Release Note

ControlLogix Redundancy System, Revision 15.60

Catalog Numbers 1756-CNB/D, 1756-CNB/E, 1756-CNBR/D, 1756-CNBR/E, 1756-CN2/B, 1756-CN2R/B, 1756-ENBT, 1756-EWEB, 1756-L55, 1756-L55M12, 1756-L55M13, 1756-L55M14, 1756-L55M16, 1756-L55M22, 1756-L55M23, 1756-L55M24, 1756-L61, 1756-L62, 1756-L63, 1757-SRM

IMPORTANT Use the online firmware upgrade procedure only if your redundant controllers are at revision 11 or higher.

Publication 1756-RN628E-EN-E - April 2007

About This Publication

These combinations of firmware makes up revision 15.60 of the ControlLogix redundancy system.

Module	Catalog Number	Series	Firmware Revision
ControlLogix5555 controller	1756-L55M*xx*	Any	15.60
ControlLogix5561 controller	1756-L61	Any	15.60
ControlLogix5562 controller	1756-L62	Any	15.60
ControlLogix5563 controller	1756-L63	Any	15.60
ControlNet bridge module	1756-CNB 1756-CNBR	D	7.13
		E	11.003
1756 10/100 Mbps EtherNet/IP Bridge, Twisted Pair Media	1756-ENBT	Any	4.4
1756 10/100 Mbps EtherNet/IP Bridge w/ Enhanced Web Services	1756-EWEB	Any	4.4
Redundancy module	1757-SRM	Any	4.4

Compatible Software Versions

To use this revision, you need these software versions.

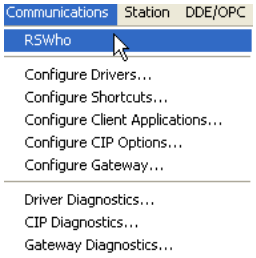
Software	Version	Notes
RSLinx Classic	2.51	
1757-SRM System Redundancy Module Configuration tool	3.6	**Important:** Using this tool to view the SRM Event Log while the redundancy chassis firmware version is at V11 or earlier will cause the 1757-SRM module to fault, only use this tool with V11 when upgrading the firmware online. Get Knowledgebase document G92234770. To access Rockwell Automation's Knowledgebase, go to http://support.rockwellautomation.com
RSLinx Enterprise	3.0	You need this only for these HMIs: • PanelView Plus terminal • VersaView industrial computer running a Windows CE operating system • RSView Supervisory Edition software **Important**: For RSView Supervisory Edition software, install the RSLinx Enterprise HOTFIX. The HOTFIX improves the EtherNet/IP switchover time. See Knowledgebase document R154640079. To access Rockwell Automation's Knowledgebase, go to http://support.rockwellautomation.com
RSLogix 5000	15.02	
RSNetWorx	5.11	

How Do I Tell Which Version I Have of the Configuration Tool?

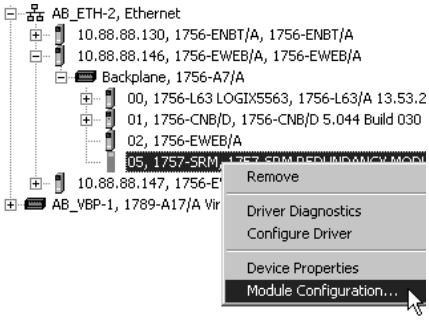
To see which version of the 1757-SRM System Redundancy Module Configuration tool that you have, perform this procedure.

1. Start RSLinx programming software.

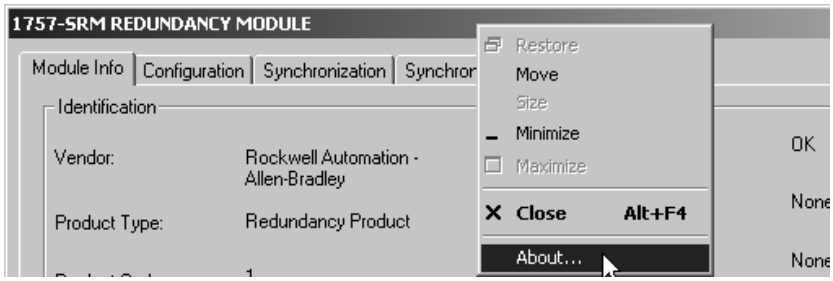
2. From the Communications pull-down menu, select RSWho.



3. Browse to and right-click your 1757-SRM module and choose Module Configuration.



The Module Configuration dialog appears.



