

## Zero downtime Fix pack

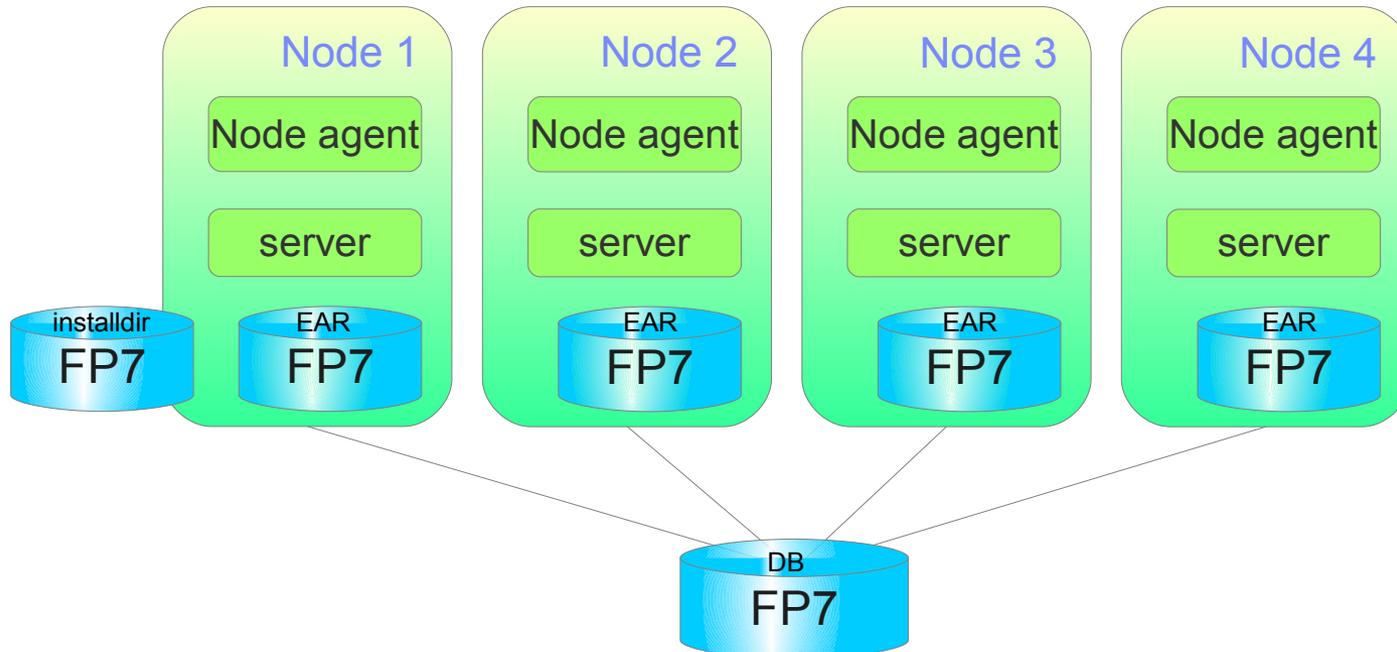
- Installing a fix pack is now supported in a clustered environment without any downtime
- Prerequisites and assumptions:
  - Site must already be on Fix Pack 7 or later
  - Interim fix JR52690 must be installed
    - This supports restarting updatedb in case of errors
    - If installing fix pack 8 or 9, this interim fix needs to be reinstalled after installing the fix pack to the installation directory
  - Support for installing fix pack 8 or later
  - Since part of the cluster must be down during parts of the install, the process must be done at a time where load is at most at half the capacity of the cluster
  - The process requires manual manipulation of servers and node agents

## Zero downtime fix pack – overall approach

- The approach for applying a fix pack without downtime is:
  - Install fix pack to the WC installation directory, including the corresponding JR52690
  - Update the database
  - Update the instances in the cluster. In the following, we assume the cluster is split into two groups: G1 and G2:
    - Shut down the servers in G1
    - Shut down the node agents G2
    - Apply the fix pack to the instances in G1
    - Wait for the updated application to be replicated to all the nodes in G1
    - Start the servers in G1
    - Stop the servers in G2
    - Start the node agents in G2
    - Wait for the nodes in G2 to be updated with the new EAR
    - Start the servers in G2
- Note that if you are on FEP7 or later, the above actions must be completed on both the WC and the Search cluster simultaneously

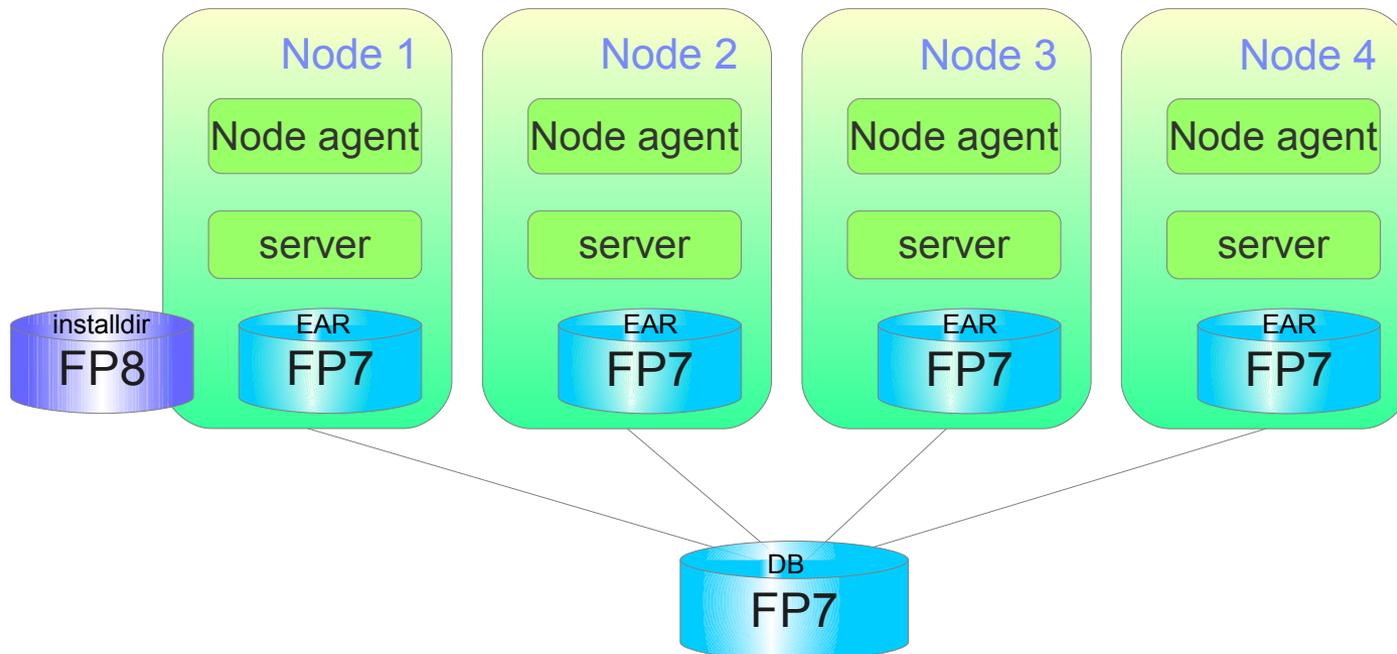
## Zero downtime fixpack – graphical view

