

# **Best Practices: Upgrading a Coupling Facility Version 2**



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Version 2 of the Best Practices: Upgrading a Coupling Facility procedures simplify the removal of the last coupling facility link which is also the last timing link, or ensure STP timing will not be disrupted. Version 2 procedures have been updated to use the CF SHUTDOWN command instead of the DEACTIVATE command. SHUTDOWN is safer as it will not complete if there are still structures in the coupling facility. SHUTDOWN was specifically added to avoid a sysplex outage as a result of the incorrect coupling facility being DEACTIVATED. Finally, with the understanding of time constraints during upgrades a streamlined procedure was added for the specific situation of a POR of a CPC on which a coupling facility resides with no physical or logical changes to the coupling facility.

IBM recommends following the best practices documented herein when upgrading a coupling facility. The procedures related to upgrading a coupling facility have been revised to leverage the most current and simplified options to ensure a successful upgrade. The procedures are designed to maximize availability and reliability when adhered to. The best practice procedures contained herein assumes the enterprise desires to keep the sysplex operational across the upgrade.

The first procedure is to be used for (a) a “push / pull” of a CPC on which a coupling facility image resides or (b) if there is to be a power on reset, POR, of the CPC on which the coupling facility image resides and there is a physical or logical change to the coupling facility. A “push / pull” is defined as the replacement of one CPC containing a CF image with another CPC which will contain a replacement CF image. Physical changes to a coupling facility include the number of links, the control unit number, where the links physically connect. The logical change of a coupling facility refers to the coupling facility definition in the CFRM policy.

The next procedure also pertains to a POR of a CPC on which a coupling facility image resides. The second procedure applies to the specific situation where there is to be a POR of a CPC on which a coupling facility resides and across the POR there are to be no physical or logical changes to the coupling facility.

The final procedure documented pertains to a disruptive coupling facility upgrade. The disruptive coupling facility upgrade procedure should be conformed to anytime the coupling facility image must be reactivated but the CPC on which the coupling facility resides is not going to be PORd. Today, the vast majority of CFCC maintenance applications can be achieved concurrently. That is, the CF image does not need to be reactivated to pick up the new service level of CFCC. The reasons a CF image may need to be reactivated include: the rare disruptive coupling facility code change, change to CFCC image storage requirements and activating a new Coupling Facility Release level which is typically delivered with a System z driver upgrade.

A failure to adhere to the recommended best practices may result in unexpected delays or outages to applications using structures in coupling facilities. Further, technical difficulties trying to obtain access to the new coupling facility may occur if any of the steps or sequence of steps is not properly followed.

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**Procedure 1:**

**Push / Pull of Coupling Facility or POR of a CPC with a Coupling Facility**

The following procedure should be used if (a) a CF is going to move onto a new CPC or (b) the CPC on which the coupling facility resides is going to be PORd and there are physical or logical changes to the CF.

Note: If the CPC is going to be PORd and there are **no** changes to the CF, physically or logically, please utilize Procedure 2.

Step	Command	Reason
0	Create new CFRM policy distinct from the currently active policy with the new CF definition and updated structure definitions based on CFSizer or SIZER. Alternatively, update the current policy "in place" to avoid changing the name of the policy.	This step can be done ahead of time to minimize net down time. For the "push / pull" the node descriptor for the CF must be updated (machine type, serial number, partition number, etc). Appropriate structure sizes for the new CFCC level can be obtained from <a href="#">CFSizer</a> or <a href="#">Sizer</a> . Updated structure sizes are necessary to ensure that a performance problem does not occur due to a structure space constraint. Also, the updated structure sizes will ensure there is no issue restarting an application in the future due to invalid structure sizes. The "resizing" of structures is required when upgrading to a new CFCC level, such as, CFCC 16 (z10) to CFCC 17 (z196).
1	Quiesce all work on z/OS images which reside on the CPC being PORd or removed. Remove z/OS images from the sysplex using V XCF,sysname,OFFLINE	
2	Reassign STP roles as needed.	Ensure CTN will not be unexpectedly disrupted when the "old" CPC where the CF image resides is removed.  Reference: IBM White Paper 101833, Important Considerations for STP server role assignments: <a href="http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833">http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833</a>
3	SETXCF START,MAINTMODE,CFNAME=cfname	Place the CF to be upgraded in maintenance mode so that no new structures will be allocated on the CF.
4	D XCF,REALLOCATE,TEST (available z/OS 1.12)	Preview the results of REALLOCATE. Evaluate any exceptions. If there is a severe problem detected then remove cfname from MAINTMODE, address the problem. Go back to Step 3.
5	SETXCF START,REALLOCATE	Issue REALLOCATE to have XCF assess each structure and relocate as appropriate. XCF will seek to move the structures off the CF in MAINTMODE.
6	a) D XCF,CF,CFNAME=cfname  b) D XCF,REALLOCATE,REPORT (available z/OS 1.12)	a) Determine if any structures remain in the CF which is being removed from service. If there are no structures remaining in the CF being removed go to Step 8. If structures remain in the CF being removed pursue Step 6b and 7.

