
EXata 8.2

Installation Guide

Notices

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Revision

Version 8.2

Edition

May 2024

Available in electronic format only

Published by:
Keysight Technologies, Inc.
1925 Century Park E, Suite 1700, Los Angeles, CA 90067 USA

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CAUTION

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WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

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Preface

Who Should Read this Guide

This installation guide describes the system requirements and installation process for EXata on Windows and Linux systems.

How this Guide is Organized

This guide contains the following information:

- [Chapter 1](#) describes installing EXata on Windows platforms.
- [Chapter 2](#) describes installing EXata on Linux platforms.

EXata Document List

The following table shows the EXata Documentation Set and offers a brief description of each document.

EXata Documentation Set

Document	Description
<i>EXata API Reference Guide</i>	This guide is a supplement to <i>EXata Programmer's Guide</i> and provides detailed information on the EXata API functions and parameters. This is available in both PDF and HTML formats.
<i>EXata Connection Manager Installation Guide</i>	This guide provides information for installing EXata Connection Manager.
<i>EXata Connection Manager User's Guide</i>	This guide provides information for using EXata Connection Manager.
<i>EXata Installation Guide</i>	This guide provides detailed steps for installing EXata.
<i>EXata License Setup Guide</i>	This is a guide for setting up an EXata license.

EXata Documentation Set (Continued)

Document	Description
<i>EXata Model Libraries</i>	<p>This set of documents contains detailed reference information on all EXata models and includes the following libraries. See <i>EXata Model Library Index</i> for an alphabetical list of all our models and a reference to which library they can be found in.</p> <p>5G Advanced 5G Advanced Satellite Advanced Wireless Cellular Cyber Developer EXata Custom Bands Electromagnetic Spectrum Operations (EMSO) <i>(part of the EXata ITAR product)</i> Federation Interfaces Joint Network Emulation (JNE) <i>(part of the EXata JNE product)</i> Keysight Interfaces LTE Military Radios <i>(part of the EXata ITAR product)</i> Multimedia and Enterprise Network Management Sensor Networks TIREM Model Interface UMTS Underwater Communication Networks (UCN) Urban Propagation Wireless</p>
<i>EXata Product Tour</i>	This tour provides an introduction to EXata by means of an example.
<i>EXata Programmer's Guide</i>	This is a guide to the EXata programming interface and functions, allowing users to develop and customize protocol models.
<i>EXata Release Notes</i>	This document lists the changes (added and removed features, bug fixes, etc.) made in the current version of EXata with respect to the previous version.
<i>EXata Shell User's Guide</i>	This is a guide for using the EXata Shell program.
<i>EXata Statistics Database User's Guide</i>	This is a guide to the statistics database generated by EXata.
<i>EXata User's Guide</i>	This is a detailed guide for using EXata and works in combination with the <i>EXata Model Libraries</i> set of documents.
<i>Scenario Player User's Guide</i>	This is a guide for using Scenario Player.

Document Conventions

EXata documents use the following conventions:

Document Conventions

Convention	Description
PARAMETER	A parameter or parameter value used in configuration files.
[]	In syntax definitions, square brackets indicate items that are optional.
< >	In syntax definitions, < and > indicate place-holders (or tokens). A syntax definition using place-holder(s) is usually followed by a description of the place-holder.
Code Segment	Segment of code from EXata source files used for illustration.
Ellipses (. . .)	Ellipses are used to indicate lines of code from EXata source files that have been omitted from an example for the sake of brevity.
Added Code	Example of code that the user should add to existing EXata functions and declarations to add a custom model to EXata. A vertical margin in the left column indicates new lines of code that need to be added.
<i>Book Title</i>	Title of a document.
Command Input	A command name or qualified command phrase, daemon, file, or option name.
Command Output	Text displayed by the computer.
Note: or Notes:	Information of special interest.

Getting Help

For help with using EXata, contact [KeysightCare Support](#) by email or open a support ticket by logging into your KSM account at the [Keysight Support Portal](#) and clicking on SUPPORT. Please include your Keysight Order Number and Certificate Number with your email or support ticket.

