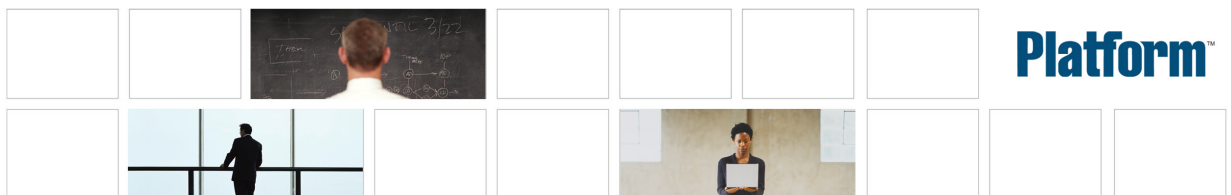

Planning and Installing Your Cluster on Windows

Platform EGO
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Installation Summary

This is a summary of the steps to take when creating a small production cluster.

This book describes how to build a production-ready cluster. A specific example is provided as a guide. If you understand this example, you can adjust the procedures as required at your site to build your own cluster.

Sample production cluster data

Read this example to understand how to create a small cluster that can grow into a regular production cluster with master host failover.

For simplicity, our cluster uses the following default settings:

- The cluster administrator domain account is `DOMAIN\egoadmin`
- The cluster name is `cluster1`
- The installation directory is `C:\EGO`
- The communication ports are `7869-7873`
- The web server ports are `8080`, `8005`, and `8009`
- The service director port is `53`
- The web service gateway port is `9090`

Our cluster has the following custom characteristics:

- The cluster administrator domain account belongs to the Local Administrators group on each host.
- All management hosts have access to a shared file system
- All hosts run Windows
- All hosts belong to the same domain
- Master host failover is enabled

Our cluster has the following hosts:

- Host M, the master host
- Host F, the file server host for the shared file system
- Host C, a compute host
- Host D, a management host that is a master candidate host

In addition, the Reporting feature uses a database host that is located outside of the cluster.

We will set up the master host and test that necessary services have started. We will add a compute host to the cluster. We will add a master candidate host and enable failover in the cluster. Once these important steps are done, we can expand the cluster by adding more management or compute hosts.

Sample production cluster installation

1. Plan and prepare your cluster (see Plan Your Cluster)

The following is a summary of what you should do:

1. Create the `DOMAIN\egoadmin` account.
2. On `Host F` (the file server host), prepare the shared configuration directory.

For example:

```
\\HostF\EGOshare
```

3. On `Host M` and `Host D` (the management hosts), free the web server ports, 8080, 8005, and 8009; the service director port, 53; and the web service gateway port, 9090.
4. On all hosts in the cluster (`Host M`, `Host C`, `Host D`):

1. Free the communication ports.

For example, free ports 7869-7872.

2. Make sure the installation directory is available.

For example, `C:\EGO` is empty or does not exist.

5. On the database host, create the database schema.

2. Install the master host (see Install the Master Host)

The following is a summary of what to do on `Host M` (the master host):

1. Log on as `egoadmin`.
2. Run the MSI package, taking defaults with the following exceptions:

1. Specify the master host `Host M`.
2. Specify the path to the license file.
3. Specify the `egoadmin` password.
4. Disable automatic system services startup.

3. Define the master host as a management host.
4. Install the database driver.
5. Configure the database connection.
6. Start and test the master host.
7. Test the web server.
8. Check the reporting services.

3. Install a compute host (see Install a Compute Host)

The following is a summary of what to do on `Host C` (a compute host):

1. Log on as `egoadmin`.
2. Run the MSI package, taking defaults with the following exception:
 - Specify the master host `Host M`.
 - Configure automatic system services startup.
3. Test the compute host.

The cluster should be able to run work.

4. Install a management host that is a master candidate host (see [Install a Management Host and Expand the Cluster](#))

The following is a summary of what to do on Host D (a master candidate host):

1. Log on as `egoadmin`.
2. Run the MSI package, taking defaults with the following exceptions:
 1. Specify the master host Host M.
 2. Disable automatic system services startup.
3. Configure the master candidate host as a management host.

Host D is now a management host, but is not a master candidate host yet.

4. Start and test the management host.
5. Restart the cluster.
6. Use the Console to configure the master failover list.

Host D is now a master candidate host. If Host M fails, Host D should take over as master.

Plan Your Cluster

Before installing EGO, plan your cluster and prepare your systems for installation.

Complete the following steps to plan your cluster:

1. Plan cluster architecture: hosts and host roles.
2. Plan cluster properties.
3. Plan the shared directory.
4. Plan and prepare the database host.

After completing these planning and system preparation steps, you are ready to install and configure EGO.

Understanding clusters

With EGO, a single administrator manages a pool of connected resources.

The first step in using EGO is to install, configure, and start the EGO software on multiple hosts, to make the hosts function together as a single cluster of resources.

Once the cluster is constructed and running, an administrator defines consumers and users, adds resource distribution policies, and makes the cluster ready to serve clients.

An EGO cluster has one master host that controls the rest of the cluster. Clients that interact with the cluster interact with the master host first, then are allocated cluster resources that they can use directly. The software automatically distributes the cluster resources fairly among various competing resource consumers.

Plan cluster architecture: hosts and host roles

Plan your cluster to decide which hosts belong in the cluster and their roles.

Host roles

Hosts in the cluster may be described as the master host, master candidates, management hosts, compute hosts, or the web server host.

Management host

Management hosts belong to the ManagementHosts resource group. These hosts are not expected to execute workload units for users. Management hosts are expected to run services such as the web server and web services gateway. The master host and all master candidates must be management hosts.

A slot is the basic unit of resource allocation, analogous to a "virtual CPU".

Management hosts share configuration files, so a shared file system is needed among all management hosts.

A management host is configured when you run `egoconfig mgghost` on the host. The tag `mg` is assigned to the management host, in order to differentiate it from a compute host.

Compute host

Compute hosts are distributed to cluster consumers to execute workload units. By default, compute hosts belong to the ComputeHosts resource group.

The ComputeHosts group excludes hosts with the `mg` tag, which is assigned to management hosts when you run `egoconfig mgghost`. If you create your own resource groups to replace ComputeHosts, make sure they also exclude hosts with the `mg` tag.