		b) If any structure did not move review the REALLOCATE REPORT output. Review output of report and address any errors.
7	<p>If any structures remain in CF cfname, SETXCF START,REBUILD,STRNAME=strname,LOC=OTHER</p> <p>SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD</p> <p>D XCF,CF,CFNAME=cfname</p>	<p>Move any structures which remain in cfname. Application specific protocols may be needed to move structures.</p> <p>Reference: Setting Up A Sysplex Chapter 15 for details about moving structures out of the CF to be removed.</p> <p><a href="#">Removing structures from a coupling facility for shutdown</a> and <a href="#">Removing a structure from a coupling facility</a></p> <p>Verify no structures remain on the coupling facility about to be upgraded.</p>
8	<p>VARY PATH(CFNAME,xx,CFNAME,yy,etc),OFFLINE,UNCON D</p>	<p>VARY the paths to the CF offline. The VARY command must be issued from all systems in the sysplex; path numbers may be different for each system. Taking the paths offline and then recycling is cleaner for z/OS to handle than not taking the paths offline. The hot unplug or TOGGLE is received as an “error” by z/OS.</p> <p>To obtain the list of CHPIDs issue D CF from each system. The list of CHPIDs will be helpful when bringing the paths back online.</p> <p>The VARY command is used rather than the CONFIG command because it may be the case that use of the links by STP would cause the CONFIG command to be rejected. Using the VARY command affects only the logical path state for coupling facility communication and does not affect (nor is it affected by) the STP network; STP can still utilize the links to maintain the timing network.</p> <p>When the paths are VARYd OFFLINE the D CF,CFNAME=cfname shows the paths as logically offline, but physically online.</p>
9	<p>RO *ALL,D CF,CFNAME=cfname D XCF,CF,CFNAME=cfname</p>	<p>Verify no system has an active path to CF. At this point, the paths will indicate logically OFFLINE. Re-verify no structures in the CF and no systems have connectivity to CF.</p>
10	<p>From the CF OPERMSG Console issue SHUTDOWN.</p>	<p>The SHUTDOWN command is recommended to avoid the potential human error of DEACTIVATING the coupling facility which has all of the structures allocated in it. The SHUTDOWN command will not complete if there are structures present in the coupling facility.</p> <p>Message sequence for SHUTDOWN command when there are structures still</p>

		<p>allocated in the CF:</p> <p>=&gt; shutdown  CF0090A Do you really want to shut down the Coupling Facility? (YES/NO)  =&gt; yes  CF0093A There are structures present in the CF. SHUTDOWN canceled.</p> <p>Once the SHUTDOWN command completes successfully, the CF LPAR will become “not operating.”</p> <p>If there are structures still allocated in the CF, verify that the correct CF was selected for SHUTDOWN. If the correct CF was selected, consider reviewing the structures still allocated in the CF and seek to move them out of the CF. At this point the paths will have to be VARYd back ONLINE to allow structures to rebuild out of the CF. VARY the paths ONLINE and go back to Step 6. If VARYing the paths ONLINE and moving the structures is not desired, aka, deleting the structures has been deemed acceptable then the CF image may be DEACTIVATED.</p>
11	Remove the CPC about to be PORd or removed from the CTN	Removal from the CTN will allow the CONFIG command(s) in the next step to be accepted.
12	CONFIG CHP(xx,yy...),OFFLINE,UNCOND	<p>Configure the links to the CF OFFLINE. D CF,CFNAME=cfname and D M=CHP will show the links as physically OFFLINE. Recall, paths were already logically OFFLINE from the VARY OFFLINE issued previously.</p> <p>The CONFIG command is used (in addition to the VARY PATH command) to ensure that the z/OS can recognize all hardware changes.</p>
13	Bring in the “new machine”	Remove the “old” machine and bring in the “new” machine or, POR the CPC, depending on the scenario.
14	<p>ACTIVATE parms,SOFT=VALIDATE</p> <p>On the Nth partition,  ACTIVATE parms,FORCE</p>	<p>If making changes to CF elements (CF control units or CF channel paths) in the I/O configuration, ensure that SOFT=VALIDATE is specified on the ACTIVATE system command. SOFT=VALIDATE is a requirement on all N-1 partitions when changes to CF elements are made.</p> <p>Via the SOFT=VALIDATE, HCD builds the change control blocks, CCBs, for hardware changes, as well as, software changes. SOFT=VALIDATE also ensures there is sufficient hardware system area, HSA, space to accommodate the changes.</p>

