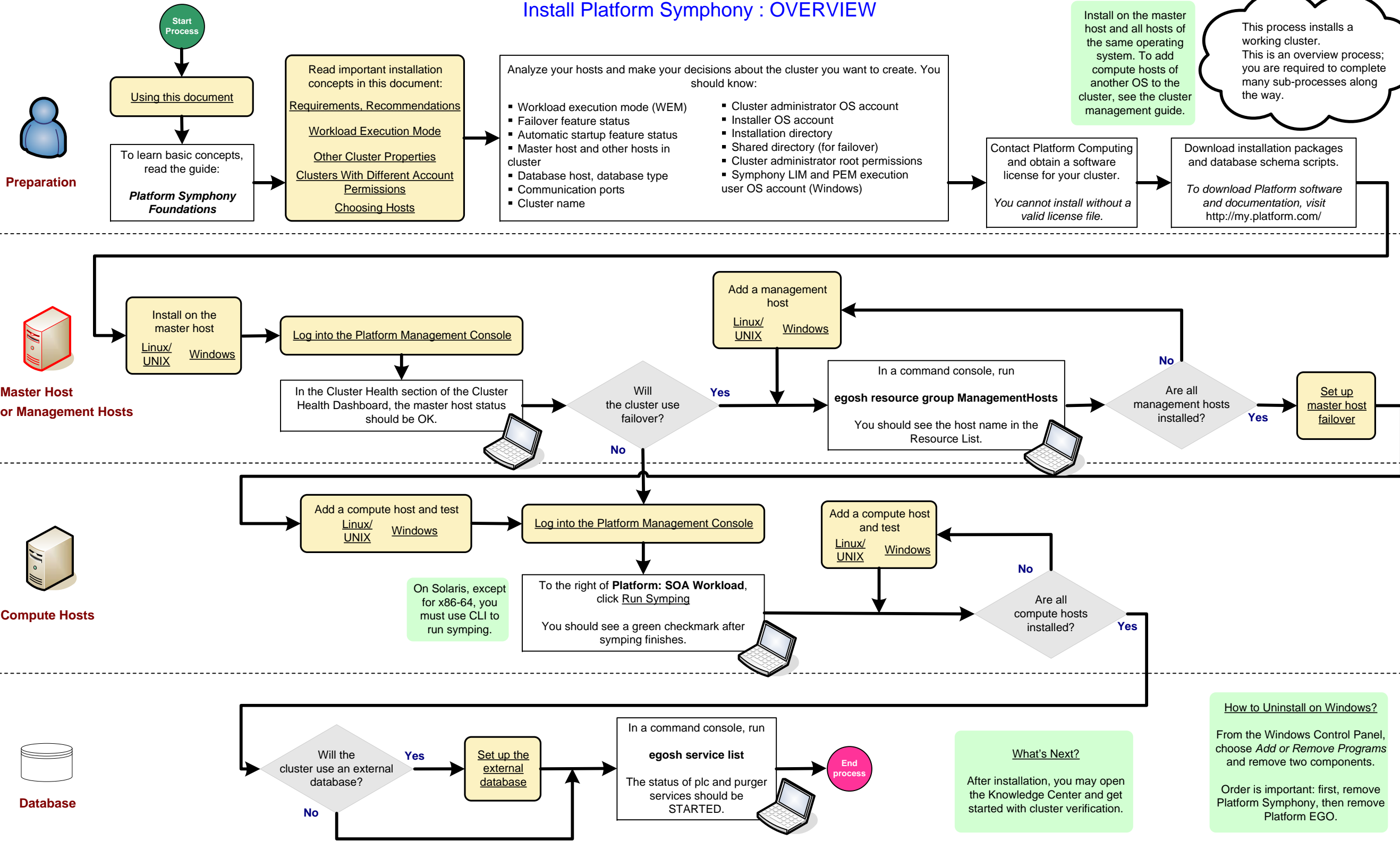


# Install Platform Symphony : OVERVIEW





# System Requirements and Recommendations

The master host is a management host.



We suggest that you disable real-time anti-virus software and any defragmentation software.

These tools cause poor performance and instability, especially on management hosts, and create various problems if they lock files while scanning them. Schedule virus scans during cluster downtime.

## Hardware Requirements



	<u>MANAGEMENT HOSTS</u>	<u>COMPUTE HOSTS</u>
CPU count:	1 or 2	1
CPU power:	>= 2.4 GHz	>= 2.4 GHz
RAM:	4 GB	512 MB
Disk space (to install):	500 MB	300 MB
Additional disk space: (for applications, logs, etc.)	Can be 30 GB for a large cluster	1 GB*N (slots) + sum of applications service package sizes (including dependencies)

## Windows Hosts



- MSI 2.0 or later required
- We suggest that you used fixed IP addresses (Windows hosts can be DHCP clients if the IP address is never lost or changed in a running cluster)

## Windows Networks:

- We suggest per-seat licensing to ensure that management hosts have enough Microsoft Windows Client Access Licenses. If the network is licensed per server instead of per seat, you could run out of these licenses, causing Symphony to fail.



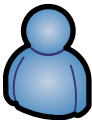
# Understanding Workload Execution Modes

When you install Symphony, your choice of workload execution mode affects the flexibility and security of your cluster. When you install the cluster, you must choose simplified or advanced WEM. Although the requirements for using advanced WEM are more restrictive, we recommend choose advanced WEM if you can, because it is not always possible to change the cluster mode after installation.

	SIMPLIFIED WEM	ADVANCED WEM
Description	<p>With simplified workload execution mode, there is no impersonation; on compute hosts, all Symphony applications and Symphony system services execute under the same user account.</p>	<p>With advanced workload execution mode, impersonation is used to run workload; multiple Symphony applications can all execute under different execution accounts. Symphony system services can execute under a different user account from Symphony applications.</p> <p>On Windows, the cluster administrator needs some special permissions.</p>
Permissions required to install:	<p>No special permissions required.</p> <p>- if you do not have OS administrator permissions, simplified WEM is used automatically</p>	<p>OS administrator (root for UNIX, local administrator for Windows hosts)</p>
Permissions required to run:	<p>No special permissions required.</p> <p>- if you cannot have Symphony system services running as LocalSystem on Windows, they can run under the cluster administrator’s OS account</p>	<p>OS administrator (root for UNIX, local administrator for Windows hosts)</p>
LIM and PEM run as:	<ul style="list-style-type: none"><li>▪ cluster administrator on UNIX</li><li>▪ cluster administrator on all Windows management hosts</li><li>▪ cluster administrator on Windows compute hosts if you installed without administrator permission</li><li>▪ LocalSystem on Windows compute hosts if you installed with administrator permission and accepted the default</li><li>▪ cluster administrator on Windows compute hosts if you installed with administrator permission and changed the default</li></ul>	<ul style="list-style-type: none"><li>▪ root on UNIX</li><li>▪ cluster administrator on all Windows management hosts</li><li>▪ LocalSystem on Windows compute hosts if you accepted the default</li><li>▪ cluster administrator on Windows compute hosts if you changed the default</li></ul>
Symphony applications run as:	<p>same account used to run Symphony LIM and PEM on the host</p>	<p>Symphony consumer’s workload execution account (on UNIX, this cannot be root)</p>
UNIX – Maximum application scalability	<p>1024 SSM connections permitted by default (this is a system setting)</p> <p>OS administrator permission is required if you want to increase scalability to 6400 connections. You need to increase scalability if the number of CPUs used by any one application plus the number of client connections to that same application will exceed 1000.</p>	<p>6400 SSM connections permitted (maximum application scalability)</p>
Restrictions	<p>There is no “sandboxing” of Symphony applications, and Symphony applications can interfere with Symphony system services because they share the same execution account.</p>	<p>“Sandboxing” of Symphony applications is possible, but you must configure it carefully. Applications can interfere with each other if they use the same Symphony consumer, or if their consumers are configured to share the same workload execution account.</p>



# Understanding Other Cluster Properties



## Cluster administrator



*The cluster administrator account must exist on every host in the cluster. The account must have a password. It's ideal if the password of this account does not change frequently.*



We recommend you create a new domain user account that can be dedicated exclusively to administration and operation of the cluster.



We recommend that you name the account **egoadmin**.

### WINDOWS

You may choose a local account as cluster administrator. It must have the same password on all hosts.

### WINDOWS

If the cluster administrator has local administrator permissions on all hosts, use the cluster administrator as the installation account. Do not install as cluster administrator if the installation account has admin permissions but the cluster administrator account does not.

### WINDOWS

The cluster administrator password must not include certain characters such as “£” on the French keyboard. Symphony supports passwords containing alphanumeric characters and any of the following special characters:

`` ~ = [ ] \ ; ' , . /`

### UNIX



If you cannot install with root permissions on all hosts, use the cluster administrator as the installation account.

### WINDOWS

If you cannot install with Windows local administrator permissions on all hosts, use the cluster administrator as the installation account.



*For this, the cluster administrator requires the permission: Log on as a service*



*Windows 2003 and Windows 2008 system policies require that you have local administrator permissions to install software. For more information, see the Symphony FAQs.*



*On Windows 2008, do not install with the Windows local Administrator account if the cluster administrator belongs to the local administrators group \ on the host, but is not the Administrator account.*



## Installation directory



We recommend you use the default installation directory:  
/opt/ego or C:\EGO  
*On all hosts in the cluster, you must have the same installation directory available. The installation directory should be empty when you start to install.*

The installation directory you specify is saved as the environment variable:

**EGO\_TOP**

When user documentation refers to this environment variable, substitute the full path to the installation directory.

The path to the installation directory must not contain spaces. On Windows, you cannot install under:  
C:\Program Files\



## Ports and Cluster Name

We suggest you use the default base port 7869. Symphony requires seven consecutive ports starting from the base port, for example, 7869-7875.



*On all hosts in the cluster, you must have the same set of ports available.*

The default cluster name is cluster1. You must customize the installation if you want to specify your own unique cluster name. Do not use a valid host name as the cluster name.

*Cluster name is permanent, you cannot make a change after you install.*



## Startup and management features

Linux/UNIX  
We recommend that you enable automatic startup for ease of administration.



*You need root to enable this.*

Linux/UNIX  
We recommend you allow remote host management. This means you can start, stop, and restart other hosts in the cluster from your local host.



*To enable this, you need to be able to run rsh or ssh across all hosts in the cluster without having to enter a password; see your operating system documentation for information about configuring rsh or ssh.*

Linux/UNIX  
If you install as root, we recommend that you grant root permissions to the cluster administrator with egosetsudoers.

With egosetsudoers, the cluster administrator can start a local host in the cluster, and shut down or restart any hosts in the cluster from the local host (with remote host management).



*You need root to enable this.*

WINDOWS  
We recommend you enable remote host startup. This means you can start, stop, and restart other hosts in the cluster from your local host.