By default, the number of slots on a compute host is equal to the number of CPUs.

Web server host

The web server is the host that runs the Platform Management Console. There is only one web server host; it does not need to be a dedicated host. Any management host in the cluster can be the web server (decided when the cluster starts up).

Database host

The database host is the host that runs the database used for Reporting. For a production cluster, you must use a supported commercial database, and the host does not need to be part of the cluster. Reporting supports Oracle 9i, Oracle 10g, and MySQL 5.x databases.

Host requirements for a large production cluster

Machine requirements depend on the cluster size and workload. The following numbers are for production use.

Machine requirements

- For a management host (which includes the master host), we suggest at least a 1- or 2-CPU (>2.0GHz) computer with 4GB RAM, 30GB storage.
- For a compute host, we suggest at least a 1-CPU (>2.4GHz) computer with 512MB RAM.

Memory and hard drive size depends on the application.

Management host requirements

- The master host should be the most powerful and reliable host.

Decide your cluster architecture

1. Decide which hosts will belong to the cluster.
2. Decide which hosts will be management hosts and identify the important host roles.

If you do not configure hosts to be management hosts, all hosts in the cluster are compute hosts.

- Management hosts
 - Decide which host will be the master host.
 - Decide which additional hosts will be the master candidates.
 - Decide which hosts will be management hosts, but not master candidates.
 - Compute hosts
 - Decide which hosts will be compute hosts only.
3. Decide how many slots you want to have on the management hosts.

Plan cluster properties

Plan properties of the cluster including name, administrator user account, ports, and directories. Prepare the necessary accounts and directories. Check that required ports are free.

What you need to know

- Cluster name
- Cluster administrator
- Connection ports and base port
- Web server ports
- Web service gateway port
- Service director port
- Installation directory

What you need to do

Decide your cluster properties and prepare the hosts.

Cluster name

Every cluster has a name to identify it.

The cluster name appears in the Platform Management Console.

The default cluster name is `cluster1`.

You can customize the cluster name at installation. You cannot change the cluster name after installation.

The cluster name must be 39 characters or less, and cannot contain any white spaces. Do not use the name of any host or user as the name of your cluster.

Cluster name requirements

A suitable name contains:

- Up to 39 characters
- Case-sensitive alphanumeric characters and underscore:
 - `London`
 - `test_grid`
 - `2001`
- No spaces or special characters:
 - `A&B` (special character ampersand (&) is not allowed)
 - `grid 22` (space is not allowed)

Cluster administrator

The cluster administrator is the only person who can manage the entire cluster: start, stop, and manage all hosts. The Local Administrator of the host can start and stop services on one host.

By default, the Windows LocalSystem account is used to run EGO agents on the host. For failover purposes, the cluster administrator account is used on all management hosts, instead of LocalSystem

By default, all EGO containers and EGO system services such as the web server run as the cluster administrator.

The cluster administrator account also owns EGO files.

The same cluster administrator account with the same password must exist on every host in the cluster. It may be difficult to modify the account after installation, so we suggest creating a dedicated account with user name `egoadmi n`. You must create the account before you start the installation. The account requires the following privileges on each host:

- Act as part of the operating system
- Debug programs
- Increase quotas
- Log on as a service
- Replace a process level token

Tip:

The `egoadmi n` account should belong to the Local Administrators group on each host.

Whenever documentation refers to the `egoadmin` account, it means the cluster administrator account on the domain. Substitute the correct name if you use a different account as cluster administrator.

Connection ports and base port

On every host, a set of connection ports must be free for use by EGO components.

EGO requires exclusive use of certain ports for communication. EGO uses the same five consecutive ports on every host in the cluster. The first of these is called the base port.

The default base connection port is 7869. EGO always uses five consecutive ports starting from the base port. By default, EGO uses ports 7869-7873.

The ports can be customized by customizing the base port. For example, if the base port is 6880, EGO uses ports 6880-6884.

EGO needs the same ports on every host, so you must specify the same base port on every host.

To change the base port after installation, shut down the cluster and use the `egoconfi g setbaseport` command on each host in the cluster. Start the cluster to use the new connection ports.

Web server ports

On the web server, a set of ports must be free for use by EGO components.

EGO requires exclusive use of three communication ports on the web server. By default, EGO uses ports 8080, 8005, and 8009.

The first port is the client connection port. You must know this port to connect to the Platform Management Console.

The other ports are for administration.

Since the web server might run on any management host in the cluster, the web server ports must be free on all management hosts.

The ports can be customized by editing the Tomcat web server configuration files, for example, by editing `C:\EGO\gui\tomcat\conf\server.xml` and `C:\EGO\gui\conf\wsm.conf`

Web service gateway port

On the host that runs the web service gateway, one port must be free for use by EGO components.

EGO requires exclusive use of a communication port on the web service gateway. By default, EGO uses port 9090.

Since the web service gateway might run on any management host in the cluster, the web service gateway port must be free on all management hosts.

This port can be customized by editing the web service gateway configuration file, `wsg.conf` in the configuration directory, to specify a custom value for `wsg_port`.

Service director port

On the host that runs the service director, one port must be free for use by EGO components.

EGO requires exclusive use of port 53 on the service director. This value cannot be changed.

Since the service director might run on any management host in the cluster, port 53 must be free on all management hosts.

Installation directory

The installation directory is the directory where the EGO binaries are installed on a host.

The installation directory must be the same directory on every host.

The default installation directory is `C:\EGO`. To use a different directory, you must customize the installation.

The installer creates the installation directory if it does not already exist. If it does exist, make sure it is not already in use.

Remember:

Do not confuse the installation directory with the shared directory. For management hosts, some shared files such as configuration files are maintained in the common shared directory instead of in the installation directories on each host.

Decide your cluster properties and prepare the hosts

1. Decide a cluster name.

If you do not choose the default, you will have to customize the installation.

Default name: `cluster1`

2. Create the cluster administrator account on all hosts.

Choose an account that works for all hosts.

We recommend using `DOMAIN\egoadmin`.

3. Ensure that all the cluster connection ports are free on all hosts.

Choose a base port that works for all hosts. If you do not choose the defaults, you will have to customize the installation.

