

# PTC MKS Toolkit

## **Administrator's Evaluation Guide**

**PTC**<sup>®</sup>

PTC Inc.

## *PTC MKS Toolkit: Administrator's Evaluation Guide*

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# Technical Support

To request customer support, please contact us by one of the means listed below and in your request include the name and version number of the product, your serial number, and the operating system and version/patch level that you are using. Contact PTC MKS Toolkit customer support at:

<b>Technical Support Form:</b>	<a href="http://www.mksoftware.com/support/support.asp">http://www.mksoftware.com/support/support.asp</a>
<b>E-mail:</b>	<a href="mailto:MKSToolkitSupport@ptc.com">MKSToolkitSupport@ptc.com</a>
<b>Telephone:</b>	+1-703-803-7660
<b>Fax:</b>	+1-703-803-3344

When reporting problems, please provide a test case and test procedure, if possible. If you are following up on a previously reported problem, please include the problem tracking number in your correspondence.

Finally, tell us how we can contact you. Please give us your e-mail address and telephone number.

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# Introduction



This guide will help you evaluate, become familiar with, and choose the appropriate PTC MKS Toolkit® product to meet your needs. While this guide is aimed primarily at software and web developers, it also discusses the general scripting and automation capabilities inherent in all PTC MKS Toolkit products and applicable to almost any use. There is also a separate evaluation guide aimed more at system administrators as well as one aimed at users of the MKS AlertCentre Add-On. These guides are available from the same source as this evaluation guide.

This evaluation guide will:

- Give you an overview of the PTC MKS Toolkit product family.
- Help you install the PTC MKS Toolkit evaluation kit.
- Walk you through some of the highlights of each of the PTC MKS Toolkit developer products.
- Tell you where to get more information about these products.
- Help you get customer support, should you need it.

## Product Family Introduction

There are several products in the PTC MKS Toolkit family aimed at different kinds of people, performing different kinds of tasks. All products in the PTC MKS Toolkit family are unified by our goal of making your use of Windows more efficient and more enjoyable. Our products fall into two broad categories – those for system administrators and those for software developers.

### PTC MKS Toolkit Developer Products

PTC MKS Toolkit development products facilitate a cross-platform, "write once-deploy anywhere" development and deployment strategy across Windows and legacy systems, and preserves existing investments in technology and expertise. The PTC MKS Toolkit development products also allow pure Windows developers to automate routine tasks with scripting and

increase productivity with file and text manipulation tools, batch search and replace tools, and scheduling interfaces. PTC MKS Toolkit development products provide solutions in the following areas:

- **User Compatibility** – a variety of command shells and hundreds of command-line utilities help make your software engineers more productive on their Windows machines.
- **Platform Interoperability** – a selection of connectivity utilities provides you with secure interactive access to both your remote Windows servers and workstations and your legacy systems.
- **Application Portability** – more than 2700 APIs let you port all manner of legacy applications to Windows, while maintaining a single source code baseline.

The PTC MKS Toolkit product family is the only solution for developing and deploying enterprise-critical cross-platform applications. It is also the leading product for evolving those applications to incorporate the latest Windows and web technologies, such as COM and Java™. Whether you are a native Windows or cross-platform software, script, or web developer, the PTC MKS Toolkit developer products can help you be more efficient in your job.

- **PTC MKS Toolkit for Developers** – a Windows development product for software, script, and web developers, who can choose from command-line or graphical Visual Studio® build environments. It is ideal for developing common, cross-platform scripts for UNIX®, Linux, and Windows, from a single Windows desktop. Using the power of more than 400 command-line utilities, including **make**, **cc**, and **vi**, you can develop native Windows applications, as well as Perl, KornShell, C shell, **bash**, Tcl, **sed** / **awk**, and others.
- **PTC MKS Toolkit for Interoperability** – extending PTC MKS Toolkit for Developers by adding a complete X server for displaying X Window System-based graphical applications, including OpenGL and Motif applications, on Windows. A network-capable server can display a graphical application on your Windows workstation from any machine on your network.
- **PTC MKS Toolkit for Professional Developers** – an ideal solution for the migration of non-graphical, character based, UNIX C, C++, and Fortran applications and utilities to Windows. With over 1500 APIs, you can extend the power of the PTC MKS Toolkit and migrate custom utilities, non-graphical C, C++, or FORTRAN applications as well as Perl, KornShell, C shell, **bash**, Tcl, **sed** / **awk**, and CGI scripts.

- 
- **PTC MKS Toolkit for Enterprise Developers** – the proven solution for porting robust, mission-critical UNIX applications to Windows. With over 2700 UNIX APIs and a full command-line development environment, PTC MKS Toolkit for Enterprise Developers is the ultimate in UNIX to Windows migration. No other product can match our full support for C, C++, and Fortran; for UNIX process management including fork(), signals, alarms, and threads; for file system and security management; and for curses, X, Motif, and OpenGL. And no other product matches PTC MKS Toolkit's access to Win32 APIs for Windows integration and interoperability.
  - **PTC MKS Toolkit for Enterprise Developers 64-bit Edition** – 64-bit Windows is an ideal platform for applications that require large amounts of memory and high-performance such as digital content creation, electronic design automation, data warehousing, mechanical design automation, and advanced scientific and research applications. PTC MKS Toolkit for Enterprise Developers 64-bit Edition simplifies the migration of 32-bit and 64-bit UNIX applications to both Itanium and extended architecture 64-bit Windows platforms.

## PTC MKS Toolkit System Administration Products

PTC MKS Toolkit system administration products are built on a solid foundation of robust tools and engines that have been optimized for building best-of-breed system administration solutions. Whether you are administering a Windows<sup>®</sup> environment or one that mixes Windows and legacy systems, these tools and engines let you effectively manage that environment.

The PTC MKS Toolkit for System Administrators is no longer sold, but its capabilities are completely encapsulated in the PTC MKS Toolkit for Developers. This document continues to refer to the now defunct product, but as you read PTC MKS Toolkit for System Administrators, think the System Administrator subset of PTC MKS Toolkit for Developers.

The MKS Alertcentre is no longer sold, but it serves as a wonderful example of the sorts of applications you can build with PTC MKS Toolkit and the source is still fully available for download as example code and for reuse. The PTC MKS Toolkit Development shop still monitors server and builds using this technology.

- **PTC MKS Toolkit for System Administrators** – a powerful administration suite featuring PTC MKS Toolkit for System Administrators also gives you the ability to move data and files between machines, remotely administer systems, and perform

backups across multiple platforms. Increase productivity and automate repetitive tasks like password synchronization, adding users and groups, setting up new machines, cloning a system file or a document tree on local or remote systems, and automatically scheduling recurring tasks.

- **MKS AlertCentre™ Add-On** – a complete solution for monitoring, alerting and job scheduling. MKS AlertCentre can monitor your mission-critical systems and applications 24 hours a day, seven days a week to provide you with the peace of mind of knowing that your network, applications, and Internet/Intranet-based information systems are running normally.

For more information on MKS AlertCentre Add-On, please visit <http://www.mksoftware.com/products/ac>.

## What's in the PTC MKS Toolkit Products

This section details the contents of each of the PTC MKS Toolkit products:

**PTC MKS Toolkit for System Administrators**—a powerful administration suite that lets you move data and files between machines, remotely administer systems, automate administration tasks, and perform UNIX-compatible backups, across UNIX, Linux, and Windows platforms. It includes:

- Over 350 utilities (full POSIX.2 specification), including remote utilities (**rsh**, **rshd**, **rexec**, **rexecd**, **rcp**, **rlogind**), secure utilities (**ssh**, **sshd**, **scp**, **sftp**, **sftp-server**), and **telnetd** for accessing UNIX systems.
- MKS KornShell (**ksh**), Bourne Again Shell (**bash**), and MKS C shell (**cs**) command environments.
- Powerful scripting tools such as **Perl**, **awk**, and **sed** and standard UNIX workhorse tools such as **vi** and **grep**.
- SNMP (Simple Network Management Protocol) utilities that let you control and monitor network devices and their functions.
- Utilities for setting up users, groups, and permissions on Windows.
- Tape and archive commands (**tar**, **pax**, **cpio**, **mt**), for creating UNIX-compatible backups.
- Service and registry commands to start and stop local or remote Windows services and manipulate the Windows registry.
- Commands to manage device drivers, Windows domains, and file associations (**dev**, **domain**, **ftype**).

- 
- PTC Nu/TCRACKER Workstation.

**PTC MKS Toolkit for Developers**—a Windows development product for software, script, and web developers, who can choose from UNIX-style command line or graphical Visual Studio build environments. It includes:

- All the features of PTC MKS Toolkit for System Administrators.
- Over 400 utilities, including command line build utilities (**make**, **cc**, **ar**, **ld**, **vi**, **grep**), for migrating and unifying your builds across UNIX and Windows.
- Tools and utilities for manipulating HTML and other web content as well as pulling and pushing content from local or remote servers (**web**, **htdiff**, **htsplit**, **url**, **mkurl**, **mkscgi**).
- PTC Nu/TCRACKER Workstation.

**PTC MKS Toolkit for Interoperability**—a full UNIX and Windows interoperability suite, allowing remote access, remote system administration, interconnectivity, file sharing, and full automation and scripting capabilities. It includes:

- All the features of PTC MKS Toolkit for Developers.
- The fully network-capable PTC X/Server, for displaying both local and remote X Windows applications.
- PTC Nu/TCRACKER Workstation.