- This is our cluster. It has four members, running fix pack 7. We will update to fix pack 8
  - As described earlier, we will update it in two groups: Node 1&2 and Node 3&4
  - In this example, WC is installed on Node 1
  - If you have a different number of members, split it into similar groups
    - For example, if you have nine members, you'll have one group of four and one of five members



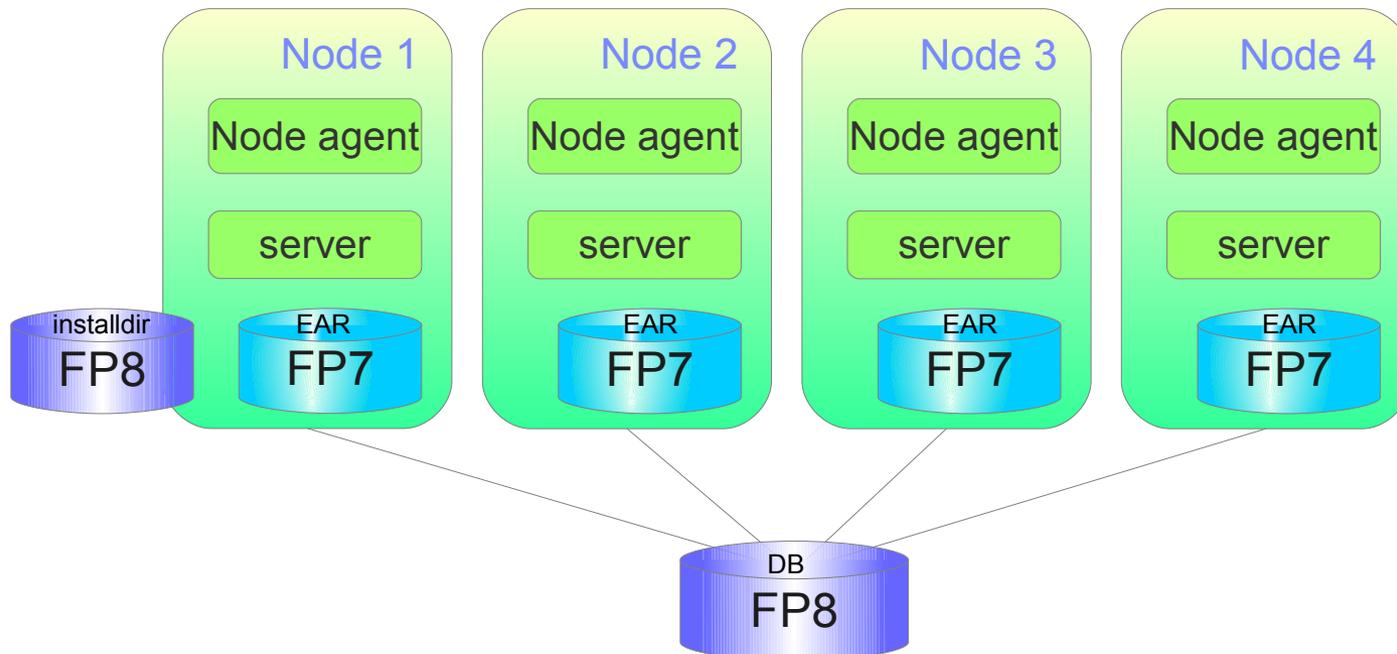
## Zero downtime fixpack – graphical view

- Install the new fix pack to the WC installation directory
  - Also remember to reinstall JR52690