		<p>Reference: <a href="#">z/OS VIR13.0 MVS System Commands, Activate Command Parameters section 4.3.3</a></p> <p>On the Nth partition activate the parms.</p>
15	<p>SETXCF START,POLICY,TYPE=CFRM,POLNAME=new_policyname</p> <p>or</p> <p>SETXCF START,POLICY,TYPE=CFRM,POLNAME=modified_active_policy</p>	<p>Activate the new CFRM policy with the definition for the new CF and updated structure sizes per CFSizer or SIZER output. Recall, the new CF definitions is only required for a “push / pull” scenario. The CF definition change will take effect immediately. Structure size changes will be pending after the new or modified policy is activated.</p> <p>From a CFRM perspective the previous definition was removed and a new CF definition was added. The new CF definition will NOT be in MAINTMODE even if the CFNAME is the same.</p>
16	SETXCF START,MAINTMODE,CFNAME=cfname	Place the newly defined CF in MAINTMODE to prevent DUPLEX(ENABLED) structures from immediately moving into the CF when connectivity is established.
17	<p>a) Add the CPC which was PORd back into the CTN or add the new CPC to the CTN.</p> <p>b) Activate the CF partition</p> <p>c) Reassign STP roles as necessary.</p>	<p>The CPC must be added to the CTN to be properly synchronized with the other CPCs.</p> <p>CF must be activated to allow the system to connect and utilize the image.</p> <p>Ensure STP is in the desired configuration.</p> <p>Reference: IBM White Paper 101833, Important Considerations for STP server role assignments:  <a href="http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833">http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833</a></p>
18	<p>a) CONFIG CHP(xx,yy,etc),ONLINE</p> <p>b) V PATH(CFname,xx,CFname,yy,etc),ONLINE</p>	<p>Configure CHPIDs online. The configuration commands must be issued from all systems in the sysplex; CHPID numbers may be different for each system.</p> <p>If the CHPIDs numbers have not changed on z/OS across the push / pull, then use the links noted in Step 8</p> <p>Message IXC517I will be issued indicating that XCF has connectivity to the CF.</p> <p>Note: If a policy change was done the logical state of the paths in their default state (ONLINE), so there is no need to use the VARY command to bring the paths logically online. On the other hand, if the same links are to be used and there was no change to the CF definition in the CFRM policy the logical state will be OFFLINE. Thus, the paths would need to be VARYd ONLINE from all</p>

		of the z/OS images which remained active.
19	D XCF,CF,CFNAME=cfname RO *ALL,D CF,CFNAME=cfname	Verify XCF has the proper CF definition. In particular, if a “push / pull” is being done ensure the serial number for the new CF. D XCF,CF,CFNAME=cfname indicates the CF definition XCF logically knows about. D CF,CFNAME=cfname contains the physical information for the CF the image is connected to. The serial numbers must match for XCF to be able to use the CF.  Verify all systems have connectivity to the new CF and all the paths are ONLINE. Also, verify CF to CF links are available.
20	SETXCF STOP,MAINTMODE,CFNAME=cfname	Take the newly defined CF out of MAINTMODE to allow structure allocations in the new CF.
21	SETXCF START,REALLOCATE	Relocate structures to the desired CFs. XCF will seek to resolve the pending policy changes.
22	D XCF,REALLOCATE,REPORT (available on z/OS 1.12)	Verify all structures reside in desired CFs. Correct any errors noted by the report.
23	Verify structures reside in preferred CFs. Review output from z/OS Health Check XCF_CF_STR_PREFLIST.  Use SETXCF rebuild commands as necessary to move structures. SETXCF START,REBUILD,STRNAME=strname,LOC=OTHER  SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD	REALLOCATE processing may complete with 0 exceptions because XCF / XES placed the structure in most desirable CFs which may not coincide with the order of the CFs in the PREFLIST. Investigate structures which did were not placed in the CF noted first in the PREFLIST. Assess the reason for the structure placement and relocated structures to desired CFs as needed.
24	IPL z/OS images which reside on the CPC which was PORD or reside on the new CPC.	