*To enable this, you need to install with local administrator permissions.*



*Windows 2003 system policies prevent the use of remote startup on these hosts.*



## Failover

We recommend that you allow master host failover.



*To enable this, you must create a shared directory that is fully controlled by the cluster administrator and accessible from all management hosts.*



*To enable this, you need to dedicate at least two hosts to be used exclusively for cluster management (the master host and at least one other management host). You will also need at least one compute host to execute application workload.*

If you choose not to allow failover, the master host can be used to run application workload.



## Database choices


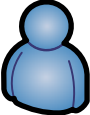


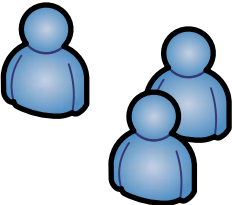

We suggest that you use a commercial database to store reporting data.



*Contact your database administrator and set up the external database as soon as possible after installation.*

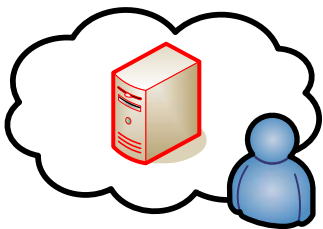
If you choose to enable the non-production database, you must choose the master host or any management host as the database host.

Clusters With Different Account Permissions

Case #1		Case #2		Case #3	
 <div>Your system administrator permissions:</div>	NO special permissions are available. UNIX: no root permission WINDOWS: no local administrator permission		Permission to install as a system administrator, but NOT to run work.		Permission to install AND run work as a system administrator.
 <div>To run the installer:</div>	The account you use to install ALWAYS becomes the cluster administrator. You must use the SAME account to install on all hosts in the cluster.		Log on as a system administrator: <ul style="list-style-type: none"><li>UNIX: any account with root permission</li><li>WINDOWS: any account with local administrator permission</li></ul>		Same as Case #2
<div>Startup status:</div> 	<ul style="list-style-type: none"><li>Symphony will NOT start automatically if a host restarts.</li><li>You must start Symphony manually on EACH host, as cluster administrator.</li><li>WINDOWS: As cluster administrator, always shut down Symphony before you log off the host.</li></ul>		<ul style="list-style-type: none"><li>Symphony starts automatically if a host restarts.</li><li>You can start remote hosts and start multiple hosts at once.</li><li>Symphony keeps running on the host if the cluster administrator logs off.</li></ul>		Same as Case #2
<div>Workload execution mode (WEM):</div> 	Simplified WEM: Symphony applications run under ONE user account.		Simplified WEM: Symphony applications run under ONE user account.		Advanced WEM: Symphony applications run under the consumer's workload execution account, which is CONFIGURABLE. Different consumers can have different workload execution accounts.
<div>Execution user accounts:</div> 	LIM and PEM and Symphony applications run as the cluster administrator (the same account used to install the system).		UNIX: LIM and PEM and Symphony applications always run as the cluster administrator.  WINDOWS (management hosts): LIM and PEM always run as the cluster administrator.  WINDOWS (compute hosts): LIM and PEM and Symphony applications run as LocalSystem by default, but during installation, you can choose cluster administrator instead.  WINDOWS: The cluster administrator account must have special permissions: <ul style="list-style-type: none"><li>Log on as a service</li><li>Log on as a batch job (required by <b>Everyone</b>)</li></ul>		UNIX: LIM and PEM run as ROOT. WINDOWS (management hosts): LIM and PEM always run as the cluster administrator. WINDOWS (compute hosts): LIM and PEM run as LocalSystem by default, or cluster administrator (decided during installation). WINDOWS: The cluster administrator account requires these special permissions: <ul style="list-style-type: none"><li>Log on as a service</li><li>Act as part of the operating system</li><li>Debug programs</li><li>Increase scheduling priority (or Increase Quotas, for Windows 2000 and earlier)</li><li>Replace a process level token</li><li>Impersonate a client after authentication (required by <b>Everyone</b>)</li><li>Log on as a batch job (required by <b>Everyone</b>)</li></ul>
 <div>Restrictions</div>	There is no “sandboxing” of Symphony applications, and Symphony applications can interfere with Symphony system components because they share the same execution account.		Same as Case #1.		“Sandboxing” of Symphony applications is possible, but you must configure it carefully. Applications can interfere with each other if they use the same Symphony consumer, or if their consumers are configured to share the same workload execution account.



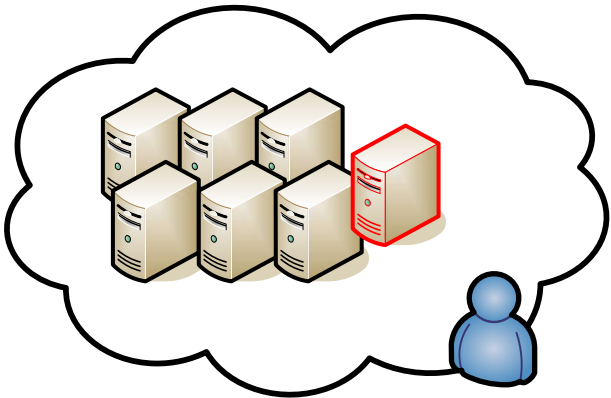
# Choosing Hosts



A single-host cluster

☒

MASTER HOST:  
\_\_\_\_\_



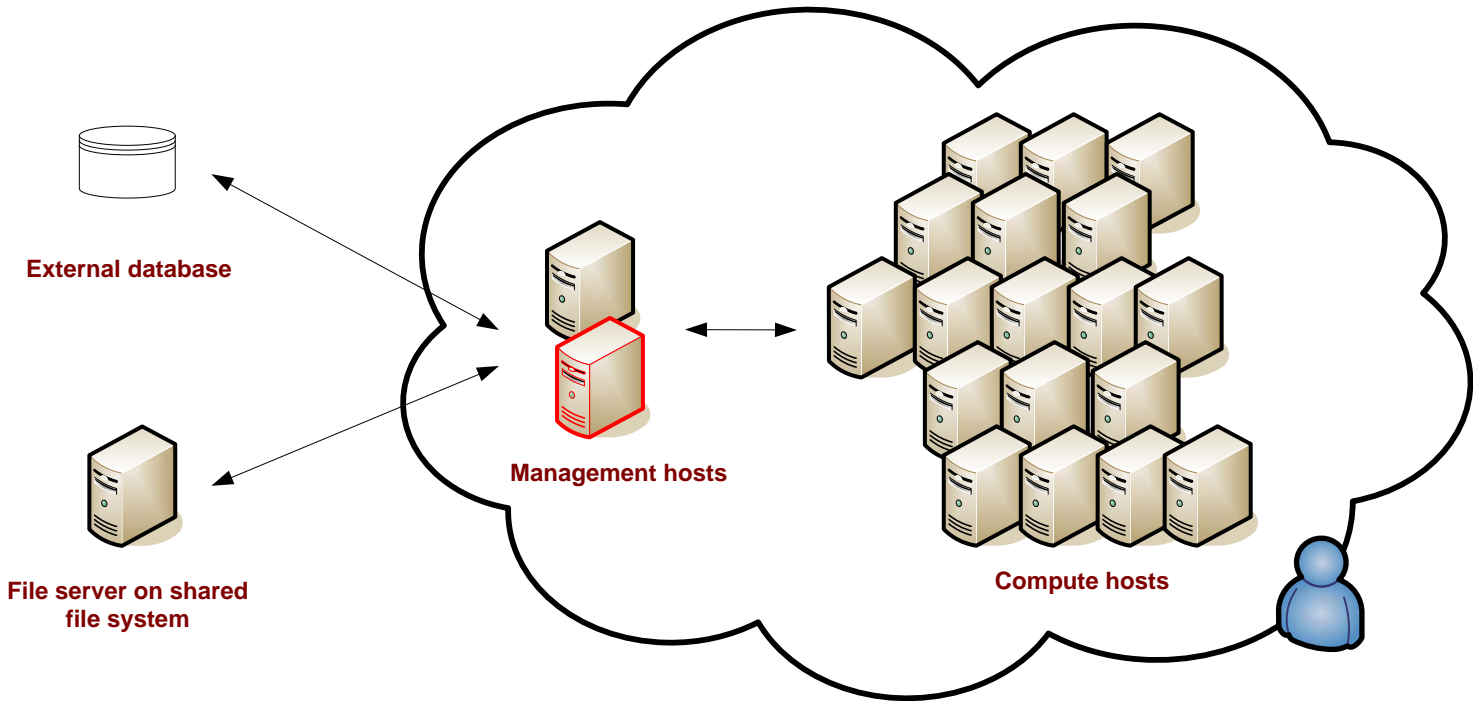
A simple cluster with no failover

☒

MASTER HOST:  
\_\_\_\_\_

☒

ADDITIONAL COMPUTE HOSTS:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Complete cluster suitable for large scale production user or small scale applications testing

☒

MASTER HOST:  
\_\_\_\_\_

☒

ADDITIONAL MANAGEMENT HOSTS:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☒

COMPUTE HOSTS:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☒

FILE SERVER HOST:  
\_\_\_\_\_

☒

DATABASE HOST:  
\_\_\_\_\_

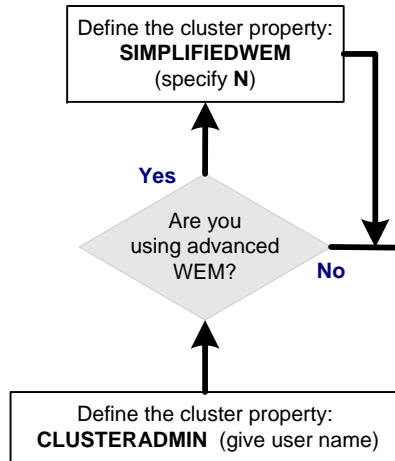
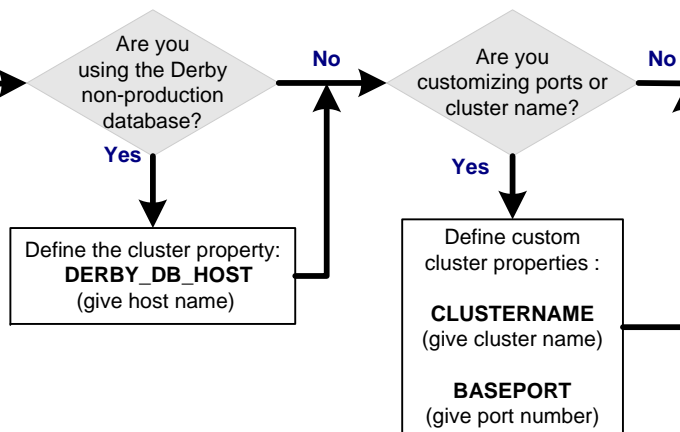


- To define cluster properties as environment variables with sh, ksh, or bash:  
**export VARIABLE\_NAME=value**
- To define cluster properties as environment variables with csh or tcsh:  
**setenv VARIABLE\_NAME value**
- To define cluster properties in a file, create a simple text file  
/tmp/install.config and enter each variable on a new line, as shown:  
**VARIABLE\_NAME=value**

Any variables set in the environment overwrite the same variables set in the configuration file. When setting environment variables, be aware you may need to set any variable that has been reset. This process assumes you are installing on a host for the first time, and none of the environment variables have been reset from defaults.

