

# Oracle® Solaris Cluster Geographic Edition 4.1 Security Guide

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# Preface

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*Oracle Solaris Cluster Geographic Edition 4.1 Security Guide* contains security information about the Geographic Edition software product.

## How This Book Is Organized

The *Oracle Solaris Cluster Geographic Edition 4.1 Security Guide* contains the following chapter:

- [Chapter 1, “Introduction to Geographic Edition Security,”](#) provides an overview of the concepts that you need to know about Geographic Edition security.

## Related Documentation

Information about related Geographic Edition topics is available in the documentation that is listed in the following table. All Geographic Edition documentation is available at <http://www.oracle.com/technetwork/indexes/documentation/index.html>.

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Topic	Documentation
Overview	<i>Oracle Solaris Cluster Geographic Edition Overview</i>
Installation	<i>Oracle Solaris Cluster Geographic Edition Installation Guide</i>
Data Replication	<i>Oracle Solaris Cluster Geographic Edition Data Replication Guide for EMC Symmetrix Remote Data Facility</i> <i>Oracle Solaris Cluster Geographic Edition Data Replication Guide for Oracle Data Guard</i> <i>Oracle Solaris Cluster Geographic Edition Data Replication Guide for Oracle Solaris Availability Suite</i>
System administration	<i>Oracle Solaris Cluster Geographic Edition System Administration Guide</i>

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**Note** – Data replication with EMC Symmetrix Remote Data Facility is supported for Geographic Edition 4.1.

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For a complete list of Geographic Edition documentation, see *Oracle Solaris Cluster 4.1 Release Notes*.

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Topic	Documentation
Hardware installation and administration	<i>Oracle Solaris Cluster 4.1 Hardware Administration Manual</i> Individual hardware administration guides
Concepts	<i>Oracle Solaris Cluster Concepts Guide</i>
Software installation	<i>Oracle Solaris Cluster Software Installation Guide</i>
Data service installation and administration	<i>Oracle Solaris Cluster Data Services Planning and Administration Guide</i> and individual data service guides
Data service development	<i>Oracle Solaris Cluster Data Services Developer's Guide</i>
System administration	<i>Oracle Solaris Cluster System Administration Guide</i> <i>Oracle Solaris Cluster Quick Reference</i>
Software upgrade	<i>Oracle Solaris Cluster Upgrade Guide</i>
Error messages	<i>Oracle Solaris Cluster Error Messages Guide</i>
Command and function references	<i>Oracle Solaris Cluster Reference Manual</i> <i>Oracle Solaris Cluster Data Services Reference Manual</i> <i>Oracle Solaris Cluster Geographic Edition Reference Manual</i> <i>Oracle Solaris Cluster Quorum Server Reference Manual</i>
Compatible software	<i>Oracle Solaris Cluster Compatibility Guide</i> available at the <a href="#">Oracle Solaris Cluster Technical Resources page</a>
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## Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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## Getting Help

If you have problems installing or using Geographic Edition software, contact your service provider and provide the following information:

- Your name and email address (if available)
- Your company name, address, and phone number
- The model and serial numbers of your systems
- The release number of the operating system (for example, Oracle Solaris 11)
- The release number of the Geographic Edition software (for example, 4.1)
- The contents of the `/var/cacao/instances/default/logs/cacao.0/1/2` file

Also have available the contents of the `/var/adm/messages` file.

Use the following commands to gather information about your system for your service provider.

Command	Function
<code>prtconf -v</code>	Displays the size of the system memory and reports information about peripheral devices
<code>psrinfo -v</code>	Displays information about processors
<code>pkg list</code>	Reports which packages are installed
<code>prtdiag -v</code>	Displays system diagnostic information
<code>/usr/cluster/bin/clnode show-rev -v</code>	Displays Geographic Edition release and package version information for each node





# Introduction to Geographic Edition Security

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The Geographic Edition software product protects applications from unexpected disruptions by using multiple clusters that are geographically separated by long distances. These clusters contain identical copies of the Geographic Edition infrastructure, which manage replicated data between the clusters. Geographic Edition software is a layered extension of the Oracle Solaris Cluster software.

The *Oracle Solaris Cluster Geographic Edition 4.1 Security Guide* provides information on secure installations, configuration, and security features for the Oracle Solaris Cluster product. Use this book with the entire Geographic Edition documentation set to provide a complete view of the Geographic Edition software.

This chapter contains the following sections:

- “[Overview of Geographic Edition and Security](#)” on page 9
- “[Secure Installation and Configuration](#)” on page 10
- “[Security Features](#)” on page 11

For more information, see *Oracle Solaris Cluster 4.1 Security Guide* and *Oracle Solaris 11.1 Administration: Security Services*.

## Overview of Geographic Edition and Security

Geographic Edition software is a layered extension of the Oracle Solaris Cluster software. Data replication software enables applications that are running on a Geographic Edition cluster to tolerate disasters by migrating services to a geographically separated secondary cluster. A disaster such as an earthquake, fire, or storm might disable the cluster at the primary site.

