

IBM Cluster Checklist

IBM Confidential
DRAFT 09/03/99

Checklist for IBM Cluster Solutions using MSCS

1.0 IBM ServeRAID-II and ServeRAID-3H Configurations

Note: This checklist assumes that you have followed step by step the instructions in the regularly updated IBM installation guide (this is the only guide which is officially supported by IBM Technical Support). The checklist will only provide ADDITIONAL help in problem determination and trouble shooting, based on most common problems seen in the field.

Please check for the latest version of the updated official IBM installation instructions before using this checklist.

If you can not answer YES to all following questions you may not have achieved a valid configuration.

TABLE 1.

Check the following questions and tick the box if you can answer with "yes".	✓
General	
<p>1. Has the regularly updated IBM installation guide been used for installation?</p> <p><i>(currently 3313890.pdf for ServerRAID-3H and 2417813.pdf for ServeRAID-II)</i> <i>PLEASE check for updates and use only the current version!</i></p>	<input type="checkbox"/>
Hardware	
<p>2. Has Channel 3 been used for SCSI-heartbeat connection?</p> <p><i>This is a hard-coded requirement for ServeRAID-II and ServeRAID-3H. Do not attempt to use another channel!</i> <i>You need to connect channel 3 using the Third Channel Cable-option.</i> <i>ServeRAID-3H has only channel 3 as internal connection available. If you want RAID protection for your OS you need to use either an additional adapter (e.g. ServeRAID-3L) or install your OS on a non-shared logical drive in your external enclosure.</i></p>	<input type="checkbox"/>
<p>3. Only EXP10: Are you using Auto Sensing SCSI Cable to connect to EXP10?</p> <p><i>(p/nr 03K9352) not to use with EXP15</i></p>	<input type="checkbox"/>

TABLE 1.

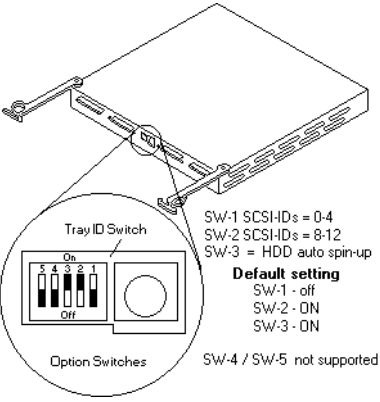
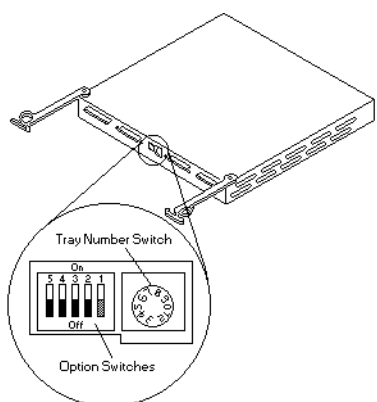
<p>Check the following questions and tick the box if you can answer with "yes".</p>	<input checked="" type="checkbox"/>
<p>4. Only EXP15: Are you using LVDS cabling? <i>(03k9310-2m, 03k9311-4.2m, 03k9312-12m)</i></p>	<input type="checkbox"/>
<p>5. Have you checked the switch settings of your EXP according to the pictures?</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>EXP10</p> </div> <div style="text-align: center;">  <p>EXP15 (all must be set to off!)</p> </div> </div>	<input type="checkbox"/>
<p>6. Have all Hot Spares been low level formatted? <i>Remember that Hot Spares are non-shared devices. This means that if you wish to use Hot Spares, which we recommend, EACH server needs to have at least one Hot Spare assigned which should be left in the RDY-state on the partner node.</i></p>	<input type="checkbox"/>
<p>7. Have all RDY-drives been removed or set to SBY? <i>If you just set the drive to EMP it will be set again to RDY after the reboot, that's why please remove the drive or set it to SBY.</i></p>	<input type="checkbox"/>
<p>ServeRAID Settings</p>	
<p>8. Only EXP10: Has the speed for each shared SCSI channel been set to 10Mhz only? <i>The EXP10 does not support Ultra speed in a clustering environment</i></p>	<input type="checkbox"/>

TABLE 1.