4. Right-click the title bar and choose About to verify the version of your configuration tool.

Known Anomalies for All Revisions

Known Anomaly	Description
Perform online edits during a switchover.	In some instances, RSLogix 5000 programming software may not let you perform additional online edits of a function block, SFC, or structured text routine. This may occur if you edit the routine while online and the system is switching over and synchronizing. Perform this procedure to: 1. Close and then reopen RSLogix 5000 programming software. 2. Upload the RSLogix 5000 project from the primary controller.
Delete a task or unschedule a program online.	The secondary chassis may disqualify and then synchronize if you: • delete a task while online with the controller. • unschedule a program while online with the controller.
ASCII instructions may prevent the secondary controller from synchronizing.	After you download a project that contains ASCII instructions (for example, ABL, ACB) to a pair of redundant controllers, the secondary controller may disqualify and fail to synchronize. If this occurs, turn off both controllers (primary and secondary) and then turn them back on.
Controller may momentarily drop its connection to a digital I/O module.	In rare instances, if a tap to a 1756-CNB module is disconnected or broken, the primary controller may momentarily drop its connection to a digital I/O module in local or remote chassis. The connection automatically reestablishes itself. To minimize the chances of this happening, use redundant ControlNet media. Redundant ControlNet media prevents a loss of communication if a trunkline or tap is severed or disconnected.
Sometimes a secondary 1757-SRM module rejects a command.	Sometimes the secondary 1757-SRM module rejects a synchronization, disqualification, or switchover command. To avoid this, give the command to the primary 1757-SRM module. Lgx00058897
Secondary 1756-ENBT module sometimes stops communicating after a power cycle.	A 1756-ENBT module in a secondary chassis sometimes stops communicating after you cycle power to it. Lgx00062494
Fail to synchronize with a high connection count.	The chassis can fail to synchronize if the controller is near its connection limits. Lgx00063311
Commanding a secondary chassis to become primary while turning on its partner causes a fault.	The secondary 1757-SRM module can fault if you command it to become primary while you are turning on the partner chassis. The 1757-SRM module shows an EAAH error. To avoid this, wait until the secondary chassis completes its transition to Primary with No Partner before turning on the partner chassis. Lgx00063356
A secondary 1756-ENBT module sometimes will not allow locking for update.	A 1756-ENBT module in a secondary chassis sometimes will not allow locking for update due to a loss of communication with its primary partner. When this happens, its partner 1756-ENBT module displays PwNS on the front module display Primary with No Secondary and you cannot lock the system for an update. The 1757-SRM Configuration Tool's Synchronization Status tab will also show No Partner on the status line for the 1756-ENBT module. **To recover:** Power cycle the secondary chassis and redownload the project to the secondary controller. Lgx00065410

Enhancements in Revision 15.60

These enhancements apply only to controllers in a redundant system. For the list of enhancements for all systems, see ControlLogix Controller Revision 15 Release Notes, publication 1756-RN620.

Enhancement	Description
Update the firmware of a redundant chassis while process is running.	If your system is at revision 11, 13, 15.56, or 15.57, you may update the firmware in your redundant chassis without shutting down your process.
Use up to seven communication modules in your local chassis.	If your system is at revision 15.60, you may use any combination of up to seven communication modules in your local chassis.
Update a 1756-L55 controller to a 1756-L6*x* controller.	If your system uses 1756-L55 controllers in a redundant system, you can update a 1756-L55 controller to an appropriate 1756-L6*x* controller without shutting down your process. However, you cannot convert a 1756-L6*x* controller to a 1756-L55 controller. The controller you update in the secondary chassis must have at least as much memory as the primary controller in your redundant system.

Corrected Anomalies in Revision 15.60

Revision 15.60 corrects these anomalies in redundant system controllers.

Corrected Anomaly	Description
Secondary failed to re-synchronize when the ethernet connection was corrected.	If your redundant chassis was synchronized and you pulled a 1756-ENBT or Ethernet cable out of the primary chassis a swichover occurred successfully but once the cause was corrected, the system failed to re-synchronize automatically.
The redundant system chassis did not consistently allow I/O modules to be deleted while the system was running.	The redundant system chassis did not consistently allow I/O modules to be deleted while the system was running. The controller produced the error message “Failed to delete module”. Lgx00074233
In rare instances, the removal of a data table from the primary chassis faulted the secondary chassis.	In rare instances, the removal of a data table tag from the primary chassis faulted the secondary chassis. Lgx00073781
The controller became stuck in Run mode during the transition to Program mode. Outputs were also disabled.	In rare circumstances, the controller did not fully transition to Program mode, even though outputs were disabled. Lgx00073590
The secondary controller in a redundant system may have faulted if the network trunkline was broken.	The secondary controller in a redundant system may have faulted if the network trunkline was broken. Lgx00073583
Communication modules in the RSLogix 5000 controller organizer may have displayed as dropped connections after a switchover. This may have caused the controller to experience a major fault if the modules were configured to fault on connection failures.	Communication modules in the RSLogix 5000 controller organizer may have displayed as dropped connections after a switchover. These modules might have had signature mismatches but no connection paths to or through them. When the controller organizer displayed these modules as dropped connections, the controller’s I/O LED indicator might have momentarily flashed green, causing a major controller fault. Lgx00072933
Outgoing serial port messages that contained errors eventually caused an unrecoverable controller fault.	Outgoing serial port messages that contained errors eventually caused an unrecoverable controller fault. Lgx00072891