## Procedure 2:

### POR of a CPC with a Coupling Facility with NO Physical or Logical Changes to the CF

The following procedure should be used when the CPC on which the coupling facility resides is going to be PORd and there are **no** physical or logical changes to the CF.

Note: if physical or logical changes to the coupling facility are to be made please utilize Procedure 1.

Step	Command	Reason
0	Create new CFRM policy distinct from the currently active policy with the updated structure definitions based on CFSizer or SIZER. Alternatively, update the current policy "in place" to avoid changing the name of the policy.	<p>This step can be done ahead of time to minimize net down time. Appropriate structure sizes for the new CFCC level can be obtained from <a href="#">CFSizer</a> or <a href="#">Sizer</a>. Updated structure sizes are necessary to ensure that a performance problem does not occur due to a structure space constraint. Also, the updated structure sizes will ensure there is no issue restarting an application in the future due to invalid structure sizes.</p> <p>This step is required for CFCC Level changes. This step is desirable if the sizes were not adjusted across the last CFCC Level upgrade or if the usage of the structures has changed significantly.</p> <p>Caution: As noted above, this procedure assumes the CF links, control unit and CFRM definition are not changing. If the links, control unit or CFRM definition change the CF may become accessible earlier than planned.</p>
1	Quiesce all work on z/OS images which reside on the CPC being PORd or removed. Remove those z/OS images from the sysplex using V XCF,sysname,OFFLINE	
2	Reassign STP roles as needed.	<p>Ensure CTN will not be unexpectedly disrupted when the "old" CPC where the CF image resides is removed.</p> <p>Reference: IBM White Paper 101833, Important Considerations for STP server role assignments: <a href="http://www.ibm.com/support/techdocs/at_smastr.nsf/WebIndex/WP101833">http://www.ibm.com/support/techdocs/at_smastr.nsf/WebIndex/WP101833</a></p>
3	SETXCF START,MAINTMODE,CFNAME=cfname	Place the CF that will be impacted by the POR in maintenance mode so that no new structures will be allocated on the CF.
4	D XCF,REALLOCATE,TEST (available z/OS 1.12)	Preview the results of REALLOCATE. Evaluate any exceptions. If there is a severe problem detected then remove cfname from MAINTMODE, address the problem. Go back to Step 3.
5	SETXCF START,REALLOCATE	Issue REALLOCATE to have XCF assess each structure and relocate as appropriate. XCF will seek to move the structures off the CF in MAINTMODE.

6	<p>a) D XCF,CF,CFNAME=cfname</p> <p>b) D XCF,REALLOCATE,REPORT (available z/OS 1.12)</p>	<p>a) Determine if any structures remain in the CF which is being removed from service. If there are no structures remaining in the CF being removed go to Step 8. If structures remain in the CF being removed pursue Step 6b and 7.</p> <p>b) If any structure did not move review the REALLOCATE REPORT output. Review output of report and address any errors.</p>
7	<p>If any structures remain in CF cfname, SETXCF START,REBUILD,STRNAME=strname,LOC=OTHER</p> <p>SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD</p> <p>D XCF,CF,CFNAME=cfname</p>	<p>Move any structures which remain in cfname. Application specific protocols may be needed to move structures.</p> <p>Reference: Setting Up A Sysplex Chapter 15 for details about moving structures out of the CF to be removed.</p> <p><a href="#">Removing structures from a coupling facility for shutdown and</a> <a href="#">Removing a structure from a coupling facility</a></p> <p>Verify no structures remain on the coupling facility about to be upgraded.</p>
8	<p>VARY PATH(CFNAME,xx,CFNAME,yy,etc),OFFLINE,UNCON D</p>	<p>VARY the paths to the CF offline. The VARY command must be issued from all systems in the sysplex; path numbers may be different for each system. Taking the paths offline and then recycling is cleaner for z/OS to handle than not taking the paths offline. Performing a hot unplug or TOGGLE is perceived as an “error” by z/OS.</p> <p>To obtain the list of CHPIDs issue D CF from each system. The list of CHPIDs will be helpful when bringing the paths back online in step 8.</p> <p>The VARY command is used rather than the CONFIG command because it may be the case that use of the links by STP would cause the CONFIG command to be rejected. Using the VARY command affects only the logical path state for coupling facility communication and does not affect (nor is it affected by) the STP network; STP can still utilize the links to maintain the timing network.</p> <p>When the paths are VARYd OFFLINE the D CF,CFNAME=cfname shows the paths as logically offline, but physically online.</p>
9	<p>RO *ALL,D CF,CFNAME=cfname D XCF,CF,CFNAME=cfname</p>	<p>Verify no system has an active path to CF. At this point, the paths will indicate logically OFFLINE. Re-verify no structures in the CF and no systems have connectivity to CF.</p>
10	<p>From the CF OPERMSG Console issue SHUTDOWN.</p>	<p>The SHUTDOWN command is recommended to avoid the potential human error of DEACTIVATING the coupling</p>