If a disaster occurs, the Geographic Edition cluster can continue to provide services by using the following levels of redundancy:

- A secondary cluster
- Duplicated application configuration on the secondary cluster

- Replicated data on the secondary cluster

The Geographic Edition software provides a suite of tools to manage and configure geographically separated clusters with a migration of services between sites. The Geographic Edition software can manage availability across multiple physical locations through robust security, application service migration, and data replication to tolerate disaster across an enterprise system.

On Geographic Edition 4.1, the clusters can be global clusters, zone clusters, or a combination of both.

## General Security Principles

The following principles are fundamental to using the Geographic Edition application securely.

- Keep software up to date
- Restrict network access to critical services
- Follow the principle of least privilege
- Monitor system activity
- Keep up to date on the latest Oracle security information

## Secure Installation and Configuration

This section provides links for planning and executing a secure installation and configuration of Geographic Edition.

- Installation – Geographic Edition software must be installed on a cluster that is running the Oracle Solaris Operating System and the Oracle Solaris Cluster software. Use the Oracle Solaris 11 Automated Installer (AI) to install Geographic Edition software at the same time that you install Oracle Solaris Cluster software or at any time afterwards. The Geographic Edition software configuration is identical to the Oracle Solaris Cluster software configuration. See [Chapter 2, “Installing Geographic Edition Software,” in \*Oracle Solaris Cluster Geographic Edition Installation Guide\*](#).
- Cluster packages – Geographic Edition packages use Oracle Solaris Image Packaging System (IPS) package names. To see a list of core cluster and data service packages, see [Oracle Solaris Cluster 4.1 Security Guide](#). This table lists the packages that are provided with Oracle Solaris Cluster Geographic Edition 4.1.

IPS Package Name	Description
ha-cluster/geo/geo-framework	Oracle Solaris Cluster Geographic Edition Framework

IPS Package Name	Description
ha-cluster/geo/manual	Oracle Solaris Cluster Geographic Edition manual pages
ha-cluster/geo/replication/availability-suite	Oracle Solaris Cluster Geographic Edition Availability Suite Data Replication
ha-cluster/geo/replication/data-guard	Oracle Solaris Cluster Geographic Edition Data Guard Data Replication
ha-cluster/geo/replication/sbp	Oracle Solaris Cluster Geographic Edition Script Based Plug-in Replication
ha-cluster/geo/replication/srdf	Oracle Solaris Cluster Geographic Edition SRDF Data Replication
ha-cluster/geo/replication/zfs-sa	Oracle Solaris Cluster Geographic Edition Sun ZFS Storage Appliance
ha-cluster/group-package/ha-cluster-geo-full	Oracle Solaris Cluster Geographic Edition full group package
ha-cluster/group-package/ha-cluster-geo-incorporation	Oracle Solaris Cluster Geographic Edition incorporation group package

- Configuration – You can perform all administration tasks on a cluster that is running the Geographic Edition software without causing any nodes or the cluster to fail. You can install, configure, start, use, stop, and uninstall the Geographic Edition software on an operational cluster. See [Chapter 4, “Administering Access and Security,”](#) in *Oracle Solaris Cluster Geographic Edition System Administration Guide*.

## Security Features

This section contains information about specific security mechanisms offered by Geographic Edition.

A secure installation uses the following critical security features:

- Role-Based Access Control (RBAC) – Geographic Edition software bases its RBAC profiles on the RBAC rights profiles that are used in the Oracle Solaris Cluster software. You must become an administrator who is assigned the User Security rights profile to change most of the security attributes of a role. Assume the root role and use the RBAC roles of `solaris.cluster.geo.modify`, `solaris.cluster.geo.admin`, and `solaris.cluster.geo.read` to access the cluster. For more information, see [“How to Use Your Assigned Administrative Rights”](#) in *Oracle Solaris 11.1 Administration: Security Services* and [“Geographic Edition Software and RBAC”](#) in *Oracle Solaris Cluster Geographic Edition System Administration Guide*.

- Security Certificates – During installation, the cluster is configured for secure cluster communication by using security certificates (nodes within the same cluster must share the same security certificates). The communication between clusters in a Geographic Edition partnership is secured through the Java Management Extensions (JMX) port with Secure Sockets Layer (SSL) using the security certificates. For more information, see [“Configuring Trust Between Partner Clusters”](#) in *Oracle Solaris Cluster Geographic Edition Installation Guide*.
- Common Agent Container – To enable a zone cluster to function as a member of a Geographic Edition partnership, the common agent container must be manually configured within the zone cluster. For more information, see [“Preparing a Zone Cluster for Partner Membership”](#) in *Oracle Solaris Cluster Geographic Edition Installation Guide*.
- IP Security Architecture (IPsec) – Use IPsec to configure secure TCP/UDP heartbeat communications between partner clusters. For more information, see [“Configuring Secure Cluster Communication Using IPsec”](#) in *Oracle Solaris Cluster Geographic Edition System Administration Guide*.

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