#### Hardware Checklist for the master host

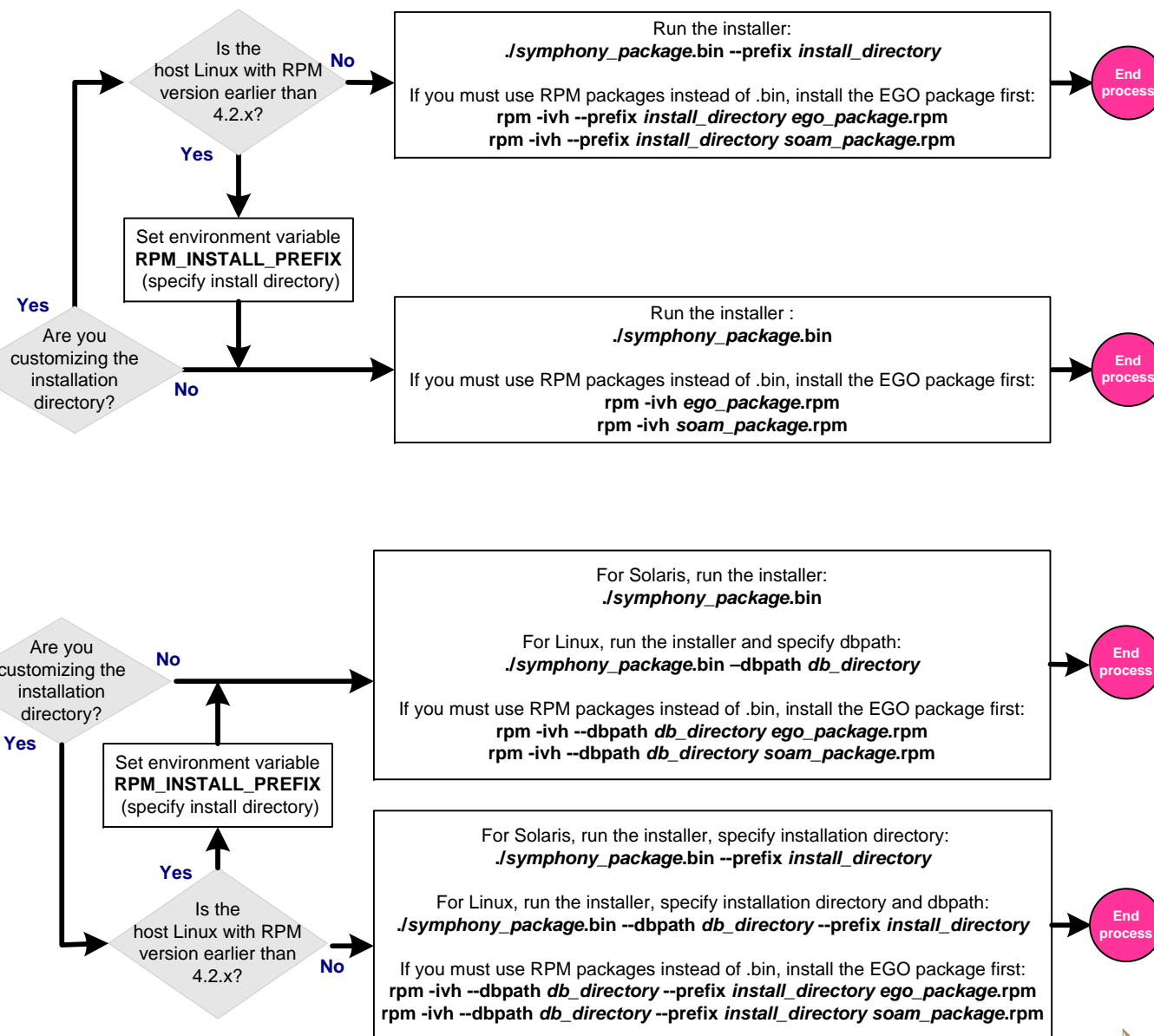
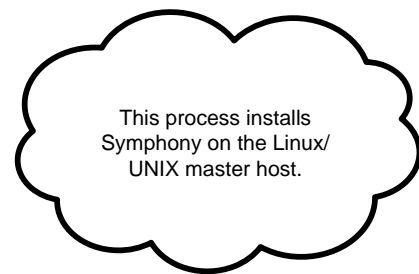
- communication ports are available
- installation directory is available and empty
- cluster administrator account exists on the host
- web server ports 8080, 8005, 8009 are available
- service director port 53 is available
- web service gateway port 9090 is available
- loader controller port 4046 is available
- Derby database port 1527 is available
- host has access to the shared directory (for failover)



## Install on the Master Host (part 1 of 2) \*for a cluster with a Linux/UNIX master host

To install on the Linux/UNIX master host, you need to know:

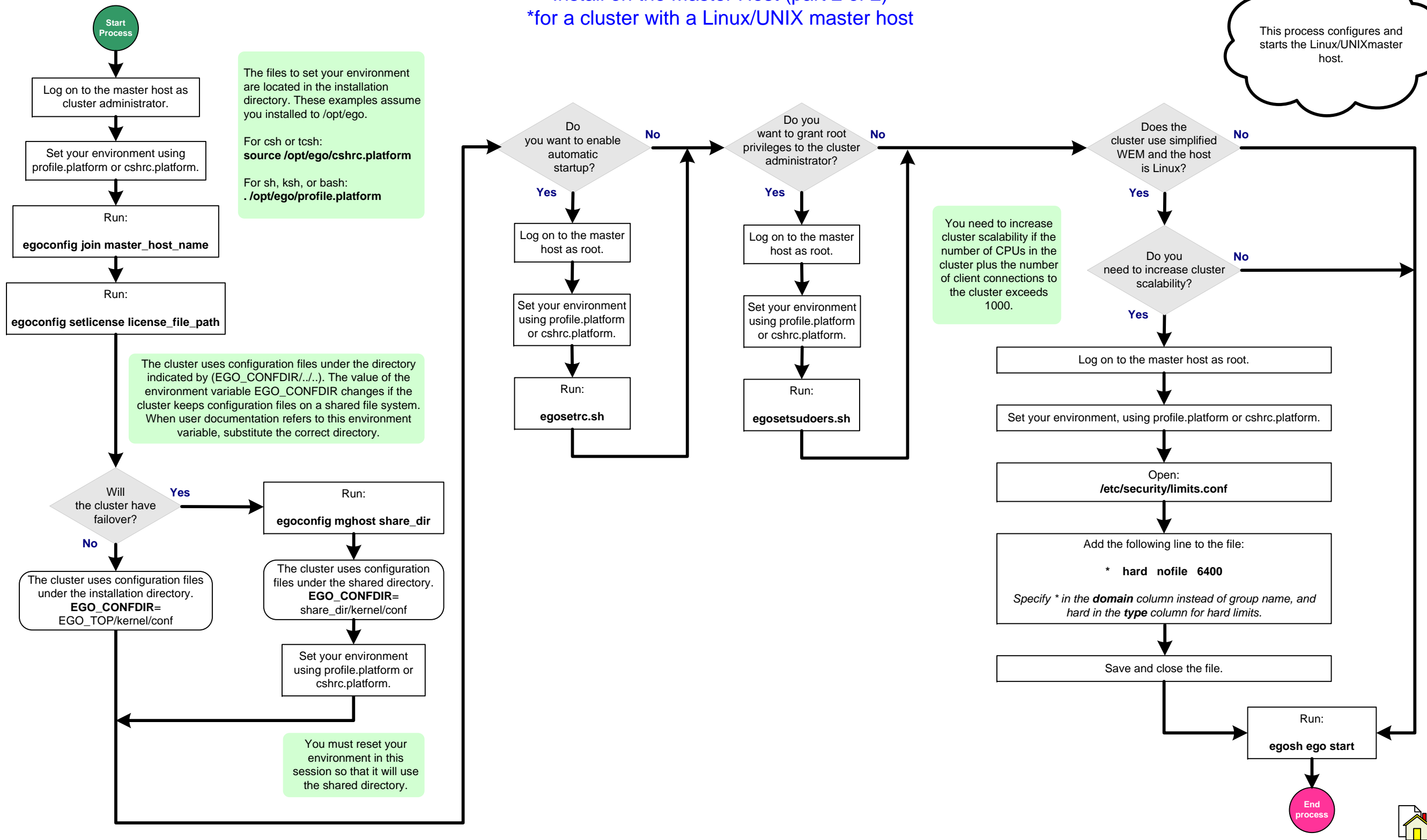
- Cluster administrator OS account
- Database host
- Communication ports
- Workload execution mode (WEM)
- Installation directory
- Cluster name



Proceed to Part 2

Install on the Master Host (part 2 of 2)  
\*for a cluster with a Linux/UNIX master host

This process configures and starts the Linux/UNIX master host.





- To define cluster properties as environment variables with sh, ksh, or bash:  
**export VARIABLE\_NAME=value**
- To define cluster properties as environment variables with csh or tcsh:  
**setenv VARIABLE\_NAME value**
- To define cluster properties in a file, create a simple text file  
/tmp/install.config and enter each variable on a new line, as shown:  
**VARIABLE\_NAME=value**

Any variables set in the environment overwrite the same variables set in the configuration file. When setting environment variables, be aware you may need to set any variable that has been reset. This process assumes you are installing on a host for the first time, and none of the environment variables have been reset from defaults.