**PTC MKS Toolkit for Professional Developers**— an ideal solution for the migration of non-graphical, character based, UNIX C, C++, and Fortran applications and utilities to Windows. It includes:

- All the features of PTC MKS Toolkit for Developers.
- Over 1500 UNIX APIs for migrating non-graphical UNIX applications to Windows.
- Process management: **fork()**, **exec()**, signals.
- POSIX, DCE, and Solaris threads.
- File system handling: **mount()**, **umount()**, **symlink()**.
- IPC and Networking: sockets (including UNIX-domain sockets), shared memory, message queues, semaphores, and FIFOs.
- UNIX to Win32 file and user security mapping.
- UNIX to Win32 file path and file system mapping, including devices such as **/dev/null** and **/dev/lp**.
- Curses and terminal handling.

- A complete build environment including **ar**, **cc**, **cxx**, **ld**, **make**, **gmake**, **tcl**, **bison**, and **flex**.
- A Deployment Wizard, a simple, graphical tool for preparing applications for distribution.
- The *PTC MKS Toolkit UNIX to Windows Porting Guide*.
- PTC NuTCRACKER Workstation.

**PTC MKS Toolkit for Enterprise Developers**—a complete solution for integrating UNIX and Windows software development on a single developer system, solving both interoperability and cross-platform development needs; for migrating complex, graphical UNIX and Linux applications and scripts to Windows; and for evolving and modernizing those applications to take advantage of Windows, to integrate with Windows applications, and to become web-enabled. It includes:

- All the features of PTC MKS Toolkit for Professional Developers and all the features of PTC MKS Toolkit for Interoperability.
- Over 2700 UNIX APIs including X11R6, Motif 2.1, OpenGL, and XView.
- A selection of X servers, for providing display from local and remote X Window System clients.
- PTC NuTCRACKER Workstation.

## Summary

Here is a summary of the features available in each of the PTC MKS Toolkit products to help you choose the right one for your needs:

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	PTC MKS Toolkit for System Administrators	PTC MKS Toolkit for Developers	PTC MKS Toolkit for Interoperability	PTC MKS Toolkit for Professional Developers	PTC MKS Toolkit for Enterprise Developers	PTC MKS Toolkit for Enterprise Developers 64-bit Edition
Command shells and scripting utilities	•	•	•	•	•	•
System administration utilities	•	•	•	•	•	•
Graphical and command-line scheduling interfaces	•	•	•	•	•	•
Tape backup and archiving utilities	•	•	•	•	•	•
Client/server remote utilities	•	•	•	•	•	•
Client/server secure utilities	•	•	•	•	•	•
Telnet server	•	•	•	•	•	•
Multibyte support	•	•	•	•	•	•
Software development utilities		•	•	•	•	•
Web development utilities		•	•	•	•	•
Tcl shell and built-in commands		•	•	•	•	•
PTC X/Server			•		•	•
Advanced development utilities				•	•	•
Non-Graphical APIs				•	•	•
Tcl development APIs				•	•	•
X, Motif, OpenGL APIs					•	•
64-bit versions of APIs						•



# Installing the PTC MKS Toolkit Evaluation Package

# 2

All PTC MKS Toolkit products install the Evaluation Guide and companion scripts by default. Custom installations have an option to disable the install of the Evaluation Guide, so if your installation is missing the Evaluation Guide, please rerun the installer and add the Evaluation Guide. In all other cases, the start menu **PTC > MKS Toolkit > Evaluation Guide** will contain the evaluation guides and links to the companion scripts and demonstrations.

## Installing the PTC MKS Toolkit Resource Kit

You must have a non-demo PTC MKS Toolkit product installed on your machine before the PTC MKS Toolkit Resource Kit can be installed.

- Visit <http://www.mkssoftware.com/reskit> and download and run The PTC MKS Toolkit Resource Kit self-extracting installer.
- Follow the on-screen instructions.

## PTC MKS Toolkit Basics

There are a few basics you should know before embarking on your evaluation of PTC MKS Toolkit.

- **Using PTC MKS Toolkit Features.** While PTC MKS Toolkit has several graphical utilities for doing useful things such as compressing archives of files, the majority of the utilities in PTC MKS Toolkit are non-graphical in nature. These non-graphical utilities are designed to be used from inside of a command processor, which we call a shell. UNIX users will be familiar with shells, which are more extensive than, but similar to the Windows command processor, `cmd.exe`. You will find the graphical utilities on and be able to launch them from the Start menu (**Start > Programs > PTC > MKS Toolkit > ...**). On the other hand, to launch the non-graphical utilities, you will need to be in a shell or command processor, preferably one of the PTC MKS Toolkit shells.
- **Launching a Shell.** All versions of PTC MKS Toolkit come with a KornShell (`ksh`), Bourne Again Shell (`bash`) and a C shell (`csh`). The easiest way to launch these is from the Start menu, **Start >**

**Programs > PTC > MKS Toolkit > Korn Shell, Start > Programs > PTC > MKS Toolkit > C Shell, or Start > Programs > PTC > MKS Toolkit > Bash Shell.** There are some basic differences in these shells, but they are conceptually very similar. If you have no experience with shells or have no preference, you should probably start with the KornShell. This evaluation guide assumes that you are running the KornShell. The PTC MKS Toolkit products contain extensive documentation on these shells that you can read at your leisure to understand the differences in shells.

- **Getting Help.** There are two main ways to get help in PTC MKS Toolkit, the Windows way and the UNIX way, whichever you prefer. Traditionally, in UNIX, in a shell you type `man` and then the name of a utility, and this displays what is known as the manual page for that utility. Try typing `man sh`, for example, for help on the KornShell. On Windows, however, help tends to be more graphical in nature. You will find graphical documentation for the PTC MKS Toolkit utilities, plus additional tutorials and other information, on the PTC MKS Toolkit entry in the Start menu, under Documentation (**Start > Programs > PTC > MKS Toolkit > Documentation**). There, you will find the *PTC MKS Toolkit Utilities Reference*, which contains the same information as the manual pages, only in a graphical format.
- **Launching a Script.** Launching files on Windows is different from launching files on UNIX. Windows identifies how to launch any file by looking up the program to run by the file extension (the three letter suffix after the dot in the file name, such as `.exe` or `.doc`). Files on UNIX often have no extensions, while extensions are fairly critical on Windows. Windows maintains a list of registered file associations that allows a given file extension to be associated with a given file type which in turn is associated with a given application. This allows you to launch an application and load the specified file by simply clicking on the file name in the Windows Explorer or by simply typing the file name on the command line of a shell or command interpreter. For example, if you have Microsoft Word installed on your system, typing `file.doc` on the command line launches Microsoft Word with `file.doc` open. When you install a member of the PTC MKS Toolkit product family, you have the option of registering several PTC MKS Toolkit-specific file associations. The following table shows the registered file extensions, their associated file types, and the PTC MKS Toolkit utilities used to run files with those extensions:

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Extension	File Type	Associated PTC MKS Toolkit Utility
.awk	mks_awk	MKS AWK( <b>awk</b> )
.cpl	mks_vpax	Visual Pax ( <b>vpax</b> )
.cpio	mks_vpax	Visual Pax ( <b>vpax</b> )
.csh	mks_csh	MKS C Shell ( <b>csh</b> )
.gz	mks_gunzip	gunzip
.ksh	mks_shell	MKS KornShell ( <b>sh</b> ) Windowless
.mk	mks_make	MKS Make( <b>make</b> )
.pax	mks_vpax	Visual Pax ( <b>vpax</b> )
.pl	mks_perl	MKS Perl ( <b>perl</b> )
.sh	mks_shell_sh	MKS KornShell ( <b>sh</b> ) Console
.tar	mks_vpax	Visual Pax ( <b>vpax</b> )
.Z	mks_uncompress	umcompress



# Evaluating the PTC MKS Toolkit System Administrator Products

# 3

PTC has two products with features specifically for system administrators, PTC MKS Toolkit for System Administrators and MKS AlertCentre (an add-on for PTC MKS Toolkit).

The MKS AlertCentre add-on has a separate Evaluation Guide which you can see online at <http://www.mksoftware.com/docs>. The PTC MKS Toolkit for System Administrators is a great compliment to the MKS AlertCentre add-on as it provides the tools necessary to perform remote administration on servers that are reporting error conditions. Putting a copy of PTC MKS Toolkit for System Administrators on each of your servers will give you the ability to connect to these machines from anywhere on your network or via a dialup line to perform any necessary administration or repair tasks.

## Evaluating PTC MKS Toolkit for System Administrators

Currently many thousands of system administrators use PTC MKS Toolkit for daily system administration tasks, and each of these administrators finds a different utility in the product depending on whether his or her background is from Windows or from UNIX. Accordingly, the following two sections discuss PTC MKS Toolkit for System Administrators from these two differing perspectives. We recommend that all system administrators read both sections, because the demonstrations in both sections are useful, regardless of background.

PTC MKS Toolkit for System Administrators is a full UNIX and Windows interoperability suite, allowing remote access, remote system administration, interconnectivity, file sharing, and full automation and scripting capabilities.

PTC MKS Toolkit for System Administrators includes:

- A single-connection telnet server, allowing remote access to the Windows machine.