		<p>facility which has all of the structures allocated in it. The SHUTDOWN command will not complete if there are structures present in the coupling facility.</p> <p>Message sequence for SHUTDOWN command when there are structures still allocated in the CF:</p> <pre>=&gt; shutdown CF0090A Do you really want to shut down the Coupling Facility? (YES/NO) =&gt; yes CF0093A There are structures present in the CF. SHUTDOWN canceled.</pre> <p>Once the SHUTDOWN command completes successfully, the CF LPAR will become “not operating.”</p> <p>If there are structures still allocated in the CF, verify that the correct CF was selected for SHUTDOWN. If the correct CF was selected, consider reviewing the structures still allocated in the CF and seek to move them out of the CF. At this point the paths will have to be VARYd back ONLINE to allow structures to rebuild out of the CF. VARY the paths ONLINE and go back to Step 7. If VARYing the paths ONLINE and moving the structures is not desired, (for example, if deleting the structures has been deemed acceptable) then the CF image may be DEACTIVATED.</p>
11	Perform Power On Reset	
12	Activate the CF partition	CF must be activated to allow the system to connect and utilize the image.
13	Reassign STP roles as necessary.	<p>Ensure STP is in the desired configuration.</p> <p>Reference: IBM White Paper 101833, Important Considerations for STP server role assignments:  <a href="http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833">http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101833</a></p>
14	V PATH(CFname,xx,CFname,yy,etc),ONLINE	Since there was no change to the CF definition in the CFRM policy and the same links and control unit are to be used to access the CF, the logical state of the paths will be OFFLINE. Thus, the paths need to be VARYd ONLINE from all of the z/OS images which remained active. The list of paths made in Step 8 can be referenced.
15	SETXCF START,POLICY,TYPE=CFRM,POLNAME=new_policyname  or	Activate the new CFRM policy with the definitions for the updated structure sizes per CFSizer or SIZER output. Structure size changes will be pending after the new or modified policy is activated.

	SETXCF START,POLICY,TYPE=CFRM,POLNAME=modified_active_policy	Bypass this step if no policy was created or modified in step 0.
15	D XCF,CF,CFNAME=cfname RO *ALL,D CF,CFNAME=cfname	Verify XCF has the proper CF definition. In particular, if a “push / pull” is being done ensure the serial number for the new CF. D XCF,CF,CFNAME=cfname indicates the CF definition XCF logically knows about. D CF,CFNAME=cfname contains the physical information for the CF the image is connected to. The serial numbers must match for XCF to be able to use the CF.  Verify all systems have connectivity to the new CF and all the paths are ONLINE. Also, verify CF to CF links are available.
16	SETXCF STOP,MAINTMODE,CFNAME=cfname	Take the newly defined CF out of MAINTMODE to allow structure allocations in the new CF.
17	SETXCF START,REALLOCATE	Relocate structures to the desired CFs. XCF will seek to resolve the pending policy changes.
18	D XCF,REALLOCATE,REPORT (available on z/OS 1.12)	Verify all structures reside in desired CFs. Correct any errors noted by the report.
19	Verify structures reside in preferred CFs. Review output from z/OS Health Check XCF_CF_STR_PREFLIST.  Use SETXCF rebuild commands as necessary to move structures. SETXCF START,REBUILD,STRNAME=strname,LOC=OTHER  SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD	REALLOCATE processing may complete with 0 exceptions because XCF / XES placed the structure in most desirable CFs which may not coincide with the order of the CFs in the PREFLIST. Investigate structures which did were not placed in the CF noted first in the PREFLIST. Assess the reason for the structure placement and relocated structures to desired CFs as needed.
20	IPL z/OS images which reside on the CPC which was PORD	

