “Additional License Authorization” or “ALA” shall refer to the ALA that corresponds to the version of the Licensed Software.

“Documentation” means the Licensor user documentation that is included with the Licensed Software.

“Licensee” means the legal entity or individual that is identified in the applicable Product Order or who has rightfully received a license to the Licensed Product.

“License Option” means the type of license available for a given software product (such as a named user license, concurrent user license or server license). In addition to the ALA, a License Option may be set forth in a Product Order or an agreement executed in writing by Licensee and Licensor.

“Licensor” means the applicable Micro Focus entity and its affiliates who own the intellectual property rights in Licensed Product.

“Licensed Software” means the executable version of Licensor’s software listed in the Product Order or otherwise provided to or rightfully acquired by Licensee. This Agreement shall govern the use of any update to the Licensed Software that Licensee receives pursuant to a separate support and maintenance agreement as described in Section 4 below, unless such update contains, comes with, or is otherwise specifically governed by a different end user license agreement.

“Product Order” means an agreement between Licensor and Licensee that consists of a document that has been (i) submitted by Licensee describing the License Option(s) to be purchased for the Licensed Software, and (ii) accepted by Licensor (a) in writing or (b) by delivering the Licensed Software to Licensee, whichever occurs first. A Product Order may also consist of a written quote, or other written document issued by Licensor (the “Quote”), (i) describing the License Options for the Licensed Software to be purchased, and (ii) that is accepted by Licensee before the Quote expires either by (a) returning the Quote signed by an authorized representative of Licensee, (b) issuing a purchase order that references the Quote (if the Quote expressly allows acceptance in this manner), or (c) paying Licensor the fees listed in the Quote. Unless otherwise expressly set forth in the relevant Product Order, each Product Order incorporates the terms and conditions of this Agreement, and in no event will any different or additional terms of a purchase order or similar document issued by Licensee in connection with this Agreement or a Product Order apply, and any such additional or different terms are hereby rejected by the Licensor. For purposes of this paragraph, “Licensor” shall also include the relevant Micro Focus entity as defined above and its authorized distributors and resellers. Any conflicting or additional terms in a Product Order accepted by an authorized distributor or reseller of Licensor shall have no effect unless such terms have been agreed to by the applicable Micro Focus entity in writing.

“Third Party Component” means any run time or other elements owned or licensed to Licensor by a third party (other than open source code or elements) which may be embedded in the Licensed Software.

“Third Party Software” means additional or accompanying software owned or licensed by a third party (such as Adobe Acrobat or Microsoft Internet Explorer, but not any open source code or elements) that may be specified in the Documentation or in a file accompanying such Licensed Software.

“Warranty Period” means the ninety (90) day time frame beginning on date of delivery of the Licensed Software to Licensee (Licensed Software delivery is deemed to occur when the Licensed Software is physically delivered to Licensee EXWORKS or made available for download to Licensee).

1. GRANT OF LICENSE; LICENSE CONDITIONS.

A. **License Grant.** Subject to Licensee’s compliance with the terms and conditions of this Agreement (including but not limited to payment of applicable fees), Licensor grants to Licensee a personal, non-transferable, non-sublicensable and non-exclusive license to use the Licensed Software as authorized by the License Option(s) specified in the ALA solely for Licensee’s internal business operations, functions and benefit, and not for commercialization of the Licensed Software or to provide services or benefit to any affiliates or subsidiaries of Licensee or any other third party. Throughout the license term, Licensee agrees to: (i) implement internal safeguards to prevent any unauthorized copying, distribution, installation, use of, or access to, the Licensed Products and associated support and maintenance, or any other breach of this Agreement; and (ii) take all necessary steps to destroy or erase all Licensed Software codes, programs, Documentation, and other proprietary information of Licensor before disposing of any media or hardware. Licensor will provide any license key necessary for activation and use of the Licensed Software. Licensor is not liable or responsible for lost or broken license keys and is not obligated to replace license keys or issue new license keys unless (1) Licensee has purchased a support and maintenance plan for the applicable Licensed Software that specifically covers the issuance of new or replacement keys and (2) the applicable version of the Licensed Software is then generally available for distribution by Licensor. If Licensee has not paid for such a support and maintenance plan, replacement or new license keys may be available for purchase at Licensor’s then-current list price for applicable new licenses.