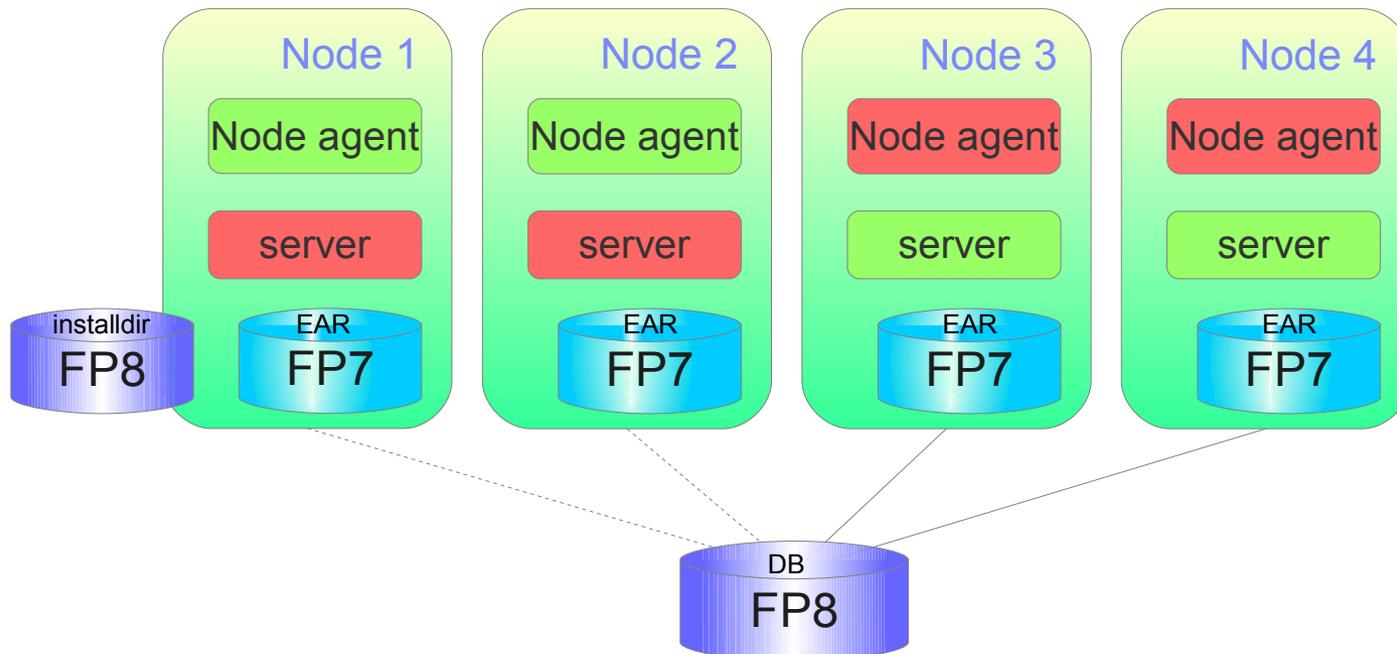
## Zero downtime fixpack – graphical view

- Update the database to fix pack 8 level
  - Note that with JR52690, updatedb can be re-run if initial run was unsuccessful



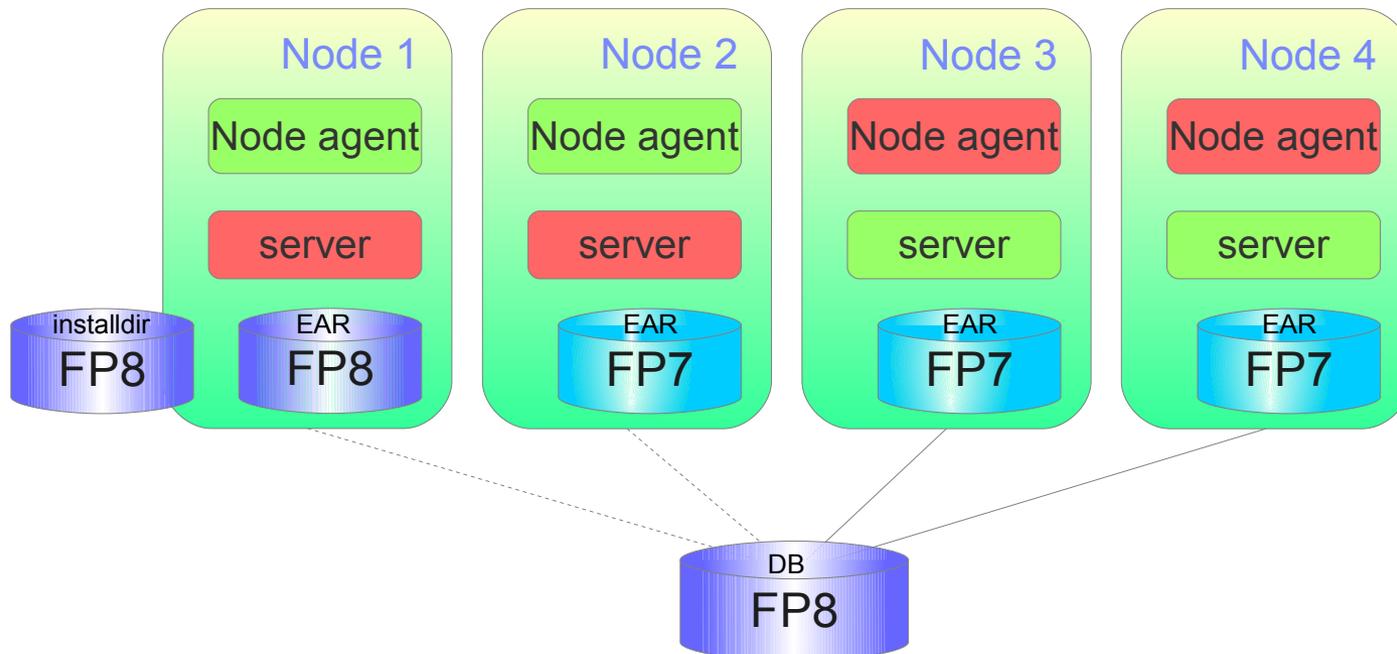
## Zero downtime fixpack – graphical view

- Shut down servers on members in the first group (Node 1&2)
  - This is done to ensure they will not accept traffic until we want them to
- Shut down node agents in the second group (Node 3&4)
  - This is done to ensure these servers will not be updated until we want them to