- A single-connection secure shell server, allowing encrypted remote access to the Windows machine and the ability to tunnel X11 and other TCP protocols over the secure link.
- A single-connection rlogin server, allowing remote access to Windows and UNIX machines.
- Remote shell and rexec services, for remote access to Windows systems.
- Remote utilities (**rsh**, **rexec**, **rnp**, **rlogin**) for accessing other UNIX and Windows machines.
- Secure utilities (**ssh**, **sshd**, **scp**, **sftp**, **sftp-server**) for secure access to other UNIX and Windows machines.

## Secure Shell

Secure shell client and server can be used in place of **rsh**, **ftp**, **rnp**, **telnet** and **rlogin** and provide encrypted connections between machines that are both secure and based on industry standards for maximum interoperability.

To launch a secure shell client to connect to your own machine

1. Invoke **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > Secure Shell**
2. You are prompted for your account password account. Please type the correct password and press ENTER.
3. You should see a standard shell prompt.
4. Type **eventlog -r** or **vi** or some other PTC MKS Toolkit command.

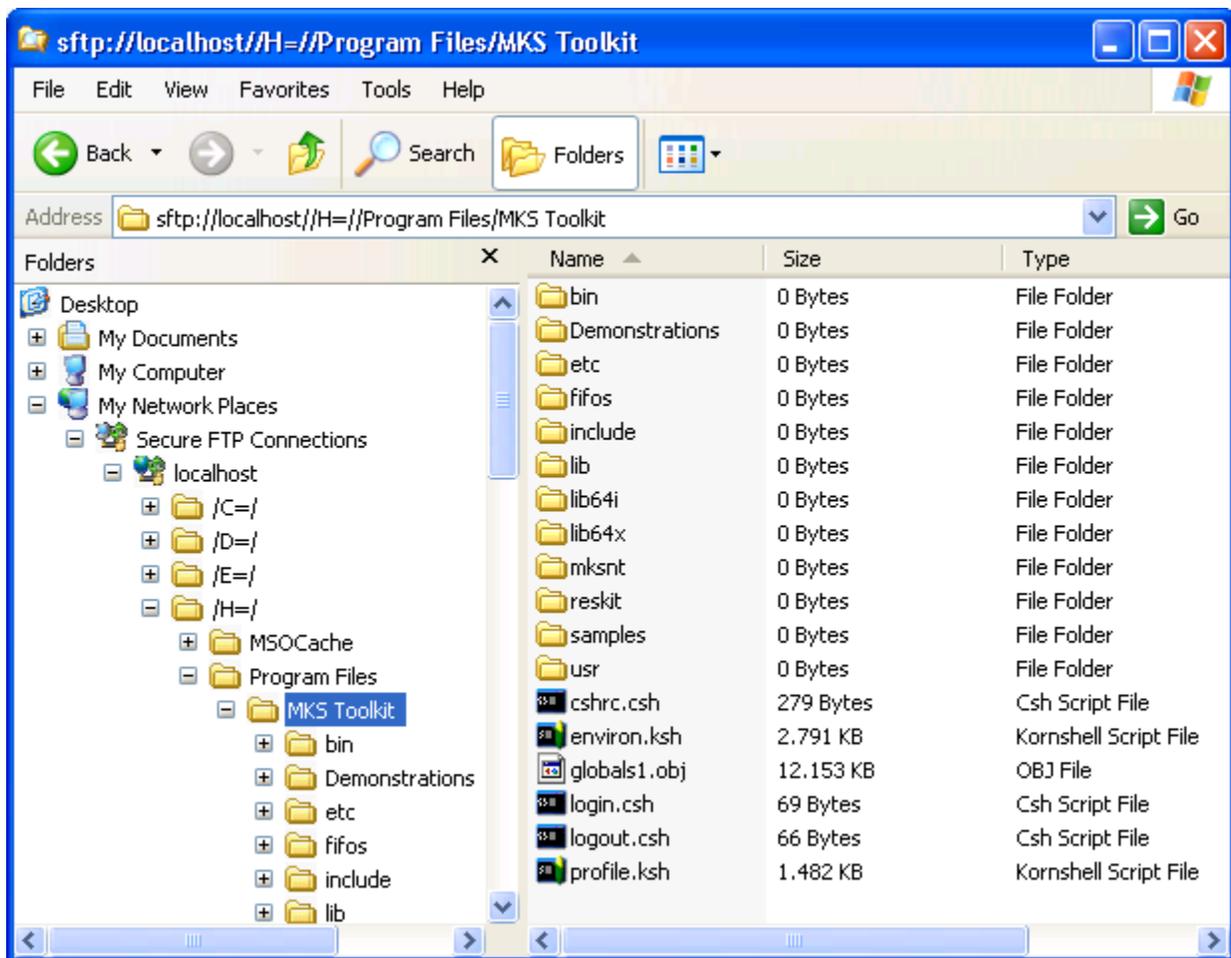
The secure shell server runs an MKS KornShell by default (although you can easily run a Windows Command Interpreter if you wish) and all your familiar commands are right at your fingertip. for example **ls**, **dir**, **cp**, and **copy**.

The X11 protocol can be tunneled through the secure shell connection. This is not tremendously useful for the localhost connection established here, but it works to any Secure Shell server that enables X11 tunneling.

## Visual SFTP

Visual SFTP is a powerful Windows Explorer extension that lets you easily drag and drop files through a secure connection just as easily as you would on your local network. Seamlessly integrated with Windows Explorer, Visual SFTP lets you open one or multiple connections and transfer or manipulate files found on remote Windows, UNIX/Linux, or any other system that supports the Secure Shell protocol.

**Try this:** From the **Start** menu, select **My Network Places**. From the **My Network Places** window that appears, click **Secure FTP Connections**. On the window that appears, click **Add Host** and enter “localhost”. Double click the **localhost** icon that was just added and when prompted, enter the requested password. You should now see a list of files on your home drive. Select the **Folders** icon on the toolbar to display a list of your mapped drives in a tree view and you can now explore the server in the same manner as with the built-in FTP Explorer extension. PTC MKS Toolkit Visual SFTP is fully secure, tunneling passwords over encrypted TCP connections, letting you explore (and drag and drop files to and from the server) UNIX and Windows servers anywhere on the internet with complete confidence that all transactions are securely encrypted.



## Telnet Client and Server

PTC MKS Toolkit for System Administrators includes a single-connection telnet server. Unlimited connection servers are available as an add-on.

To demonstrate the telnet server, log in to a UNIX or Windows machine, other than the one on which you installed PTC MKS Toolkit for System Administrators. From there, start a telnet connection, using whatever telnet client is available on that machine, to the Windows machine where you installed PTC MKS Toolkit for System Administrators. You should see the default banner “Welcome to MKS Telnet Server Version x.xxxx.xxxx” and a login prompt. Log in and try one of the PTC MKS Toolkit commands, such as `sysinf drives`.

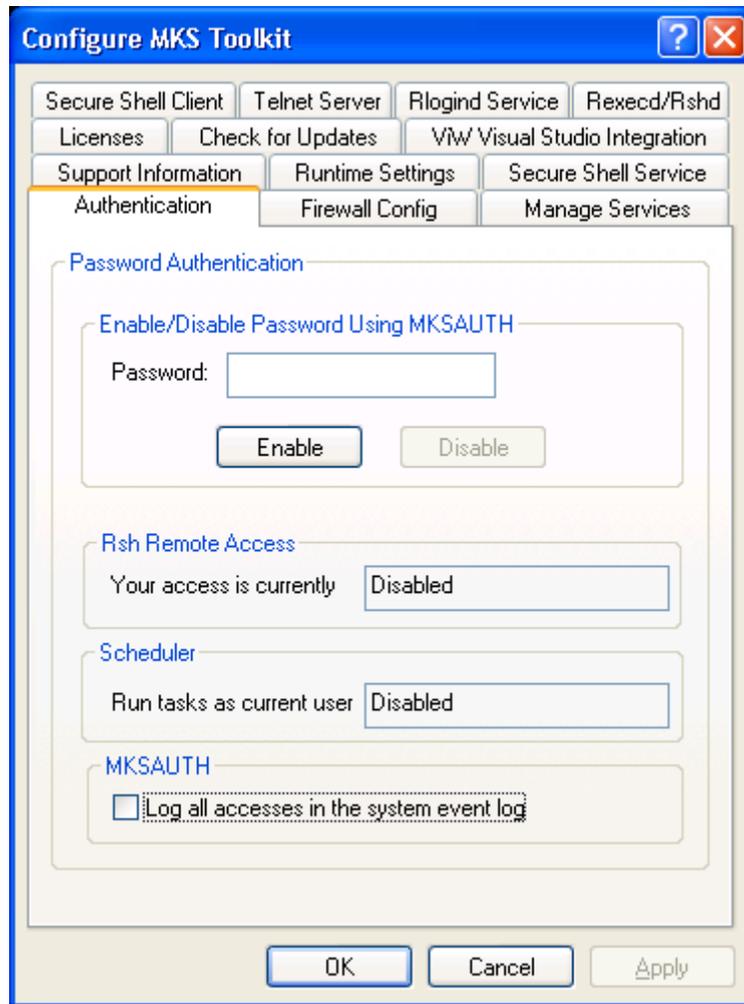
The telnet server runs an MKS KornShell by default (although you can easily run a Windows Command Interpreter if you wish) and all your familiar commands are right at your fingertip. for example `ls`, `dir`, `cp` and `copy`.

## Remote Utilities

PTC MKS Toolkit comes with remote utilities (`rsh`, `rexec`, `rlogin`, `rcp`) for accessing other UNIX and Windows machines. It also includes the server-side components for these utilities (`rshd`, `rexecd`, `rlogind`) so that your Windows machine can accept remote requests.