B. **Evaluation Licenses.** With respect to any Licensed Software provided to Licensee solely for evaluation purposes (an “Evaluation License”), in the event of conflict this Section 1.B shall prevail over any other provisions set forth in this Agreement. An Evaluation License may be used for a period of no more than thirty (30) days from the date the Licensed Software is provided to Licensee (“Evaluation Term”), unless a different period is specified in writing by Licensor. An Evaluation License may be used

solely for Licensee's internal evaluation and testing purposes on a single computer system and not for development, commercial, or production purposes. For Licensed Software subject to an Evaluation License, (i) Licensee may not reproduce or distribute the Licensed Products; and (ii) Licensee's results of benchmark or other performance tests run on or using the Licensed Software may not be disclosed to any third party without Licensor's prior written consent. At any time during the Evaluation Term or upon completion thereof, Licensee may, upon written notification to Licensor and payment of the applicable license fee, replace the Evaluation License with a license to use the Licensed Software that is not restricted to evaluation purposes. In the absence of such notification by Licensee, the Evaluation License shall automatically terminate at the end of the Evaluation Term, and Licensee shall return, or, if Licensor so directs, delete and destroy all such Licensed Software and provide Licensor with written confirmation of its compliance with this provision. Upon written request from Licensee, Licensor may, in its sole discretion, grant Licensee an extension in writing prior to the expiration of the Evaluation Term. Other than updates to Licensed Software provided as part of support and maintenance, Licensed Software provided by Licensor free of license fee charge shall be deemed to be provided for evaluation purposes only. Licensed Software furnished under an Evaluation License is provided without any contractual obligation of maintenance and support by Licensor and is provided "as is" without warranties, implied or express, of any kind.

C. Bundles/Suites. If the Licensed Software is licensed in a bundle or suite of multiple products, and the applicable Product Order specifies the License Option and license count for the bundle or suite (but not the individual product components of the bundle or suite), then each product in the bundle or suite shall share such license type and count. For example, individual products in the bundle or suite cannot be used by multiple users if only one user license is purchased (for user-based licenses) and cannot be installed on multiple devices or servers if only one device or server license is purchased (for device or server-based licenses).

2. USE RESTRICTIONS. Except as may be otherwise specifically permitted in the applicable ALA, Licensee agrees not to, directly or indirectly:

A. Copy, distribute or use the Licensed Software, in whole or in part (such as any portion, feature, function, or user interface) without paying Licensor the applicable fees;

B. Use the Licensed Software as a service, or for timesharing, facilities management, outsourcing, hosting, service bureau use, or for providing other application service (ASP) or data processing services to third parties or for like purposes, or permit the use of the Licensed Software by a third party or permit access by or use for the benefit of any third party without executing a separate distribution agreement for the Licensed Software and paying Licensor the applicable required additional fees;

C. Modify or create derivative works of the Licensed Software, or decrypt, translate, disassemble, recompile, decompile or reverse engineer the Licensed Software or attempt to do so (except to the extent applicable law specifically permits such activity, in which case Licensee must provide Licensor with detailed information regarding such activities);

D. Alter, destroy, or otherwise remove any proprietary notices or labels on or embedded within the Licensed Software;

E. Use the Licensed Software in a manner other than as specifically permitted in this Agreement or an ALA;

F. Assign, sell, resell, license, rent, lease, lend, sublicense, outsource or otherwise transfer the Licensed Software to any third party, without first paying Licensor the applicable required license fees and obtaining Licensor's prior written consent;

G. Authorize, allow or appoint any third party to do any of the foregoing. For the avoidance of doubt, third parties include, without limitation, contractors and consultants (including contractors and consultants retained to provide services solely for the benefit of Licensee), outsourcers, Licensee's affiliates and subsidiaries, parent companies, customers, and the public; or

H. Publish or disclose to third parties any evaluation or benchmarking of the Licensed Software without Licensor's prior written consent. Notwithstanding the foregoing, Licensee may: (i) make a reasonable number of archival back-up copies of the Licensed Software and (ii) make a reasonable number of

copies of the Documentation. Licensee shall reproduce all copyright and other proprietary rights notices appearing in or on the Licensed Products, including notices of all third party suppliers.