1

Installing EXata on Windows

This chapter covers the system requirements and installation procedure for EXata on Windows.

1.1 System Requirements

EXata is supported on Windows 10 Home and Windows 10 Pro 64-bit edition.

The minimum platform requirements to run EXata on a Windows system are listed in [Table 1-1](#).

TABLE 1-1. Minimum Requirements for Windows

Item	Requirements
CPU	Quad-core Intel i7 (“Kaby-Lake”). Modern hex- or oct-core processors preferred.
Memory	16 GB or more.
Disk	512 GB SSD or more. 1 TB+ is required if large-scale time-series database functionality is needed.

Additional Requirements for EXata GUI

In addition to the requirements listed in [Table 1-1](#), the following are recommended for running the EXata GUI:

- Discrete graphics card with at least 128 MB memory supporting hardware 3D acceleration.
- Display with 1024 x 768 or better resolution.

Note: EXata GUI may not run on a virtual machine that does not support 3D hardware acceleration.

Additional Requirements for Scenario Player

In addition to the requirements listed in [Table 1-1](#), the following are required for running Scenario Player:

- A graphics cards with the following specifications:
 - Core speed: 512 Mhz or more
 - Memory size: 1 GB or more

- Memory speed: 1.5 GHz or more

Note: Vendor-specific specifications:

- o NVidia card: Minimum of 40 CUDA cores
 - o AMD: Minimum of 512 Stream processors
- Display with 1024 x 768 or better resolution.

Note: Scenario Player may not run on a virtual machine that does not support 3D hardware acceleration.

1.2 Downloading the EXata Installer

To download the EXata installer for your platform, do the following:

1. Using a web browser, navigate to <https://www.keysight.com/find/epsoftware>.
2. If you have a Keysight account, go to step 3. Otherwise, click on **First Time User** and complete the registration step. You will need the Keysight Order Number and Keysight Certificate Number from your entitlement certificate to register.
3. Login to your KSM account.
4. Click on **You can get updates**.
5. In the EXata row, click on **EXata 8.2. Release**.
6. Download the EXata installer for your platform.

1.3 Installing EXata

This section describes how to install EXata.

- Notes:**
1. EXata must be installed from an administrator user account.
 2. The EXata installer includes the binary files and all other files and directories needed to run EXata. It does not include the source code. If needed, EXata source code must be downloaded and extracted separately (see [Section 1.6](#)).

To install EXata on Windows, perform the following steps:

1. Download the installation package (exata-8.2-windows-installer.exe). See [Section 1.2](#) for details.
2. Double-click on the installation package and follow the installation prompts.
3. The installer will prompt you to select the components you wish to install. In addition to EXata, you can choose to install Report Generator and Scenario Player. Report Generator is an add-on module for generating reports from the statistics database. Refer to *Statistics Database User's Guide* for details of using Report Generator. Scenario Player is an add-on module for running and visualizing EXata scenarios. Refer to *Scenario Player User's Guide* for details of using Scenario Player.

- Notes:**
1. EXata, Report Generator, and Scenario Player will be installed in individual sub-folders within the directory that you specify. If you select the default installation location (C:/Program Files/Scalable), then EXata will be installed in C:/Program Files/Scalable/exata/8.2, Report Generator will be installed in C:/Program Files/Scalable/exata-8.2-report-generator, and Scenario Player will be installed in C:/Program Files/Scalable/scenario-player/8.2.
 2. Some firewall programs may prevent EXata GUI from running. To use EXata GUI, you may need to add it to the exception list of your firewall program. Check the documentation of your firewall program for details on adding a program to the exception list or contact your system administrator. If you are using Microsoft Windows firewall, visit the Microsoft website for details of adding a program to the exception list
 4. The installer will prompt you to install the Npcap software. Npcap is required for running EXata in emulation mode. You can choose to install this package during the EXata installation or install it later.
To install Npcap after installing EXata, run npcacp-1.20.exe located in the interfaces\lib-emulation subfolder of the EXata installation directory.
 5. The installer will prompt you to install the EXata Virtual Device Driver. The EXata Virtual Device Driver is required for the packet sniffing interface of EXata. You can choose to install this package during the EXata installation or install it later.