Default base port: 7869

4. Ensure that the web server ports are free on all management hosts.

If you cannot use the default ports, you will have to edit the Tomcat server configuration.

Default web server ports: 8080, 8005, 8009

5. Ensure that the web service gateway port is free on all management hosts.

If you cannot use the default port, you will have to edit `wsg.conf` after installation.

Default web service gateway port: 9090.

6. Ensure that the service director port is free on all management hosts.

Service director port: 53

7. Ensure that the installation directory is free on all hosts.

Choose a directory that works for all hosts. If you cannot use the default, you will have to customize the installation.

Default installation directory: `C: \EGO`

Plan the shared directory

Decide on a file server host and create the shared directory.

What you need to know

- Master host failover
- Configuration directory

What you need to do

- Prepare the shared directory

Master host failover

During master host failover, the system is unavailable for a few minutes while hosts are waiting to be contacted by the new master.

The master candidate list defines which hosts are master candidates. By default, the list includes just one host, the master host, and there is no failover. If you configure additional candidates to enable failover, the master host is first in the list. If the master host becomes unavailable, the next host becomes the master. If that host is also unavailable, the next host is considered to become the master, and so on down the list. A short list with two or three hosts is sufficient for practical purposes.

For failover to work properly, the master candidates must share a file system and the shared directory must always be available.

Important:

The shared directory should not reside on a master host or any of the master candidates. If the shared directory resides on the master host and the master host fails, the next candidate cannot access the necessary files.

Shared directory

The shared directory contains important system files where they are accessible to all management hosts.

Do not confuse the shared directory with the configuration directory. The shared directory on the file server contains the configuration directory and other important files and directories.

If you want work in the system to continue in case of failover, the master candidates must share a file system and some important files must be available on the shared file system.

For example, if a file is on the master host and the master host fails, failover does not work because the next candidate cannot access the necessary file. If the file is on a different host, the new master host can update the file.

The shared directory contains all the files and directories that must be shared among management hosts.

The file server is the host where the shared directory is located. The file server host does not have to belong to the cluster.

By default, all files are located under the installation directory on the host.

When you configure the master as a management host, some files and directories are copied to the shared directory and modified. All hosts configured as management hosts will use files under the shared directory.

Create and share the shared directory before you run `egoconfig mgghost` to configure a management host.

Configuration directory

The configuration directory contains important configuration files.

Do not confuse the configuration directory with the shared directory. The shared directory contains the configuration directory and other important files and directories.

If you want work in the system to continue in case of failover, the master candidates must share a file system and some important files must be available on the shared file system.

For example, if the configuration directory is on the master host and the master host fails, failover does not work because the next candidate cannot access necessary files. If the configuration directory is on a different host, the new master can use the same files.

Directory location

At first, configuration files are located under the installation directory on the master host.

For example, the default configuration directory is `C:\EGO\kernel\conf`.

When the master host is configured as a management host, the configuration directory is copied to the shared directory. All hosts configured as management hosts will use the configuration directory under the shared directory.

For example, the shared configuration directory becomes `\\HostF\EGOshare\kernel\conf`.

Prepare the shared directory

Set up the shared directory on the file server host.

1. Log on to the file server host.

Choose a stable host as the file server.

Important:

The file server host where the shared directory resides should not be the master host or a master candidate host.

2. Create and share a directory.

For example, create and share the following directory in file server host HostF: `C:\EGOshare`.

This directory is shared as `\\HostF\EGOshare`.

3. Give the cluster administrator account (egoadmin) full read and write permissions for the shared directory.

Plan and prepare the database host

Decide on a commercial database and prepare the database host for Reporting.

What you need to know

- Database host

What you need to do

- Prepare the database host

Prepare the database host

Prepare the database host for the reporting feature.

The commercial database is properly configured and running:

- You have a user name, password, and URL to access the database host.
- There is appropriate space in the database allocated for the reporting feature.

1. Obtain the `egodata.a.sql` script for your commercial database from Platform.
2. Run the script to create a database schema.

- For Oracle databases:

```
sqlplus user_name/password@connect_string @egodata.sql data_tablespace
index_tablespace
```

- For MySQL databases:

```
mysql --user=user_name --password=password --database=report_database <
egodata.sql
```

where

- *user_name* is the user name on the database host.
- *password* is the password for this user name on the database host.
- *connect_string* is the named SQLNet connection for this database.
- *data_tablespace* is the name of the tablespace where you intend to store the table schema.
- *index_tablespace* is the name of the tablespace where you intend to store the index.
- *report_database* is the name of the database to store the report data.

The report data will load into the database host and the Console will use the data in this database.

Install the Master Host

Set up a Windows host as the master host.

The following steps summarize installation on the master host

1. Obtain the necessary files:
 - Obtain the MSI package
 - Obtain an EGO license
2. As `egoadmi n`, deploy the software:
 1. Run the MSI package on the master host.
3. As `egoadmi n`, configure and test the master host:
 1. Define the host as a master host.
 2. Install the database driver.
 3. Configure the database connection
 4. Start the host.
 5. Test that a management host was added to the cluster.
 6. Test the web server.
 7. Check the reporting services.

Next: Add a compute host to your cluster, as described in [Install a Compute Host](#).

Install the Master Host

Obtain the MSI package

EGO has one MSI package for Windows hosts. This package is named `ego1.2.3-win32.msi`

Obtain an EGO license

You need to install an EGO license to use your cluster.

You can get two types of licenses:

Demo license

This is a temporary license to be used for evaluation purposes. Contact Platform Computing to obtain a demo license.

Permanent license

This license is granted after you purchase it from Platform Computing.

Tip:

Before installing, you should copy your licence to a location that you can easily access from the master host. You will need to locate this file to configure your license.

Run the MSI package on the master host

Check the following:

- You have the EGO MSI package.
- You have a valid EGO license file.
- Your Windows operating system is using MSI 2.0 or later.

The EGO MSI package does not support MSI 1.0.

Tip:

Run `msiexec` to determine your version of MSI.

- You have access to an account that is a member of the Local Administrators group, for example, `egoadmin`.
- That the installation directory does not exist or is empty.

The default installation directory is `C:\EGO`.