- 3. TERM OF LICENSE.** This Agreement and the license term for the Licensed Software granted herein is perpetual, unless a subscription/term license has been purchased by Licensee (in which case the license term shall be set forth in the Product Order or ALA), and is subject to earlier termination as provided in this Section 3. If Licensee has purchased a subscription/term license, such license shall automatically terminate upon expiry of such subscription/term, unless earlier terminated under this Section 3. Licensor may terminate this Agreement, along with any or all licenses then in effect with Licensee, immediately by giving Licensee written notice of termination in the event that (i) Licensee breaches any term or condition of this Agreement and fails to remedy such breach within ten (10) days of receipt of Licensor's notice detailing such breach; (ii) Licensee becomes insolvent, has a receiver appointed, or files for or has filed against it, liquidation, bankruptcy or analogous proceedings; or (iii) Licensee infringes or misappropriates the intellectual property rights of Licensor. Termination shall be without prejudice to any other rights or remedies Licensor may have. In the event of any termination, Licensee's license(s) to install, access or use the Licensed Software will immediately terminate, and Licensee shall destroy and erase all copies of such Licensed Software in its possession or control and provide written certification to Licensor that it has complied with this provision. Early termination of this Agreement shall not entitle Licensee to any refund or reimbursement of any previously paid fees. The rights and obligations of the parties contained in Sections 3 (Term of License), 6 (Disclaimer of Warranty), 7 (Limitation of Liability), 8 (High Risk Uses), 9 (Ownership), 10 (Third Party Software and Components), 11 (Notice to U.S. Government End Users), 12 (License Fees and Payment Terms), 13 (Audits), 15 (Privacy and Use of Licensee Information), 16 (Licensee Trademark and Feedback) and 17 (Miscellaneous) will survive the termination or expiration of this Agreement.
- 4. SUPPORT AND MAINTENANCE.** Licensee is not entitled to any updates to the Licensed Software, unless Licensee purchases maintenance and support services pursuant to Licensor's then-current applicable standard maintenance and support agreement, which can be found at <https://www.microfocus.com/support-and-services/maintenance-and-support-agreements/> or can be provided by Licensor at Licensee's request. Maintenance and support services (including, but not limited to, any new versions, bug fixes, and patches) provided by Licensor will be subject to such agreement. Where Licensee purchases maintenance and support for any Licensed Software, Licensee hereby agrees to purchase or keep current on such maintenance and support services for all of Licensee's licensed units of such Licensed Software product, regardless of License Option.
- 5. LIMITED WARRANTY.** Licensor warrants for the Warranty Period that: (i) if the Licensed Software is supplied via media, the media will be free from defects in materials or workmanship under normal use, and (ii) the copy of the Licensed Software delivered to Licensee substantially conforms in all material respects to the Documentation. Licensee's sole and exclusive remedy for any defective media supplied by Licensor shall be Licensor's repair or replacement of such defective media free of charge, provided that the defective media is returned to Licensor during the Warranty Period. During the Warranty Period, Licensee's sole and exclusive remedy for not meeting part (ii) of the above warranty shall be the repair or replacement of the Licensed Software by Licensor free of charge so that it substantially conforms to the Documentation or, if Licensor reasonably determines that such remedy is not economically or technically feasible, Licensee shall be entitled to a full refund of the license fee and any maintenance fee paid for such Licensed Software. Upon such refund, Licensee's license to use such Licensed Software will immediately terminate. The warranties set forth in this Section 5 shall not apply if the defects in the Licensed Software or media result from: (a) failure to use the Licensed Software in accordance with the Documentation, this Agreement or ALAs; (b) the malfunctioning of Licensee's equipment or network; (c) accident, neglect, or abuse; (d) service by any unauthorized person; (e) other software used by Licensee and not provided by Licensor, or for which the Licensed Software is not designed or licensed for such use; (f) Third Party Software that is not a Third Party Component; (g) any other cause occurring after initial delivery of the Licensed Software or media to Licensee, unless caused directly by Licensor. Licensor has no responsibility for any claims made outside of the Warranty Period. The foregoing warranty shall not apply to any free-of-charge Licensed Software or updates provided under support and maintenance. THE FOREGOING WARRANTIES DO NOT APPLY, AND LICENSOR DISCLAIMS ALL WARRANTIES, WITH RESPECT TO ANY THIRD PARTY SOFTWARE THAT IS NOT A THIRD PARTY COMPONENT. The warranties set forth in this Section 5 will not apply and will become null and void if Licensee materially breaches any provision of this Agreement.

