xCAT 2 How to Install Additional Software
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1.0 Introduction

   xCAT 2 Cookbook illustrates how you can install the operating systems on the nodes. There are times you want to install addition software. This document explains how you can add additional software into the cluster for both stateful and stateless cases. It will also introduce a new command called 'updatenode' to allow you to configure or reconfigure the nodes. Please note all the discussion below except chapter 5 is for Linux only. There are a lot of differences in AIX. Please refer to "xCAT2 AIX Cookbook" for related topics in AIX.

2.0 Install Additional Software for Stateless Nodes

1. copy the extra rpms you are going to add on to
 `/install/post/otherpkgs/<os>/<arch>/*` directory or its subdirectories where `<os>` and `<arch>` are defined in the `nodetype` table.
Use the following command to find out `<os>` and `<arch>` for a node.
 `nodels node1 nodetype.os nodetype.arch`

2. add rpm names (without version number) with their subdirectories into
 `/install/custom/netboot/<ostype>/profile.otherpkgs.pkglist` where `<profile>` is defined in the `nodetype` table. `<ostype>` is the operating system name without the version number. The following os types are recognized by xCAT.

```
        centos
        fedora
        rh
        sles
        windows
```

 Note: The default package lists are usually stored under
 `/opt/xcat/share/xcat/netboot/<ostype>/` directory.

For example, file `/install/custom/netboot/sles/compute.otherpkgs.pkglist` will look like this if you want to add RSCT packages (src, rsct.core and rsct.core.utils):

```
src
rsct.core
rsct.core.utils
```

If you have copied the rpms into a subdirectory, say rsct, then the file should be look like this:

```
rsct/src
rsct/rsct.core
rsct/rsct.core.utils
```

Please see Appendix for the format of a `otherpkgs.pkglist` file.

3.run `/opt/xcat/share/xcat/netboot/<ostype>/genimage`, the extra rpms are automatically installed into the image. Then run `packimage`.

4. if you have additional configuration scripts for the software that would like to run after the node is boot up, copy the script to /install/postscripts directory and add the confirmation script to the `postscripts` table.

```
cp myconfigsctipt /install/postscripts/
chtab node=compute postscripts.postscripts=myconfigsctipt
```

After setting up, deploy the node as usual. The addition software will be installed and configured during the node deployment.

3.0 Install Additional Software for Stateful Nodes

1. copy the extra rpms you are going to add on to
`/install/post/otherpkgs/<os>/<arch>/*` directory or its subdirectories where `<os>` and `<arch>` are defined in the nodetype table.
Use the following command to find out `<os>` and `<arch>` for a node.
`nodels node1 nodetype.os nodetype.arch`

2. [only for Linux]
you should create repodata for the `/install/post/otherpkgs/<os>/<arch>/` directory. The repodata is necessary for "yum" and "zypper" to know about the repository.

The command "createrepo" is used to create repodata, before executing the command, please make sure the "createrepo" rpm package is installed. Remember that on SLES11, the "createrepo" rpm package is in the SLE-11-SDK-DVD Media 1 ISO, not in the install ISO.

After "createrepo" is installed, run the following command to create repodata for the directory `/install/post/otherpkgs/<os>/<arch>/`.
`createrepo /install/post/otherpkgs/<os>/<arch>/`

3. add rpm names (without version number) with their subdirectories into
`/install/custom/install/<ostype>/profile.otherpkgs.pkglist` where
`<profile>` is defined in the `nodetype` table. `<ostype>` is the operating system name
without the version number. The following os types are recognized by xCAT.

```
centos
fedora
rh
sles
windows
```

Note: The default package lists are usually stored under
`/opt/xcat/share/xcat/install/<ostype>/` directory.

For example, file `/install/custom/netboot/sles/compute.otherpkgs.pkglist` will
look like this if you want to add RSCT packages (src, rsct.core and rsct.core.utils):

```
src
rsct.core
rsct.core.utils
```

If you have copied the rpms into a subdirectory, say rsct, then the file should be look like
this:

```
rsct/src
rsct/rsct.core
rsct/rsct.core.utils
```

Please see Appendix for the format of a `otherpkgs.pkglist` file.

3. add the word `'otherpkgs'` to the `postscripts` table. For example:

```
chtab node=compute postscripts.postcripts=otherpkgs
```

4. if you have additional configuration scripts for the software that would like to run after
the node is boot up, copy the script to /install/postscripts directory and add the
confirmation script to the `postscripts` table.

```
cp myconfigsctipt /install/postscripts/
chtab node=compute postscripts.postscripts=otherpkgs,myconfigsctipt
```

After setting up, deploy the node as usual. The addition software will be installed and
configured during the node deployment.

4.0 Install Additional Software for Stateful Nodes after the Nodes are Up and Running

1. follow step 1-4 in chapter 3.

2. run updatenode command

```
updatenode noderange otherpkgs
```

If you have configuration script, run

```
updatenode <noderange> otherpkgs,myconfigscript
```

5.0 Rerun Postscripts or Run Addition Scripts with updatenode Command

You can use `updatenode` command to perform the following functions after the nodes are up and running:

- install additional software for stateful nodes (described in chapter 4)
- run postscripts defined in the `postscripts` table for both stateful and stateless nodes.
- run any script for both stateful and stateless nodes.

The later 2 functions works on AIX as well.

The following are some examples of how to use it:
To re-run all the postscripts for the nodes:

```
updatenode <noderange>
```

To re-run the syslog postscripts for the nodes:

```
updatenode <noderange> syslog
```

To run a list of scripts, make sure the scripts are copied to /install/postscripts directory, then

```
updatenode <noderange> script1,script2
```

Note: `script1,script2` may or may not be defined in the `postscripts` table. However if you want script1 and script2 get invoked next time the nodes are deployed, add them into the `postscripts` table.

Appendix: File Format for a otherpkgs.pkglist File

A simple `otherpkgs.pkglist` file just contains the the name of the rpm file without the version numbers.
For example, if you put the following three rpms under
`/install/post/otherpkgs/<os>/<arch>/` directory,

```
rsct.core-2.5.3.1-09120.ppc.rpm
rsct.core.utils-2.5.3.1-09118.ppc.rpm
src-1.3.0.4-09118.ppc.rpm
```

The otherpkgs.pkglist file will be like this:

```
src
rsct.core
rsct.core.utils
```

If you create a subdirectory under `/install/post/otherpkgs/<os>/<arch>/`, say `rsct`, the `otherpkgs.pkglist` file will be like this:

```
rsct/src
rsct/rsct.core
rsct/rsct.core.utils
```

You can group some rpms in a file and include that file in the `otherpkgs.pkglist` file using `#INCLUDE:<file>#` format.

```
rsct/src
rsct/rsct.core
```

```
rsct/rsct.core.utils
#INCLUDE:/install/post/otherpkgs/myotherlist#
```
where `/install/post/otherpkgs/myotherlist` is another package list file that follows the same format.

You can also specify in this file that certain rpms to be removed before installing the new software. This is done by adding '-' before the rpm names you want to remove. For example:
```
rsct/src
rsct/rsct.core
rsct/rsct.core.utils
#INCLUDE:/install/post/otherpkgs/myotherlist#
-perl-doc
```