- The required connection ports are not in use.

The default base connection port is 7869. EGO uses five consecutive ports starting from this base port (7869-7873)

Tip:

Run `netstat -an` to see if ports are in use.

- The required web server ports are not in use.

The default web server ports are 8080, 8005, and 8009.

- That the required web service gateway port is not in use.

The default web service gateway port is 9090.

- That the required service director port is not in use.

The service director port is 53.

- The cluster administrator account exists.

You can install two ways:

- Interactive installation.
- Silent installation.

Interactive installation

If you customize the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding more hosts to the cluster.

1. Log on to the master host as a Local Administrator account.
For example, log on as `DOMAIN\egoadmin`.
2. Run the MSI package by double-clicking the MSI file.
3. At the Master Host dialog, specify the name of your master host (Host M) and click Next.
4. At the License File dialog, specify the location of your license file and click Next.

For example, `C:\Temp\license.dat`.

5. At the Cluster Name dialog, specify the name of your cluster and click Next.
The default is `cluster1`.
6. At the Cluster Administrator dialog, specify the name and password of your cluster administrator and click Next.
The default is the current account. For example, `DOMAIN\egoadmin`.
7. At the Installation Directory dialog, specify the path to the installation directory and click Next.
For example, `C:\EGO`.
8. At the Connection Base Port dialog, specify the connection base port and click Next.
The default is 7869.
9. At the Startup dialog, clear the check box and click Next.
The default is to enable Start system services after installation. In our example, clear the check box.
10. At the Summary dialog, review your settings and click Install.

After you complete the installation process, you may delete the license file from your temporary directory.

Silent installation

If you customize the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding more hosts to the cluster.

Ensure the information you specify is free from typographical errors: the installation will not continue if there are errors within parameter entries.

1. Log on to the master host as a Local Administrator account and install the MSI package. Use parameters to customize the installation as desired.
For example, log on as `DOMAIN\egoadmin`.
2. For the `DBHOST` parameter, specify the name of your production database host (Host Q).
For example, `DBHOST=Host Q`.
3. For the `MASTERHOST` parameter, specify the name of your master host (Host M).
For example, `MASTERHOST=Host M`.
4. For the `LICENSEFILE` parameter, specify the path to your license file.
For example, `LICENSEFILE=C:\Temp\license.dat`.
5. For the `CLUSTERNAME` parameter, specify the name of your cluster.
The default is `cluster1`, which you don't need to change in our example.
6. For the `CLUSTERADMIN` parameter, specify the name of your cluster administrator.
The default is the current account, which you don't need to change in our example. For example, `DOMAIN\egoadmin`.
7. For the `ADMINPASSWD` parameter, specify the password of your cluster administrator.
For example, `ADMINPASSWD=mypasswd`.

This password must be the actual password of the account. The installer does not verify the password.

8. For the INSTALLDIR parameter, specify the path to the installation directory.

The default is C: \EGO, which you don't need to change in our example.

9. For the BASEPORT parameter, specify the connection base port.

The default is 7869.

10. For the STARTUP parameter, specify Yes to start services automatically or No to disable this feature.

The default is Yes. For our example, use STARTUP=No.

Using our example:

```
msiexec -i "C:\EGO\ego1. 2. 3_win32.msi" DBHOST=HostQ  
MASTERHOST=HostM LICENSEFILE=C:\Temp\license.dat  
ADMINPASSWD=mypasswd STARTUP=No /qn
```

After you complete the installation process, you may delete the license file from your temporary directory.

Configure and test the master host

You have installed EGO on the master host. You are logged on as `egoadmi n`.

Complete the following steps to configure the master host:

1. Define the host as a master host.
2. Install the database driver.
3. Configure the database connection.
4. Start the host.
5. Test that a management host was added to the cluster.
6. Test the web server.
7. Check the reporting services.

Define the host as a master host

Make the host a master host.

What you need to know

- Host roles
- Shared directory

Define a management host

You are logged on as `egoadmi n`.

Take this step on every management host, including all master candidates.

1. Start the command console.
2. Run the `egoconfig mghost` command:

`egoconfig mghost shared_dir user_name password`

Where *shared_dir* is the shared directory that contains important files such as configuration files to support failover, *user_name* is the `egoadmi n` account, and *password* is the `egoadmi n` password.

For example:

```
egoconfig mghost \\HostF\EG0share DOMAI N\egoadmi n mypasswd
```

After you run `egoconfig mghost`, the host:

- Has access to important system files on the shared directory
- Belongs to the ManagementHosts resource group.
- Uses `egoadmi n` to run services instead of the Windows Local System account.

Remember:

The shared directory is the same for all management hosts.

The configuration does not take effect until you close and re-open the command console to reset the environment.

Install the database driver

Install the driver for your commercial database.

The commercial database is properly configured and running.

1. Download and install the latest JDBC driver for your commercial database.
 - If you are using an Oracle database, the latest driver is `ojdbc14.jar` or newer and is available from the following URL:
http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html
 - If you are using a MySQL database, the latest driver is `mysql-connector-java-3.1.12-bin.jar` or newer and is available from the following URL:
<http://dev.mysql.com/downloads>
2. If you are using the Oracle database, copy the Oracle JDBC driver into the PERF and GUI library directories.

You need to copy the Oracle JDBC driver to the following directories:

- `EGO_TOP\perf\common\lib`
- `EGO_TOP\gui\tomcat\webapps\perfgui\WEB-INF\lib`

Configure the database connection

You have a user name, password, and URL to access the database host.

Launch the database configuration tool to configure your database connection.

1. Launch the database configuration tool.

Run **dbconfig**.

2. In the User ID and Password fields, specify the user account name and password with which to connect to the database and to create your database tablespaces.

This user account must have been defined in your database application, and must have read and write access to the database tables. In general, this is the name you used to create your tablespaces.

3. In the JDBC driver field, select the driver for your commercial database.
4. In the JDBC URL field, enter the URL for your database.

This should be similar to the format given in Example URL format.

5. In the Maximum connections field, specify the maximum allowed number of concurrent connections to the database server.

This is the maximum number of users who can produce reports at the same time.

Start the host

Start EGO on the Windows host.

