



# Deploying the Full OSG Stack

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A decorative background featuring a network diagram with nodes and connecting lines, primarily located on the left and bottom-right sides of the slide.

1.

# Why the OSG Software Stack?

What's right for your site?



## Why the OSG Software Stack?

- ◎ Scalability (support for 1000s of cores)
- ◎ Easily accept more users
- ◎ Multi-core job support
- ◎ Advanced job routing

If you find any of these interesting, installing the full OSG Software Stack may be right for your site.

# Contact the Experts

Speak with us to find the  
right solution for you

[user-support@opensciencegrid.org](mailto:user-support@opensciencegrid.org)



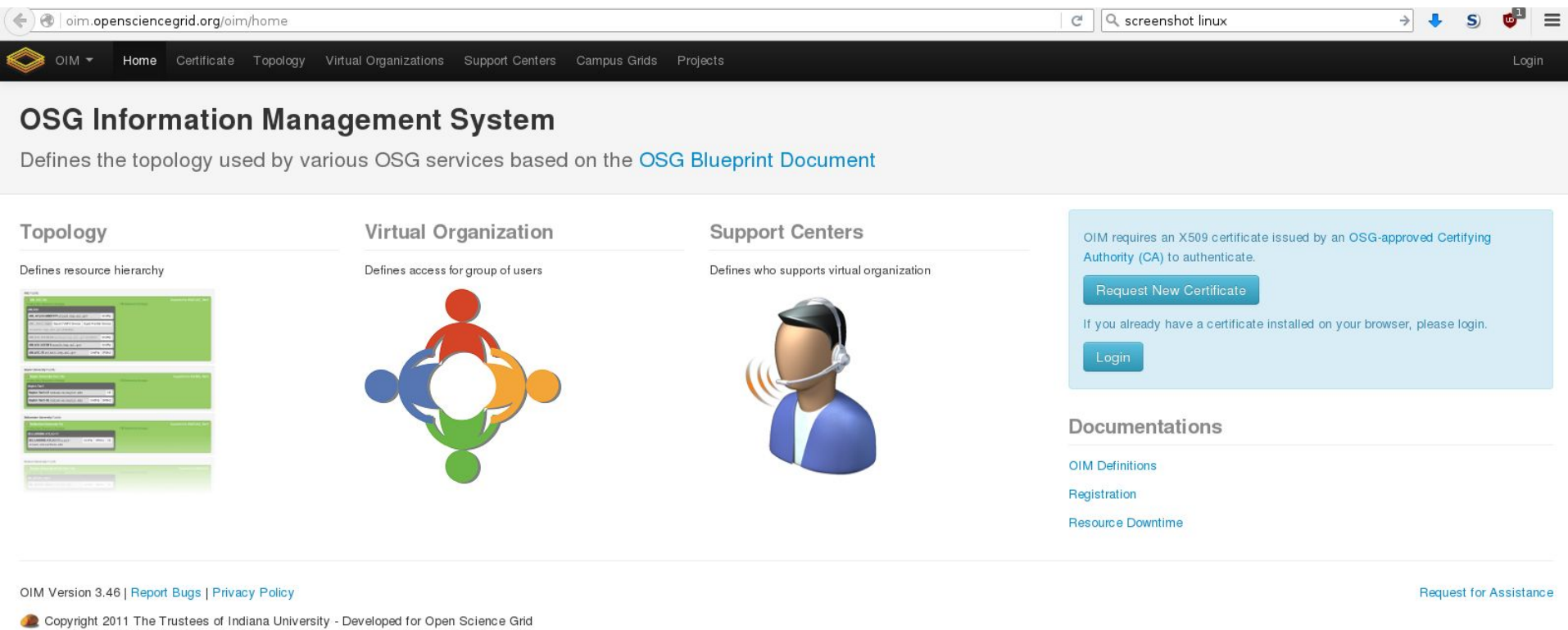


2.