6. DISCLAIMER OF WARRANTY. EXCEPT FOR THE LIMITED WARRANTY SET FORTH IN SECTION 5, THE LICENSED PRODUCTS ARE PROVIDED TO LICENSEE “AS-IS” WITHOUT WARRANTY OF ANY KIND. LICENSOR DOES NOT WARRANT THAT THE FUNCTIONS CONTAINED IN THE LICENSED SOFTWARE WILL MEET LICENSEE’S REQUIREMENTS, THAT OPERATION WILL BE UNINTERRUPTED, ACHIEVE ANY INTENDED RESULT, BE COMPATIBLE, OR WORK IN COMBINATION WITH ANY OTHER SOFTWARE, APPLICATIONS, OR SYSTEMS, MEET ANY PERFORMANCE OR RELIABILITY STANDARDS, OR BE ERROR FREE, OR THAT ANY ERRORS OR DEFECTS CAN OR WILL BE CORRECTED. EXCEPT AS SET FORTH HEREIN AND TO THE EXTENT PERMITTED BY LAW, ALL OTHER WARRANTIES WITH RESPECT TO THE LICENSED PRODUCTS, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY, QUALITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, AND WARRANTIES THAT MAY ARISE OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE, OR TRADE PRACTICE ARE EXPRESSLY DISCLAIMED BY LICENSOR AND ITS THIRD-PARTY SUPPLIERS AND AFFILIATES. LICENSEE ACKNOWLEDGES THAT LICENSEE IS RESPONSIBLE FOR THE SELECTION OF THE LICENSED SOFTWARE TO ACHIEVE LICENSEE’S INTENDED RESULTS AND FOR THE INSTALLATION AND/OR USE OF, AND RESULTS OBTAINED FROM, THE LICENSED SOFTWARE.

7. LIMITATION OF LIABILITY.

A. Aggregate Cap. IN NO EVENT SHALL ANY LIABILITY OF LICENSOR OR ITS AFFILIATES OR ANY OF ITS OR THEIR RESPECTIVE LICENSORS OR SERVICE PROVIDERS UNDER OR IN CONNECTION WITH THIS AGREEMENT EXCEED, IN THE AGGREGATE, THE AMOUNTS PAID BY LICENSEE FOR THE LICENSED SOFTWARE AND THE INITIAL PERIOD OF MAINTENANCE AND SUPPORT GIVING RISE TO THE APPLICABLE CLAIM.

B. Waiver of Liability. IN NO EVENT SHALL LICENSOR OR ITS AFFILIATES OR ANY OF ITS OR THEIR RESPECTIVE LICENSORS OR SERVICE PROVIDERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SIMILAR DAMAGES, LOSS OF PROFITS, BUSINESS, DATA, OR PROGRAMS (INCLUDING, BUT NOT LIMITED TO, THE COST OF RECOVERING OR REPLACING SUCH DATA OR PROGRAMS), LOSS, DAMAGE OR ANY COSTS DUE TO INTERRUPTION, DELAY, OR INABILITY TO USE THE LICENSED SOFTWARE, WHETHER ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, EVEN IF INFORMED OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE.