#### Hardware Checklist for the management host

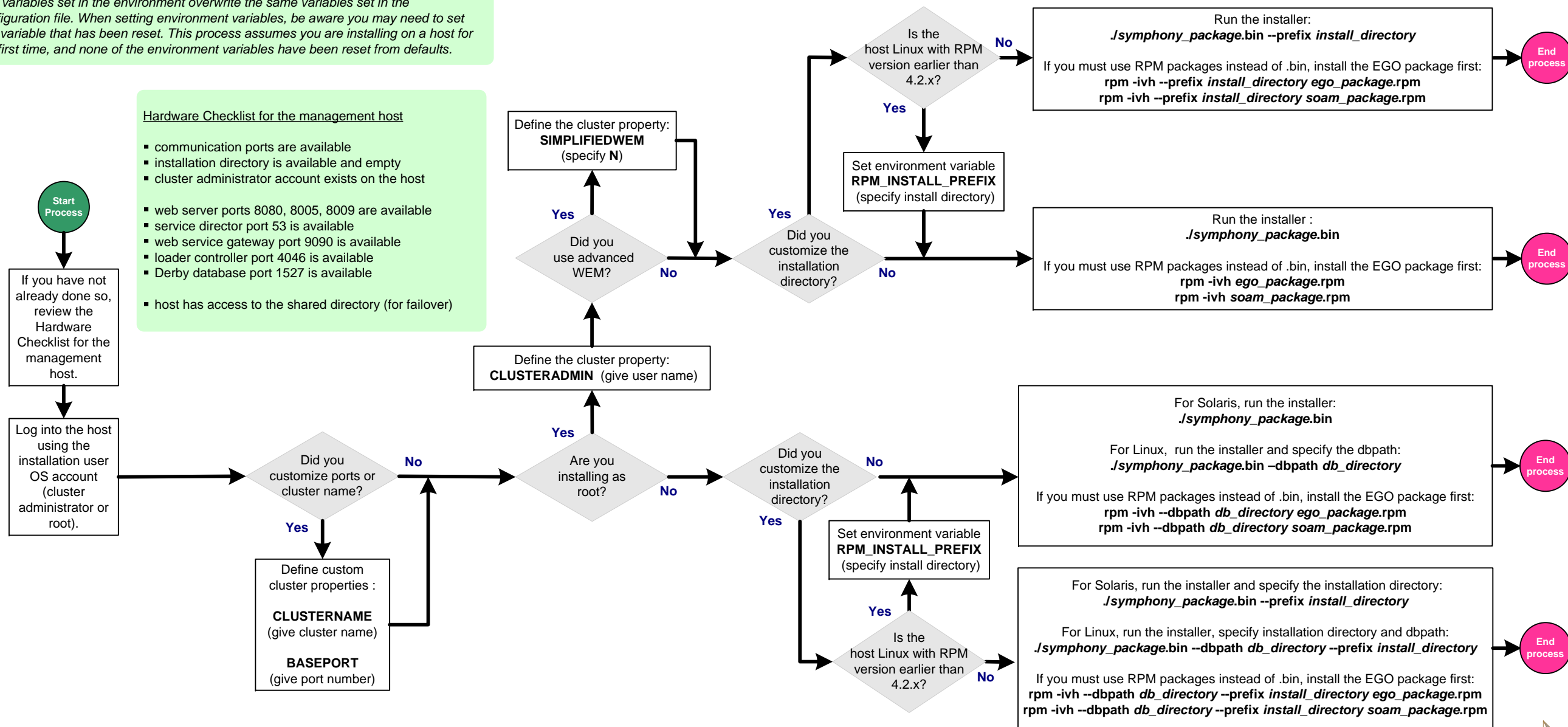
- communication ports are available
- installation directory is available and empty
- cluster administrator account exists on the host
- web server ports 8080, 8005, 8009 are available
- service director port 53 is available
- web service gateway port 9090 is available
- loader controller port 4046 is available
- Derby database port 1527 is available
- host has access to the shared directory (for failover)

## Add a Management Host (part 1 or 2) \*for a cluster with a Linux/UNIX master host

To add a Linux/UNIX management host, you need to know:

- Cluster administrator OS account
- Workload execution mode (WEM)
- Communication ports
- Installation directory
- Cluster name

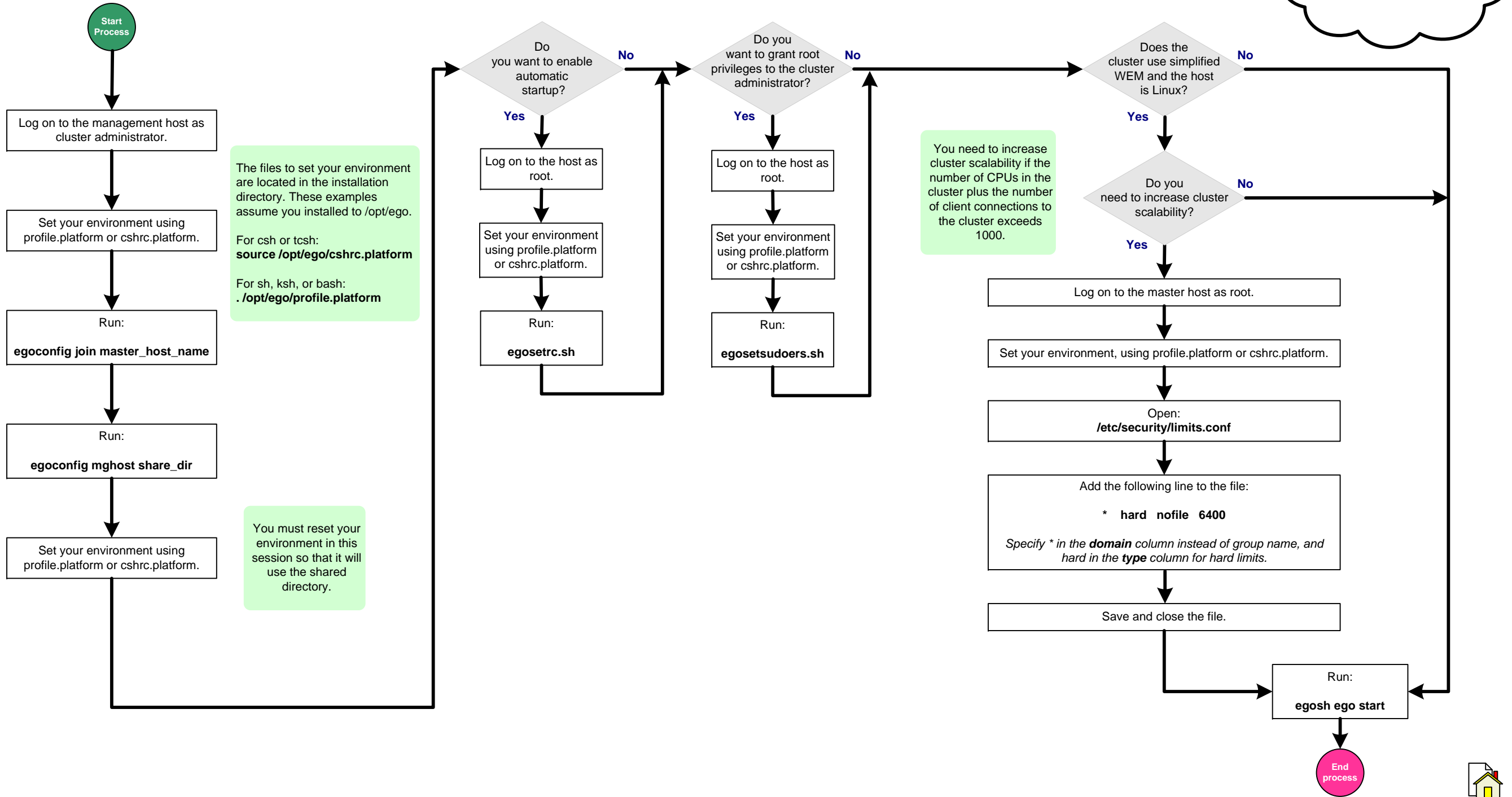
This process installs  
Symphony on a Linux/  
UNIX management host.



Proceed to Part 2

Add a Management Host (part 2 of 2)  
\*for a cluster with a Linux/UNIX master host

This process configures  
and starts a Linux/UNIX  
management host.



# Add a Compute Host and Test (part 1 of 2)

## \*Linux/UNIX host

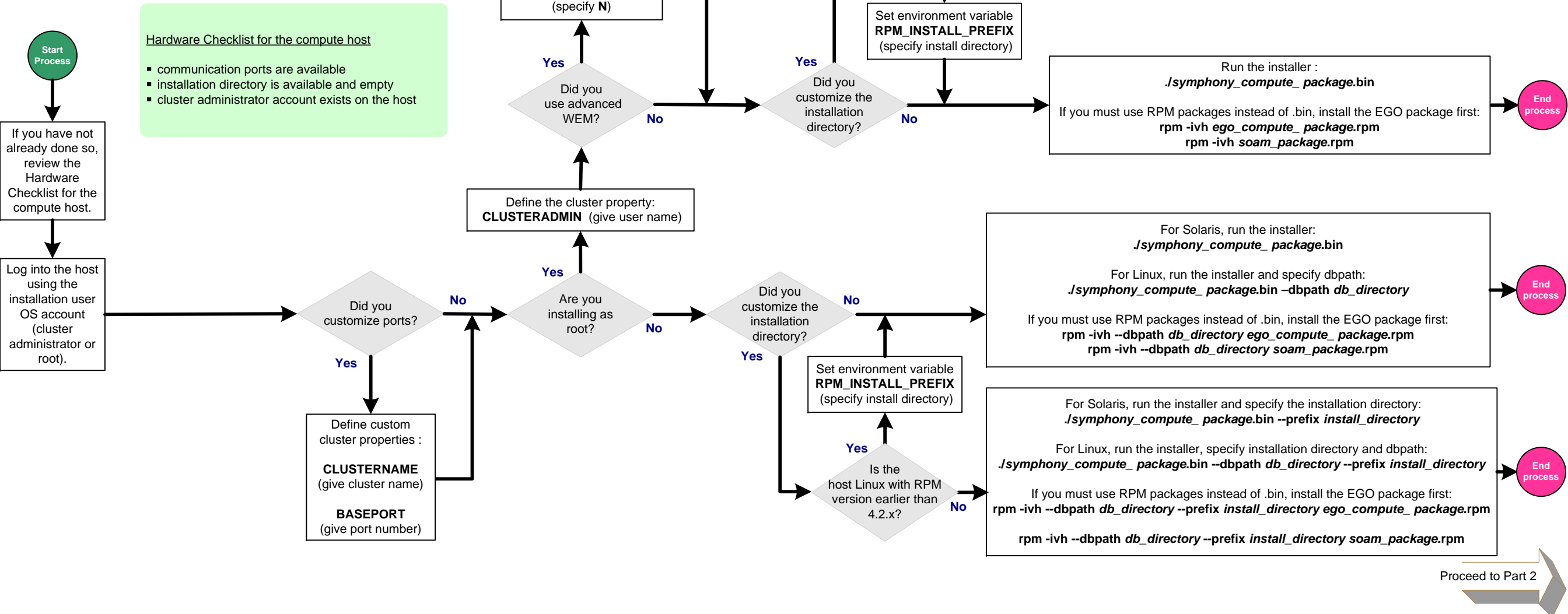
- To define cluster properties as environment variables with sh, ksh, or bash:  
**export VARIABLE\_NAME=value**
- To define cluster properties as environment variables with csh or tcsh:  
**setenv VARIABLE\_NAME value**
- To define cluster properties in a file, create a simple text file  
/tmp/install.config and enter each variable on a new line, as shown:  
**VARIABLE\_NAME=value**

Any variables set in the environment overwrite the same variables set in the configuration file. When setting environment variables, be aware you may need to set any variable that has been reset. This process assumes you are installing on a host for the first time, and none of the environment variables have been reset from defaults.