# Open Science Grid Registration

OSG Information Management  
System (OIM)

# Open Science Grid Registration: OIM



The screenshot shows the homepage of the Open Science Grid Information Management System (OIM). The browser address bar displays `oim.opensciencegrid.org/oim/home`. The navigation menu includes links for Home, Certificate, Topology, Virtual Organizations, Support Centers, Campus Grids, and Projects. The main heading is "OSG Information Management System", with a sub-heading stating it defines the topology used by various OSG services based on the OSG Blueprint Document. Three main sections are featured: "Topology" (describing resource hierarchy), "Virtual Organization" (describing user access), and "Support Centers" (describing support personnel). A right-hand sidebar contains a login/certificate section with buttons for "Request New Certificate" and "Login", and a "Documentations" section with links for "OIM Definitions", "Registration", and "Resource Downtime". The footer includes version information (3.46), a "Report Bugs" link, a "Privacy Policy" link, and a "Request for Assistance" link.

oim.opensciencegrid.org/oim/home

OSG Information Management System

Defines the topology used by various OSG services based on the [OSG Blueprint Document](#)

**Topology**  
Defines resource hierarchy

**Virtual Organization**  
Defines access for group of users

**Support Centers**  
Defines who supports virtual organization

OIM requires an X509 certificate issued by an OSG-approved Certifying Authority (CA) to authenticate.

[Request New Certificate](#)

If you already have a certificate installed on your browser, please login.

[Login](#)

**Documentations**

- [OIM Definitions](#)
- [Registration](#)
- [Resource Downtime](#)

OIM Version 3.46 | [Report Bugs](#) | [Privacy Policy](#)

[Request for Assistance](#)

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<http://oim.opensciencegrid.org>

<https://twiki.opensciencegrid.org/bin/view/Operations/OIMRegistrationInstructions>

# Open Science Grid Registration: Certificates

oim.opensciencegrid.org/oim/home

oim Home Certificate Topology Virtual Organizations Support Centers Campus Grids Projects Login

## OSG Information Management System

Defines the topology used by various OSG services based on the [OSG Blueprint Document](#)

### Topology

Defines resource hierarchy

### Virtual Organization

Defines access for group of users

### Support Centers

Defines who supports virtual organization

## Users with certificates from IGTF accredited CAs

OIM requires an X509 certificate issued by an OSG-approved Certifying Authority (CA) to authenticate.

[Request New Certificate](#)

If you already have a certificate installed on your browser, please login.

[Login](#)

### Documentations

- [OIM Definitions](#)
- [Registration](#)
- [Resource Downtime](#)

OIM Version 3.46 | [Report Bugs](#) | [Privacy Policy](#) [Request for Assistance](#)

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# Open Science Grid Registration: Certificates

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Users without certificates

OIM requires an X509 certificate issued by an OSG-approved Certifying Authority (CA) to authenticate.

**Request New Certificate**

If you already have a certificate installed on your browser, please login.

Login

## Documentations

- [OIM Definitions](#)
- [Registration](#)
- [Resource Downtime](#)

<http://oim.opensciencegrid.org>  
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# Open Science Grid Registration: Certificates

The screenshot shows the Open Science Grid Information Management System (OIM) website. The browser address bar displays `oim.opensciencegrid.org/oim/home`. The navigation menu includes **Home**, **Certificate** (highlighted with a red box), **Topology**, **Virtual Organizations**, **Support Centers**, **Campus Grids**, and **Projects**. The main heading is **OSG Information Management System**, with a sub-heading: "Defines the topology used by various OSG services based on the [OSG Blueprint Document](#)".

Three main sections are visible:

- Topology**: "Defines resource hierarchy" with a screenshot of a web interface.
- Virtual Organization**: "Defines access for group of users" with a logo of four stylized figures in red, blue, orange, and green.
- Support Centers**: "Defines who supports virtual organization" with an icon of a person wearing a headset.

On the right side, a light blue box contains the following text:

OIM requires an X509 certificate issued by an OSG-approved Certifying Authority (CA) to authenticate.

**Request New Certificate** (button, highlighted with a red box)

If you already have a certificate installed on your browser, please login.

Login (button)

Below this box is a **Documentations** section with links for [OIM Definitions](#), [Registration](#), and [Resource Downtime](#).