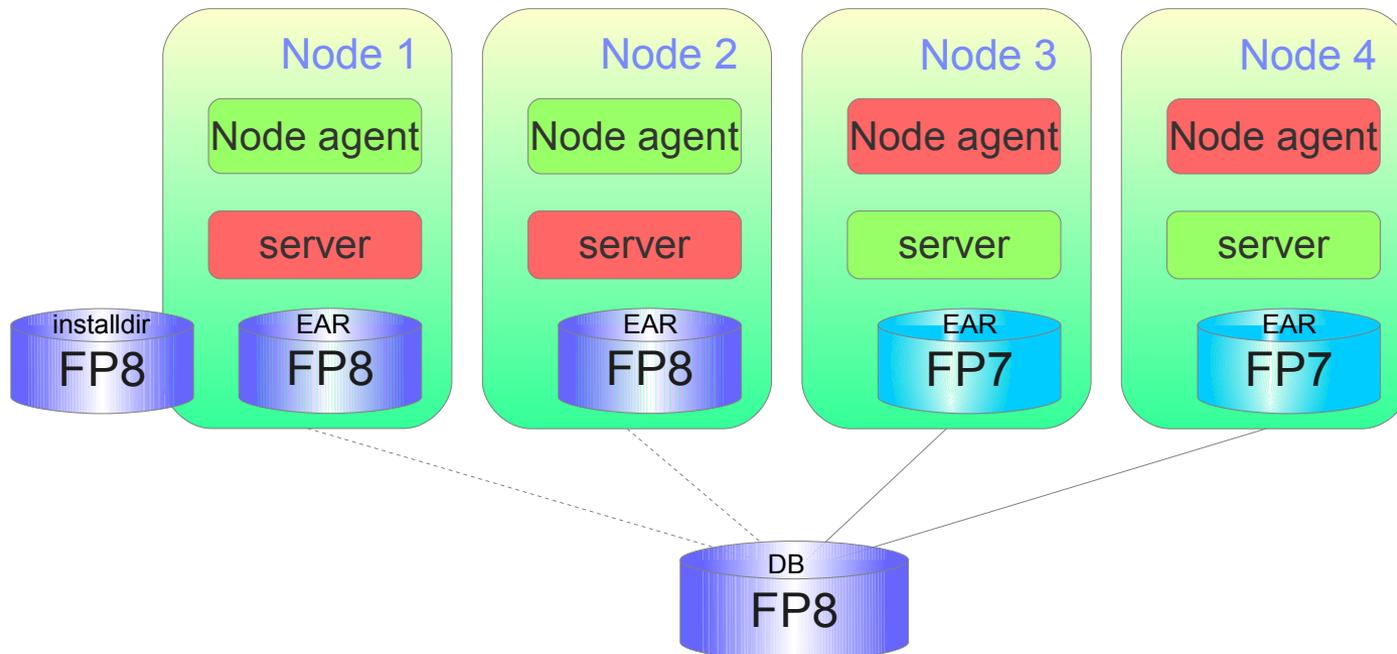
## Zero downtime fixpack – graphical view

- Apply the new fix pack (FP8 here) to one of the members of the first group
  - This will be the node that also has WC installed with an updated installation directory
  - In our example, we're updating Node 1



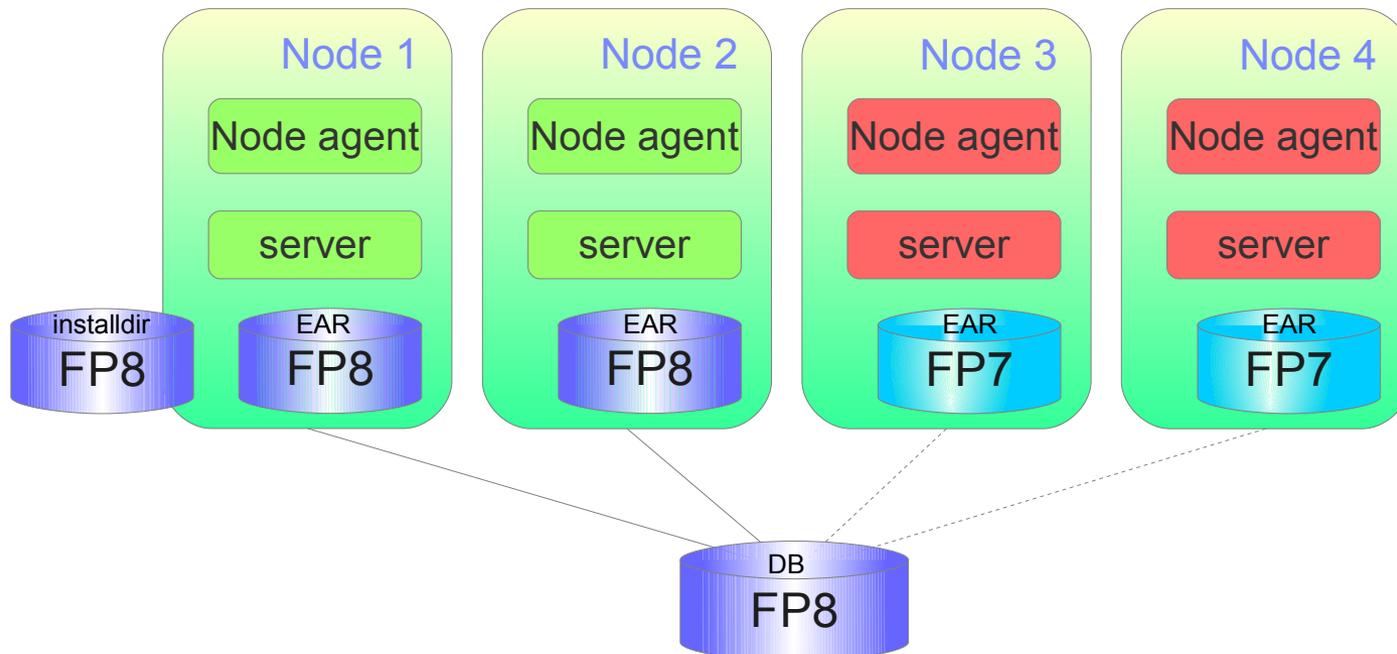
## Zero downtime fixpack – graphical view

- Wait for the deployment manager to replicate the updated EAR to the remaining nodes in the first group (Node 2 here)
  - This can take a while, as the EAR is copied over the network