You are logged on as `egoadmin`.

To start the local EGO Windows host, perform the following steps:

1. Start the command console.
2. Start EGO:

egosh ego start

You have now started EGO on the host.

Test that a management host was added to the cluster

1. Start the command console.
2. Look for the host in the ManagementHosts group in your cluster:

egosh resource group ManagementHosts

If you can see the host name in the Resource List, the host is successfully added to the cluster and configured as a management host.

Note:

This test only detects hosts that are running.

Test the web server

Check that the following is true:

- You installed and configured the software on the master host.
 - You started the master host.
1. Launch any web browser and visit the Platform Management Console page in your master host.
 http: // *master_host_name*: 8080/Platform
- If you see the Platform Management Console web page, your web server is running.
2. Log on to the Console and check host status (optional):
 - a) User Name: Admin
 - b) Password: Admin
 - c) On the Cluster Health section of the Cluster Health Dashboard, check the host status of the master host is ok.

Note:

This may take several minutes, depending on your cluster and host configuration.

Check the reporting services

Check that the reporting services are running.

1. Run egosh to view the status of your services.
egosh service list
2. Check that the status of the pl c and purger services are STARTED.

Install a Compute Host

Set up a Windows host as a compute host.

1. Obtain the necessary files:
 1. Obtain the MSI package.
2. As `egoadmi n`, deploy the software:
 1. Run the MSI package on the compute host.
3. As `egoadmi n`, test the host in the cluster:
 1. Test that the host was added to the cluster.

Your cluster is ready to run work.

Tip:

Repeat these steps to add more compute hosts to your cluster. You can also add a management host, as described in [Install a Management Host](#).

Obtain the MSI package

EGO has one MSI package for Windows hosts. This package is named `ego1.2.3-win32.msi`

Run the MSI package on the compute host

Check the following:

- You have the EGO MSI package
- Your Windows operating system is using MSI 2.0 or later.

The EGO MSI package does not support MSI 1.0.

Tip:

Run `msiexec` to determine your version of MSI.

- You have access to an account that is a member of the Local Administrators group, for example, `egoadmin`.
- The installation does not exist or is empty.

The default installation directory is `C:\EGO`.

- The required connection ports are not in use.

The default base connection port is 7869. EGO uses five consecutive ports from this base port (7869-7873).

Tip:

Run `netstat -a | find <port_number>` and if nothing returns, `<port_number>` is free.

- The cluster administrator account exists.

You can install two ways:

- Interactive installation.
- Silent installation.

Interactive installation

If you customized the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding additional hosts to the cluster. Do not take the default settings when adding another host if you customized the installation on the master host.

1. Log on to the compute host as a Local Administrator account.

For example, log on as `DOMAIN\egoadmin`.

2. Run the installation package by double-clicking the MSI file.
3. At the Installation Directory dialog, specify the path to the installation directory and click Next.

For example, `C:\EGO`.

4. At the Master Host dialog, specify the name of your master host and click Next.

For example, `HostM`.

5. At the Install Type dialog, choose the type of installation.

Choose `Compute host only`.

6. At the Cluster Administrator dialog, specify the name of your cluster administrator and click Next.

The default is the current account from which you logged in to your host. For example, `DOMAIN\egoadmin`.

Important:

This cluster administrator name must be the same as the cluster administrator name you specified when you installed on the master host.

7. At the Connection Base Port dialog, specify the connection base port and click Next.

The default is 7869.

Important:

This base port must be the same as the base port you specified when you installed on the master host.

8. At the Startup dialog, click Next.

The default is to enable Start system services after installation.

9. At the Summary dialog, review your settings and click Install.

Silent installation

If you customized the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding another host to the cluster. Do not take the default settings when adding another host if you customized the installation on the master host.

Ensure the information you specify is free from typographical errors: the installation will not continue if there are errors within parameter entries.

1. Log on to the compute host as a Local Administrator account and install the MSI package. Use parameters to customize the installation as desired.

For example, log on as `DOMAIN\egoadmin`.

2. For the `INSTALLDIR` parameter, specify the path to the installation directory.

The default is `C:\EGO`.

3. For the `MASTERHOST` parameter, specify the name of your master host.

For example, `MASTERHOST=HostM`.

4. For the `HOSTTYPE` parameter, specify the type of installation, `Management` for the full installation or `Compute` to install a compute host only.

For example, `HOSTTYPE=Compute`.

5. For the `CLUSTERADMIN` parameter, specify the name of your cluster administrator.

The default is the current account from which you logged in to your host. For example, `DOMAIN\egoadmin`.

Important:

This cluster administrator name must be the same as the cluster administrator name you specified when you installed on the master host.

6. For the `BASEPORT` parameter, specify the connection base port.

The default is 7869.

Important:

This base port must be the same as the base port you specified when you installed on the master host.

7. For the STARTUP parameter, specify Yes to start services automatically or No to disable this feature.

The default is Yes.

Using our example:

```
msiexec -i "ego1.2.3_win32.msi" MASTERHOST=HostM  
HOSTTYPE=Compute /qn
```

Using all possible variables:

```
msiexec -i "ego1.2.3_win32.msi" MASTERHOST=HostM  
HOSTTYPE=Compute CLUSTERADMIN=egoadmin INSTALLDIR=C:\EGO  
BASEPORT=7869 STARTUP=Yes /qn
```

After the silent installation, even if you have logged on as egoadmin, close and re-open the command console to reset the environment.

Test that the host was added to the cluster

You installed EGO on the host. You are logged in as `egoadmi n`.

1. Run `egosh resource list` to see the resources in your cluster.

Look for the host you added in the list of the resources.

If you can see the host name in the list of resources, that host was successfully added to the cluster.

This test detects hosts even if the host is not currently available. Some hosts may take a while to become available after they are added to the cluster.

Install a Management Host

Set up a Windows host as a management host.

The following steps summarize installation on a management host

1. Obtain the necessary files:
 1. Obtain the MSI package
2. As `egoadmi n`, deploy the software:
 1. Run the MSI package on a management host.
3. As `egoadmi n`, configure and test the management host:
 1. Define a management host.
 2. Start the host.
 3. Restart the Windows cluster.
 4. Test that a management host was added to the cluster.