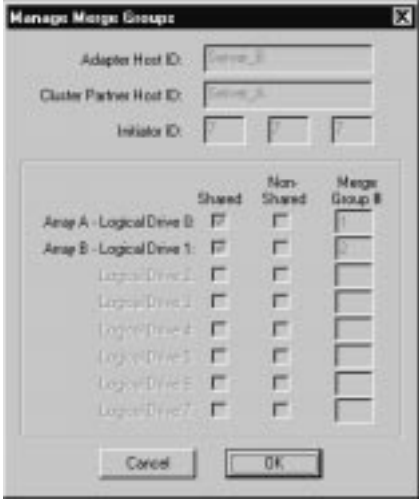
Check the following questions and tick the box if you can answer with "yes".	✓
<p>9. Have the merge ID s been defined according to the installation guide?</p> <p><i>Make sure that the merge ID for a shared logical drive is the same on both servers (Logical Drive 0 shows up with e.g. Merge ID 1 on both nodes.</i></p> <p><i>The order of the displayed Logical drives/Merge Ids might change when viewed in ServeRAID Admin/Monitoring Utility, depending on the order of the failover of the drives. However each set of physical drives should have always the same Merge ID.</i></p> <p><i>Cluster Server references disk resources by Merge ID's/"sticky drive letter" in Disk Administrator rather than disk array letter/logical drive number seen in ServeRAID Admin/Monitoring Utility.</i></p> 	
<p>10. Have you verified the Host ID and Partner Host ID?</p> <p><i>Host ID of Node A becomes Partner Host ID of Node B and the other way around, so they show up with exactly the same name (case sensitive and unique) but the other way around on the other node.</i></p>	
<p>11. Have all shared logical drives been set to Write-Through mode?</p> <p><i>Cached data, even if 'protected by the battery backed-up cache option' can not be transferred to the surviving partner in case of a node failure. You can not use the battery backed-up cache option for your shared logical drives in a clustering environment.</i></p>	
<p>12. Have the SCSI-Ids of the ServeRAID cards been checked?</p> <p><i>To avoid a SCSI conflict on the shared channel you need to assign different SCSI IDs to both adapters, e.g. first ServeRAID SCSI ID:6 on all channels, second ServeRAID SCSI ID:7 on all channels.</i></p>	
ServeRAID-Codes	
<p>13. Have you verified that you are using the latest version of ServeRAID drivers?</p> <p><i>currently disk version 3.10 (as of 05/03/99) - please check for updates</i></p>	

TABLE 1.

<p>Check the following questions and tick the box if you can answer with "yes".</p>	<input checked="" type="checkbox"/>
<p>14. Have you checked that you are using the latest version of ServeRAID BIOS and Firmware? <i>currently disk version 3.11 (as of 05/03/99) - please check for updates</i></p>	<input type="checkbox"/>
<p>15. Important: Have you used the latest version of the ServeRAID Cluster Solution disk? <i>currently version 3.10 (as of 05/03/99) please check for updates. Alternatively, check the properties of the file IPSHA.dll, it must be version 2.80 or higher</i></p>	<input type="checkbox"/>
<p>Service Packs / Hotfixes</p>	
<p>Service Pack 4 addresses several issues in the clustering environment and includes all the pre-service pack-Hotfixes (including clusfixi.exe...).</p> <p>Microsoft strongly recommends to customers to install SP4.</p> <p>Note: SP4 must be installed after MSCS! If you need to reinstall MSCS you need to uninstall SP4 before!</p> <p>However, if it is not possible to apply Service Packs (e.g. due to certification problems or incompatibility) you need to ensure that the customer obtains and installs the appropriate Hotfixes from Microsoft. Therefore the customer needs to check compatibility of SP4 with the manufacturer of the application he is running on the cluster.</p> <p>If it is not possible to apply SP4 you should revise above all the following article in the Microsoft Knowledge Base and get the customer to obtain the Hotfix from Microsoft and install them:</p> <ul style="list-style-type: none"> - Q147222 (clusfixi.exe) <p>You can find detailed information and the Hotfix at: ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/roll-up/CLUSTER</p> <p>Revise as well the following articles and apply hotfixes if appropriate.</p> <ul style="list-style-type: none"> - Q166839 (How to obtain and apply hotfixes) - Q193233 (update of rpcrt4.dll) - Q171181 (update of TCPIP.sys) <p>Tip: Oracle has released a fix which allows to apply SP4 in an Oracle Fail Save environment. customer can obtain fix from: ftp://192.86.154.96/server/wgt_tech/server/windowsNT/FailSafe/ofs2131/</p>	

TABLE 1.