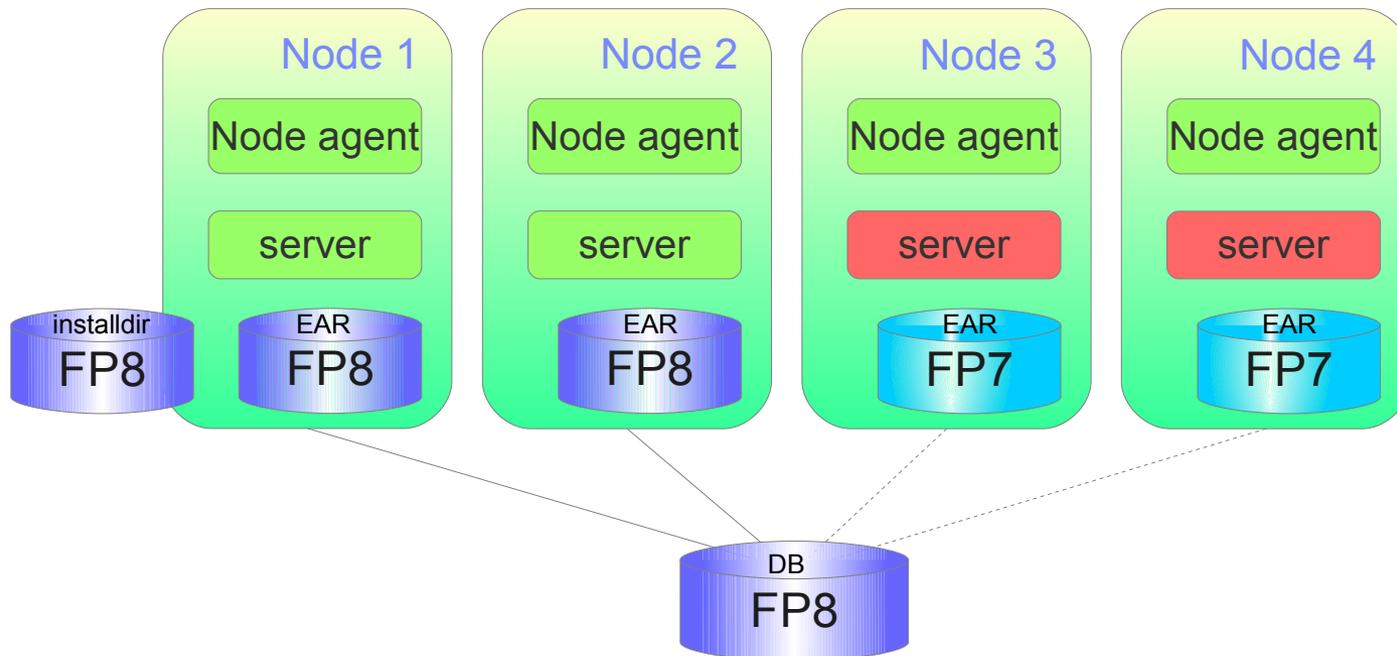
## Zero downtime fixpack – graphical view

- Start up the servers in group 1 (Nodes 1&2)
- Shut down the servers in group 2 (Nodes 3&4)
- The cluster is now serving traffic on the target fix pack level



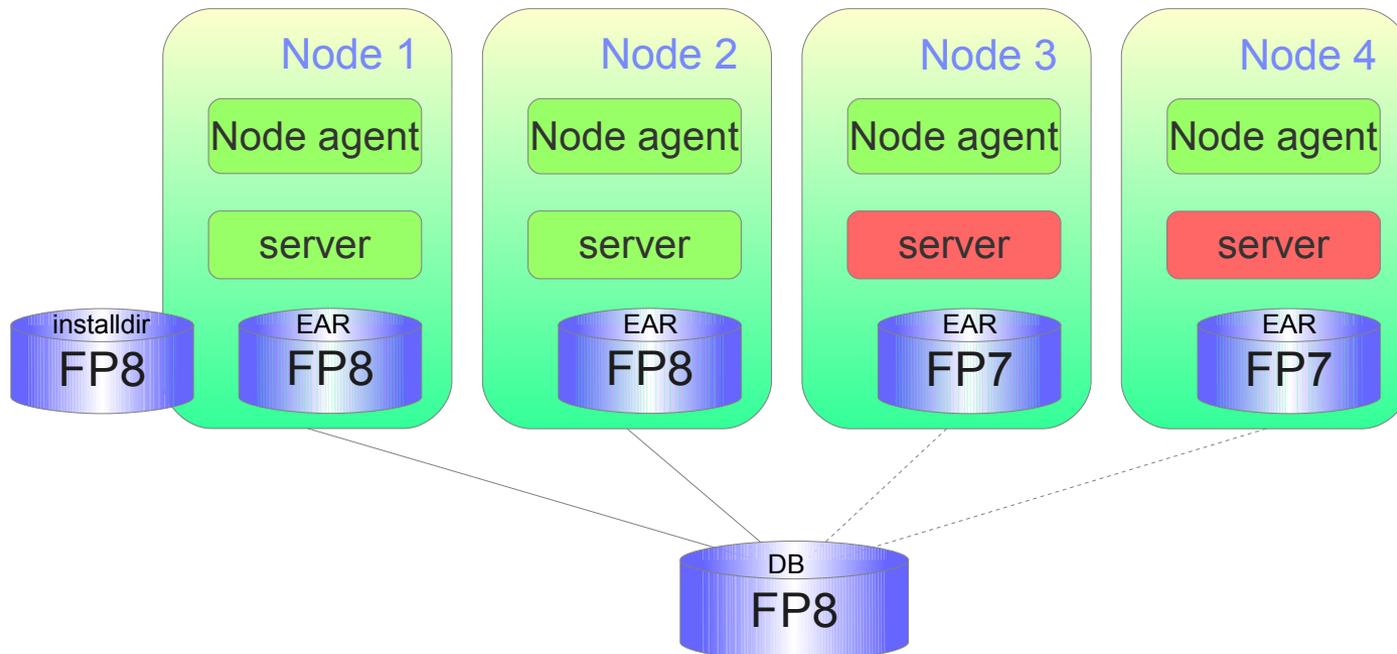
## Zero downtime fixpack – graphical view

- Start the node agents on the servers in group 2 (Nodes 3&4)