The `rsh` and `rexec` utilities execute commands on a remote machine. The `rexec` utility is used to execute a single command, while `rsh` creates a shell on the remote machine and executes a command in that shell. These utilities have corresponding Windows services (`rshd` and `rexecd`) that let your Windows machine respond to `rsh` and `rexec` requests from other machines.

PTC MKS Toolkit provides a configuration utility for setting up your Windows machine such that `rexecd`, `rlogind`, and `rshd` will accept requests. This is available in both command line (`rconfig`) and graphical versions (`grconfig`). If you type `grconfig` at a KornShell prompt, you will see a dialog similar to the following:



PTC MKS Toolkit also provides the `rsetup` command to make appropriate user and password entries in the Local Security Authority (LSA) database, so that you can authorize various users to receive remote requests.

In addition, PTC MKS Toolkit includes the `rcp` (remote copy) command for moving files between machines. It uses the same mechanism as `rsh`, so if you can `rsh` to another machine, you can easily copy files, for example: `rcp thisfile myUNIXbox:thisfile`. You can even do third-party copies where neither the source nor the target files resides on your machine.

If you need to do more than execute a command on a remote machine or copy a file to or from it, you will want to start a login session on it. Assuming that your `.rhosts` file on that machine has been configured

correctly, use the `rlogin` command followed by the name of the machine you want to log in to: `rlogin solaris2`. Using `rlogin`, you can establish a remote session on any machine that is running an `rlogin` daemon. Most UNIX machines will run `rlogind` by default.

These four articles and their corresponding sections form the basis for a very simple-to-use, yet amazingly flexible interoperability capability.

## KEY POINTS



### The ultimate flexibility to manage your mixed UNIX and Windows shop

1. Interoperate between Windows machines, between UNIX and Windows, or Windows and UNIX using `ssh` (secure shell), `telnet`, `rsh`, and `rlogin`.
2. Transfer files between UNIX and Windows with `sftp`, `scp`, `rcp`, `tar`, `cpio`, `dd`, and `pax`.
3. Run commands on any UNIX or Windows machines on your network with `ssh`, `rexec`, and `rsh`.
4. Log in remotely to any UNIX or Windows machine in your network to administer it from your desktop, using `ssh`, `rlogin`, or `telnet`.

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## MKS AlertCentre Add-On

MKS AlertCentre is an add-on for PTC MKS Toolkit that provides a complete solution for monitoring, alerting and job scheduling. MKS AlertCentre can monitor your mission-critical systems and applications 24 hours a day, seven days a week to provide you with the peace of mind of knowing that your network, applications, and Internet/Intranet-based information systems are running normally

MKS AlertCentre Add-On has its own evaluation guide, but we describe some of the underpinnings of MKS AlertCentre here, because it is built with the tools and engines from PTC MKS Toolkit for System Administrators (TKSA). TKSA serves as a *System Management Solution Platform* and AlertCentre is an example of the kind of solution that can be built and customized using this platform. PTC is dedicated to providing its customers with system management solutions combined with a platform, with which to add value to those solutions. MKS AlertCentre, therefore, is a working example of what can be built with the TKSA solution platform and MKS AlertCentre's underlying programs and scripts are provided in source code form as a set of sample programs, from which you can learn how to extend this solution and build additional solutions.

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MKS AlertCentre is written almost entirely using the PTC MKS Toolkit for System Administrators. The tools in the toolkit and its resource kit such as **service**, **eventlog**, **db**, **perl**, **web**, **portcheck**, etc. form a reusable set of components just crying out to be glued together for such tasks as monitoring. The new scheduling capabilities such as **cron** and **TKSched** produce the events to run the monitors. Tools such as **smtplib**, **smptrap** and the built in Windows command `net send` combined with various scripting engines are used to produce the alerts.

All of the scripts used to build MKS AlertCentre are available on your Monitoring Stations as examples for you to use in building custom monitors, jobs and actions. In addition, every copy of MKS AlertCentre requires PTC MKS Toolkit so you also have at your disposal all the tools and scripting engines that PTC used to build MKS AlertCentre. You are encouraged to copy a few of MKS AlertCentre scripts and modifying them to fit your needs better. Then you can implement them as Custom scripts without affecting the rest of MKS AlertCentre. Once you experience the power of scripting, you'll have much freedom to satisfy the needs of your organization. The back end scripts can be found in `$ROOTDIR/AlertCentre/Scripts` and its subdirectories.

When MKS AlertCentre discovers a problem, an action fires and someone is notified of the issue. The problem can be repaired either of two ways using TKSA:

- **Automatically:** Many of the TKSA tools are able to act on remote devices. (for example, `service -S \\host stop "Exchange DS"`; `service -S \\host start "Exchange DS"` will restart one of the Microsoft Exchange services on machine "host".) These tools can be wrapped into custom actions for MKS AlertCentre in order to take automated corrective or pre-emptive action.
- **Manually:** TKSA provides a number of tools to allow access to monitored devices from remote clients. If TKSA is installed on each monitored server and every administrator's workstation (both at work and at home), then you will have the maximum ability to fix problems anywhere in your network at any time of day or night to ensure minimal down time.

## KEY POINTS



### **MKS AlertCentre Add-On is a system management solution written with a script foundation.**

1. PTC MKS Toolkit for System Administrators serves as a System Management Solution Platform.
  2. MKS AlertCentre is built on this platform and its scripts are great examples of the TKSA tools and engines in action.
  3. MKS AlertCentre is easily extended using the same TKSA tools it is built on
  4. PTC MKS Toolkit for System Administrators is a great compliment to MKS AlertCentre in shops where servers are in remote locations and rapid repairs are a must. TKSA provides for remote access to repair (manually or automatically) any problems found.
- 

### **For Windows Administrators**

Windows system administrators will appreciate the increased flexibility of traditional UNIX command-line tools in their Windows environment. Mail administration, file management, registry editing, server management, the powerful `vi` editor, and the scripts we demonstrate are only a few of the many features of PTC MKS Toolkit for System Administrators that you will find useful.

#### **Queuing Actions for Next Reboot or Next Login**

A powerful Windows feature is the ability to schedule file operations and other tasks at the next user login or system reboot. We have enhanced the standard UNIX `mv` (copy) and `rm` (delete) file utilities so that they can schedule deferred file operations, and we have added the `pending` utility to view and modify the list of pending operations.

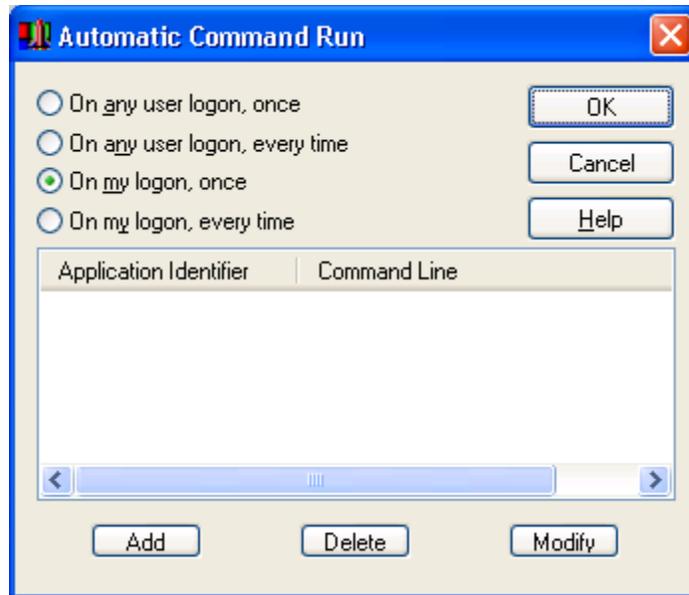
As an example, it is not always possible on Windows to rename a file while it is in use. Often this operation needs to be deferred to the next reboot. The demonstration at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For Systems Administrators > Windows Administrators > Rename on Reboot** uses the `touch`, `mv -d`, and `pending` utilities to demonstrate renaming a file on reboot.

In addition, PTC MKS Toolkit for System Administrators provides a graphical utility for modifying the registry such that utilities can be scheduled automatically for the next reboot, for every reboot, for the next

---

user login, and for every user login. This is a very simple way to have a message broadcast to each user at the next login or to start a standard application running each time a user logs in.

Invoke **Start > Programs > PTC > MKS Toolkit > Automatic Command Run** and you will see the following dialog:



### Managing Desktops

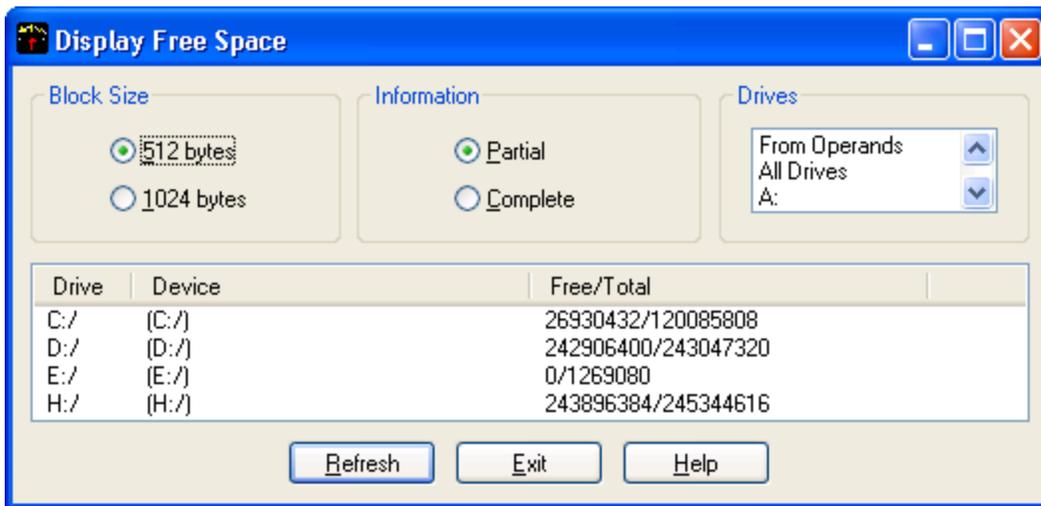
In writing scripts with PTC MKS Toolkit for System Administrators to create a common desktop for your 3000 users, you might want to take advantage of the `shortcut` utility to create that common desktop. The example at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For Systems Administrators > Desktop Shortcuts** shows the power of PTC MKS Toolkit for creating desktop shortcuts that apply to a single user, a group of users, or all users.