To install EXata Virtual Device Driver after installing EXata, run install-enetv.bat located in the interfaces\pas\virtual_windows subfolder of the EXata installation directory.

If you choose to install the EXata Virtual Device Driver and a warning message similar to the following is displayed, click **Continue Anyway**.



Note: In order to use the EXata Packet Sniffer Interface, you must restart the computer after installing the EXata Virtual Device Driver.

1.4 License

EXata supports three types of licenses: node-locked, floating, and dongle. Refer to *EXata License Setup Guide* for help with using your license after installing EXata.

For help with license issues, contact [KeysightCare Support](#) by email. You can also open a support ticket by logging into your KSM account at the [Keysight Support Portal](#) and clicking on SUPPORT.

1.5 EXata Installation File Organization

The EXata installation includes the binary files and all other files and directories needed to run EXata.

Note: In this document, INSTALL_DIR refers to the directory where EXata is installed, e.g., C:/Program Files/Scalable/exata/8.2.

TABLE 1-2. Default Subdirectories in EXata Installation

Subdirectory	Description
INSTALL_DIR/bin	Executable and other runtime files, such as DLLs
INSTALL_DIR/data	Data files, including antenna configurations, modulation schemes, and sample terrain files
INSTALL_DIR/documentation	Documentation (User's Guide, Model Libraries, programmer's Guide, Release Notes, etc.)
INSTALL_DIR/gui	Graphical components, including icons, and GUI settings files
INSTALL_DIR/interfaces	Support files for the VR-Link interface and the EXata virtual device
INSTALL_DIR/libraries	Graphical components specific to model libraries
INSTALL_DIR/license_dir	License files and license application required to run EXata
INSTALL_DIR/scenarios	Sample scenarios
INSTALL_DIR/tools	Utility tools, such as PCAP Traffic Mapper and Topology Converter

1.6 Extracting Source Code and Compiling EXata

The EXata installer places a pre-compiled executable file in INSTALL_DIR/bin. This pre-compiled executable can be used directly and you do not need to compile EXata. Refer to *EXata User's Guide* for details.

However, if you want to customize EXata or activate certain libraries, you will need to extract the source code and recompile EXata.

To download the EXata source code, contact [KeysightCare Support](#) by email. You can also open a support ticket by logging into your KSM account at [Keysight Support Portal](#) and clicking on SUPPORT. You will receive an email with instructions to download the EXata source code.

Refer to *EXata Programmer's Guide* for instructions for recompiling EXata.

1.7 Uninstalling EXata and its Components

To uninstall EXata, do one of the following:

- Uninstall EXata from the Start menu (this option is available only if you chose to install Start menu shortcuts during installation):

Start > All Programs > Scalable > EXata-8.2 > EXata Uninstall

- Open a command window, go to the directory where the EXata components are installed (e.g., C:/Program Files/Scalable), and type the following command:

```
uninstall-exata-8_2_0_0.exe
```

Select the components that you want to uninstall (EXata, Scenario Player, or Report Generator).

2

Installing EXata on Linux

This chapter covers the system requirements and installation procedure for EXata on Linux systems.

2.1 System Requirements

EXata is supported on 64-bit (x86-64 compatible) platforms running one of the following Linux distributions:

- CentOS version 7.x and 8.x
- Red Hat Enterprise Linux (RHEL) version 7.x and 8.x
- Ubuntu versions 20.04 LTS and 22.04 LTS

The minimum platform requirements to run EXata on a Linux system are listed in [Table 2-1](#).

TABLE 2-1. Minimum Requirements for Linux

Item	Requirements
CPU	Quad-core Intel i7 (“Kaby-Lake”). Modern hex- or oct-core processors preferred.
Memory	16 GB or more.
Disk	512 GB SSD or more. 1 TB+ is required if large-scale time-series database functionality is needed.
OpenGL	For EXata GUI: OpenGL 1.2 or higher (needed only if EXata GUI is run on the machine). For Scenario Player: OpenGL.1.2.1 or higher.