**Procedure 3:  
Disruptive CF Upgrade**

The following procedure should be used if the coupling facility image must be reactivated but the CPC on which the coupling facility resides will remain operational across the reactivate. This procedure also assumes the CF links, CF control unit and CF definition in the CFRM policy are NOT changing.

Step	Command	Reason
0	Create new CFRM policy distinct from the currently active policy with the updated structure definitions based on CFSizer or SIZER. Alternatively, update the current policy "in place" to avoid changing the name of the policy.	<p>This step can be done ahead of time to minimize net down time. Appropriate structure sizes for the new CFCC level can be obtained from <a href="#">CFSizer</a> or <a href="#">Sizer</a>. Updated structure sizes are necessary to ensure that a performance problem does not occur due to a structure space constraint. Also, the updated structure sizes will ensure there is no issue restarting an application in the future due to invalid structure sizes.</p> <p>This step is required for CFCC Level changes. This step is desirable if the sizes were not adjusted across the last CFCC Level upgrade or if the usage of the structures has changed significantly.</p> <p>Caution: As noted above, this procedure assumes the CF links, control unit and CFRM definition are not changing. If the links, control unit or CFRM definition change the CF may become accessible earlier than planned.</p>
1	SETXCF START,MAINTMODE,CFNAME=cfname	Place CF to be upgraded in maintenance mode so that no new structures will be allocated on the CF.
2	D XCF,REALLOCATE,TEST (available z/OS 1.12)	Preview the results of REALLOCATE. Evaluate any exceptions. If there is a severe problem detected then remove cfname from MAINTMODE, address the problem. Go back to Step 1.
3	SETXCF START,REALLOCATE	Issue REALLOCATE to have XCF assess each structure and relocate as appropriate. XCF will seek to move the structures off the CF in MAINTMODE.
4	<p>a) D XCF,CF,CFNAME=cfname</p> <p>b) D XCF,REALLOCATE,REPORT (available z/OS 1.12)</p>	<p>a) Determine if any structures remain in the CF which is being removed from service. If there are no structures remaining in the CF being removed go to Step 6. If structures remain in the CF being removed refer to Step 4b and 5.</p> <p>b) If any structure did not move review the REALLOCATE REPORT output. Review output of report and address any errors.</p>
5	If any structures remain in CF cfname, SETXCF START,REBUILD,STRNAME=stname,LOC=OTHER	Move any structures which remain in cfname. Application specific protocols may be needed to move structures.

	<p>SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD</p> <p>D XCF,CF,CFNAME=cfname</p>	<p>Reference: Setting Up A Sysplex Chapter 15 for details about moving structures out of the CF to be removed.</p> <p><a href="#">Removing structures from a coupling facility for shutdown</a> and <a href="#">Removing a structure from a coupling facility</a></p> <p>Verify no structures remain on the coupling facility about to be upgraded.</p>
6	<p>On each system, VARY PATH(CFname,xx,CFname,yy,etc),OFFLINE,UNCOND</p>	<p>VARY the paths to the CF offline. The VARY command must be issued from all systems in the sysplex; path numbers may be different for each system. Taking the paths offline and then recycling is cleaner for z/OS to handle than not taking the paths offline. The hot unplug or TOGGLE is received as an "error" by z/OS.</p> <p>To obtain the list of CHPIDs issue D CF from each system. The list of CHPIDs will be helpful when bringing the paths back online.</p> <p>The VARY command is used rather than the CONFIG command because it may be the case that use of the links by STP would cause the CONFIG command to be rejected. Using the VARY command affects only the logical path state for coupling facility communication and does not affect (nor is it affected by) the STP network; STP can still utilize the links to maintain the timing network.</p> <p>When the links are VARYd OFFLINE the D CF,CFNAME=cfname shows the paths as logically offline, but physically online</p>
7	<p>RO *ALL,D CF,CFNAME=cfname D XCF,CF,CFNAME=cfname</p>	<p>Verify no system has active paths to CF. Re-verify no structures in the CF and no systems have connectivity to CF.</p>
8	<p>From the CF OPERMSG Console issue SHUTDOWN. After the SHUTDOWN completes, ACTIVATE the CF.</p> <p>Do <i>NOT</i> perform a POR the CPC. If there is to be a POR of the CPC use the procedure <b>Push / Pull of Coupling Facility or POR of a CPC with a Coupling Facility</b>.</p>	<p>The SHUTDOWN command is recommended to avoid the potential human error of DEACTIVATING the coupling facility which has all of the structures allocated in it. The SHUTDOWN command will not complete if there are structures present in the coupling facility.</p> <p>Message sequence for SHUTDOWN command when there are structures still allocated in the CF:</p> <p>=&gt; shutdown CF0090A Do you really want to shut down the Coupling Facility? (YES/NO) =&gt; yes CF0093A There are structures present in the</p>