Obtain the MSI package

EGO has one MSI package for Windows hosts. This package is named `ego1.2.3-win32.msi`

Run the MSI package on a management host

Check the following:

- You have the EGO MSI package.
- Your Windows operating system is using MSI 2.0 or later.

The EGO MSI package does not support MSI 1.0.

Tip:

Run `msiexec` to determine your version of MSI.

- You have access to an account that is a member of the Local Administrators group, for example, `egoadmin`.
- The installation directory does not exist or is empty.

The default installation directory is `C:\EGO`.

- The required connection ports are not in use.

The default base connection port is 7869. EGO uses five consecutive ports from this base port (7869-7873).

- The required web server ports are not in use.

The default web server ports are 8080, 8005, and 8009.

- The required web service gateway port is not in use.

The default web service gateway port is 9090.

- The required service director port, port 53, is not in use.
- The cluster administrator account exists.
- You have turned off real-time anti-virus checking.

Doing this prevents performance degradation and other problems (in some cases, anti-virus software will lock files while scanning them, creating the potential for problems to arise). If periodic scans are required, a best practise is to schedule these during periods of cluster downtime.

You can install two ways:

- Interactive installation.
- Silent installation.

Interactive installation

If you customize the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding a host to the cluster. Do not take the default settings when adding a host if you customized the installation on the master host.

1. Log on to the management host as a Local Administrator account.

For example, log on as `DOMAIN\egoadmin`.

2. Run the installation package by double-clicking the MSI file.
3. At the Master Host dialog, specify the name of your master host and click Next.

For example, `HostM`.

4. At the Install Type dialog, click Next.

The default is Full installation.

5. At the Cluster Name dialog, specify the name of your cluster and click Next.

The default is cluster1.

Important:

This cluster name must be the same as the cluster name you specified when you installed on the master host.

6. At the Cluster Administrator dialog, specify the name of your cluster administrator and click Next.

The default is the current account. For example, DOMAIN\egoadmin.

Important:

This cluster administrator name must be the same as the cluster administrator name you specified when you installed on the master host.

7. At the Installation Directory dialog, specify the path to the installation directory and click Next.

For example C:\EGO.

8. At the Connection Base Port dialog, specify the connection base port and click Next.

The default is 7869.

Important:

This base port must be the same as the base port you specified when you installed on the master host.

9. At the Startup dialog, clear the check box and click Next.

The default is to enable Start system services after installation. In our example, clear the check box.

10. At the Summary dialog, review your settings and click Install.

Silent installation

If you customize the cluster name, cluster administrator, installation directory, or ports, you must use the same settings when adding a host to the cluster. Do not take the default settings when adding a host if you customized the installation on the master host.

Ensure the information you specify is free from typographical errors: the installation will not continue if there are errors within parameter entries.

1. Log on to the management host as a Local Administrator account and install the MSI package. Use parameters to customize the installation as desired.

For example, log on as DOMAIN\egoadmin.

2. For the MASTERHOST parameter, specify the name of your master host.

For example, MASTERHOST=HostM

3. For the HOSTTYPE parameter, specify Management for the full installation.

The default is Management.

4. For the CLUSTERNAME parameter, specify the name of your cluster.

The default is `cluster1`.

5. For the `CLUSTERADMIN` parameter, specify the name of your cluster administrator.

The default is the current account. For example, `DOMAIN\egoadmin`.

Important:

This cluster administrator name must be the same as the cluster administrator name you specified when you installed on the master host.

6. For the `INSTALLDIR` parameter, specify the path to the installation directory.

The default is `C:\EGO`.

7. For the `BASEPORT` parameter, specify the connection base port.

The default is `7869`.

8. For the `STARTUP` parameter, specify `Yes` to start services automatically or `No` to disable this feature.

The default is `Yes`. For our example, use `STARTUP=No`.

Using our example:

```
msiexec -i "ego1.2.3_win32.msi" MASTERHOST=HostM  
STARTUP=No /qn
```

After the silent installation, even if you have logged on as `egoadmin`, close and re-open the command console before you define the host as a management host.

Configure and test a management host

You have installed EGO on the host using the full installation option. You are logged on as `egoadmi n`.

Complete the following steps to configure the management host:

1. Define a management host.
2. Start the host.
3. Restart the Windows cluster.
4. Test that a management host was added to the cluster.

Define a management host

You are logged on as `egoadmi n`.

Take this step on every management host, including all master candidates.

1. Start the command console.
2. Run the `egoconfi g mghost` command:

```
egoconfig mghost shared_dir user_name password
```

where *shared_dir* is the shared directory that contains important files such as configuration files to support failover, *user_name* is the `egoadmi n` account, and *password* is the `egoadmi n` password.

For example:

```
egoconfig mghost \\HostF\EGOshare DOMAIN\egoadmin mypasswd
```

After you run `egoconfi g mghost`, the host:

- Has access to important system files on the shared directory
- Belongs to the ManagementHosts resource group.
- Uses `egoadmi n` to run services instead of the Windows Local System account.

Remember:

The shared directory is the same for all management hosts.

The configuration does not take effect until you close and re-open the command console to reset the environment.

Start the host

Start EGO on the Windows host.

You are logged on as `egoadmi n`.

To start the local EGO Windows host, perform the following steps:

1. Start the command console.
2. Start EGO:

```
egosh ego start
```

You have now started EGO on the host.

Restart the Windows cluster

Log on as `egoadmin`. If the master is up, log on to any host in the cluster; if the master is down, log on to a management host.

1. Restart all hosts in the cluster:

`egosh ego restart all`

Test that a management host was added to the cluster

1. Start the command console.
2. Look for the host in the ManagementHosts group in your cluster:

`egosh resource group ManagementHosts`

If you can see the host name in the Resource List, the host is successfully added to the cluster and configured as a management host.

Note:

This test only detects hosts that are running.



Expand the Cluster

Complete these steps to expand your cluster:

To expand a functional cluster, you should add management hosts as master candidates and enable failover, then add remaining management hosts and compute hosts as your workload demands.

1. Enable master host failover
2. Add hosts to the cluster

Enable master host failover

1. Add one or more master candidates and configure them as management hosts.

Complete the steps in [Install a Management Host](#) to install and test additional management hosts.