<p>Check the following questions and tick the box if you can answer with "yes".</p>	✓
<p>16. Has Retain Tip H165468 been revised?</p>	
<p>After applying Microsoft Service Pack 4 in a Microsoft Cluster Server environment, Cluster resources that rely on NetBIOS can fail.</p> <p>Details: Microsoft Windows NT Service Pack 4 has added a newly definable parameter to the IP cluster resource, titled "Enable NetBIOS for this address". Previous to Windows NT Service Pack 4 this parameter was always enabled.</p> <p>Fix: The failing resource(s) will have a dependence on a IP cluster resource(s) with in the same cluster group. Right click this IP cluster resource and choose properties, then select the "Parameters" tab from the Properties windows, check the "Enable NetBIOS for this address" box. Bring the failed cluster group on-line.</p>	
<p>17. Only for SP4 compatible setups: Has SP4 been installed and has it been done after MSCS?</p>	
<p>18. Only for SP4 incompatible systems: Has Q147222 been revised and Hotfix applied?</p>	
<p>19. Only for SP4 incompatible systems: Has Q193233 been revised and Hotfix applied?</p>	
<p>20. Only for SP4 incompatible systems: Has Q171181 been revised and Hotfix applied?</p>	
<p>21. Have you revised all other applicable articles and applied the appropriate Hotfixes?</p> <p><i>The above list is not claiming to be complete, you need to search the Microsoft Knowledge Base and check with the IBM Helpcenter for other Hotfixes according to you specific configuration. Please keep in mind to check and apply post-SP4 released Hotfixes at:</i></p> <p>ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP4/</p>	

TABLE 1.

Check the following questions and tick the box if you can answer with "yes".	✓
Trouble Shooting / Tuning	
When checking the system for functionality, if you find that the failover is slow or that individual resources time-out/go off-line, please check the following:	
<ol style="list-style-type: none">1. Identify the resource(s) by viewing all resources in Cluster Administrator during the failover. Therefore you will need to know and understand the dependencies between the resources of the group.<ul style="list-style-type: none">- You will find that especially IP addresses are likely to be slow to failover unless they have their own resource monitor.2. If you have identified the resource, open the properties and tick the box which assigns a separate resource monitor for this resource. The change will become effective the next time the resource will be brought on-line.	
Do not assign separate resource monitors to every resource, since this will put an unnecessary load onto the the system.	
3. Have you checked the failover of resources and assigned separate resource monitors if appropriate?	<input type="checkbox"/>

2.0 SSA Cluster Setups Using IBM SSA Cluster Adapter and IBM SerialRAID Adapter

Note: This checklist assumes that you have followed the instructions provided by the documentation you have received with the SSA equipment, It will only provide ADDITIONAL help in problem determination and trouble shooting, based on most common problems seen in the field.

Please check for updated official IBM installation instructions before using this checklist.

TABLE 2.

Check the following questions and tick the box if you can answer with "yes".	✓
SSA Codes	
1. Have you updated your SSA adapter with the latest version of microcode? <i>For IBM SSA Cluster Adapter: currently v0200 (as of 05/03/99)-please check for updates For IBM SerialRAID Adapter: currently v6450 (as of 05/03/99)-please check for updates</i>	<input type="checkbox"/>
2. Are you using the latest version of drivers (currently v1.6 as of 05/03/99)?	<input type="checkbox"/>
3. Have you updated your SSA disk with the latest microcode? <i>Currently vesion 8877, 9595 and 9902 (as of 05/03/99) depending on disk model - please check for updates</i>	<input type="checkbox"/>
Hardware	
4. Have you checked the loop configuration according to the HMM of your disk-subsystem? <i>Especially when using a dual-loop configuration you need to ensure that you do not get an invalid loop configuration in case of a node failure. Please revise chapters "Loop Rules for SSA Adapters" and "Configuration Samples" in Red-book SG24-2098-02 (currently Redpiece - as of 05/03/99)</i>	<input type="checkbox"/>
5. Only for Netfinity 5500 and 5500-M10: Have you revised Retain Tip H165897? <i>Ensure that no more than one SSA adapter card is used on the primary bus (PCI Bus/0, slots 5 and 6) Ensure that IBM SSA Cluster adapters are not used on the secondary bus (PCI Bus/1, slots 1,2,3 and 4)</i>	<input type="checkbox"/>

TABLE 2.