		<p>CF. SHUTDOWN canceled.</p> <p>Once the SHUTDOWN command completes successfully, the CF LPAR will become “not operating.”</p> <p>If there are structures still allocated in the CF, verify that the correct CF was selected for SHUTDOWN. If the correct CF was selected, review the structures still allocated in the CF and seek to move them out of the CF. At this point the links will have to be VARYd back ONLINE to allow structures to rebuild out of the CF. VARY the links ONLINE and go back to Step 5. If VARYing the links ONLINE and moving the structures is not desired, aka, deleting the structures has been deemed acceptable then the CF image may be DEACTIVATED.</p>
9	<p>SETXCF START,POLICY,TYPE=CFRM,POLNAME=new_policy name</p> <p>or</p> <p>SETXCF START,POLICY,TYPE=CFRM,POLNAME=modified_active_policy</p>	<p>Activate the new CFRM policy with the definitions for the updated structure sizes per CFSizer or SIZER output. Structure size changes will be pending after the new or modified policy is activated.</p>
10	<p>On each system, VARY PATH(CFname,xx,CFname,yy,etc),ONLINE</p>	<p>VARY paths online. The command must be issued from all systems in the sysplex; path numbers may be different for each system.</p> <p>To obtain the list of CHPIDs issue D CF from each system or use the list from step 6 above.</p>
11	<p>D XCF,CF,CFNAME=cfname RO *ALL,D CF,CFNAME=cfname</p>	<p>If any changes were made to the CF definitions in the CFRM policy verify XCF is connected to the proper CF, including the serial number for the new CF. D XCF,CF,CFNAME=cfname indicates the CF definition XCF logically knows about. D CF,CFNAME=cfname contains the physical information for the CF the image is connected to. The serial numbers noted in the D XCF and D CF for each CF must match.</p> <p>Verify all systems have connectivity to the new CF and all the paths are ONLINE. Also, verify CF to CF links are available.</p>
12	<p>SETXCF STOP,MAINTMODE,CFNAME=cfname</p>	<p>Take the newly defined CF out of MAINTMODE to allow structure allocations in the new CF.</p>
13	<p>SETXCF START,REALLOCATE</p>	<p>Relocate structures to the desired CFs. XCF will seek to resolve the changes pending.</p>
14	<p>D XCF,REALLOCATE,REPORT (available on z/OS 1.12)</p>	<p>Verify all structures reside in desired CFs. Correct any errors noted by the report.</p>

15	<p>Verify structures reside in preferred CFs. Review output from z/OS Health Check XCF_CF_STR_PREFLIST.</p> <p>Use SETXCF rebuild commands as necessary to move structures.</p> <p>SETXCF START,REBUILD,STRNAME=strname,LOC=OTHER</p> <p>SETXCF STOP,REBUILD,DUPLEX, STRNAME=strname,KEEP=NEW OLD</p>	<p>REALLOCATE processing may complete with 0 exceptions because XCF / XES placed the structure in most desirable CFs which may not coincide with the order of the CFs in the PREFLIST. Investigate structures which did were not placed in the CF noted first in the PREFLIST. Assess the reason for the structure placement and relocated structures to desired CFs as needed.</p>
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It is the intention of the authors to update this document in the future. IBM publications will be updated to reflect the information contained herein on a release boundary.

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### **Feedback**

Please send comments or suggestions for changes to [nfagen@us.ibm.com](mailto:nfagen@us.ibm.com).

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