At the bottom left, it says "OIM Version 3.46 | [Report Bugs](#) | [Privacy Policy](#)". At the bottom right, there is a link for [Request for Assistance](#). The footer contains "Copyright 2011 The Trustees of Indiana University - Developed for Open Science Grid".

Users without certificates

<http://oim.opensciencegrid.org>  
<https://twiki.opensciencegrid.org/bin/view/Operations/OIMRegistrationInstructions>

# Open Science Grid Registration: Certificates

The screenshot shows the OIM website at [oim.opensciencegrid.org/oim/certificate](http://oim.opensciencegrid.org/oim/certificate). The browser address bar shows the URL and search engines like Screenshot Linux. The navigation menu includes Home, Certificate, Topology, Virtual Organizations, Support Centers, Campus Grids, and Projects. A left sidebar contains a Home link and sections for USER CERTIFICATES (Request New, Search) and HOST CERTIFICATES (Request New, GridAdmins, Search). A main content area features a notice about the 2016 ATLAS certificate migration from OSG to CERN CA, followed by a welcome message and documentation links for specific VOs and sites, and general OSG user documentation. A footer contains version information, a report bug link, a privacy policy link, and a request for assistance link.

oim.opensciencegrid.org/oim/certificate

Home Certificate Topology Virtual Organizations Support Centers Campus Grids Projects

Home

USER CERTIFICATES

- + Request New
- Q Search

HOST CERTIFICATES

- + Request New
- GridAdmins
- Q Search

In 2016, US ATLAS will cease to use OSG-supplied certificates, in favor of certificates issued by the CERN certificate authority (CA). To ensure minimal impact to your ATLAS privileges through this transition, US ATLAS encourages you to obtain a personal certificate from the CERN CA (if you don't yet have one), and add it to your existing ATLAS VO membership.

For details on the OSG certificate CA migration, click [here](#)

## Welcome to the OSG PKI Certificate Request & Management System

To request a new user or host certificate, please select the appropriate option from the menus to the left.

### Documentation for Specific VOs and Sites

- [CMS User Documentation](#)
- [FermiLab User Documentation](#)
- [ATLAS User Documentation](#)
- [Using the CERN CA for ATLAS users](#)

### General Documentation for all OSG Users

- [Documentation on Getting a User Certificate via Web interface](#)
- [OSG/PKI Certificate Renewal](#)

Note: Check to make sure that your soon to expire DigiCert user certificate is currently installed on your browser.

- [OIM User's Guide](#)
- [OSG PKI command-line clients](#)
- [All OSG PKI Documentation](#)

OIM Version 3.46 | [Report Bugs](#) | [Privacy Policy](#) [Request for Assistance](#)

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oim.opensciencegrid.org/oim/certificate

Home Certificate Topology Virtual Organizations Support Centers Campus Grids Projects

Home

USER CERTIFICATES

- + Request New
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HOST CERTIFICATES

- + Request New
- GridAdmins
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<http://oim.opensciencegrid.org/oim/certificate>