C. Scope. THE LIMITATIONS AND EXCLUSIONS OF THIS SECTION 7 APPLY TO ALL CAUSES OF ACTION, INCLUDING, WITHOUT LIMITATION, BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE, STRICT LIABILITY, MISREPRESENTATION AND OTHER TORTS. THESE LIMITATIONS AND EXCLUSIONS APPLY COLLECTIVELY TO LICENSOR, ITS PARENTS, AFFILIATES, AND SUBSIDIARIES AND EACH OF THEIR RESPECTIVE EMPLOYEES, CONTRACTORS, AND SUPPLIERS. NOTWITHSTANDING THE FOREGOING, NOTHING IN THIS SECTION 7 EXCLUDES LIABILITY FOR WILLFUL MISCONDUCT OR FRAUDULENT MISREPRESENTATION.

D. Exclusive Remedy. LICENSEE’S REMEDIES IN THIS AGREEMENT ARE LICENSEE’S EXCLUSIVE REMEDIES. LICENSEE AGREES THAT, IN ENTERING INTO THIS AGREEMENT, IT DID NOT RELY ON ANY REPRESENTATIONS (WHETHER WRITTEN OR ORAL) OF ANY KIND OTHER THAN THOSE EXPRESSLY SET OUT IN THIS AGREEMENT.

E. Essential Purpose. LICENSEE FURTHER ACKNOWLEDGES THAT THE LIMITATIONS AND EXCLUSIONS OF LIABILITY IN THIS SECTION 7 APPLY TO THE FULLEST EXTENT PERMITTED BY LAW AND ARE AN ESSENTIAL ELEMENT OF THIS AGREEMENT AND THAT, IN THE ABSENCE OF SUCH LIMITATIONS AND EXCLUSIONS, THE PRICING AND OTHER TERMS AND CONDITIONS SET FORTH HEREIN WOULD BE SUBSTANTIALLY DIFFERENT. THE LIMITATIONS AND EXCLUSIONS SET FORTH IN THIS SECTION 7 SHALL APPLY EVEN IF THE LICENSEE’S REMEDIES UNDER THIS AGREEMENT FAIL OF THEIR ESSENTIAL PURPOSE.

F. Free Software. IF LICENSOR PROVIDES LICENSEE WITH ANY LICENSED SOFTWARE FREE-OF-CHARGE OR UNDER AN EVALUATION LICENSE, TO THE EXTENT PERMITTED BY LAW, LICENSOR SHALL NOT BE RESPONSIBLE FOR ANY LOSS OR DAMAGE TO LICENSEE, ITS

CUSTOMERS, OR ANY THIRD PARTIES CAUSED BY THE LICENSED SOFTWARE THAT IT MAKES AVAILABLE TO LICENSEE.