Additional Requirements for EXata GUI

In addition to the requirements listed in [Table 2-1](#), the following are recommended for running the EXata GUI:

- Discrete graphics card with at least 128 MB memory supporting hardware 3D acceleration (see [Section 2.2](#) for instructions for installing drivers).
- Display with 1024 x 768 or better resolution

Note: EXata GUI may not run on a virtual machine that does not support 3D hardware acceleration.

Additional Requirements for Scenario Player

In addition to the requirements listed in [Table 2-1](#), the following are required for running Scenario Player:

- A graphics cards with the following specifications:
 - Core speed: 512 Mhz or more
 - Memory size: 1 GB or more
 - Memory speed: 1.5 GHz or more

Note: Vendor-specific specifications:

- NVidia card: Minimum of 40 CUDA cores
- AMD: Minimum of 512 Stream processors

- Display with 1024 x 768 or better resolution.

Note: Scenario Player may not run on a virtual machine that does not support 3D hardware acceleration.

Additional Requirements for EXata Packet Sniffer Interface

In order to use the EXata Packet Sniffer interface, Linux kernel source code or header files must be present and DKMS must be installed. See [Section 2.2](#) for details.

2.2 Installing Third-Party Software

Installing Graphics Packages

To be able to run the EXata GUI and Scenario Player on Linux platforms, you need to install the following software:

- OpenGL: Consult your system administrator for help with installing the appropriate OpenGL library.
 - For EXata GUI: OpenGL 1.2 or higher
 - For Scenario Player: OpenGL.1.2.1 or higher.
- Graphics driver: Contact the manufacturer of the graphic card installed on your system for instructions to install the latest version of the graphics driver.
 - For NVidia GeForce cards, drivers are available from <http://www.nvidia.com>.
 - For ATI Radeon cards, drivers are available from <http://www.ati.com>.

Note: Some Linux distribution include prepackaged versions of these drivers. Search for "nvidia" for NVidia cards or "fglrx" for ATI cards using the system package manager.

Installing Packages for EXata Packet Sniffer Interface on Linux Platforms

In order to use the EXata Packet Sniffer interface, Linux kernel source code or header files must be present and DKMS must be installed. (The DKMS package is needed to install the EXata Virtual Device Driver.)

- To verify if Linux kernel source code or header files are available on the emulation server (i.e., the machine running EXata), open a terminal window from a root user account and type the following:
 - For Debian or Ubuntu systems, type:

```
dpkg -s kernel
dpkg -s kernel-headers
```

- For other systems, type:

```
rpm -q kernel
rpm -q kernel-headers
```

If the above commands fail, consult your system administrator on how to install the kernel source or header files on the emulation server.

- To install DKMS on a CentOS 7.x or RHEL 7.x system, do the following:
 1. Get the RPM file containing the EPEL repository by executing the following command (without the line-break):

```
wget http://dl.fedoraproject.org/pub/epel/7/x86_64/Packages/e/epel-
release-7-14.noarch.rpm
```

2. Install the EPEL repository by executing the following command:

```
sudo rpm -ivh epel-release-7-14.noarch.rpm
```

3. Install the DKMS package by executing the following command:

```
sudo yum install dkms
```

- To install DKMS on a CentOS 8.x or RHEL 8.x system, do the following:
 1. Get the RPM file containing the EPEL repository by executing the following command (without the line-break):

```
wget https://dl.fedoraproject.org/pub/epel/8/Everything/x86_64/
Packages/e/epel-release-8-15.el8.noarch.rpm
```

2. Install the EPEL repository by executing the following command:

```
sudo rpm -ivh epel-release-8-15.el8.noarch.rpm
```

3. Install the DKMS package by executing the following command:

```
sudo yum install dkms
```

- To install DKMS on an Ubuntu system, execute the following command:

```
apt-get install dkms
```

2.3 Installing EXata

This section describes how to install EXata on a Linux system.

EXata can be installed locally on a machine by double clicking on the installation package (only if you are logged in from a root account) or by running the installer from the command line (see [Section 2.3.1](#)). EXata can be installed on a remote machine by running the installer from the command line using ssh (see [Section 2.3.2](#)).