This script uses basic KornShell scripting (for string manipulation and basic testing), standard UNIX utilities such as `mkdir`, `rmdir` and the value-added utility `registry` to query file locations, as well as `shortcut` to create the actual menu or desktop shortcut. The basic UNIX utility set has been extended, in a familiar way, to let you perform operations unique to Windows.

### Displaying Free Disk Space

It is not all that easy to determine how much disk space is free on Windows, especially through the Explorer. With PTC MKS Toolkit for System Administrators, type `df -P` at a PTC MKS Toolkit command or shell prompt to see how many drives you have, how many blocks are used, how many are free, where they are mounted, and what percentage is free.

If you prefer a graphical utility, try our graphical `df (gdf)` utility – from a KornShell prompt, type `gdf`:



If you are curious, `gdf` is a script (`gdf.ksh`) that is built using our general-purpose `d1g` dialog building utility. What kind of other useful utilities can you build with `d1g`?

### Local and Remote Service Administration

Have you ever wanted to start a service on a remote machine from the command line or a script? The Windows `net` command does not control remote machines. Why try to remember all the `net` command options when all you need is our `service` command to fully manage all services locally or on a remote machine? In one script you can enumerate all the services, `grep` (text search) for the one you want, stop it, update the registry, and restart your services.

The demonstration script shows you how simple working with services can be, using the PTC MKS Toolkit `service` utility. Run the demonstration at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > Windows Administrators > Local and Remote Service**

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**Administration.** At the prompt, provide the name of a machine on your network. The demonstration program will then give you the service status of that machine.

The Windows **net** command is limited only to the current machine and it is not always reasonable to use the Server Manager for Domains to perform service maintenance on a remote machine. The PTC MKS Toolkit **service** utility gives you the freedom and flexibility to easily administer both local and remote services.

### **Wrapping an arbitrary program to be run as a service**

On UNIX, applications may be run free of a logon context (controlling TTY) simply by making them children of **nohup** or by catching and ignoring the **SIGHUP** signal. Windows applications that try to do this are terminated when the user logs off. One solution is to wrap the application up as a Windows Service and have it be a child of the service framework. While this requires some additional administration (removing this service when the job completes), there may be reasons to run an arbitrary program as a child of the service framework (perhaps even changing identity). The PTC MKS Toolkit **mksrv** utility does this for you. This utility acts a wrapper around any Windows application and can be run as any user who has **Log On as a Service** privileges. It can also be run as the local **SYSTEM** account, which adds an option to give this application access to the desktop.

Run the demonstration at **Start->Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > Windows Administrators > Generalized Service Wrapper**. This demonstration first creates a service to wrap the MKS KornShell and run as the local System account (requires administrator privileges). Next, this service is started, creating a secondary console window in which you see the output of **whoami**. Finally, the service is removed.

Uses for **mksrv** include simple **nohup** replacement, debugging problems that only occur with the **SYSTEM** account, and wrapping legacy batch scripts to run when nobody is logged in. The PTC MKS Toolkit Scheduler and the command-line scheduling utilities, described in the *PTC MKS Toolkit Scheduling Solutions Guide*, provide an alternative to this approach.

### **Process Status**

There are many ways to see which processes are running on your machine. Our **ps** utility and its graphical counterpart **gps** have one very interesting feature that lets you differentiate between several programs of the same name—they show the parameters that were passed to each program. How many times have you been frustrated by the Task Manager's lack of ability to distinguish between two instances of a single process?

See how we have solved this problem, by typing `gps` at a KornShell prompt:

The screenshot shows a window titled "Process Status" with a table of process information. The table has columns for Command, PID, PPID, Size, Rss, Start, and Time. The processes listed include Idle, System, sms, and various instances of C:\WINDOWS\... and C:\ProgramFiles... The right side of the window contains control buttons for "Display" (Close, Refresh, Periodic...) and "Process" (Kill, using: SIGTERM, Threads..., Debug...).

Command	PID	PPID	Size	Rss	Start	Time
Idle	0	1	0	16	Feb06	6-04:37:48
System	4	0	1876	232	Feb06	00:12:35
sms	484	4	3544	368	Apr25	00:00:01
C:\WINDOWS\s...	536	484	33264	3832	Apr25	00:08:52
winlogon.exe	560	484	68612	7524	Apr25	00:01:01
C:\WINDOWS\s...	604	560	36560	4608	Apr25	00:08:32
C:\WINDOWS\s...	616	560	42356	2992	Apr25	00:02:05
C:\WINDOWS\s...	760	604	65852	5340	Apr25	00:00:07
C:\WINDOWS\s...	844	604	37788	4576	Apr25	00:00:16
C:\WINDOWS\s...	940	604	157232	30628	Apr25	00:06:58
C:\WINDOWS\s...	1020	604	31600	3736	Apr25	00:00:03
C:\WINDOWS\s...	1108	604	39220	4960	Apr25	00:00:00
"C:\ProgramFiles...	1376	604	33712	3492	Apr25	00:00:00
"C:\ProgramFiles...	1432	604	49420	2564	Apr25	00:00:01
C:\WINDOWS\s...	1596	604	62952	9544	Apr25	00:00:29
C:\WINDOWS\E...	1848	1780	139884	37320	Apr25	00:21:11
C:\WINDOWS\s...	1960	604	15328	1172	Apr25	00:00:00

This is yet another useful utility built on our general-purpose `dlg` dialog building utility. It is script based—so you can look at it to get ideas for your own custom scripts.

### Registry Manipulation

You have 3000 desktops to configure and they all require changes to the registry. You know how to do it but it is going to be tedious. To automate these changes using the limited, native Windows scripting capabilities is not appealing. PTC MKS Toolkit for System Administrators provides a very powerful scripting language that can do the job. Moreover, our scripting language is standardized worldwide across many UNIX platforms including Linux, so that (such as user profile files like `ntuser.dat`) what you learn can help you ease your transition to UNIX system administration, if you choose.

As an example of the power of this scripting, this demonstration shows registry manipulation (including loading a hive). Once the script is executed, your shells (`*sh`) and command prompts (`cmd`) on Windows will all have tab completion enabled. That is, when you type the beginning of a command, you can then use the tab key to cycle through all the possible matches for that command.

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The demonstration is at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > Windows Administrators > Tab completion through registry manipulation.**

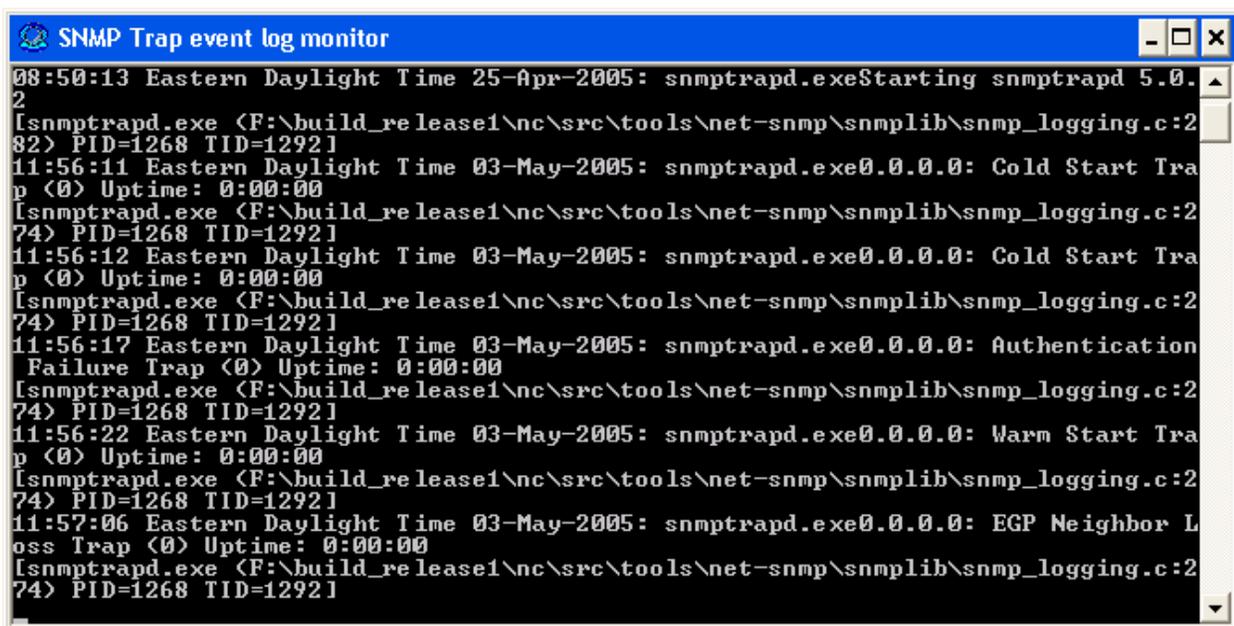
This script, `complete.ksh`, demonstrates the power of scripting (specifically registry scripting) by letting you modify registry entries for the current user, all users (by repetitively loading user profiles and modifying them), or new users on the current machine. You can use this script as the basis for many other useful scripts to modify the registry.