- 8. HIGH-RISK USES.** The Licensed Software is not fault tolerant, nor designed, manufactured, or intended for use in hazardous environments requiring fail-safe performance (including, without limitation, the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems) in which failure of the Licensed Software could lead directly or indirectly to death, personal injury, or severe physical or environmental damage. Licensor and its suppliers shall have no liability for any use of the Licensed Software in any high-risk situations.
- 9. OWNERSHIP.** The Licensed Products are provided under license, and not sold, to Licensee. The only rights in the Licensed Products are the licenses expressly stated in this Agreement and no other rights are implied or granted by estoppel. Licensor (and its affiliates) and its and their licensors and third party suppliers retain ownership of, and reserve all rights in and to, the Licensed Products, including all copies thereof, and all intellectual property rights arising out of or relating to the Licensed Products. Licensee shall use reasonable efforts to safeguard the Licensed Products (including all copies thereof) from infringement, misappropriation, theft, misuse, or unauthorized access. Licensee shall promptly notify Licensor if it becomes aware of any infringement or misappropriation of the Licensed Products and shall fully cooperate with Licensor, at Licensor's expense, in any legal action taken by Licensor to enforce its intellectual property rights.
- 10. THIRD PARTY SOFTWARE AND COMPONENTS.** The Licensed Software may come with or require Third Party Software that Licensee shall license directly from the third party licensor pursuant to such third party's terms and conditions and not this Agreement. Additionally, some Licensed Software may include certain Third Party Components and open source software. Such open source software and Third Party Components may also be loaded on the Licensed Software media. Third Party Components are licensed to Licensee under this Agreement; open source software is licensed pursuant to the applicable open source license. To the extent applicable, information about the open source software may be found (i) in a file accompanying the applicable Licensed Software or (ii) in the Documentation or ALA. Licensee shall not directly access any Third Party Components other than with or as part of the Licensed Software. Licensee agrees that to the extent required by a third party licensor or supplier of a Third Party Component, that third party licensor or supplier is an intended third party beneficiary of this Agreement as necessary to protect intellectual property rights in the Licensed Software and limit certain uses thereof.
- 11. NOTICE TO U.S. GOVERNMENT END USERS.** The Licensed Products are deemed to be "Commercial Items," as defined at 48 C.F.R. §2.101, consisting of "Commercial Computer Software" and "Commercial Computer Software Documentation," as such terms are used in 48 C.F.R. §12.212 or 48 C.F.R. §227.7202, as applicable. Consistent with such sections, the Licensed Products are licensed to U.S. Government end users (i) only as Commercial Items, and (ii) with only those rights as are granted pursuant to this Agreement.
- 12. LICENSE FEES AND PAYMENT TERMS.** Licensee agrees to pay the applicable license fees for the Licensed Products within thirty (30) days of the date of invoice or such other date as agreed in writing by the parties. Software license fees are non-refundable, except as provided in Section 5 above, and shall be paid without any deduction or tax withholding. Software License fees are exclusive of any applicable transportation charges, sales, use, value added tax, and other applicable taxes and duties, and all such amounts shall be paid or reimbursed by Licensee. Licensee shall be liable for all outstanding past due amounts, which shall accrue interest at the rate of 1.5% per month compounded or, if lower, the maximum rate allowed by applicable law, and any collection costs associated with the collection of any past due amounts.
- 13. AUDITS.** Licensor or an Auditor (as defined below) has the right to verify Licensee's compliance with the licenses issued under Product Orders, the applicable ALAs and this Agreement (please see Micro Focus License Compliance Charter at <http://supportline.microfocus.com/licensing/licVerification.aspx>, which can also be provided by Licensor at Licensee's request). Licensee agrees to:

 - A. **Recordkeeping.** Keep, and upon Licensor's request, provide records, sufficient to certify Licensee's compliance with this Agreement based on the applicable License Option(s) (including applicable license metric and other terms and conditions) for the Licensed Software, which may include but are not limited to, serial numbers, license keys, logs, the location, model (including quantity and type of processor) and serial number of all machines on which the Licensed Software is installed or accessed or from which

the Licensed Software can be accessed, the names (including corporate entity) and number of users accessing or otherwise able to access the Licensed Software, metrics, reports, copies of the Licensed Software (by product and version), and network architecture diagrams as they may relate to Licensee's licensing and deployment of the Licensed Products and associated support and maintenance;

B. Questionnaire. Within seven (7) days of Licensor's request, Licensee shall furnish to Licensor or its designated independent auditor ("Auditor") a completed questionnaire provided by Licensor or Auditor, accompanied with a written statement signed by a director of Licensee certifying the accuracy of the information provided; and

C. Access. Provide representatives of Licensor or Auditor any necessary assistance and access to records and computers to allow an inspection and audit of Licensee's computers and records, during Licensee's normal business hours, for compliance with licenses, the applicable ALAs, and this Agreement, and fully cooperate with such audit.

D. Non-Compliance. In the event that Licensee has, or at any time has had, unlicensed installation, use of, or access to the Licensed Software or has otherwise breached this Agreement or an ALA (a "Non-Compliance"), without prejudice to any other rights or remedies Licensor may have, including, without limitation, injunctive relief, Licensee shall, within thirty (30) days' notice of such Non-Compliance to Licensee, purchase sufficient licenses and/or subscriptions and associated support and maintenance to cure the Non-Compliance, by paying Licensor's current (as of the date of such additional purchase) list license fees and 12-month support and maintenance fees to Licensor for such additional licenses, plus Licensor's current (as of the date of such additional purchase) list term license and support and maintenance fees and interest (compounded at 1.5% monthly or the maximum rate permitted by applicable law if lower) for such additional licenses for the time period from the commencement of the Non-Compliance until payment of the aforementioned fees, with interest payable even if an invoice was not issued at the time the Non-Compliance occurred. For purposes of the foregoing, "list" shall mean Licensor's full list price as set forth in Licensor's standard price list that is current as of the commencement of the audit without any volume or other discount. If Licensee's Non-Compliance results in an underpayment of license fees of 5% or greater, Licensee shall also reimburse Licensor for the reasonable cost of such audit in addition to other amounts due. In the event of a dispute related to a Non-Compliance, Licensor shall have the right to collect from Licensee its reasonable costs and attorneys' fees incurred in enforcing this Agreement.