- Notes:**
- You must have root privileges to install EXata.
 - The EXata installer includes the binary files and all other files and directories needed to run EXata. It does not include the source code. If needed, EXata source code must be downloaded and extracted separately (see [Section 2.6](#)).

2.3.1 Installing EXata on a Local Machine

To install EXata on a local machine, perform the following steps:

- Download the installation package for your platform. See [Section 1.2](#) for details.

[Table 2-2](#) lists the available installation packages for Linux platforms.

TABLE 2-2. EXata Installation Packages for Linux Platforms

Platform	Installation Package
CentOS 7.x	exata-8.2-linux-installer-rhel7
RHEL 7.x	
CentOS 8.x	exata-8.2-linux-installer-rhel8
RHEL 8.x	
Ubuntu 20.04 LTS	exata-8.2-linux-installer-ubuntu20
Ubuntu 22.04 LTS	exata-8.2-linux-installer-ubuntu22

- Make sure that the installation package is executable.
- Install EXata as follows:
 - If you are logged in from a root account, you can run the installer from the installer GUI by double clicking on the installation package and following the installation prompts. If you choose the option to install desktop shortcuts, the shortcuts will be created on the desktop of the root account.

Note: The installer GUI is not supported on CentOS 8.x and RHEL 8.x Wayland Display Server when running in a Virtual Machine (VM). As a workaround, you may either:

- Run the installer from the command line as described below, or
 - Start CentOS 8.x and RHEL 8.x with X11 display server (see <https://www.redhat.com/en/blog/red-hat-enterprise-linux-8-gnome-and-display-server-changes>), and then run the installer GUI.
- You can run the installer from the command line as follows:
 - a. Open a command window and change the directory to the location where you downloaded the installation package.
 - b. Run the installer and follow the installation prompts.
 - If you are logged in from a root account, use the following command:

```
./<installer-name>
```

where `<installer-name>` is the name of the installation package.

For example, to install EXata on CentOS 7.x platforms, use the following command:

```
./exata-8.2-linux-installer-rhel7
```

If you choose the option to install desktop shortcuts, the shortcuts will be created on the desktop of the root account.

- If you are logged in from a non-root account, use the following command:

```
sudo -H ./<installer-name>
```

If you choose the option to install desktop shortcuts, the shortcuts will be created on the desktop of the root account.

Note: On Ubuntu platforms, you can run the installer without the `-H` option. In this case, the desktop shortcuts will be created for the account from which the installer was run.

3. The installer will prompt you to select the components you wish to install. In addition to EXata, you can choose to install Report Generator, EXata Virtual Device Driver, and Scenario Player.

- Report Generator is an add-on module for generating reports from the statistics database. Refer to *Statistics Database User's Guide* for details of using Report Generator.
- The EXata Virtual Device Driver is required for the EXata Packet Sniffer interface. You can choose to install this package during the EXata installation or install it later.

To install EXata Virtual Device Driver later, execute the following commands as root (in the following, `<INSTALL_DIR>` is the directory where EXata is installed:

```
dkms add <INSTALL_DIR>/interfaces/pas/virtual_linux/  
dkms build exata-enetv/8.2  
dkms install exata-enetv/8.2
```


- Scenario Player is an add-on module for running and visualizing EXata scenarios. Refer to *Scenario Player User's Guide* for details of using Scenario Player.

Notes: 1. EXata, Report Generator, and Scenario Player will be installed in individual sub-folders within the directory that you specify. If you select the default installation location (`/opt/Scalable`), then EXata will be installed in `/opt/Scalable/exata/8.2`, Report Generator will be installed in `/opt/Scalable/exata-8.2-report-generator`, and Scenario Player will be installed in `/opt/Scalable/scenario-player/8.2`.