2. Use the Management Console to configure the master candidate list and failover order.

Complete the steps in [Set your master candidates](#).

Set your master candidates

You must be a cluster administrator.

You can modify the order of the hosts in the candidate list (this is the list which specifies the management host(s) in line to become the new master in situations where the existing master host becomes unavailable). You can also change the master host.

1. Click **Cluster > Configure Master Candidates**.
2. To add hosts to your candidate list, select one or more hosts and click **Add**.
Use **SHIFT** or **CTRL** while you are clicking to select more than host at a time.
3. To remove any hosts from the candidate list, click the host name and **Remove**.

You cannot remove the master host from this list. The master host is at the top of the list by default when you navigate to this page.

4. Change the order of the candidates using **Up** and **Down**.

You can move the master host from the top of the list, however you cannot remove master host from the list.

5. When you have the hosts you want in the order you want, click Apply.

Changing and saving the order of your candidates restarts your cluster.

The hosts you want as master and master candidates are now set in the order you want them to failover. Your cluster automatically restarts so the changes take effect.

Add hosts to the cluster

Complete the following steps to add more hosts to your cluster:

- Repeat the steps in Install a Management Host to install and test additional management hosts.
- Repeat the steps in Install a Compute Host to install and test additional compute hosts.

Install a Linux Compute Host

Add Linux compute hosts to a Windows cluster. A mixed cluster is useful if you have cross-platform applications that can run on either Linux or Windows.

Contents

1. What you need to know
2. Installing EGO on a Linux host
3. Managing the mixed cluster after installation

1. What you need to know

To expand the cluster, you can add Linux compute hosts to the Windows cluster. This kind of mixed cluster is for advanced users.

When you plan a mixed cluster, you must be aware of the following points.

a) Supported hosts

It is required that all Linux hosts run the same versions of kernel and glibc.

For a compute host, we suggest at least a 1-CPU (>2.4GHz) machine with 512MB RAM. Memory and hard drive size depends on the application.

b) Cluster administrator account

To support Linux hosts, the cluster requires a Linux OS user account as cluster administrator (egoadmi n). The Linux egoadmi n account must exist on every Linux host and have the same name as the Windows egoadmi n account. For example, if the actual Windows account name is . \newadmi n or DOMAI N\newadmi n, the Linux account name is newadmi n.

The Linux cluster administrator is the only non-root account that has permission to manage Linux hosts in the cluster. The account owns most EGO files on Linux.

You must create the egoadmi n account before you start the installation.

d) Installation directory

The Linux installation directory is the directory where the EGO binaries are installed on a Linux host. It does not need to have the same name as the Windows installation directory.

The installation directory must be the same directory on every host.

The default installation directory is `/opt/ego`. To use a different directory, you must customize the installation.

The installer creates the installation directory if it does not already exist. If it does exist, make sure it is empty.

e) Other considerations

When you install on the Linux host:

- use the same base port as Windows hosts (to check the base port, see `EGO_LIM_PORT` in `%EGO_CONFDIR%/ego.conf` on the master host)
- use the same cluster name as Windows hosts (the cluster name is displayed in the Platform Management Console and is part of the file name `%EGO_CONFDIR%/ego.cluster.cluster_name`)

2. Installing EGO on a Linux host

Install the software on each Linux compute host.

When you install on Linux hosts, joining the cluster and starting the host is a manual process. The installation process is not complete until you configure a host.

Obtain RPM package

Choose the RPM package according to the operating system you are installing on.

EGO compute host packages

Each operating system version has a separate RPM package. Obtain the package to match your host. Compute host packages have `computehost` in the file name. For example for x86 hosts running Linux 2.4 with glibc version 2.3, install the package named `egocomputehost-linux2.4-glibc2.3-x86-1.2.3.nnnnnn.rpm`

RPM package for required operating system version

Each operating system version has a separate RPM package. Obtain the package to match your host.

For example, for x86 hosts running Linux 2.4 with glibc version 2.3, install the package named `ego-linux2.4-glibc2.3-x86-1.2.3.nnnnnn.rpm`.

Find your RPM version

To find out which version of RPM you are using, use the `rpm --version` option. Different versions of RPM require different options to install the packages.

For example:

rpm --version

RPM version 4.2.3

Deploy the software on the compute host

Check the following:

- That you are logged on as root.
- That the Linux cluster administrator account exists with the same name as the Windows account.

The default cluster administrator is `egoadmi n`.

- That the installation directory does not exist or is empty.

The default installation directory is `/opt/ego`.

- That the required connection ports are not in use. You must use the same ports as the Windows hosts.

The default base connection port is 7869. EGO uses five consecutive ports from this base port (7869-7873)

Complete the following steps to deploy the software.

1. Customize cluster properties (optional).
2. Run RPM.
3. Set the command-line environment.
4. Set up automatic system startup (optional).
5. Grant root privileges to a cluster administrator

Customize cluster properties (optional)

Customize the cluster properties at installation by setting variables to specify the cluster administrator, the cluster name, and the base connection port.

Setting these variables is optional; if the default settings are acceptable, you can install without configuring any of these variables.

Set custom variables for installation

Set custom variables before installation if you wish to customize the cluster properties.

You can set environment variables according to your login shell. If you do not wish to use environment variables, create a simple text file `/tmp/install.config` and enter each variable on a new line. An environment variable is ignored if the same variable is set in the cluster properties configuration file.

- For sh, ksh, or bash: **export** *VARIABLE_NAME=value*
- For csh or tcsh: **setenv** *VARIABLE_NAME value*
- In `install.config`: *VARIABLE_NAME=value*
- To define the cluster name, set the CLUSTERNAME variable.

Default cluster name: `cluster1`

For example:

setenv CLUSTERNAME cluster1

- To define the cluster administrator account, set the CLUSTERADMIN variable.

Default user account: `egoadmi n`

setenv CLUSTERADMIN user1

For example:

- To define the base connection port, set the BASEPORT variable.

Default base port: 7869

For example:

setenv BASEPORT 7890

Run RPM

You can install two ways:

- Install to the default installation directory.
- Install to a custom installation directory.