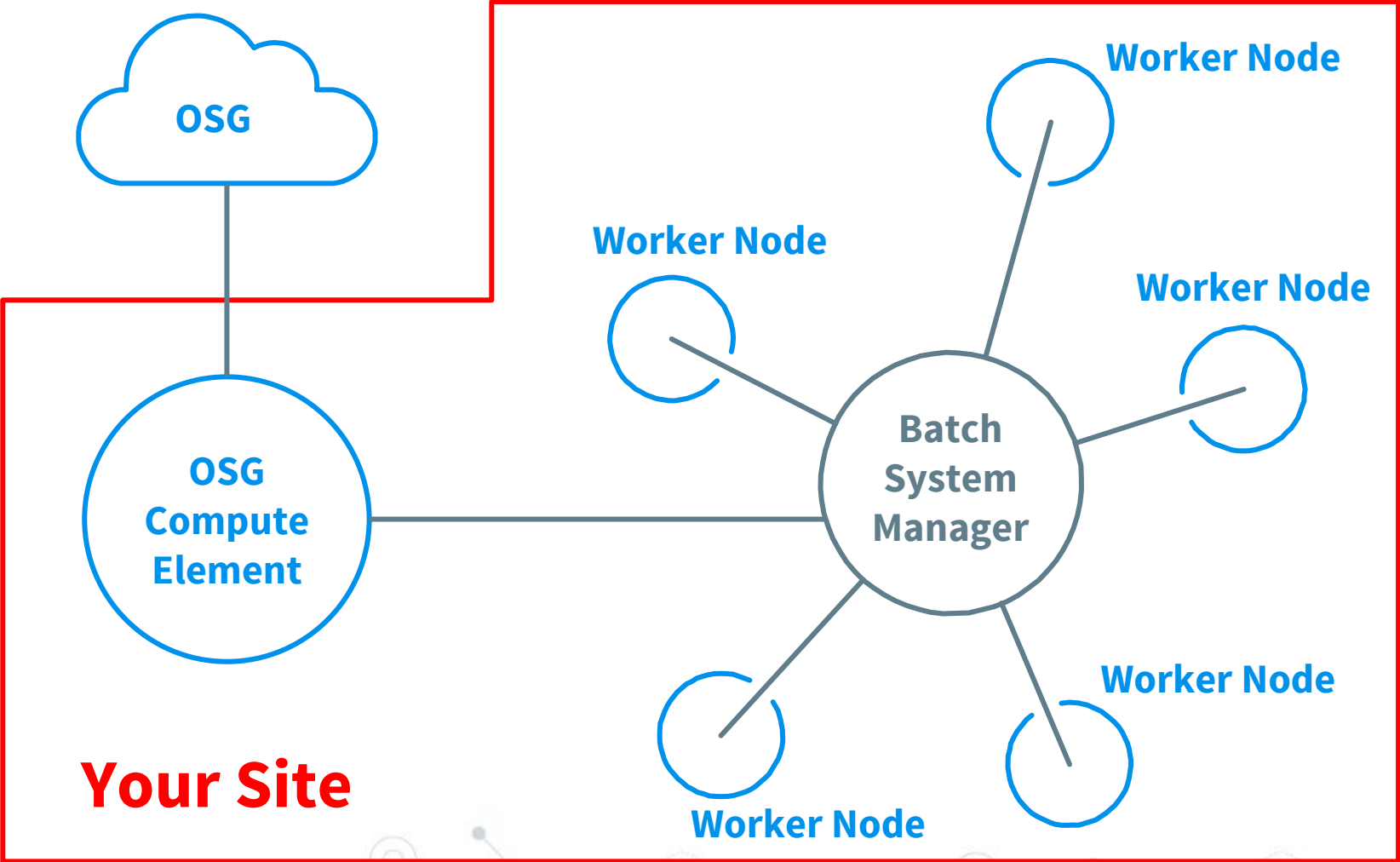


# 3.

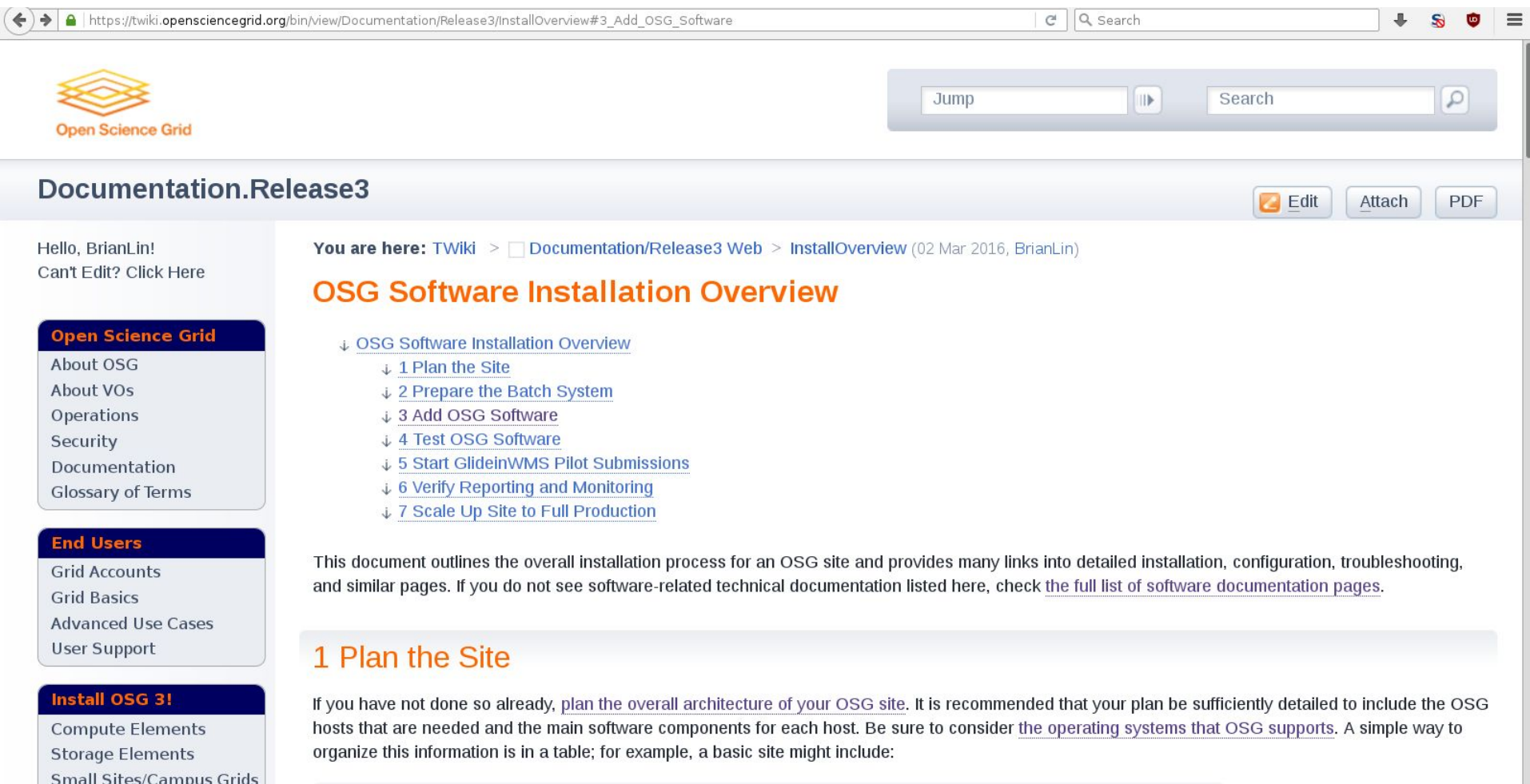
# Installing the OSG Software Stack

Required and optional services

# Installing the OSG Software Stack: A Basic Site



# Installing the OSG Software Stack: Getting Started



The screenshot shows a web browser window displaying a TWiki page. The address bar shows the URL: [https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOverview#3\\_Add\\_OSG\\_Software](https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOverview#3_Add_OSG_Software). The page header includes the Open Science Grid logo and a search bar. The main content area is titled 'Documentation.Release3' and contains a breadcrumb trail: 'You are here: TWiki > Documentation/Release3 Web > InstallOverview (02 Mar 2016, BrianLin)'. Below this is the section 'OSG Software Installation Overview' with a list of links: '1 Plan the Site', '2 Prepare the Batch System', '3 Add OSG Software', '4 Test OSG Software', '5 Start GlideinWMS Pilot Submissions', '6 Verify Reporting and Monitoring', and '7 Scale Up Site to Full Production'. The page also features a sidebar with navigation links for 'Open Science Grid', 'End Users', and 'Install OSG 3!'.