2. EXata and Scenario Player can be installed on the same machine or different machines. If they are installed on the same machine, then Scenario Player can be used to run with EXata in local or remote execution mode (see *EXata User's Guide*). If they are installed on different machines, Scenario Player can be used to run with EXata only in remote execution mode.
4. If you are installing EXata on an Ubuntu 20.04 LTS or 22.04 LTS machine and you have selected the option to create desktop shortcuts, then after installation run the following commands (without line-breaks):

```
sudo chown <username>:<username> /home/<username>/.local/share/gvfs-  
metadata/home*
```

```
sudo chown <username>:<username> /home/<username>/Desktop/*.desktop
```

5. In addition to copying the necessary files to your system, the installer also updates some environment variables. In order for these environment variables to take effect, you must logout of the system and login again.

2.3.2 Installing EXata on a Remote Machine

To install EXata on a remote machine, perform the following steps:

1. Login to the remote machine using ssh.
2. Download the installation package from the EXata download page to the remote machine. See [Table 2-2](#) for the name of the installation package for your platform.
3. Make sure that the installation package is executable.
4. Run the installer by typing the following command:

```
./<installer-name> --mode text
```

where `<installer-name>` is the name of the installation package.

For example, to install EXata on CentOS 7.x platforms, use the following command:

```
./exata-8.2-linux-installer-rhel7 --mode text
```

5. Follow the installation prompts. See [Section 2.3.1](#) for a description of the components which can be selected for installation.

6. In addition to copying the necessary files to your system, the installer also updates some environment variables. In order for these environment variables to take effect, you must logout of the system and login again.

2.4 License

EXata supports three types of licenses: node-locked, floating, and dongle. Refer to *EXata License Setup Guide* for help with using your license after installing EXata.

For help with license issues, contact [KeysightCare Support](#) by email. You can also open a support ticket by logging into your KSM account at the [Keysight Support Portal](#) and clicking on SUPPORT.

2.5 EXata Installation File Organization

The EXata installation includes the binary files and all other files and directories needed to run EXata.

Note: In this document, `INSTALL_DIR` refers to the directory where EXata is installed, e.g., `/opt/Scalable/exata/8.2`.

TABLE 2-3. Default Subdirectories in EXata Installation

Subdirectory	Description
<code>INSTALL_DIR/bin</code>	Executable and other runtime files, such as DLLs
<code>INSTALL_DIR/data</code>	Data files, including antenna configurations, modulation schemes, and sample terrain files
<code>INSTALL_DIR/documentation</code>	Documentation (User's Guide, Model Libraries, programmer's Guide, Release Notes, etc.)
<code>INSTALL_DIR/gui</code>	Graphical components, including icons, and GUI settings files
<code>INSTALL_DIR/interfaces</code>	Support files for the VR-Link interface and the EXata virtual device
<code>INSTALL_DIR/libraries</code>	Graphical components specific to model libraries
<code>INSTALL_DIR/license_dir</code>	License files and license application required to run EXata
<code>INSTALL_DIR/scenarios</code>	Sample scenarios
<code>INSTALL_DIR/tools</code>	Utility tools, such as PCAP Traffic Mapper and Topology Converter

2.6 Extracting Source Code and Compiling EXata

The EXata installer places a pre-compiled executable file in `INSTALL_DIR/bin`. This pre-compiled executable can be used directly and you do not need to compile EXata. Refer to *EXata User's Guide* for details.

However, if you want to customize EXata or activate certain libraries, you will need to extract the source code and recompile EXata.

To download the EXata source code, contact [KeysightCare Support](#) by email. You can also open a support ticket by logging into your KSM account at [Keysight Support Portal](#) and clicking on SUPPORT. You will receive an email with instructions to download the EXata source code.

Refer to *EXata Programmer's Guide* for instructions for recompiling EXata.

2.7 Uninstalling EXata and its Components

To uninstall EXata or any of its components, do the following:

1. Open a command window.
2. Go to the directory where the EXata components are installed (e.g., `/opt/Scalable` or `/home/username/Scalable`).
3. Type the following command to uninstall EXata from the local machine:

```
./uninstall-exata-8_2_0_0
```

Type the following command to uninstall EXata from a remote machine:

```
./uninstall-exata-8_2_0_0 --mode text
```

4. Select the components that you want to uninstall (EXata, Scenario Player, or Report Generator).