Install to the default installation directory

1. Run RPM using the default installation options:

rpm -ivh *package_name*.rpm

package_name.rpm is the name of the RPM package.

For example:

rpm -ivh egocomputehost-linux2.4-glibc2.3-x86-1.2.3-*nnnnnn*.rpm

Install to a custom installation directory

1. Run RPM and specify the installation directory:

- For RPM version 4.2.x or later and all versions of RPM which support the --prefix option:

rpm -ivh --prefix *install_dir* *package_name*.rpm

- *install_dir* is the installation directory
- *package_name*.rpm is the name of the RPM package

For example:

rpm -ivh --prefix /opt/test/ egocomputehost-linux2.4-glibc2.3-x86-1.2.3-*nnnnnn*.rpm

- For RPM version 4.1.x or earlier, if --prefix is not supported, set one more environment variable before you run the package:

setenv RPM_INSTALL_PREFIX *install_dir*

rpm -ivh *package_name*.rpm

- *install_dir* is the installation directory
- *package_name*.rpm is the name of the RPM package

For example: test/

setenv RPM_INSTALL_PREFIX /opt/

rpm -ivh egocomputehost-linux2.4-glibc2.3-x86-1.2.3-*nnnnnn*.rpm

The installer will create the installation directory if it does not already exist.

Set the command-line environment

On Linux hosts, set the environment before you run any EGO commands. You need to do this once for each session you open. Both `root` and `egoadmi n` accounts use EGO commands to configure and start the cluster.

You need to reset the environment if the environment changes during your session, for example, if you run `egoconf i g mghost`, which changes the location of some configuration files.

These examples assume the default installation directory `/opt/ego`.

- For `csch` or `tcsh`, use `cschrc. ego`:
`source /share/ego/kernel/conf/cschrc.ego`
- For `sh`, `ksh`, or `bash`, use `profile. ego`:
`. /share/ego/kernel/conf/profile.ego`

Set up automatic system startup (optional)

Enable EGO to start automatically when the host restarts.

Automatic startup

By default, you must start EGO manually if a host restarts.

Note:

For ease of administration, you should use `egosetrc. sh` to enable automatic startup. This feature starts EGO automatically when the host restarts.

Enabling automatic system startup creates an `ego` link under: `/etc/rc. d/i ni t. d`

Set automatic startup on your host

1. Run the command `egosetrc. sh`.

Grant root privileges to a cluster administrator

Optional. A `root` user within a Linux environment can choose to give root privileges within the cluster to the cluster administrator.

Check the following:

- That you are logged on as `root`.
- That `/etc/ego. sudoers` does not already exist.
- That the cluster administrator account exists.

The default cluster administrator is `egoadmi n`.

By default, only `root` can start, stop, or restart the cluster.

Give root privileges to `egoadmi n` so that `egoadmi n` can start a local host in the cluster, or shut down or restart any hosts in the cluster from the local host. For `egoadmi n` or `root` to start the cluster, or start any hosts specified by name, you need to be able to run `rsh` across all hosts in the cluster without having to enter a password; see your operating system documentation for information about configuring `rsh`.

Do the following to give root privileges to `egoadmi n` for one host. Run the command on each host in the cluster.

1. Run the `egosetsudoers. sh` command.

When you run `egosetsudoers. sh`, it does the following:

It creates the `/etc/ego. sudoers` file. The file owner is `root` and the permissions are set to `600` because you ran this command as `root`. Only the `root` user can edit this file.

It will setuid the `egosh` command and change the owner of `egosh` to `root`.

Whenever you see instructions to log on as `root` to start, stop, or restart a host in the cluster, you may log on as `egoadmi n` instead.

Configure and test the compute host

You installed EGO on the host, granted root privileges to `egoadmi n`, and are logged on as `egoadmi n`.

Complete the following steps to make the compute host part of your cluster.

1. Set the command-line environment.
2. Join the cluster.
3. Start the host.
4. Test that the host was added to the cluster.

Set the command-line environment

On Linux hosts, set the environment before you run any EGO commands. You need to do this once for each session you open. Both `root` and `egoadmi n` accounts use EGO commands to configure and start the cluster.

You need to reset the environment if the environment changes during your session, for example, if you run `egoconfi g mghost`, which changes the location of some configuration files.

These examples assume the default installation directory `/opt/ego`.

- For `cs`h or `tc`sh, use `cs`hrc. ego:
`source /share/ego/kernel/conf/cshrc.ego`
- For `sh`, `ksh`, or `bash`, use `prof`i l e. ego:
`. /share/ego/kernel/conf/profile.ego`

Join the cluster

1. Run `egoconfi g` to join the cluster.

Always specify the name of the master host:

`egoconfig join master_host_name`

For example:

`egoconfig join HostM`

Start the host

1. Run `egosh` to start EGO on your host.

`egosh ego start`

Test that the host was added to the cluster

You installed EGO on the host. You are logged in as `egoadmi n`.

1. Run `egosh resource list` to see the resources in your cluster.

Look for the host you added in the list of the resources.

If you can see the host name in the list of resources, that host was successfully added to the cluster.

This test detects hosts even if the host is not currently available. Some hosts may take a while to become available after they are added to the cluster.

3. Managing the mixed cluster after installation

When you operate a mixed cluster, be aware of the following concepts.

a) Starting hosts

To start a Linux host, use `root` (remember, if you enabled root permissions for `egoadmi n`, you may use `egoadmi n` instead of `root`). You cannot start a Linux host from a Windows host.

To start a cluster, log onto Windows as `egoadmi n` and run `egosh ego start all`. Then log on to the Linux host as `root` and run `egosh ego start all`. You need `rsh` to use "start all" on Linux.

b) Checking hosts

When you check the status of hosts in the cluster, run `egosh resource view` to see the OS (Host Type) in the output.

c) Workload execution account

For a consumer to execute work on both Linux and Windows hosts, you need one Linux execution user account and one Windows execution user account with the same user name. For example, if the actual Windows account is `DOMAI N\test06` or `. \test06`, the Linux account is `test06`.

Always input the Windows account name when you configure the execution user in the consumer properties. If the execution host is Linux, the domain name is automatically stripped (for example, `DOMAI N\test06` is interpreted as `test06` on Linux).

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