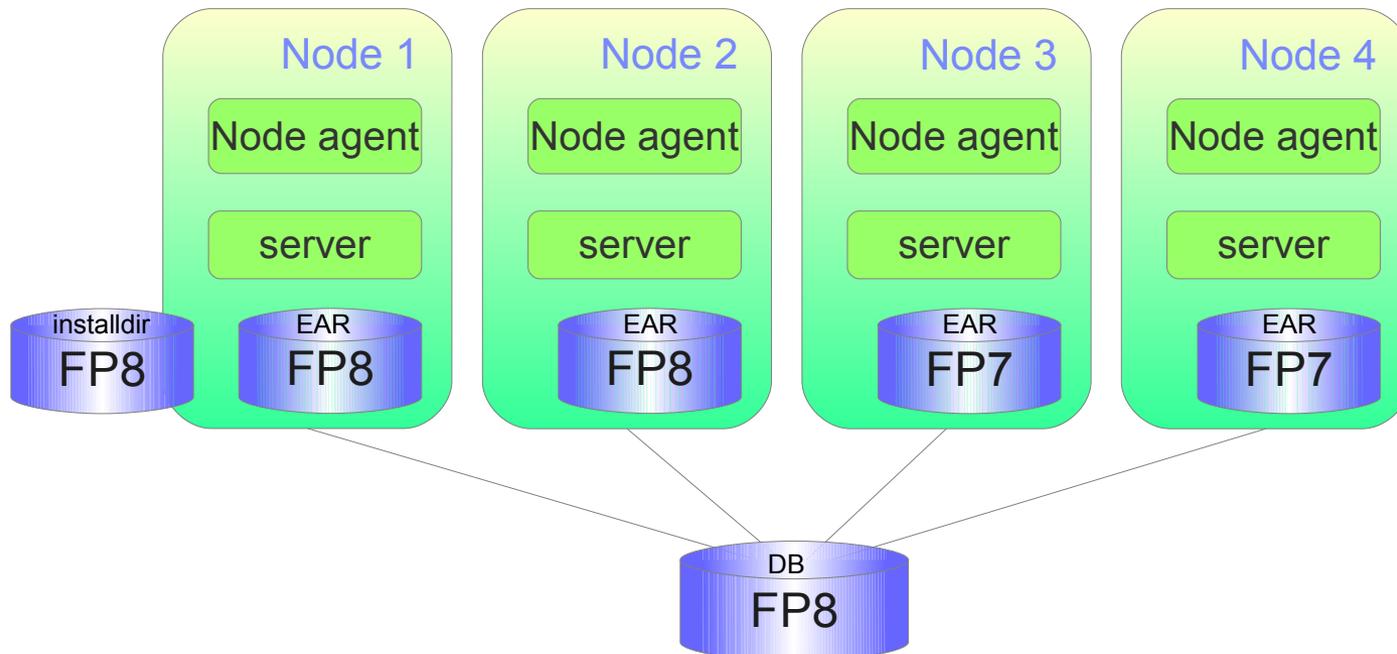
## Zero downtime fixpack – graphical view

- Wait for the EAR to be updated in the remaining nodes



## Zero downtime fixpack – graphical view

- Start the servers in group 2 (Nodes 3&4)
- The entire cluster is now updated
- Note that we only showed the WC cluster here. An equivalent activity should happen for the Search cluster, in parallel



## Trademarks, disclaimer, and copyright information

IBM, the IBM logo, ibm.com, Coremetrics, DB2, PowerVM, Rational, WebSphere, and z/VM are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of other IBM trademarks is available on the web at "[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)" at <http://www.ibm.com/legal/copytrade.shtml>

Other company, product, or service names may be trademarks or service marks of others.

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE. IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM IBM (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF ANY AGREEMENT OR LICENSE GOVERNING THE USE OF IBM PRODUCTS OR SOFTWARE.

© Copyright International Business Machines Corporation 2015. All rights reserved.

## Zero downtime Fix pack

- Installing a fix pack is now supported in a clustered environment without any downtime
- Prerequisites and assumptions:
  - Site must already be on Fix Pack 7 or later
  - Interim fix JR52690 must be installed
    - This supports restarting updatedb in case of errors
    - If installing fix pack 8 or 9, this interim fix needs to be reinstalled after installing the fix pack to the installation directory
  - Support for installing fix pack 8 or later
  - Since part of the cluster must be down during parts of the install, the process must be done at a time where load is at most at half the capacity of the cluster
  - The process requires manual manipulation of servers and node agents

The ability to apply a fix pack without incurring a site outage has long been requested by clients, and with interim fix JR52690, this is now a supported method.

What this fix does is to improve the updatedb script to be restartable in case of an error. In other words, if an error occurs during the course of running updatedb, you no longer will need to restore the database and retry, but can simply resolve the error condition and re-run the script on the same database.

Since the fix pack and interim fixes must also support running on a newer database, the zero-downtime fixpack process is only supported on fix pack 7 and onwards. That is, you can install fix pack 8 and newer on a fix pack 7 and newer installation that has JR52690 installed. Note that this is not included in fix packs 8 and 9, so you must reinstall JR52690 after installing the fix pack to the installation directory.

The process involves running at partial capacity, so we strongly recommend that the fix pack install is done during a low traffic situation.

The process is not automated and does require manual stopping and starting of node agents and servers throughout the process. We recommend devising a detailed script, outlining every single action so as to ensure a smooth process.

## Zero downtime fix pack – overall approach

- The approach for applying a fix pack without downtime is:
  - Install fix pack to the WC installation directory, including the corresponding JR52690
  - Update the database
  - Update the instances in the cluster. In the following, we assume the cluster is split into two groups: G1 and G2:
    - Shut down the servers in G1
    - Shut down the node agents G2
    - Apply the fix pack to the instances in G1
    - Wait for the updated application to be replicated to all the nodes in G1
    - Start the servers in G1
    - Stop the servers in G2
    - Start the node agents in G2
    - Wait for the nodes in G2 to be updated with the new EAR
    - Start the servers in G2
- Note that if you are on FEP7 or later, the above actions must be completed on both the WC and the Search cluster simultaneously

The overall approach for applying a fix pack with no downtime is as follows:

First, you must install the fixpack to the WebSphere Commerce installation directory. We will in the following assume that this is Node 1 of your cluster.

Then you must update the database using the updateddb script. As mentioned earlier, the JR52690 interim fix will allow you to re-run this script as needed.

Finally, you will update the instances (i.e. the EAR files) in the production cluster.