Open Science Grid

Documentation.Release3

Hello, BrianLin!  
Can't Edit? Click Here

**Open Science Grid**

- About OSG
- About VOs
- Operations
- Security
- Documentation
- Glossary of Terms

**End Users**

- Grid Accounts
- Grid Basics
- Advanced Use Cases
- User Support

**Install OSG 3!**

- Compute Elements
- Storage Elements
- Small Sites/Campus Grids

You are here: TWiki > Documentation/Release3 Web > InstallOverview (02 Mar 2016, BrianLin)

## OSG Software Installation Overview

- ↓ [OSG Software Installation Overview](#)
  - ↓ [1 Plan the Site](#)
  - ↓ [2 Prepare the Batch System](#)
  - ↓ [3 Add OSG Software](#)
  - ↓ [4 Test OSG Software](#)
  - ↓ [5 Start GlideinWMS Pilot Submissions](#)
  - ↓ [6 Verify Reporting and Monitoring](#)
  - ↓ [7 Scale Up Site to Full Production](#)

This document outlines the overall installation process for an OSG site and provides many links into detailed installation, configuration, troubleshooting, and similar pages. If you do not see software-related technical documentation listed here, check [the full list of software documentation pages](#).

### 1 Plan the Site

If you have not done so already, [plan the overall architecture of your OSG site](#). It is recommended that your plan be sufficiently detailed to include the OSG hosts that are needed and the main software components for each host. Be sure to consider [the operating systems that OSG supports](#). A simple way to organize this information is in a table; for example, a basic site might include:

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOverview>

## Installing the OSG Software Stack: General Requirements

- ⦿ Enterprise Linux 5 (going away soon), 6 and 7 :OSG Software distributed via yum repositories
- ⦿ Interfaces with HTCondor, Torque/PBS, LSF, SLURM, or SGE batch systems
- ⦿ SELinux not currently supported



## Installing the OSG Software Stack: Compute Element

- ◎ Batch system submit node with layer of OSG software
- ◎ Requires host certificate
- ◎ Needs to be publicly accessible
- ◎ HTCondor-CE (job gateway)
  - Require a shared FS between CE and worker nodes for non HTCondor batch-systems

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallHTCondorCE>

- ◎ edg-mkgridmap or GUMS (authentication)
- ◎ Gratia (accounting)
- ◎ GIP and OSG Info Services (site availability)
- ◎ RSV (system monitoring, recommended)

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallRSV>



## Installing the OSG Software Stack: Worker Nodes

### ⦿ OSG Worker Node Client

- RPM, tarball, or OASIS installation options

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallWNClient>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallWNClientTarball>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/UsingOSGWnClientFromOASIS>

### ⦿ Need outgoing network access

### ⦿ Do NOT need host certificates

### ⦿ Optional services

- OASIS (software distribution via HTTP)

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallCvmfs>

- GLExec (security at the WN level)

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallGlexec>

## Installing the OSG Software Stack: Optional Software

- ◎ Squid (proxying cache, recommended with OASIS)

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallFrontierSquid>

- ◎ GlideinWMS Frontend (submitting into the OSG)

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallGlideinWMSFrontend>

- ◎ Storage Element

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOSGBestmanSE>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/HadoopOverview>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallXrootd>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOSGGridFTP>

## Resources

- ◎ Contact the Experts

[user-support@opensciencegrid.org](mailto:user-support@opensciencegrid.org)

- ◎ OSG Information Management System

<https://oim.opensciencegrid.org>

<https://twiki.opensciencegrid.org/bin/view/Operations/OIMRegistrationInstructions>

- ◎ Site Install Overview

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallOverview>

- ◎ HTCondor-CE Install Guide

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallHTCondorCE>

- ◎ Worker Node Install Guides

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallWNClient>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/InstallWNClientTarball>

<https://twiki.opensciencegrid.org/bin/view/Documentation/Release3/UsingOSGWnClientFromOASIS>

## Credits

I'd like to thank:

- ⊙ OSG Connect team
- ⊙ User Support team
- ⊙ Grid Operations Center
- ⊙ OSG Software team

Special thanks to all the people who made and released these awesome resources for free:

- ⊙ Presentation template by [SlidesCarnival](#)
- ⊙ Photographs by [Unsplash](#) & [Death to the Stock Photo](#) ([license](#))



# Thanks!

## Any questions?

You can find me at:

[blin@cs.wisc.edu](mailto:blin@cs.wisc.edu)

[osg-software@opensciencegrid.org](mailto:osg-software@opensciencegrid.org)

Support requests should go to:

[user-support@opensciencegrid.org](mailto:user-support@opensciencegrid.org)