To add a Linux/UNIX compute host, you need to know:

- Cluster administrator OS account
- Workload execution mode (WEM)
- Communication ports
- Installation directory
- Cluster name

For some versions of Solaris, the compute host installer is packaged as a .tar file instead of .bin. To install, see “Configuring a Mixed OS Cluster” in the cluster management guide.



# Add a Compute Host and Test (part 2 of 2)

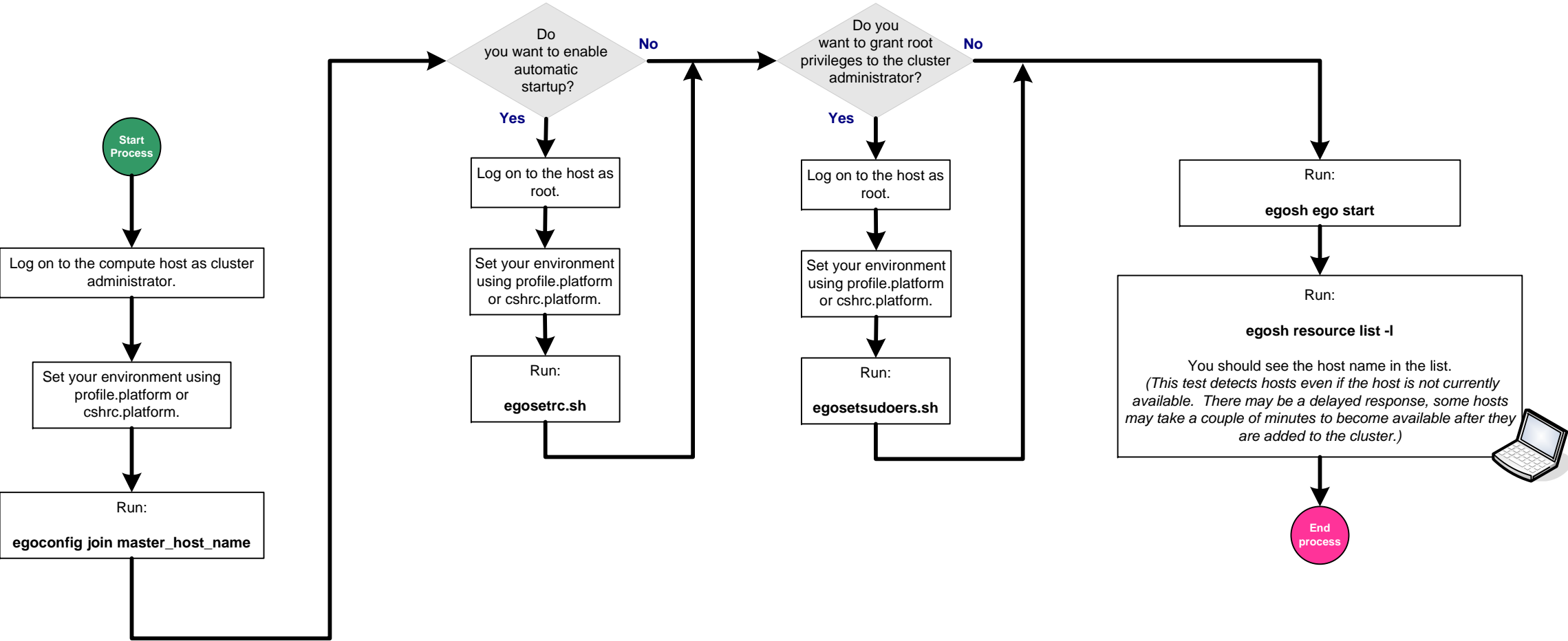
\*Linux/UNIX host

The files to set your environment are located in the installation directory. These examples assume you installed to /opt/ego.

For csh or tcsh:  
**source /opt/ego/cshrc.platform**

For sh, ksh, or bash:  
**./opt/ego/profile.platform**

This process configures and starts a Linux/UNIX compute host.



To install on the Windows master host, you may need to input:



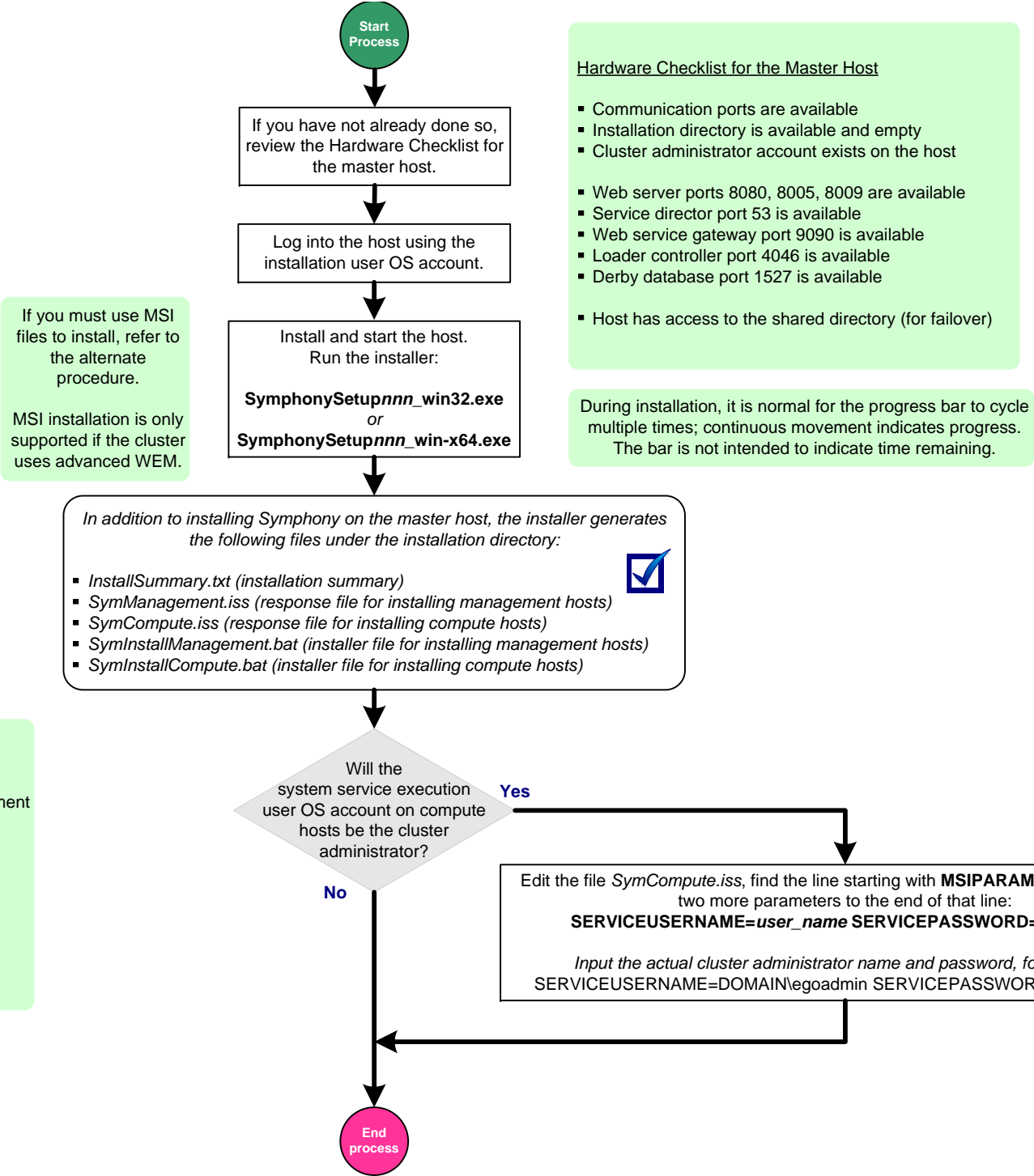
- License file location
- Cluster administrator OS account
- Failover feature status
- Database host
- Communication ports
- Cluster name
- Workload execution mode (WEM)
- Database type
- Installation directory
- Master host
- Shared directory

# Install on the Master Host

*\*for a cluster with a Windows master host*

[recommended method]

This process installs Symphony on the Windows master host using .exe package.



## EGO\_CONFDIR

The cluster uses configuration files under the directory indicated by (EGO\_CONFDIR\..\..). When user documentation refers to this environment variable, substitute the correct directory.

*Without failover:*

The cluster uses configuration files under the installation directory.  
EGO\_CONFDIR=EGO\_TOP/kernel/conf

*With failover and a shared directory:*

The cluster uses configuration files under the shared directory.  
EGO\_CONFDIR=share\_dir/kernel/conf



# Add a Management Host

*\*for a cluster with a Windows master host*  
[recommended method]

To add a Windows management host, you may need to know:

- Cluster administrator OS account name and password
- Installation directory
- Master host
- Shared directory
- Communication ports



## Hardware Checklist for the Management Host

- Communication ports are available
- Installation directory is available and empty
- Cluster administrator account exists on the host
- Web server ports 8080, 8005, 8009 are available
- Service director port 53 is available
- Web service gateway port 9090 is available
- Loader controller port 4046 is available
- Derby database port 1527 is available
- Host has access to the shared directory (for failover)

Start  
Process

If you have not already done so,  
review the Hardware Checklist for  
management hosts.

Log into the host using the  
installation user OS account.

Copy the response file and the special script to the host,  
along with the installer file:

- *SymManagement.iss*
- *SymInstallManagement.bat*
- *SymphonySetupnnn\_win32.exe* or  
*SymphonySetupnnn\_win-x64.exe*

Run the installer:  
**SymInstallManagement.bat**

Let the host start automatically after installation.

Restart the master host to make the cluster recognize the  
new management host.  
On the master host, run:

**egosh ego restart**

End  
process

This process installs  
Symphony on a Windows  
management host using  
.exe package.

If you must use MSI  
files to install, refer to  
the alternate procedure.

MSI installation is only  
supported if the cluster  
uses advanced WEM.





Add a Compute Host and Test  
\* Windows host  
[recommended method]

To add a Windows compute host, you may need to know:

- Cluster administrator OS account
- System service execution user OS account
- Installation directory
- Master host
- Communication ports
- Workload execution mode (WEM)



This process installs  
Symphony on a Windows  
compute host using .exe  
package, and verifies the  
installation is successful.

Hardware Checklist for the Compute Host

- Communication ports are available
- Installation directory is available and empty
- Cluster administrator account exists on the host

Start  
Process

If you have not already  
done so, review the  
Hardware Checklist for  
compute hosts.

Log into the host  
using the installation  
user OS account.

Yes

No

Will you use  
the customized .bat file  
to install?

Yes

No

Is the  
system service  
account the cluster  
administrator?

You must use the modified  
response file. For  
information, see "Install on  
the Master Host  
(Windows)".