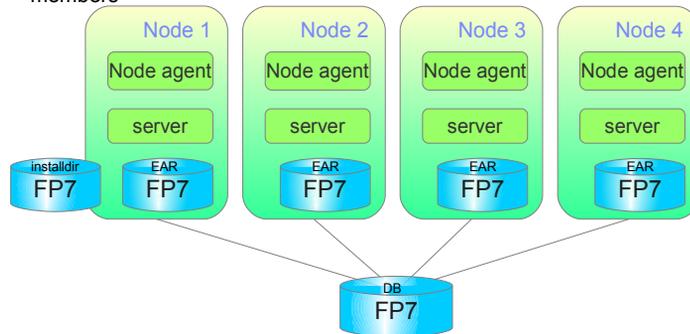
Since we do not recommend that the servers in the cluster run at different levels at the same time, you will do this by shutting down one half of the cluster members, apply the fix pack to those members, switch over, restarting the updated cluster members and stopping the remaining members, update those remaining members and then finally bring back all cluster members.

The way to control which cluster members are updated is by stopping and starting the node agents. The node agent is the process on a node that communicates with the deployment manager. By stopping the node agent on a node, you effectively ensures that the EAR file on that node will not be automatically updated by the deployment manager.

So to summarize, you will shut down the server in the first half of the cluster and the node agent in the second half. At this point, only the second half of the cluster will serve

## Zero downtime fixpack – graphical view

- This is our cluster. It has four members, running fix pack 7. We will update to fix pack 8
  - As described earlier, we will update it in two groups: Node 1&2 and Node 3&4
  - In this example, WC is installed on Node 1
  - If you have a different number of members, split it into similar groups
    - For example, if you have nine members, you'll have one group of four and one of five members



3

© 2015 IBM Corporation

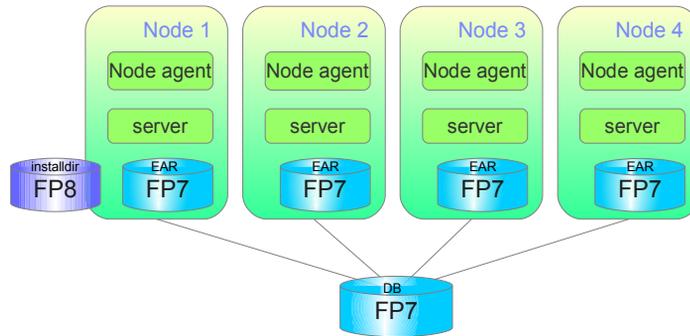
In the following slides, we will detail the process outlined in the previous slide in a graphical way.

In this example, we assume the production cluster to have four members. Again, since the same actions are performed on the search and WebSphere Commerce clusters simultaneously, we will only show the WebSphere Commerce cluster, but you would perform the same actions on the Search cluster.

We also assume that WebSphere Commerce is installed on Node 1.

## Zero downtime fixpack – graphical view

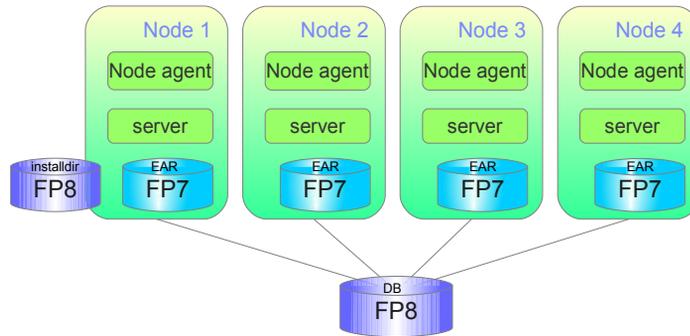
- Install the new fix pack to the WC installation directory  
– Also remember to reinstall JR52690



The first action is to install the fix pack to the WebSphere Commerce installation directory without updating neither the database or any instances.

## Zero downtime fixpack – graphical view

- Update the database to fix pack 8 level
  - Note that with JR52690, updatedb can be re-run if initial run was unsuccessful

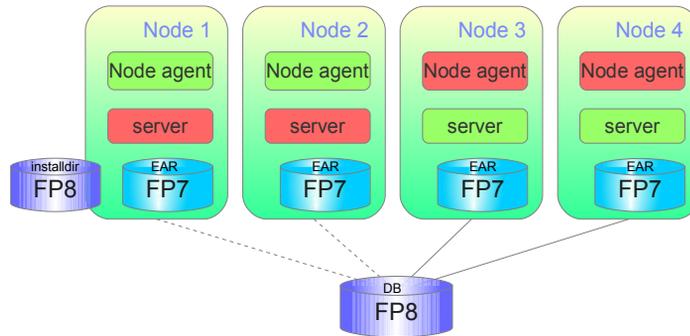


Next, you will use updatedb to update the database to the new fix pack level.

At this point, you will have the entire cluster serving traffic on a fix pack 7 level against a fix pack 8 level database.

## Zero downtime fixpack – graphical view

- Shut down servers on members in the first group (Node 1&2)
  - This is done to ensure they will not accept traffic until we want them to
- Shut down node agents in the second group (Node 3&4)
  - This is done to ensure these servers will not be updated until we want them to

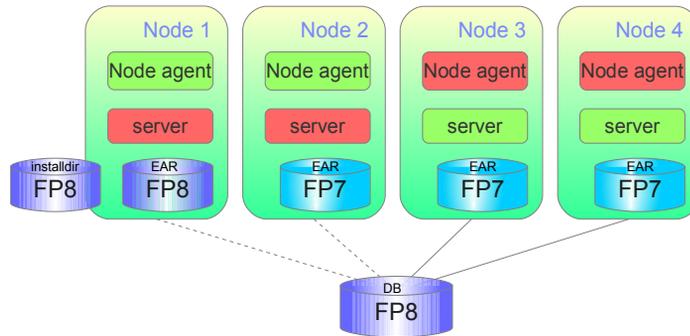


Then you will shut down the servers in the first half of the cluster (Nodes 1 and 2 in this example) and the node agents on the second half of the cluster (Nodes 3 and 4 here).

At this point, only the second half of the cluster (nodes 3 and 4) are serving traffic.