Check the following questions and tick the box if you can answer with "yes".	✓
<p>Only for 7133: Have you checked the serial number of your bypass-cards?</p> <p><i>This applies only if you are experiencing problems (especially "lost" disks after a reboot). The suspected cards start with IWA... and IWB... Please contact the IBM Helpcentre for details.</i></p>	<input type="checkbox"/>
<p>Service Packs / Hotfixes</p> <p>The IBM SerialRAID adapter requires SP4 when used in a clustering environment. SSD is currently investigating issues with the IBM SSA Cluster adapter in conjunction with SP4. Please contact the IBM Helpcentre for details and updates if you are using this adapter.</p> <p>Service Pack 4 addresses several issues in the clustering environment and includes all the pre-service pack-Hotfixes (including clusfixi.exe...).</p> <p>Microsoft strongly recommends to customers to install SP4.</p> <p>Note: SP4 must be installed after MSCS! If you need to reinstall MSCS you need to uninstall SP4 before!</p> <p>However, if it is not possible to apply Service Packs (e.g. due to certification problems or incompatibility) you need to ensure that the customer obtains and installs the appropriate Hotfixes from Microsoft. Therefore the customer needs to check compatibility of SP4 with the manufacturer of the application he is running on the cluster.</p> <p>If it is not possible to apply SP4 you should revise above all the following article in the Microsoft Knowledge Base and get the customer to obtain the Hotfix from Microsoft and install them:</p> <ul style="list-style-type: none"> - Q147222 (clusfixi.exe) <p>You can find detailed information and the Hotfix at: ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/roll-up/CLUSTER</p> <p>Revise as well the following articles and apply hotfixes if appropriate.</p> <ul style="list-style-type: none"> - Q166839 (How to obtain and apply hotfixes) - Q193233 (update of rpcrt4.dll) - Q171181 (update of TCPIP.sys) <p>Tip: Oracle has released a fix which allows to apply SP4 in an Oracle Fail Safe environment. customer can obtain fix from: ftp://192.86.154.96/server/wgt_tech/server/windowsNT/FailSafe/ofs2131/</p>	

TABLE 2.

<p>Check the following questions and tick the box if you can answer with "yes".</p>	✓
<p>Has Retain Tip H165468 been revised?</p> <p>After applying Microsoft Service Pack 4 in a Microsoft Cluster Server environment, Cluster resources that rely on NetBIOS can fail.</p> <p>Details: Microsoft Windows NT Service Pack 4 has added a newly definable parameter to the IP cluster resource, titled "Enable NetBIOS for this address". Previous to Windows NT Service Pack 4 this parameter was always enabled.</p> <p>Fix: The failing resource(s) will have a dependence on a IP cluster resource(s) with in the same cluster group. Right click this IP cluster resource and choose properties, then select the "Parameters" tab from the Properties windows, check the "Enable NetBIOS for this address" box. Bring the failed cluster group on-line.</p>	
<p>6. Only for SP4 compatible setups: Has SP4 been installed and has it been done after MSCS?</p>	
<p>7. Only for SP4 incompatible systems: Has Q147222 been revised and Hotfix applied?</p>	
<p>8. Only for SP4 incompatible systems: Has Q193233 been revised and Hotfix applied?</p>	
<p>9. Only for SP4 incompatible systems: Has Q171181 been revised and Hotfix applied?</p>	
<p>10. Have you revised all other applicable articles and applied the appropriate Hotfixes?</p> <p><i>The above list is not claiming to be complete, you need to search the Microsoft Knowledge Base and check with the IBM Helpcenter for other Hotfixes according to you specific configuration. Please keep in mind to check and apply post-SP4 released Hotfixes at:</i></p> <p><i>ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP4/</i></p>	

TABLE 2.

