**RedHat HA - Patching**

NOTE: We need to make sure patching a cluster is done each node at a time.

For example: Patch Node1, reboot. Patch Node2, reboot. Patch Node3 (or Quorum Device), reboot. The directions below will explain how this process should work.

Perform the following steps to update the base RHEL packages, High Availability Add-On packages, and/or Resilient Storage Add-On packages on each node in a rolling-fashion:

1.) Choose a single node where the software will be updated. If any preparations need to be made before stopping or moving the resources or software running on that node, carry out those steps now.

2.) Move any managed resources off this node as needed. If there are specific requirements or preferences for where resources should be relocated to, then consider creating new location constraints to place the resources on the correct node. The location of resources can be strategically chosen to result in the least number of moves throughout the Rolling Update procedure, rather than moving resources in preparation for every single node update.

Otherwise if allowing the cluster to automatically manage placement of resources on its own is acceptable, then the next step will automatically take care of this.

3.) Place the chosen node in standby mode to ensure it is not considered in service, and to cause any remaining resources to be relocated elsewhere or stopped.

pcs cluster standby [<node>]

4.) Stop the cluster software on the chosen node using pcs:

pcs cluster stop [<node>]

5.) Perform any necessary software updates on the chosen node. There are various methods for doing so that are outside the scope of this article. Consult the general instructions for installing High Availability and Resilient Storage software, Knowledge Content in the Customer Portal, and/or the Product Documentation.

6.) If any software was updated that necessitates a reboot, prepare to perform that reboot. It is recommended that cluster software be disabled from starting on boot so that the host can be checked to ensure it is fully functional on its new software versions before bringing it into the cluster. The cluster stack can be disabled from starting on boot on this chosen node with:

pcs cluster disable [<node>]

Perform the reboot when ready, and when complete, ensure the host seems to be fully functional and is using the correct software in any relevant areas (such as having booted into the latest kernel). If anything does not seem correct, then do not proceed until the situation is resolved. Contact Red Hat Global Support Services for assistance if needed.

Once everything appears to be set up correctly, re-enable the cluster software on this chosen node if it was previously enabled:

pcs cluster enable [<node>]

7.) Rejoin the updated node into the cluster

pcs cluster start [<node>]

Check pcs status output to determine if everything appears as it should. Once the node seems to be functioning properly, reactivate it for service by taking it out of standby mode:

pcs cluster unstandby [<node>]

8.) If any temporary location constraints were created in step 2 to control the placement of resources, then adjust or remove them to allow resources to go back to their normally preferred locations.

9.) Repeat steps 1-8 for each remaining node.

**NOTE: A Quorum Device (which is used in our current ODS setup) can be patched at any time, but it cannot be done at the same time as the cluster (Node1 and Node2). There are no specific commands that need to be followed for the Quorum Device. The current cluster (Node1 and Node2) just needs to be running and in a healthy state.**