14. RELATED SERVICES. Licensee shall be responsible for obtaining and installing all proper hardware and other third party support software (including operating systems) for the proper installation and implementation of the Licensed Software. In the event that Licensee retains Licensor to perform any services with respect to the Licensed Software (for example: installation, implementation, maintenance, consulting, or training services), Licensee and Licensor agree that such services shall be provided at Licensor's then- current standard terms, conditions, and rates for such services unless otherwise agreed in writing by Licensor.

15. PRIVACY AND USE OF LICENSEE INFORMATION.

A. Responsibility and Compliance with Laws. Licensee is solely responsible for and assumes all liability with respect to its own collection, processing, storage, and transfer of any user data, including, but not limited to, personally identifiable information and personal health and financial information (collectively, "Personal Information"). Licensee shall be solely responsible for notifying its users of proper use of such data. Each party is responsible for complying with its respective obligations under all applicable laws, regulations, and industry standards regarding data collection and data privacy applicable for the use of the Licensed Software by the relevant party. Licensee shall not provide any Personal Information to Licensor for processing by Licensor on behalf of Licensee, unless otherwise agreed by the parties in writing in an applicable transaction document with applicable privacy terms. If the parties agree that processing Personal Information is necessary for the performance of this specific transaction, and when such Personal Information processing falls within the scope of the General Data Protection Regulation (EU) 2016/679 ("GDPR"), before any Personal Information is made available to Licensor, the parties agree that Licensee will be the data controller and Licensor will be the data processor, and when Licensor is processing Personal Information on behalf of Licensee, such processing shall be governed by terms that comply with Article 28 of the GDPR including standard contractual clauses to be included in such transaction document. Licensor will not have access to protected health information unless the

parties have an executed business associate agreement in place for this transaction. Licensee is solely responsible for assessing the Licensed Product or any related product or service for compliance with any industry requirements applicable to Licensee.

B. Consent to Use of Licensee Information. To the extent required or permitted by law, Licensee hereby expressly consents to (i) receiving information from Licensor from time to time advertising Licensor's products; (ii) the use of Licensee's name in Licensor customer lists, promotional materials, and press releases; and (iii) the collection and use of information about the computer system on which the Licensed Software is installed (e.g. product version, serial number) for internal security and licensing purposes. Further information about Licensor's processing of personally identifiable data is available at <https://www.microfocus.com/about/legal/#privacy> (click "Privacy Notice" tab) or can be provided by Licensor at Licensee's request.

C. Other Use of Licensee Information. To the extent required or permitted by law, and notwithstanding the terms in Section 15.A, Licensor may also process personally identifiable information of Licensee and Licensee's users (i) in order to comply with a legal obligation to which Licensor is subject; (ii) as is necessary for the performance of this Agreement; and (iii) where necessary for the purposes of Licensor's legitimate interests, except where such interests are overridden by the interests or fundamental rights and freedoms of the Licensee or Licensee's users which require protection of personally identifiable information.

