



## Setting up multiple UNICORE sites with the graphical installer

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## 1 Introduction

### 1.1 About This Document

This is a short description of how to set up a multiple site grid with the graphical installer of the UNICORE quickstart.

[Installation Scenarios](#) Section 1.2 gives an overview of how the components will be set up and how they work together. You can directly jump to Section 2 or Section 3 if you are not interested in (or already know) the UNICORE internals.

### 1.2 Installation Scenarios

#### 1.2.1 Scenario 1: All sites within one firewall

There are different ways to set up your UNICORE installation. One scenario is UNICORE running in-house to allow access to several local target systems. Imagine you have one or more target systems you want to be accessible through UNICORE and you want to install the general UNICORE services on different machines for security or load distribution purposes. Then you strive for a configuration as shown in Figure [img-scenario1].

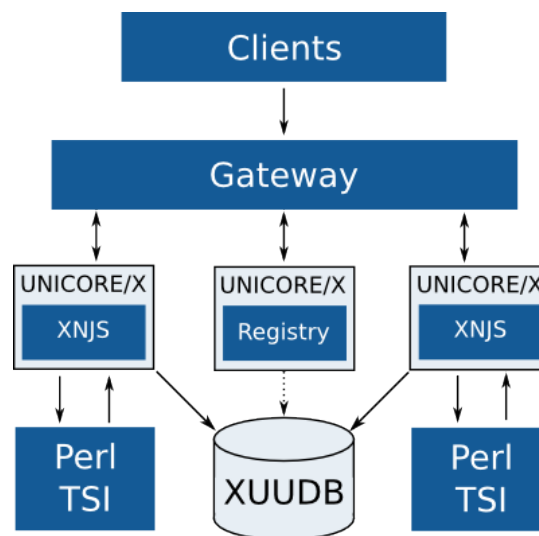


Figure 1: Single-Site Configuration with Global Registry

The Gateway is the entrance to the site through which all services can be reached. The Gateway port is the only one which needs to be open for https connections from the outside world. The

Registry provides information about all services except Gateway and XUADB. The services dynamically register with the Registry, they contact the Registry through the Gateway.

### 1.2.2 Scenario 2: All sites with individual firewalls

In the second scenario, the UNICORE installation spreads across multiple physical locations, each of which deploying a separate firewall. In this case, each site needs its own Gateway as an entry point, and each site needs the Gateway port to be opened in the firewall. Assume that each site runs its own xuadb as to be able to administer user access on its own. One site needs to run the Registry to provide information about all grid-wide services, this Registry will be set up behind that site's Gateway. See Figure [\[img-scenario2\]](#).

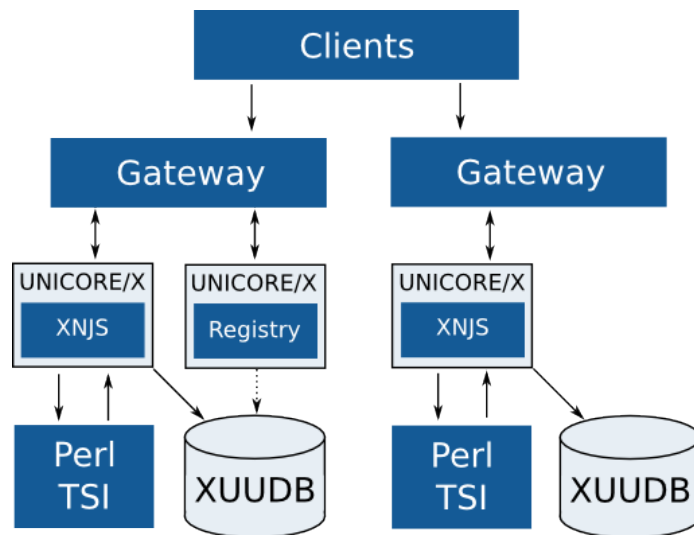


Figure 2: Single-Site Configuration with Global Registry

## 2 Scenario 1: All sites within one firewall

Setup:

- One machine with Gateway, Registry, XUADB, UNICORE/X and embedded Java TSI.
- Each additional site with UNICORE/X and embedded Java TSI
- XUADB that manages users for each UNICORE/X individually

**Caution**

If your installation is accessible from outside, exchange the demo user certificates as soon as possible!

## 2.1 Install UNICORE/X, Gateway, XUADB, Global Registry

Login to the machine and start the graphical installer of the UNICORE Core Server bundle by executing:

```
java -jar unicare-servers-6.3.0.jar
```

On screen 5, select the following components to be installed:

- UNICORE/X
- Gateway
- XUADB
- Registry

On screen 6, replace **all** host names with the full qualified host name or IP address of the current machine (they are set to `localhost` by default).<sup>footnote</sup>[For test purposes, you can install all "sites" on one machine, then 'localhost' will be just fine. In this case remember to change the default port for any additional unicarex.]