### Event logging

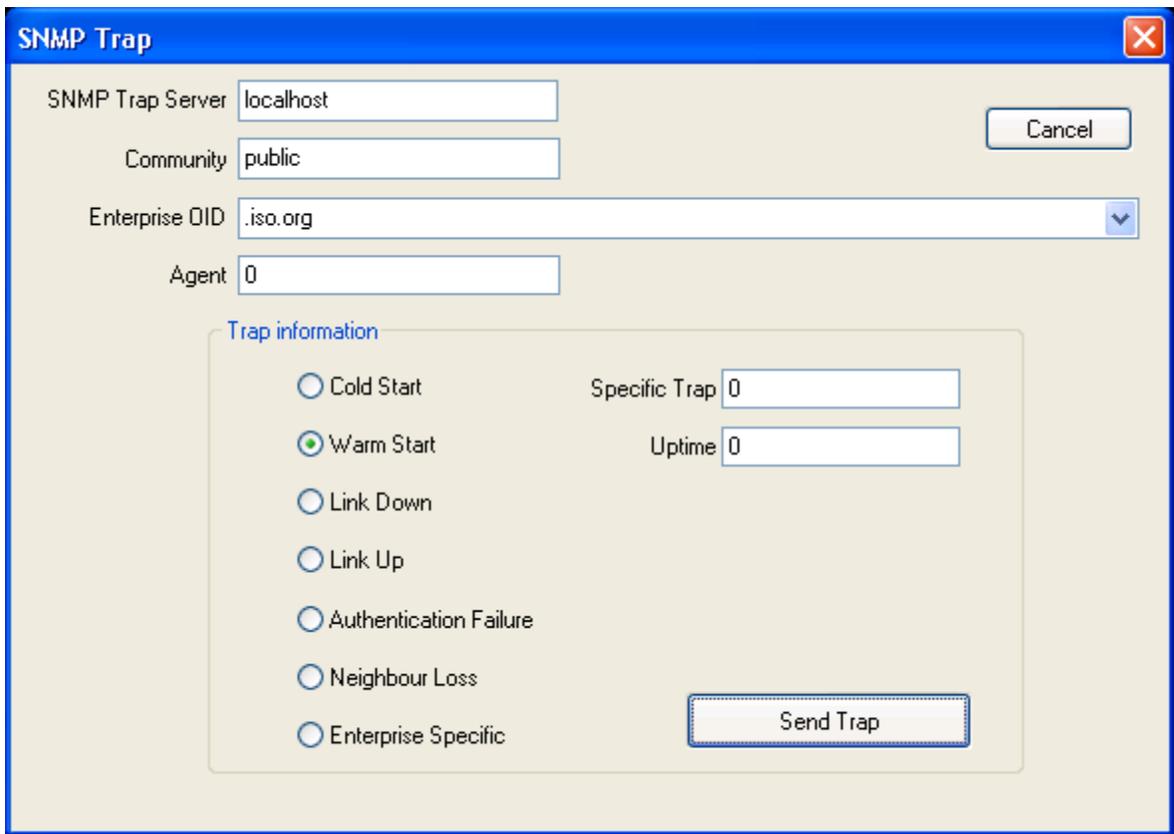
Windows event logs can easily be displayed or manipulated with PTC MKS Toolkit Perl.

The demonstration is at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > Windows Administrators > Event logging.**

The script `admin8.ksh` makes use of PTC MKS Toolkit `dlg` and SNMP commands to send an `snmptrap` to the local machine where the `snmptrapd` will log a message in the local event log. An event log watching Perl script then filters out SNMP trap messages from the event log and displays them in a window. This Perl script also makes use of a custom COM interface which blocks for changes to one of the local event log.



```
SNMP Trap event log monitor
08:50:13 Eastern Daylight Time 25-Apr-2005: snmptrapd.exeStarting snmptrapd 5.0.
2
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
82) PID=1268 TID=1292]
11:56:11 Eastern Daylight Time 03-May-2005: snmptrapd.exe0.0.0.0: Cold Start Tra
p (0) Uptime: 0:00:00
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
74) PID=1268 TID=1292]
11:56:12 Eastern Daylight Time 03-May-2005: snmptrapd.exe0.0.0.0: Cold Start Tra
p (0) Uptime: 0:00:00
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
74) PID=1268 TID=1292]
11:56:17 Eastern Daylight Time 03-May-2005: snmptrapd.exe0.0.0.0: Authentication
Failure Trap (0) Uptime: 0:00:00
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
74) PID=1268 TID=1292]
11:56:22 Eastern Daylight Time 03-May-2005: snmptrapd.exe0.0.0.0: Warm Start Tra
p (0) Uptime: 0:00:00
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
74) PID=1268 TID=1292]
11:57:06 Eastern Daylight Time 03-May-2005: snmptrapd.exe0.0.0.0: EGP Neighbor L
oss Trap (0) Uptime: 0:00:00
[snmptrapd.exe (F:\build_release1\nc\src\tools\net-snmplib\snmplib\snmp_logging.c:2
74) PID=1268 TID=1292]
```



PTC MKS Toolkit for System Administrators and all higher products contain the SNMPv2 **snmpbulk**, **snmpget**, **snmpgetnext**, **snmpnetstat**, **snmpset**, **snmpstatus**, **snmpstat**, **snmptrap**, **snmptrapd**, and **snmpwalk** utilities. These are system administration utilities that let you control and monitor network devices and their functions.

PTC MKS Toolkit also provides a command line **eventlog** utility to print (filtering records and specifying fields) and write records from the various Windows event logs.

### Windows Management Instrumentation (WMI)

Windows provides extensive COM access to system configuration information through WMI. (<http://www.microsoft.com/hwdev/driver/WMI/default.asp>). PTC MKS Toolkit Perl can communicate through WMI and provide mechanisms (using standard Perl syntax) to access and manipulate these components.

---

The demonstration is at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > Windows Administrators > Windows Management Instrumentation**.

The script `ifconfig.pl` (which will only run where WMI is present) displays TCP/IP configuration information. This script can easily be modified to provide update capabilities and thus fully emulate its UNIX counterpart.

## KEY POINTS



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### Streamline Your Workload

1. Use automated scripts to:

Improve manageability of Windows in large installations by populating and managing registry entries en masse.

Administer user accounts in batch (*for example*, after a reorganization or a merger), instead of one-by-one.

Perform repetitive tasks on large numbers of machines.

2. Manage Windows environments with standardized tools and scripts that also work in UNIX and Linux environments.

3. Easily perform other common tasks that may be difficult to do using standard Windows facilities:

Add users and groups.

Control services.

Perform complex file searches.

Copy permissions.

Do UNIX-compatible backups.

Move data and files between machines.

Remotely administer systems.

Clone a system file tree or document tree.

Copy a standard user set-up to a new user account.

Wrap any process or script as a service and run it when the machine starts and before any user logs on or allow it to survive a logoff.

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## For UNIX Administrators on Windows

UNIX system administrators will appreciate a set of familiar commands on Windows and UNIX-style command line utilities for interacting with Windows features. PTC MKS Toolkit for System Administrators is ideal for helping to reduce the learning curve on Windows. In fact, many of your UNIX administration skills will transfer immediately to Windows.

### Editing

The `vi` editor is the editor that is common to every version of UNIX. PTC MKS Toolkit for System Administrators includes two versions of this editor for your convenience. The first is a standard UNIX version, which you can exercise by typing `vi` from any command or shell prompt, or by selecting **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > Vi**.

**Try this:** `vi` is integrated with the Windows clipboard making it easy to cut and paste between Windows and `vi`. At the `vi` command prompt, type `set clipboardbuffer=x`, setting the Windows clipboard to buffer `x`. (You may want to add this to your profile file `ex.rc` in your home directory, `$HOME`.) Yank a couple of lines into the clipboard, `"x2Y`. Move your cursor into a Windows application, such as Notepad or Word, and use control-V to paste this text. Now, highlight some text in the Windows application and copy it using control-C. Move into `vi` and paste it: `"xp`.

The second version of `vi` in PTC MKS Toolkit for Developers is a graphical version, `vi` for Windows, that responds to the standard `vi` commands, but supports standard Windows features such as font control and printer integration – the best of both worlds. You can try it by typing `viw` from any command or shell prompt, or by selecting **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > Vi for Windows**.

**Try this:** UNIX and Windows use different line termination characters: UNIX uses a linefeed, while Windows uses the combination of a carriage control and a linefeed. You can control the style to use by selecting **Options > PC Specific** from the `viw` menus. While you're at it, go to a command or shell prompt and type `man flip` to find out how to automatically convert whole files.