16. LICENSEE TRADEMARK AND FEEDBACK. Licensor may use Licensee's name and logo for business development and marketing purposes, including, but not limited to, online and printed sales and marketing materials. Any other use of Licensee's name or logo, or a description of Licensee's use of the Licensed Software, shall be subject to Licensee's prior consent. Any suggestions, ideas for modifications, enhancements, and other feedback from Licensee regarding the Licensed Software provided at any time (collectively, the "Feedback"), including (but not limited to) all intellectual property rights in and to such Feedback, shall be owned exclusively by Licensor. Licensee hereby assigns all right, title and interest in and to such Feedback and all the intellectual property rights therein to Licensor, without the necessity of any further consideration. To the extent any Feedback cannot be assigned to Licensor, Licensee hereby grants to Licensor a perpetual, irrevocable, exclusive, worldwide, royalty-free, fully paid up license, with the right to sublicense through multiple tiers to use, make, sell, distribute, execute, adapt, translate, reproduce, display, perform, modify, create derivative works of and otherwise exploit the Feedback in any manner.

17. MISCELLANEOUS.

A. Assignment. Licensor may assign this Agreement, including any rights or obligations under the Agreement (in whole or in part) to a parent or an affiliate. Licensee may not assign or transfer this Agreement or any of its rights or duties hereunder, including (but not limited to) by merger, acquisition by any entity of all or substantially all of Licensee's stock or assets, change of control, operation of law, or otherwise, without the prior written consent of Licensor and payment by Licensee of the applicable assignment fee. Any attempted assignment not in accordance with this Section shall be null and void.

B. Governing Law. If Licensee is located in North America, the laws of the State of California govern this Agreement and the licenses granted hereunder, and the parties hereto consent to the exclusive jurisdiction of the State and Federal courts of the State of California in any action based on this Agreement or the Licensed Software hereunder or any License Option under an ALA. Each party waives any right it may have to object to such venue, including objections based on personal jurisdiction or forum non conveniens (inconvenient forum). The parties agree that the Uniform Computer Information Transaction Act or any version thereof, adopted by any state, in any form ("UCITA"), shall not apply to this Agreement. To the extent that UCITA is applicable, the parties hereby opt out of the applicability of UCITA pursuant to the opt-out provision(s) contained therein. If Licensee is located in France, Germany or Japan, this Agreement is governed by the laws of the country in which Licensee is located. In the rest of the world the laws of England govern this Agreement. In each case, the applicable law shall apply without regard to conflict of laws provisions thereof, and without regard to the United Nations Convention on the International Sale of Goods. Other than for North American transactions, this Agreement, the licenses granted hereunder, and the parties hereto, shall be subject to the exclusive jurisdiction of the courts of the country determining the applicable law as aforesaid.

C. Export Control. This Agreement may be subject to export control laws, regulations, and other restrictions of the United States (including, but not limited to, the U.S. Export Administration Regulations (the "EAR")), United Kingdom, or the European Union regarding export or re-export of computer software and technology. Licensee agrees to comply with all applicable export control laws, regulations, and restrictions, including the EAR, where applicable.

D. Entire Agreement. The applicable Product Order and this Agreement including the applicable ALA, constitutes the complete and exclusive statement of agreement between the parties relating to the license for the Licensed Products and supersedes all prior proposals, communications, purchase orders, and agreements (including, without limitation, Other Agreements), without need for a mutually executed amendment to any such Other Agreement. Any conflicting terms and conditions shall be resolved according to the following order of precedence: the applicable Product Order, the applicable ALA, and then this Agreement in all other respects.

E. Amendment. No representation, supplement, modification, or amendment of this Agreement will be binding on either party unless executed in writing by duly authorized representatives of both parties (excluding any distributor or reseller of Micro Focus) to this Agreement.

F. Waiver. No waiver of any right under this Agreement will be effective unless in writing and signed by authorized representatives of both parties (excluding any distributor or reseller of Licensor). No waiver of any past or present right arising from any breach or failure to perform will be deemed to be a waiver of any future right arising under this Agreement.

G. Severability. If any provision in this Agreement is invalid or unenforceable, that provision will be construed, limited, modified or, if necessary, severed, to the extent necessary, to eliminate its invalidity or unenforceability, and the other provisions of this Agreement will remain unaffected.

H. No Reliance. Each party acknowledges that in entering into this Agreement it has not relied on any representations, agreements, warranties or other assurances (other than those repeated in this Agreement) and waives all rights and remedies which but for this Section 17 would be available to it.

Micro Focus EULA (1 November 2019)