Still on screen 6, change the name of the site and the component ID (GcID) to something you like, e.g. `SITE1`.

On screen 7, check `Use external registry` and replace `localhost` in the registry URL with the full qualified machine name or IP address of the current machine.

Screen 9: If you plan to let your Registry use an XUADB for authorisation later on, change the component ID to a reasonable value, e.g. `REGISTRY`.

Finish the installation and start the components via the `start.sh` script.

## 2.2 Add additional sites

Login to the new machine and start the quickstart graphical installer on the new site's machine. On screen 5, select the following components to be installed:

- UNICORE/X

On screen 6, enter the host and port of the Gateway you installed in Section Section 2.1.

Still on screen 6, replace the host name of the UNICORE/X with the full qualified host name or IP address of the current machine.

Still on screen 6, change the name of the site and the component ID to something you like, e.g. SITE2.

Still on screen 6, enter the host and port of the XUADB you installed in Section Section 2.1.

On screen 7, check `Use external registry` and enter the URL of the Registry you installed in Section Section 2.1. Not that the Registry via the Gateway, so the hostname and port should be the Gateway's.

Finish the installation.

Go to the machine where you installed the Gateway, Registry and XUADB. Open `gateway/conf/connection.properties` and add a line for the second UNICORE/X. (There should be already a line for the first UNICORE/X, copy and alter it).

Change to the XUADB directory and add a user for the second UNICORE/X, e.g.:

```
bin/admin.sh add SITE2 ../certs/demouser.pem rbreu user
```

(where `SITE2` is the component ID, not the site name, although both may be the same)

Start your new UNICORE/X via the `start.sh` script on that machine.

## 3 Scenario 2: All sites with individual firewalls

Setup:

- One machine with Gateway, Registry, XUADB, UNICORE/X and embedded Java TSI
- Each additional site with UNICORE/X, Gateway, XUADB and embedded Java TSI



### Caution

If your installation is accessible from outside, exchange the demo user certificates as soon as possible!

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### 3.1 Install UNICORE/X, Gateway, XUADB, Global Registry

Follow the instructions given in Section 2.1 and open the Gateway port in the firewall.

### 3.2 Add additional sites

Start quickstart graphical installer on the new site's machine. Select the following components to be installed:

- UNICORE/X
- Gateway
- XUADB

Replace **all** host names with the full qualified host name or IP address (they are set to localhost by default).

Change the name of the site and the component ID to something you like, e.g. SITE2.

Check `Use external registry` and enter the URL of the Registry you installed in Section Section 2.1.

Open the Gateway port in the firewall.

Start your new components.

## 4 Notes

You can easily mix Scenario 1 and 2. Actually, if you set up the first machine with Gateway, Registry, and XUADB, it doesn't matter whether additional UNICORE/X have own Gateways and XUADBs or not.

For production, you should replace the demo certificates with real ones and use classical TSIs. Depending on how heavily your UNICORE installation is used, it may be a good idea to put Gateway and Registry for load balancing.

## 5 Glossary

USite	A USite (= UNICORE site) is the UNICORE term for a set of Vsites in a common administrative domain. Each USite has a single Gateway
VSite	A VSite (= virtual site) is the UNICORE term for a Grid node, such as a compute resource. It corresponds to a UNICORE/X server.

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XUADB	The UNICORE user database maps a user certificate to the local user account and the user role. It is used to manage the access to UNICORE resources.
UNICORE/X	UNICORE/X is the central server component. It asks the XUADB for authorisation of a request. Jobs are passed to the TSI for execution.
IDB	The IDB is a file which describes system specific values like paths to executables, amount of physical memory and CPUs, etc. It is used by UNICORE/X to translate an abstract job into a system specific jobs.
Global Registry	The Global Registry is the main entry point to a UNICORE Grid. All components (e.g. UNICORE/X) which are to be accessible Grid-wide have to register with the Global Registry.
Gateway	A site's Gateway to the public network. It is designed to be the only component which has an open port in the firewall, and it can serve multiple UNICORE components within the same firewall.
TSI	The Target System Interface executes a system specific job on the target system on behalf of a user. It communicates with the local resource management system.
GcID	The XUADB returns success if the user certificate matches an XUADB entry <b>and</b> if the GcID of that entry matches the GcID of the requesting component. Thus it is possible to share a XUADB between several components where each component uses a different set of XUADB entries (by giving each component a different GcID). To share XUADB entries between multiple components, give these components the same GcID.
OGSA	The Open Grid Services Architecture
OGSA-BES	OGSA Basic Execution Services

JSDL	Job Submission Description Language
URI	Uniform Resource Identifier
DESHL	DEISA Shell
SAGA	Simple API for Grid Applications
GUI	Graphical User Interface
HTTP	Hypertext transfer protocol
JRE	Java Runtime Environment
XML	eXtensible Markup Language
SSL	Secure Socket Layer
CA	Certifikation Authority