### Familiar Tools

To assure yourself that PTC MKS Toolkit for System Administrators contains the familiar tools that you are used to, try the demonstration at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > UNIX Administrators on Windows > Familiar Tools**. This is a script that exercises `df`, `du`, and `ls`, with output resembling the following:

```

Familiar Tools
l .sh
-rwxrwxrwa 1 Administrators SYSTEM 8008 Apr 21 2004 sc.sh
-rwxrwxrwa 1 Administrators SYSTEM 46992 May 9 2000 test_dll.dll

-rwxrwxrwa 1 Administrators SYSTEM 78092 May 9 2000 tgrep.exe
-rwxrwxrwa 1 Administrators SYSTEM 307200 Apr 16 2004 tksched.exe
-rwxrwxrwa 1 Administrators SYSTEM 12864 Mar 27 2000 ugrep.ksh
-rwxrwxrwa 1 Administrators SYSTEM 1217920 Feb 2 2004 vdiff32.exe
-rwxrwxrwa 1 Administrators SYSTEM 212992 May 6 2004 vi.exe
-rwxrwxrwa 1 Administrators SYSTEM 303104 May 6 2004 viw.exe
-rwxrwxrwa 1 Administrators SYSTEM 589824 Apr 16 2004 vpax.exe
-rwxrwxrwa 1 Administrators SYSTEM 3832 Jan 15 1998 whois.c
-rwxrwxrwa 1 Administrators SYSTEM 1398 May 27 1999 x.ico

+ set +x
+ df -k
C:/ (C:/) 62367244/78116028
P:/ (//HQNTFS1/APPS) 397788716/573006388
T:/ (//HQNTFS1/TEMP) 397788716/573006388
U:/ (//HQNTFS1/USERS) 397788716/573006388
V:/ (//HQNTFS1/MH3) 397788716/573006388

+ set +x
+ du -s C:\WINDOWS/system
1819 C:/WINDOWS/system
+ set +x

```

There are hundreds of other familiar UNIX utilities included in PTC MKS Toolkit for System Administrators—including **find**, **grep**, **more**, **vi**, **sed**, and **awk**. These are robust UNIX tools. Try them by launching a C shell or KornShell. Help is available via the usual **man** command.

PTC MKS Toolkit includes samples that add support for text formatting and processing capability that is compatible with standard UNIX **troff**, **nroff** and **groff** and lets you display PTC MKS Toolkit reference pages as well as standard UNIX unformatted **man** pages (**gman**) through a Groff package in the **samples** directory of the CD.

### UNIX Password Synchronization

Many of you have both UNIX and Windows machines to administer. Your users must access both kinds of machines, but want only one password and do not want to have to change their passwords two or more times. We have provided a tool to let you take the user's password from Windows (encrypted, of course) and copy it into your UNIX password database.

Note: this is a fairly involved demonstration. It is a two-step process requiring a reboot after installation of a security helper DLL. You must also be an Administrator to run this demonstration, because the password information is stored in a secured part of the registry.

First, you must install the Local Security Authority (LSA) helper DLL, by selecting **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > UNIX Administrators on Windows > Password Synchronization Installation**.

Next, you must reboot.

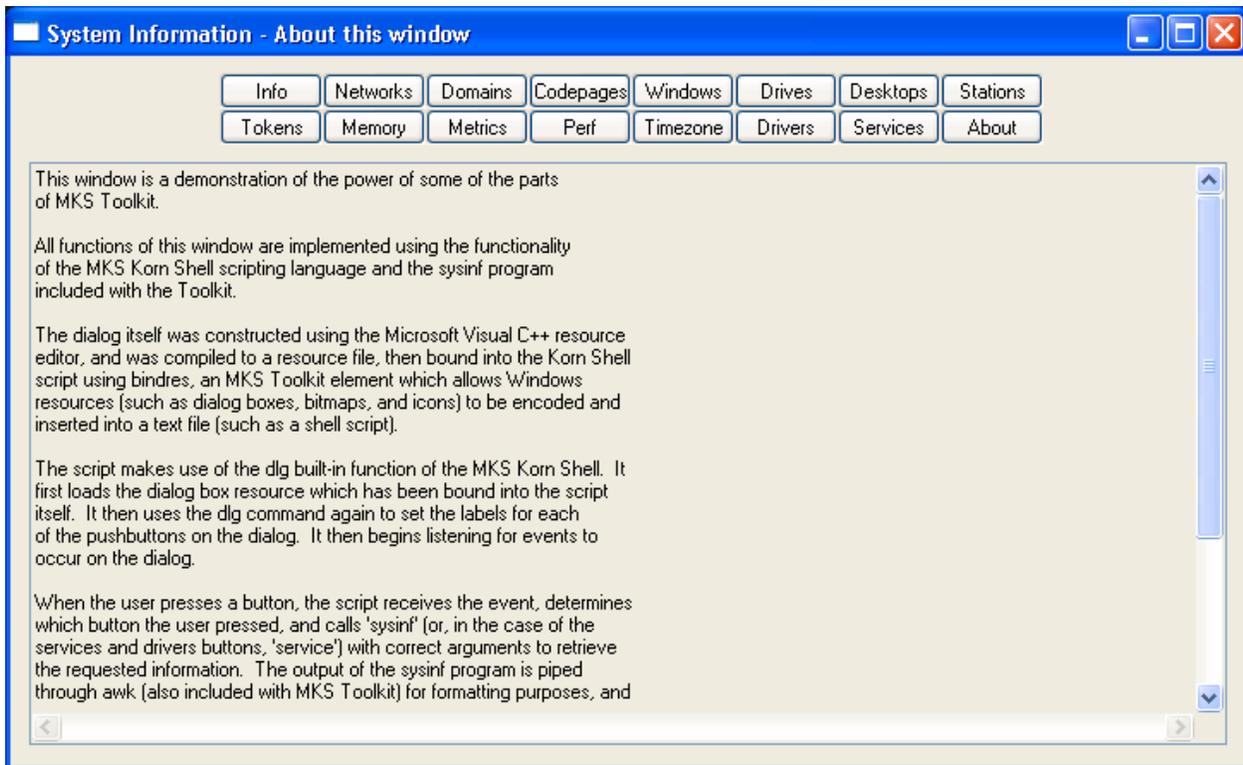
Then, you are ready to run the demonstration at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > UNIX Administrators on Windows > UNIX Password Synchronization**. This script creates a file called `passwd.ntsnc` containing DES-encrypted passwords for the users of the Windows machine. Copy this file to your UNIX server (or extract only certain users) and merge it with your existing password file. You can use the `rccp` command to copy the file, if you like.

This script, which demonstrates the power of PTC MKS Toolkit for System Administrators, extracts information stored in the registry (using the LSA helper DLL) and merges it with information derived from the `userinfo` and `groupinfo` utilities to produce an `/etc/passwd-format` file.

### System Information

System information is available on Windows, but getting at it is not always an easy or straightforward process. To find everything you need, you have to know a lot about Windows and ultimately you need to dig into the registry and that means you have to understand the registry layout, no mean feat. This demonstration script shows you the power of scripting with PTC MKS Toolkit for System Administrators, by finding all the system information that you need to know, and presenting it graphically using `dlg`, our custom, scriptable dialog building utility.

Run the demonstration script at **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > System Information**. This demonstration script exercises the `sysinf` PTC MKS Toolkit utility, which keeps you from having to know where every little piece of system information is stored.



Note that this demonstration shows you the power of the `dlg` utility. This demonstration script creates the dialog, buttons, and actions that you have just seen. When you press a button, it calls `sysinf` with the appropriate arguments, and uses `awk` to format the information for display.

### Backups and File Archiving

However you're used to handling large quantities of files and data—be it via `tar`, `cpio`, `dd`, or `pax`—it's in PTC MKS Toolkit for System Administrators. We've also got `mkszip`; type `man mkszip` at a command or shell prompt for more information.

We all know `tar`—we've used it so many times that our fingers type `tar cvf` and `tar xvf` whenever we want to move entire directory trees from one machine to another. But what about doing backups in a mixed UNIX and Windows environment? Tar to tape? Sure—the PTC MKS Toolkit `tar` recognizes the tape drives on Windows and lets you read or write a tar-formatted tape for cross usage of backup media. PTC MKS Toolkit `pax` is

the POSIX utility that handles both **tar** and **cpio** formats and it too recognizes the tape drives. We've provided it to you both with (**vpax**) and without (**pax**) a GUI.

To see **vpax** in action, select **Start > Programs > PTC > MKS Toolkit > Evaluation Guide > For System Administrators > UNIX Administrators on Windows > Visual Pax**.

The **tar**, **cpio**, **pax**, and **vpax** (Visual Pax) utilities can store and retrieve Windows security information, while remaining compatible with UNIX archives. Additionally, in order to increase performance, when dealing with standard archives (no Windows security information is being stored or retrieved), these utilities do not attempt to access security information.

PTC MKS Toolkit for System Administrators and all higher products include the **bzip2**, **gzip/gunzip** and **zip/unzip** compression utilities. These utilities augment the existing suite of compression utilities: **mkszip**, **uncompress**, **pack**, **unpack**, **zcat**, and the **-z** option of **cpio**, **pax**, and **tar**.