Copy the response file and the customized script to the  
host, along with the installer file:

- *SymCompute.iss*
- *SymInstallCompute.bat*
- *SymphonySetupnnn\_win32.exe*  
or  
*SymphonySetupnnn\_win-x64.exe*

Run the installer:  
**SymInstallCompute.bat**  
  
Let the host start automatically after installation.

Run:  
**egosh resource list -l**  
  
You should see the host name in the list.  
(This test detects hosts even if the host is not currently  
available. There may be a delayed response, some hosts  
may take a couple of minutes to become available after  
they are added to the cluster.)



End  
process

If you must use MSI  
files to install, refer to  
the alternate procedure.

MSI installation is only  
supported if the cluster  
uses advanced WEM.

Run the installer:  
**SymphonySetupnnn\_win32.exe**  
or  
**SymphonySetupnnn\_win-x64.exe**  
  
Let the host start automatically after installation.



Hardware Checklist for the Master Host

- Communication ports are available
- Installation directory is available and empty
- Cluster administrator account exists on the host
- Web server ports 8080, 8005, 8009 are available
- Service director port 53 is available
- Web service gateway port 9090 is available
- Loader controller port 4046 is available
- Derby database port 1527 is available
- Host has access to the shared directory (for failover)

Install on the Master Host (part 1 of 2)  
\*for a cluster with a Windows master host  
[alternate method]

To install on the Windows master host, you may need to input:

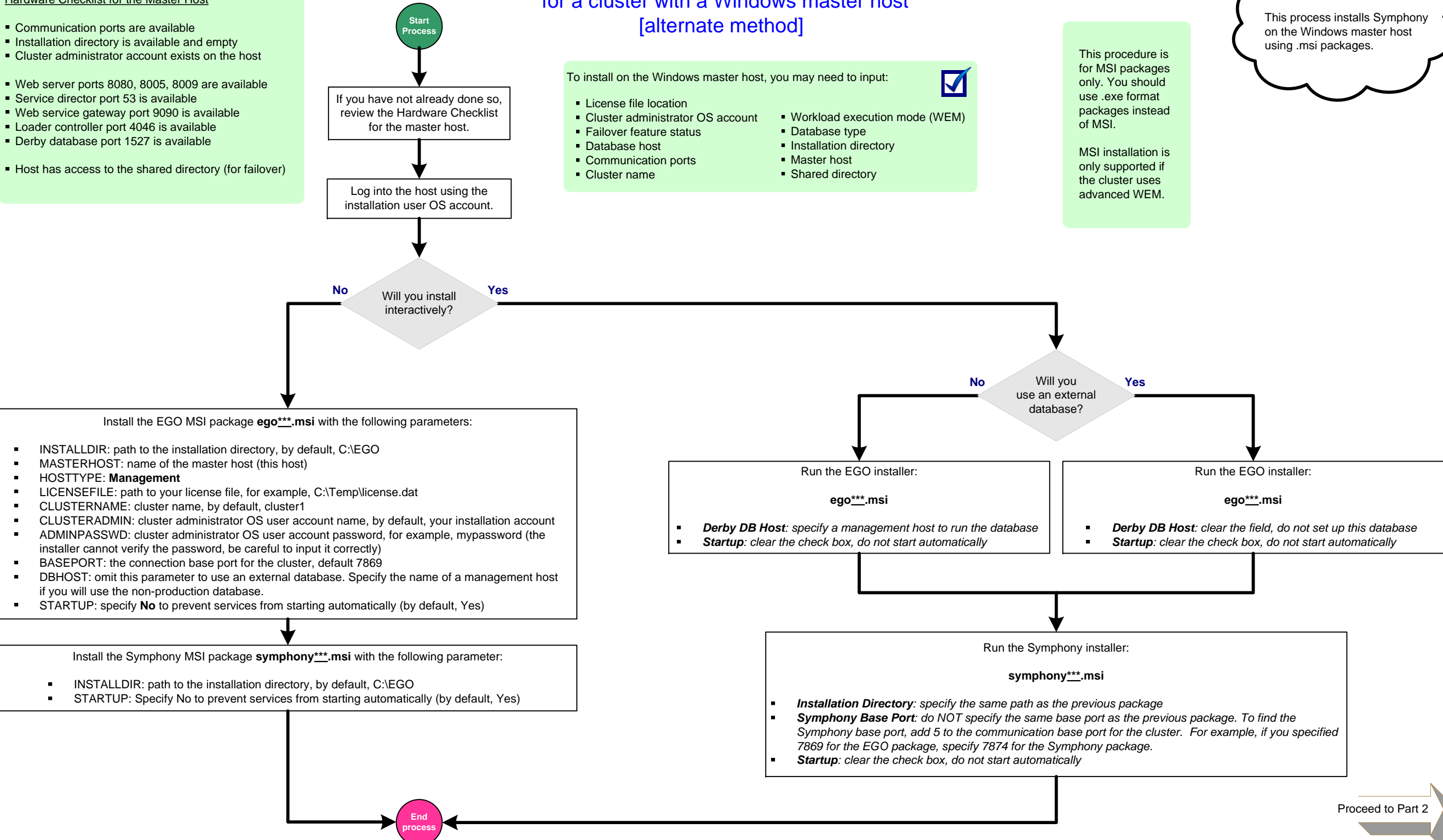
- License file location
- Cluster administrator OS account
- Failover feature status
- Database host
- Communication ports
- Cluster name
- Workload execution mode (WEM)
- Database type
- Installation directory
- Master host
- Shared directory



This procedure is for MSI packages only. You should use .exe format packages instead of MSI.

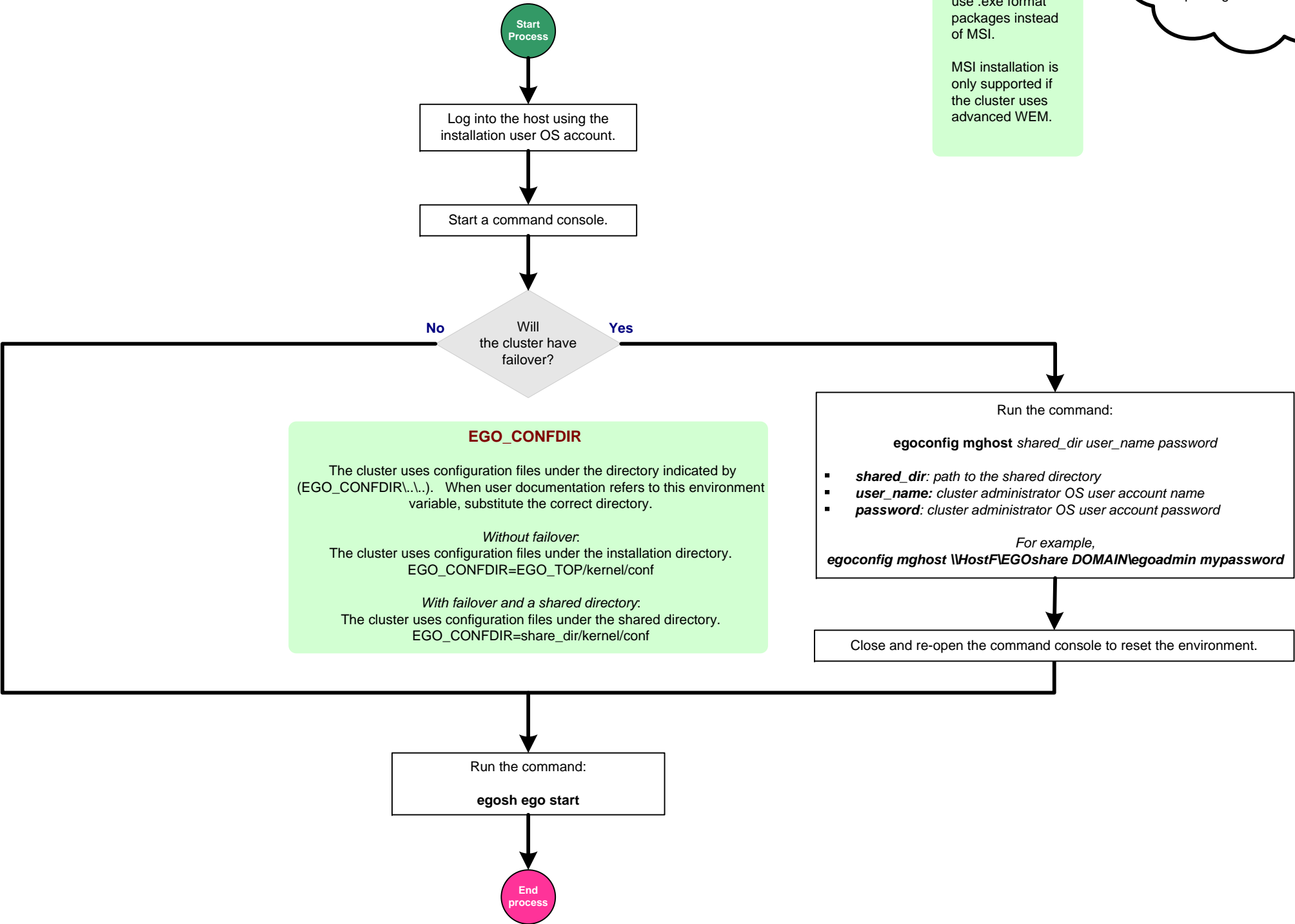
MSI installation is only supported if the cluster uses advanced WEM.

This process installs Symphony on the Windows master host using .msi packages.



Proceed to Part 2

Install on the Master Host (part 2 of 2)  
\*for a cluster with a Windows master host  
[alternate method]



This procedure is for MSI packages only. You should use .exe format packages instead of MSI.

MSI installation is only supported if the cluster uses advanced WEM.