Check the following questions and tick the box if you can answer with "yes".	✓
Trouble Shooting / Tuning	
When checking the system for functionality, if you find that the failover is slow or that individual resources time-out/go off-line, please check the following:	
<ol style="list-style-type: none">1. Identify the resource(s) by viewing all resources in each group using Cluster Administrator during the failover. Therefore you will need to know and understand the dependencies between the resources of the group.<ul style="list-style-type: none">- You will find that especially IP addresses are likely to be slow to failover unless they have their own resource monitor.2. If you have identified the resource, open the properties and tick the box which assigns a separate resource monitor for this resource. The change will become effective the next time the resource will be brought on-line.	
Don't assign separate resource monitors to every resource since this will put an unnecessary load onto the system.	
3. Have you checked the failover of resources and assigned separate resource monitors if appropriate?	

3.0 Cluster Configurations Using the IBM Netfinity Fibre Channel Solution

Note: This checklist assumes that you have followed step by step the SYMlicity Storage Manager Installation and User's Guide for NT and the SYMlicity Storage Manager User's Guide to set up your cluster. It will only provide ADDITIONAL help in problem determination and trouble shooting, based on most common problems seen in the field.

Please check for updated official IBM installation instructions before using this checklist.

TABLE 3.

Check the following questions and tick the box if you can answer with "yes".	✓
General	
1. Have you checked for / used - the regularly updated IBM installation instructions?	<input type="checkbox"/>
<i>Currently, (as of 05/03/99) it is the SYMlicity Storage Manager Installation and User's Guide for NT 9/10/98 and the SYMlicity Storage Manager User's Guide 9/10/98 - please check for updates.</i>	<input type="checkbox"/>
Hardware	
2. Have you applied ECA029?	<input type="checkbox"/>
<i>This is a MANDATORY ECA which will require the replacement of all Fibre Raid Controllers if there is not a visible FRU Label on the front of a suspect controller or the Failsafe RAID Controller when the controller is fully seated in the 3526 unit. A good controller will have a FRU Label (FRU p/n37L6077) visible from the front, when the controller is fully seated in the controller unit.</i>	<input type="checkbox"/>
3. Only Netfinity 5500: Have you revised Retain Tip H165111	<input type="checkbox"/>
<i>While installing Windows NT, the screen might display the following message: "Call your Hardware Vendor, system Halted" and the installation fails. You can either: 1. Press F6 during the "Setup is inspecting your computer's hardware..." message. Load driver(s) for Fibre Channel Host Bus adapter at this time. If this fails, use fix #2. 2. Install Fibre Channel Host Bus Adapter Card and driver after Windows NT has been completely installed.</i>	<input type="checkbox"/>
Fibre Codes Levels	
4. Have you applied the latest BIOS AND NVRAM for the IBM PCI Fibre Channel Adapter?	<input type="checkbox"/>
<i>Currently: BIOS version 1.28 (Beta version 1.35 02/02/98 - if you are not able to change advanced settings in the BIOS) and NVRAM v1.28 - all as of 03/05/99.</i>	<input type="checkbox"/>

TABLE 3.

Check the following questions and tick the box if you can answer with "yes".	✓
<p>5. Are you using the latest driver for the IBM PCI Fibre Channel Adapter?</p> <p><i>Currently version v1.21.02 (as of 05/03/99) - please check for updates</i></p>	<input type="checkbox"/>
<p>6. Have you applied the latest NVSRAM file to the RAID controllers?</p> <p><i>Note: If you are using the standard controller and the Failsave controller option you need to update ALL codes on both controllers!</i></p>	<input type="checkbox"/>
<p>7. Important: Have you updated the codes of your Netfinity Fibre Channel RAID Controller?</p> <p><i>This applies to the standard Controller shipped in the FC RAID Controller Unit and the Netfinity Fibre Channel Failsafe RAID Controller.</i></p> <p><i>Please realise that this means the update of Boot-ware AND Application-ware (which includes the Fibre Firmware with v3.0 and higher)</i></p> <p><i>Please check for the current version!</i></p>	<input type="checkbox"/>
<p>8. Have you applied the appropriate *.def files after applying NVSRAM and microcode to your controller cards?</p> <p><i>Downloading the NVSRAM file sets the controllers back to its defined default settings. According to your specific configuration you might have to change certain values manually to ensure proper functionality.</i></p> <p><i>Please revise the readme.txt file of the NVSRAM file to check the procedure.</i></p> <p><i>Those files will configure your system for a single/dual loop configuration and for a networked/non-networked configuration.</i></p>	<input type="checkbox"/>
Configuration	
<p>9. Have you revised Retain Tip H165674?</p> <p><i>This tip explains the recovery procedure if you receive the error message involving 'controller modules not found' messages while using Symplicity Manager.</i></p>	<input type="checkbox"/>
Service Packs / Hotfixes	

TABLE 3.