## Zero downtime fixpack – graphical view

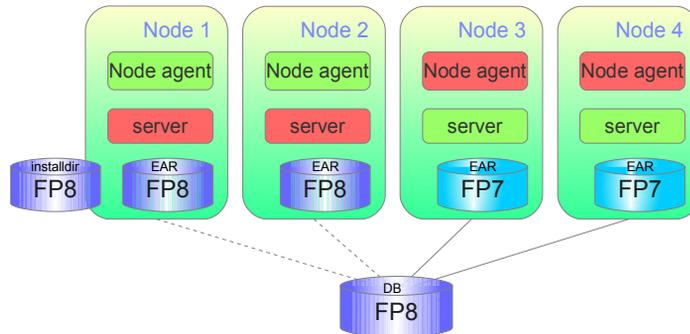
- Apply the new fix pack (FP8 here) to one of the members of the first group
  - This will be the node that also has WC installed with an updated installation directory
  - In our example, we're updating Node 1



You will then update the instance (i.e. the EAR) on Node 1.

## Zero downtime fixpack – graphical view

- Wait for the deployment manager to replicate the updated EAR to the remaining nodes in the first group (Node 2 here)
  - This can take a while, as the EAR is copied over the network



8

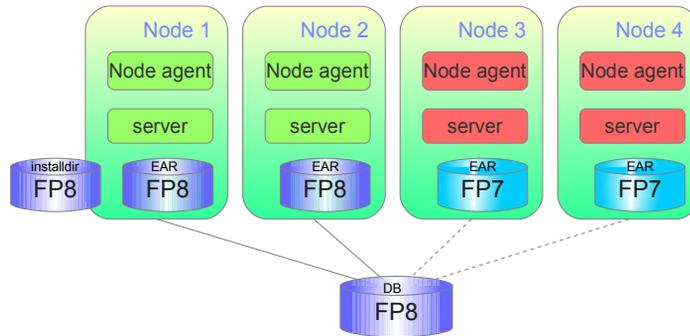
© 2015 IBM Corporation

Since the node agents in the first half of the cluster are still running, the deployment manager (not shown here) will detect the EAR update and automatically distribute the updated EAR to all cluster members with a running node agent. With the node agents on the second half of the cluster (the one serving traffic) down, these will be kept at backlevel, while the nodes in the first half are updated.

You must wait for all cluster members to be updated. This can take a while, in many cases 10 minutes or more.

## Zero downtime fixpack – graphical view

- Start up the servers in group 1 (Nodes 1&2)
- Shut down the servers in group 2 (Nodes 3&4)
- The cluster is now serving traffic on the target fix pack level

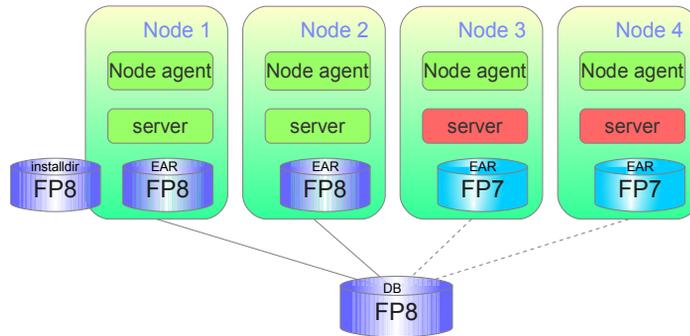


Now that the first half of the cluster are fully updated, you will start the servers in this half up and shut the remaining servers down.

At this point your production cluster will be serving traffic on an updated set of servers, but at half capacity.

## Zero downtime fixpack – graphical view

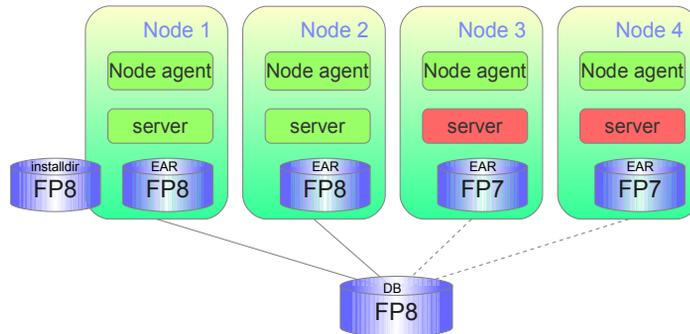
- Start the node agents on the servers in group 2 (Nodes 3&4)



Now, start the node agents in the second half of the cluster.

## Zero downtime fixpack – graphical view

- Wait for the EAR to be updated in the remaining nodes



11

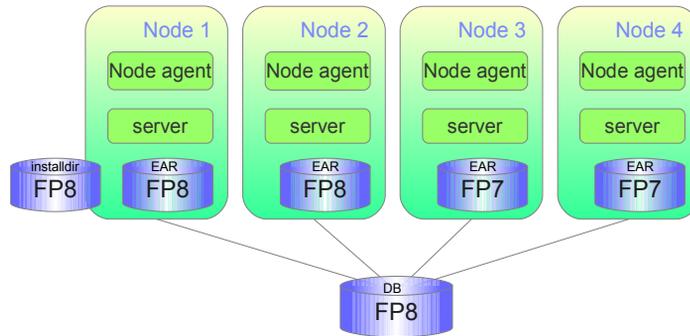
© 2015 IBM Corporation

With the node agents on the second half of the cluster running again, the deployment manager will distribute the updated application to these nodes.

Again, wait for all servers to be updated before proceeding to the next step.

## Zero downtime fixpack – graphical view

- Start the servers in group 2 (Nodes 3&4)
- The entire cluster is now updated
- Note that we only showed the WC cluster here. An equivalent activity should happen for the Search cluster, in parallel



12

© 2015 IBM Corporation

Finally, with all servers at the target fixpack level, you can start the servers in the second half of the cluster.

Your site will now be running at full capacity with a fully updated cluster.

Note once again that you would perform the same steps in parallel on the Search cluster.

Also note that in this example, we focused on installing a fix pack. If you have any interim fixes, you would install these at the same time as the fix pack.



## Trademarks, disclaimer, and copyright information

IBM, the IBM logo, ibm.com, Coremetrics, DB2, PowerVM, Rational, WebSphere, and z/VM are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of other IBM trademarks is available on the web at "[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)" at <http://www.ibm.com/legal/copytrade.shtml>

Other company, product, or service names may be trademarks or service marks of others.

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE. IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM IBM (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF ANY AGREEMENT OR LICENSE GOVERNING THE USE OF IBM PRODUCTS OR SOFTWARE.

© Copyright International Business Machines Corporation 2015. All rights reserved.