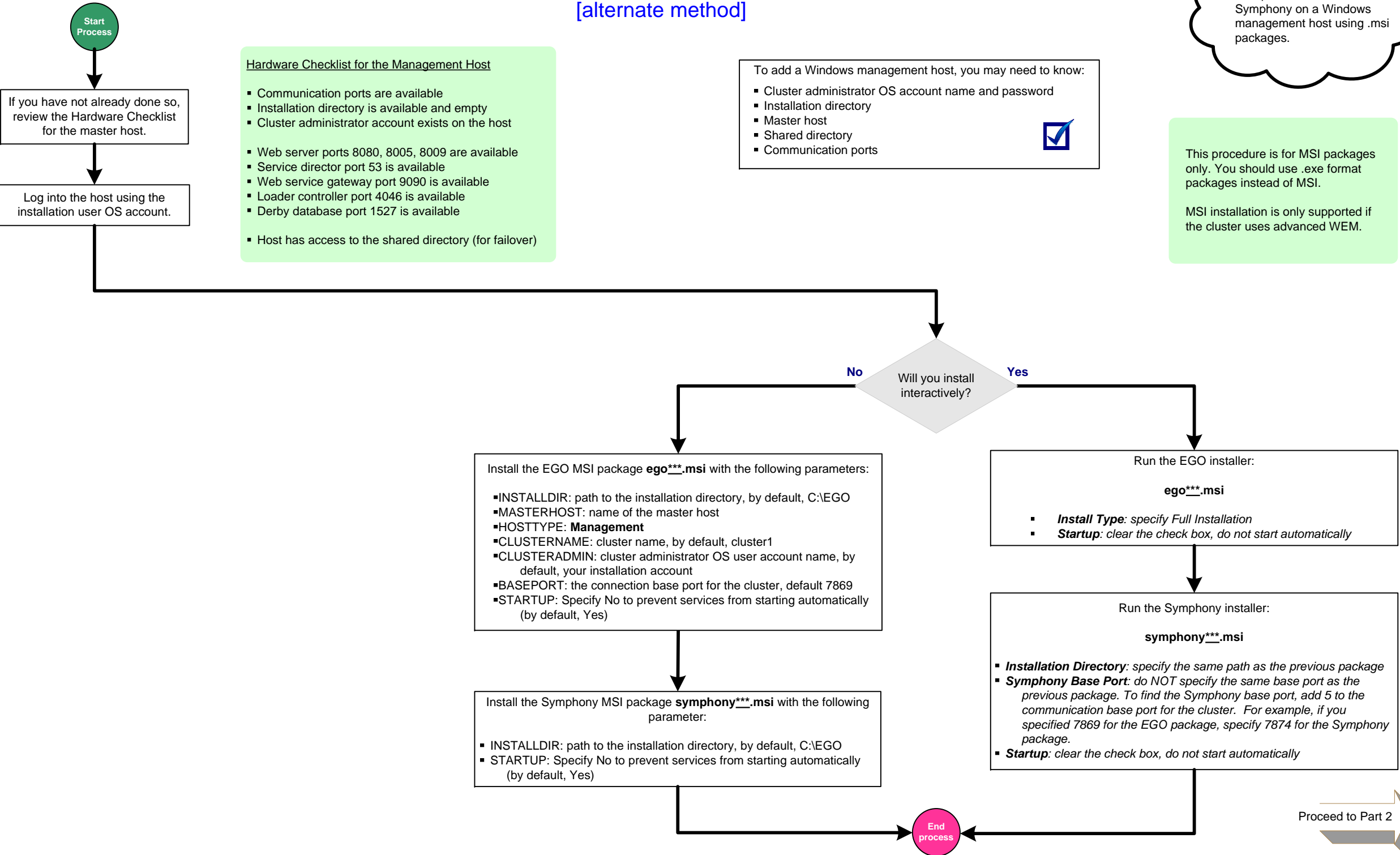
This process installs Symphony on the Windows master host using .msi packages.



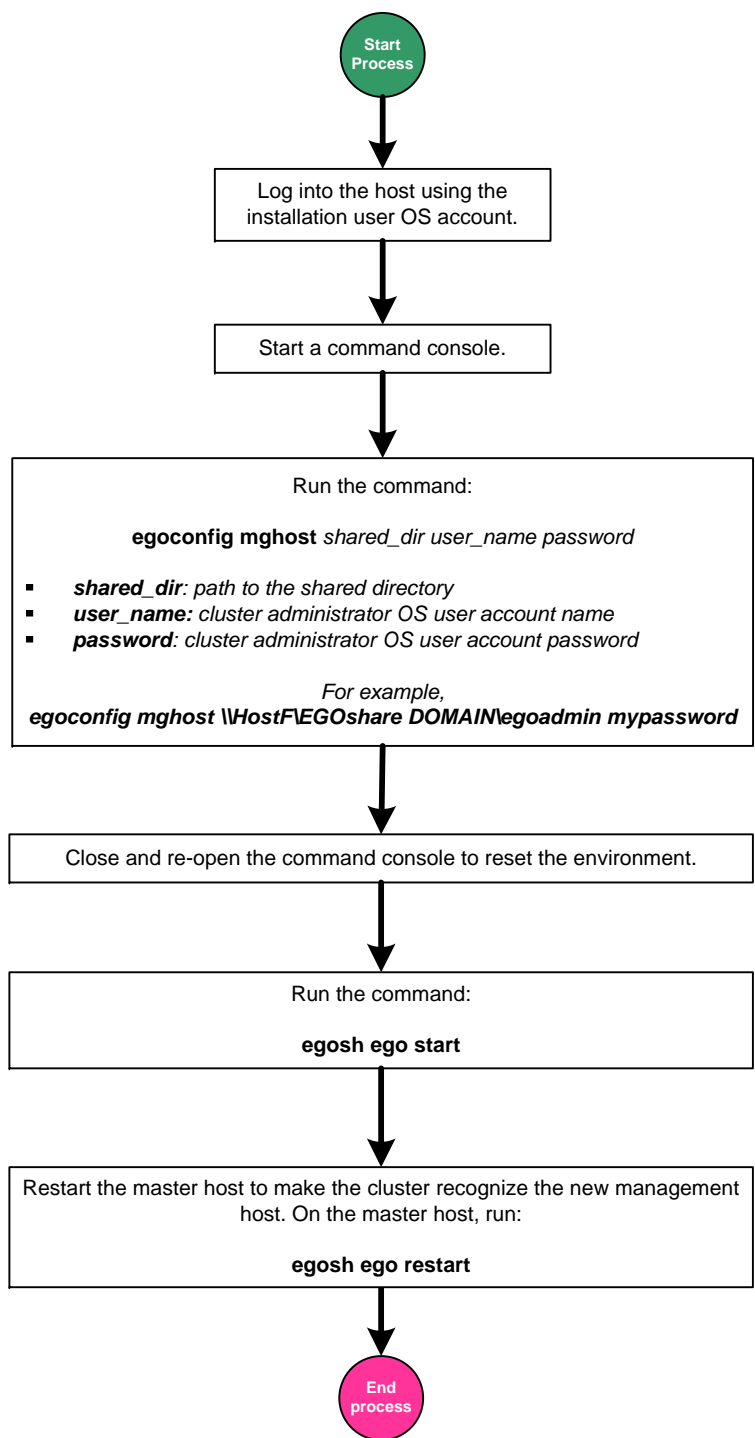
# Add a Management Host (part 1 of 2)

\*for a cluster with a Windows master host

[alternate method]



Add a Management Host (part 2 of 2)  
\*for a cluster with a Windows master host  
[alternate method]



This procedure is for MSI packages only. You should use .exe format packages instead of MSI.

MSI installation is only supported if the cluster uses advanced WEM.

This process installs Symphony on a Windows management host using .msi packages.



# Add a Compute Host and Test

\* Windows host  
[alternate method]

## Hardware Checklist for the Compute Host

- Communication ports are available
- Installation directory is available and empty
- Cluster administrator account exists on the host

To add a Windows compute host, you may need to know:

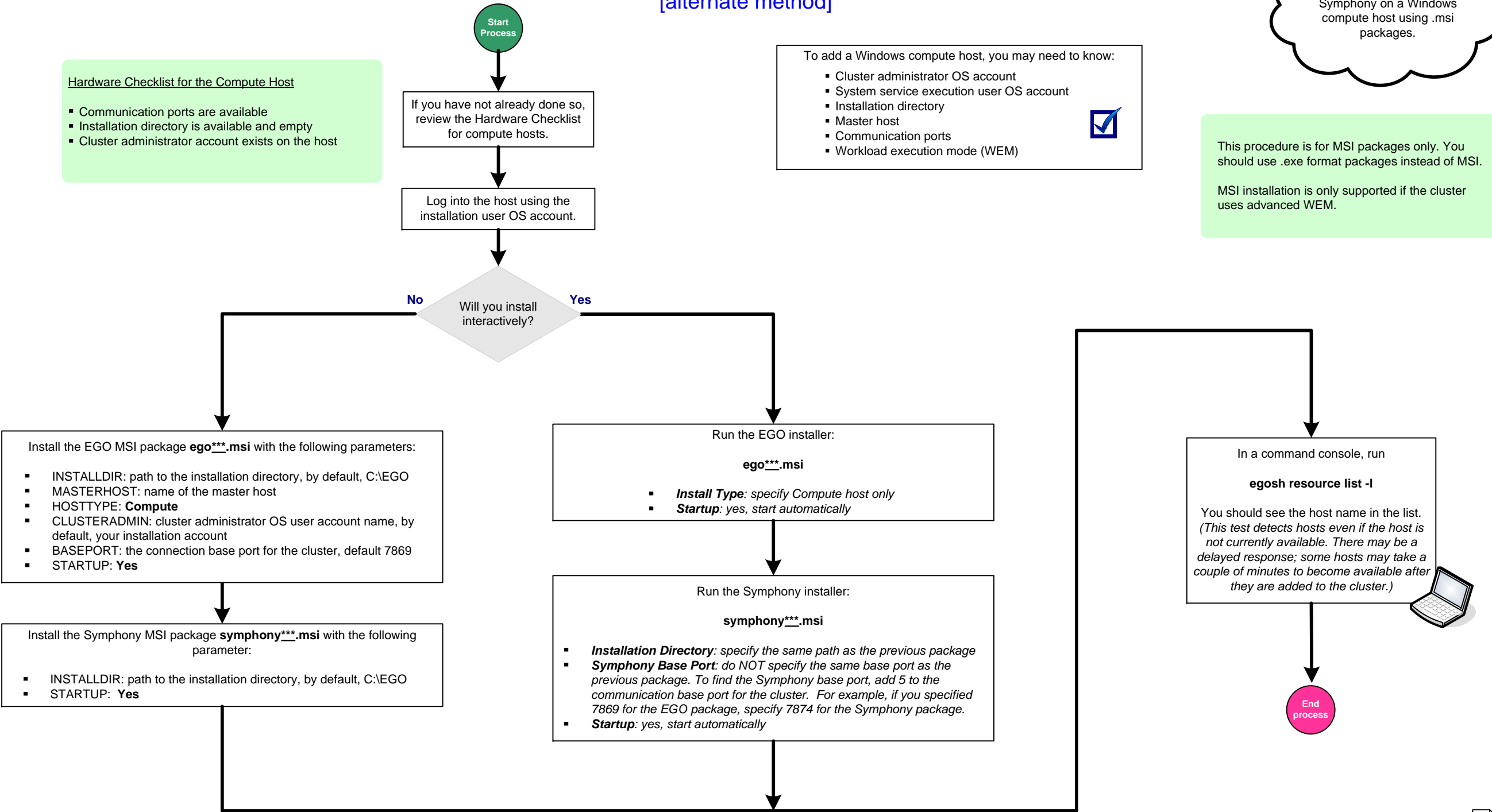
- Cluster administrator OS account
- System service execution user OS account
- Installation directory
- Master host
- Communication ports
- Workload execution mode (WEM)



This process installs  
Symphony on a Windows  
compute host using .msi  
packages.