<p>Check the following questions and tick the box if you can answer with "yes".</p>	<input checked="" type="checkbox"/>
<p>Service Pack 4 addresses several issues in the clustering environment and includes all the pre-service pack-Hotfixes (including clusfixi.exe...).</p> <p>Note: SP4 fixes problems of not being able to open the "Devices" or "Services" application in the Control Panel and the 'RPC Server not being available' - messages when using the IBM Netfinity Fibre Adapter.</p> <p>Microsoft strongly recommends to customers to install SP4.</p> <p>Note: SP4 must be installed after MSCS! If you need to reinstall MSCS you need to uninstall SP4 before!</p> <p>However, if it is not possible to apply Service Packs (e.g. due to certification problems or incompatibility) you need to ensure that the customer obtains and installs the appropriate Hotfixes from Microsoft. Therefore the customer needs to check compatibility of SP4 with the manufacturer of the application he is running on the cluster.</p> <p>If it is not possible to apply SP4 you should revise above all the following article in the Microsoft Knowledge Base and get the customer to obtain the Hotfix from Microsoft and install them:</p> <ul style="list-style-type: none"> - Q147222 (clusfixi.exe) <p>You can find detailed information and the Hotfix at: ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/roll-up/CLUSTER</p> <p>Revise as well the following articles and apply hotfixes if appropriate.</p> <ul style="list-style-type: none"> - Q166839 (How to obtain and apply hotfixes) - Q193233 (update of rpert4.dll) - Q171181 (update of TCPIP.sys) <p>Tip: Oracle has released a fix which allows to apply SP4 in an Oracle Fail Save environment. customer can obtain fix from:</p> <p>ftp://192.86.154.96/server/wgt_tech/server/windowsNT/FailSafe/ofs2131/</p>	
<p>Has Retain Tip H165468 been revised?</p> <p>After applying Microsoft Service Pack 4 in a Microsoft Cluster Server environment, Cluster resources that rely on NetBIOS can fail.</p> <p>Details: Microsoft Windows NT Service Pack 4 has added a newly definable parameter to the IP cluster resource, titled "Enable NetBIOS for this address". Previous to Windows NT Service Pack 4 this parameter was always enabled.</p> <p>Fix: The failing resource(s) will have a dependence on a IP cluster resource(s) with in the same cluster group. Right click this IP cluster resource and choose properties, then select the "Parameters" tab from the Properties windows, check the "Enable NetBIOS for this address" box. Bring the failed cluster group on-line.</p>	<input type="checkbox"/>
<p>10. Only for SP4 compatible setups: Has SP4 been installed and has it been done after MSCS ?</p>	<input type="checkbox"/>

TABLE 3.

Check the following questions and tick the box if you can answer with "yes".	✓
11. Only for SP4 incompatible systems: Has Q147222 been revised and Hotfix applied?	
12. Only for SP4 incompatible systems: Has Q193233 been revised and Hotfix applied?	
13. Only for SP4 incompatible systems: Has Q171181 been revised and Hotfix applied?	
14. Have you revised all other applicable articles and applied the appropriate Hotfixes?	
<p><i>The above list is not claiming to be complete, you need to search the Microsoft Knowledge Base and check with the IBM Helpcenter for other Hotfixes according to you specific configuration. Please keep in mind to check and apply post-SP4 released Hotfixes at:</i></p> <p><i>ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP4/</i></p>	
<p>Trouble Shooting / Tuning</p> <p>When checking the system for functionality, if you find that the failover is slow or that individual resources time-out/go off-line, please check the following:</p> <ol style="list-style-type: none"> 1. Identify the resource(s) by viewing all resources in Cluster Administrator during the failover. Therefore you will need to know and understand the dependencies between the resources of the group. <ul style="list-style-type: none"> - You will find that especially IP addresses are likely to be slow to failover unless they have their own resource monitor. 2. If you have identified the resource, open the properties and tick the box which assigns a separate resource monitor for this resource. The change will become effective the next time the resource will be brought on-line. <p>Don't assign separate resource monitors to every resource since this will put an unnecessary load onto the system.</p>	
3. Have you checked the failover of resources and assigned separate resource monitors if appropriate?	