## KEY POINTS



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### Harness the Power of UNIX on Windows

1. PTC MKS Toolkit for System Administrators contains over 250 authentic UNIX utilities such as **df**, **du**, and **ls**, and both Korn and C shells. Therefore, you can immediately start using your UNIX skills and scripts on Windows.
  2. Administer both Windows and UNIX systems using the Interoperability capabilities such as the Password Synchronization and Familiar Tools scripts demonstrated in this section.
  3. Using powerful UNIX commands such as **awk**, supplemented with our KornShell's **d1g** dialog building utility, you can get all the information you need about your Windows system, and you can avoid going to the registry to find what you want.
  4. Use UNIX commands to perform file backups across multiple platforms.
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# Available Resources

# 4

## Customer Support

PTC offers extensive customer support to ensure your success with our products. At any time during your evaluation of our products, please feel free to contact us concerning any issues that may arise.

The evaluation versions of any PTC MKS Toolkit products include free support from the time of installation. In order to continue support beyond the evaluation period you must purchase a fully licensed version of the product along with a Support Contract (Maintenance). A Support Contract is renewable annually for a small fee and entitles you to unlimited customer support, patches, bug fixes, and product upgrades. All of our sales channels offer PTC MKS Toolkit products with bundled a Support Contract for your convenience.

To request customer support, please contact us by one of the means listed below and in your request, include the name and version number of the product that you are using, your serial number, and the operating system and version/patch level that you are using. Contact PTC MKS Toolkit customer support at:

**Technical Support Form:**<http://www.mkssoftware.com/support/support.asp>

**E-mail:**[MKSToolkitSupport@ptc.com](mailto:MKSToolkitSupport@ptc.com)

**Telephone:**+1-703-803-7660

**Fax:**+1-703-803-3344

## Additional PTC MKS Toolkit Resources

There are several other sources for additional information about our PTC MKS Toolkit products. We have general product information, including technical specifications, detailed utility listings, and datasheets at:

PTC MKS Toolkit Product Information: <http://www.mkssoftware.com/products>

We offer a resource kit including example scripts, additional utilities, more tutorials, and a wide variety of other useful information at:

PTC MKS Toolkit Resource Kit Page: <http://www.mksoftware.com/reskit>

Through the years, we have accumulated a lot of technical details about the NuTCRACKER Platform products and have put this information in a searchable database at:

PTC MKS Toolkit Knowledge Base: <http://www.mksoftware.com/support/kb>

Our customers commonly ask certain questions. These questions and their answers are in our Frequently Asked Questions pages at:

PTC MKS Toolkit FAQs: <http://www.mksoftware.com/support/faqs>

## Features Summary

The PTC MKS Toolkit product family is the most comprehensive suite of products for UNIX-Windows interoperability, UNIX-Windows application migration, cross-platform development and system administration, and advanced Windows scripting. Today's power users, developers, and system administrators require powerful utilities that are rock-solid in performance and reliability. PTC MKS Toolkit is the choice of Global 2000 companies worldwide for the management and automation of mission-critical tasks. Used by over 450,000 power users, developers, and system administrators worldwide, PTC MKS Toolkit is the premium brand for addressing your organizations' critical Windows and UNIX/Linux interoperability needs.

The primary features of the products are:

- **Advanced Scripting for Windows.** With Korn, Bourne Again and C shells, `sed`, `awk`, `Perl`, `dlg`, `filebox`, and over 400 additional utilities, there is no finer scripting environment on Windows.
- **Comprehensive Command Line and Build Environments.** Power users, developers, and system administrators will love the flexibility of our command line environments, for batch processing, for automation of recurring tasks, for remote access, and for general scripting. With rock-solid, proven utilities such as `vi`, `grep`, `find`, `make`, `cc`, and `ld`, our command-line and build environments are unsurpassed.
- **Scriptable System Administration Utilities.** With extensive system administration utilities for managing users, groups, desktops, shortcuts, and permissions; for tape handling, file archiving, and UNIX-compatible backups; for registry manipulation; for service, device driver, domain, and file association management; for queuing

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actions and scheduling tasks; and for process and system information queries; there are no better system administration products than those in PTC MKS Toolkit.

- **Scriptable Web Development Utilities.** Web developers and maintainers will love the ability to create custom utilities and scripts to manage their sites with our utilities for manipulating HTML, for pushing and pulling content to and from local or remote servers, for Perl scripting in the Microsoft Active Scripting environment, and CGI programming in `Perl` and `mkscgi`.
- **Advanced UNIX-Windows Interoperability Suite.** PTC MKS Toolkit products have everything that you need to interoperate in a mixed UNIX and Windows world, including telnet server, remote commands (`rexec`, `rsh`, `rlogin`, `rcp`) and servers (`rexecd`, `rshd`, `rlogind`), secure commands (`ssh`, `sshd`, `scp`, `sftp`, `sftp-server`) and X Windows servers.
- **Most Extensive UNIX-Windows Migration and Cross-Platform Development Facilities.** With over 2700 UNIX APIs and a full command-line development environment, PTC MKS Toolkit products are the ultimate in migration and cross-platform development environments. No other products can match our full support for C, C++, and FORTRAN; for UNIX process management including `fork()`, signals, alarms, and threads; for file system and security management; and for curses, X Windows, Motif, and OpenGL. And no other product matches PTC MKS Toolkit's access to Win32 APIs for Windows integration and interoperability.
- **Advanced Modernization and Evolution Facilities.** Beyond migration, PTC MKS Toolkit products help you modernize and evolve your legacy applications, by creating objects that can be reused within existing Windows applications, that can be used to build new Windows applications; and that can be embedded in Active Server Pages, web-enabling your application.
- **Most Extensive Suite of Value-Added Utilities for Windows.** No other products on the market address real-world needs for robust utilities like PTC MKS Toolkit products. Following are some of our powerful value-added utilities:

Command	Definition
64decode	Decode a file using base64.
64encode	Encode a file using base64.
appc	Arbitrary precision programmable calculator.
assoc	Set file extension association in the Windows registry.
autorun	Specify programs to run on bootup or log in under Win32.
awkc	Compile awk programs into executables.
bindres	Encode resources and insert them into a specified text file; used with <code>d1g</code> .
c	Produce multiple-column output.
chacl	Change the access control list (ACL) on Windows objects.
chgrp	Change group attribute of a file on Windows.
color	Change foreground and background colors of the shell window
db	Send SQL queries to a database via ODBC.
dde	Perform DDE client operations.
desktop	Simple command-line desktop manipulation.
dev	Display device driver information.
dlg	Load and manage Windows dialog boxes; create graphical shell scripts.
domain	Display Windows domain information.
filebox	Display Windows Open or Save dialog box.
filever	Print file version information.
ftype	Set file type association within the Windows registry.
gdf	Graphically display the amount of free space remaining on a disk (a <code>d1g</code> example).
gdir	Graphically display and manage the current directory stack.
ghist	Display and manage command history from a scrollable dialog box.
gps	Display and manage process status in a scrollable dialog box (a <code>d1g</code> example).
groupinfo	Manipulate Windows group information.
gset	Graphically define shell settings.
gvar	View or define variables, parameters, functions, and aliases.
halt	Shut down the system.
hist	Display, fix, edit and re-enter previous command.
htdiff	Compare two HTML files and display differences.
htsplit	Split an HTML file into tokens.
htstrip	Remove HTML tokens from a file or stream.
imapmail	Manipulate e-mail messages on an IMAP mail server.
lsacl	List access control lists for Windows objects.
manstrip	Strip the unprintable sequences out of online man pages.
mapimail	Send mail on a Win32 system using the MSMApi32 ActiveX COM object.
member	Manipulate Windows group membership information.
mkscgi	Run scripts on HTTP server through the Common Gateway Interface.
mksdiag	Check PTC MKS Toolkit configuration.
mksinfo	Display PTC MKS Toolkit serial number and other information.
mkszip	Compress/decompress a file.
msgbox	Display a Windows message box.
pop3mail	Manipulate e-mail messages on a POP3 mail server.
registry	Display and modify the Windows registry.
security	Find security related information.
sendevent	Send mouse or keyboard events.
service	Manage Windows services.
shortcut	Create Windows shortcuts from the command line.
sid	Display user's security identifier.
start	Start a new program in another window.
strerror	Display a system error message.
sysinf	Display technical system information.
tksched	Launch commands at predefined times.
ugrep	Search for regular expressions from a dialog box ( <code>dlg</code> example).
uncname	Return the UNC name for a specified file.
url	Parse Uniform Resource Locators (URLs).
userinfo	Manage Windows user information.
VDiff	Compare two text files and show / merge differences.
viw	Display-oriented interactive text editor for Windows.
VPax	(Visual Pax) graphical interface to <code>pax</code> , <code>cpio</code> , and <code>tar</code> archives.
wcopy	Copy from a specified file or standard input to the Windows clipboard.
web	Transfer files to or from a Web server.
winctrl	Manipulate windows and dialog boxes.
windir	Display the name of the Windows directory.
wpaste	Print Windows clipboard text to standard output or a specified file.
ws	Display the name of the current workstation or desktop.
wstart	Start a new program in another window.

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No matter what your need in UNIX-Windows interoperability, there is an PTC MKS Toolkit product that is just right for you. Whether you are a power user, developer, or system administrator, PTC MKS Toolkit is the clear choice. After evaluating PTC MKS Toolkit, we hope that you understand, as have our 450,000 existing customers, why no other interoperability product delivers comparable quality, extensive support, and features in one convenient package. If you still have questions or concerns, please contact us at the numbers below.

## **Ordering Information**

PTC MKS Toolkit can be purchased by emailing [MKSToolkitInfo@ptc.com](mailto:MKSToolkitInfo@ptc.com) or by calling +1-703-803-3343 or 1-800-637-8034.