This procedure is for MSI packages only. You  
should use .exe format packages instead of MSI.

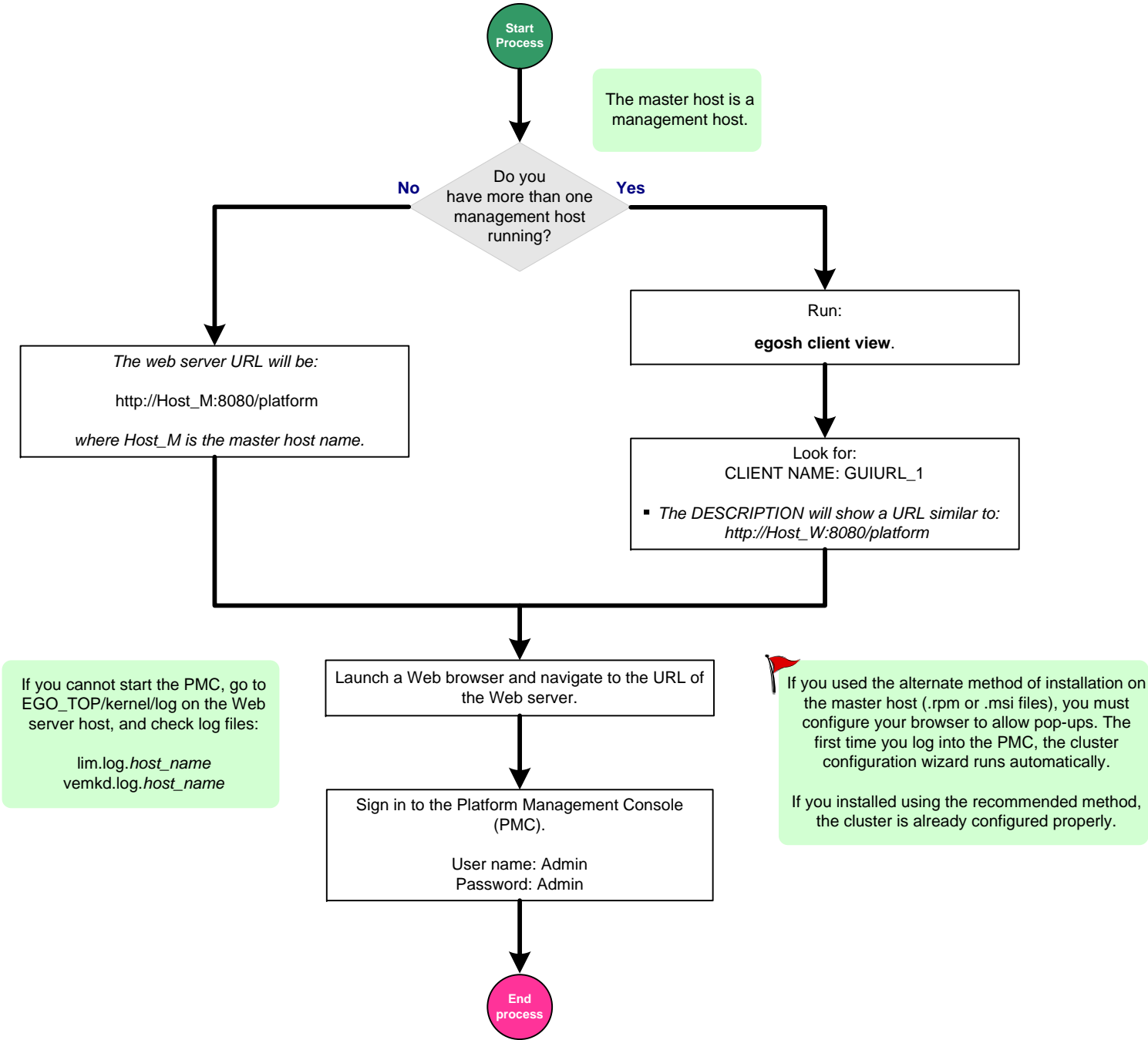
MSI installation is only supported if the cluster  
uses advanced WEM.





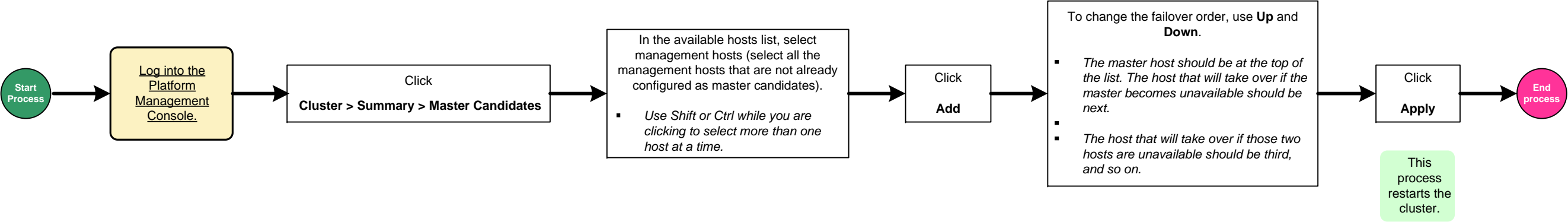
# Log into the Platform Management Console

This process opens the Platform Management Console.

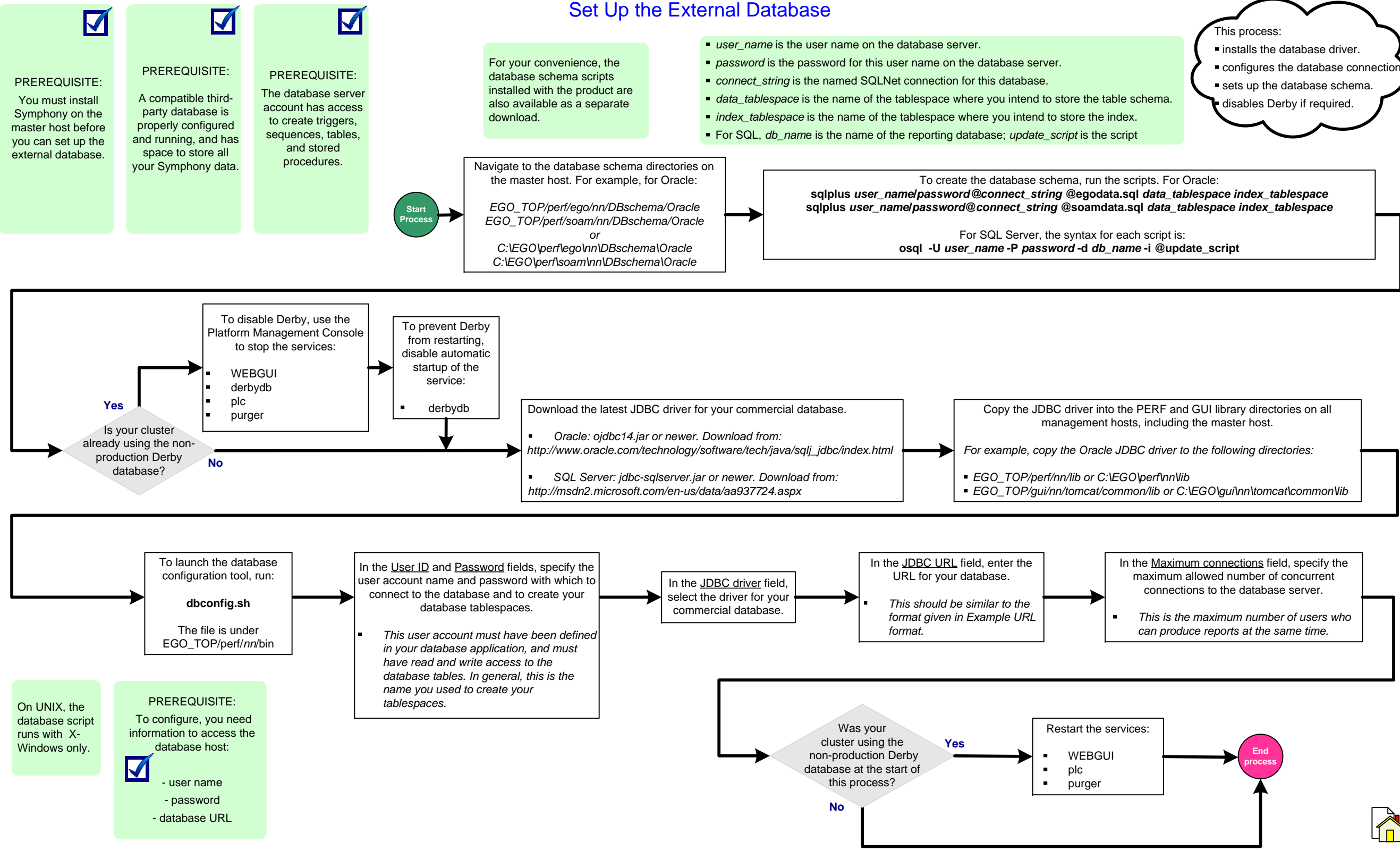


# Set up Master Host Failover

This process enables failover and determines the failover order.



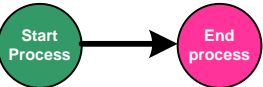
Set Up the External Database



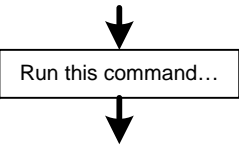


# Using This Document

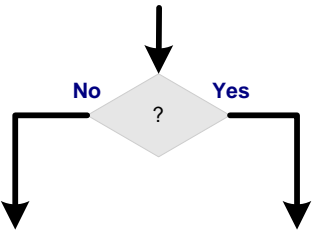
Begin each process from the green Start symbol, follow the arrows to the red Stop symbol.



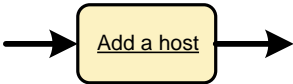
The heart of each process is the series of steps you must work through. If a task is given, you must complete the task before you proceed to the next step.



In the flow charts, you may come to various decision points along the way, and the next steps depend on your choice. At each question, answer Yes or No and follow steps for only one path, ignore any steps that belong to the other path.



When you must perform a subprocess, there is more detailed information on a different diagram. Find and complete the whole subprocess before you continue to the next step.



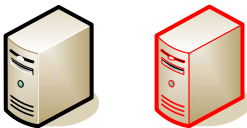
To finish your task, continue to another page and perform more steps:



Return to the home page:



Hosts or master host:



Remember this important information:



Information related to steps in the process:

The requirements are...

Learn the purpose of a process:



Be aware of a serious issue:



Dotted lines are a visual aid to group related information:



Testing steps:



## HTML navigation

Some browsers allow you to pan and zoom into parts of this document from the sidebar, to search for keywords, and to jump to book-marked pages. Other browsers require you to use scroll bars to move around the pages. You can take advantage of the built-in navigation links provided in this document, or you can use those on your browser navigation bar.

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