Corrected Anomaly	Description
Cycling the power during the qualification of a secondary controller may have caused an unrecoverable controller fault when power was reapplied.	Cycling the power during the qualification of a secondary controller may have caused an unrecoverable controller fault when power was reapplied. Lgx00072619
If a primary 1756-CNB or a 1756-CNBR module's cable was disconnected, connections were sometimes dropped after the switchover.	If a primary 1756-CNB or a 1756-CNB module's cable was disconnected, connections were sometimes dropped after the switchover. Lgx00072255
In rare instances, changing the controller from Run to Program mode faulted the primary controller, causing a switchover.	In rare instances, changing the controller from Run to Program mode faulted the primary controller, causing a switchover. Lgx00071488
If you used an HMI to monitor program-scoped tags, the controller could have experienced an unrecoverable fault during an application download.	If you used an HMI to monitor program-scoped tags, the controller could have experienced an unrecoverable fault during an application download. Lgx00071478
When the primary controller was processing inbound messages, you might not have been able to lock the controller for update if your application used >12,000 symbols.	When the primary controller was processing inbound messages, you might not have been able to lock the controller for update if your application used >12,000 symbols. Lgx00070173
If power was cycled to the secondary controller while it was being locked for update, after the power was reapplied to the secondary controller, the redundant system would possibly see the secondary controller as the primary controller.	If power was cycled to the secondary controller while it was being locked for update, after the power was reapplied to the secondary controller, the redundant system would possibly see the secondary controller as the primary controller. Consequently, the system would no longer be redundant, having no secondary controller. Lgx00070171
After ControlNet scheduling, the secondary controller could experience an unrecoverable fault.	After ControlNet scheduling, the secondary controller could experience an unrecoverable fault. Lgx00069672
If the communication modules in the RSLogix 5000 controller organizer were not named, you could not lock the controller for updating.	If the communication modules in the RSLogix 5000 controller organizer were not named, you could not lock the controller for updating. The secondary controller sees these unnamed I/O modules and assumes that they do not match those in the primary chassis. Lgx00069112
The 1757-SRM module in the Secondary chassis may fail after a switchover.	Occasionally, the secondary 1757-SRM module would fail after a switchover. The failed SRM would display FRMW ERR EA2G. Lgx00071769
A synchronization command to the primary 1757-SRM redundancy module failed.	When a disqualification command was sent to the primary 1757-SRM module, and was immediately followed by a synchronization command to the primary 1757-SRM module, the synchronization command was accepted, but the secondary 1757-SRM module remained disqualified. Lgx00058896
The 1757-SRM Configuration Tool did not allow you to enter a date and time from your keyboard.	The 1757-SRM Configuration Tool did not allow you to enter a date and time from your keyboard. Lgx00054034
Pulling a 1757-SRM module out of a primary chassis sometimes faulted the secondary controller after the switchover.	If your redundant chassis was synchronized and you pulled the 1757-SRM module out of the primary chassis, a switchover happened and the new secondary controller (old primary) could have experienced a nonrecoverable fault (solid red OK light). Lgx00067758

Enhancements in Revision 15.57

These enhancements apply only to controllers in a redundant system. For the list of enhancements for all systems, see ControlLogix Controller Revision 15 Release Notes, publication 1756-RN620.

Enhancement	Description
Update the firmware of a redundant chassis while process is running.	If your system is at revision 13, you may update the firmware in your redundant chassis without shutting down your process.
Add I/O modules while online.	At runtime, you can add 1756 I/O modules to a remote chassis via the unscheduled portion of a ControlNet network.

Corrected Anomalies in Revision 15.57

Revision 15.57 corrects these anomalies in redundant system controllers.

Corrected Anomaly	Description
With 1756-L55M*xx* controllers, data was not updated in the secondary chassis while the system was locked for update.	This was only an issue with 1756-L55M*xx* controllers. When the system was locked for update, the data in the secondary chassis was not updated. Once the switchover occurred, the new primary chassis used the old data. Lgx00069959
If 1756-L55M*xx* controllers automatically loaded a project from nonvolatile memory, there was a nonrecoverable fault.	If 1756-L55M*xx* controllers were configured to load a project on powerup or when the nonvolatile memory was empty or corrupt, there was a nonrecoverable fault. Lgx00068091

Enhancements in Revision 15.56

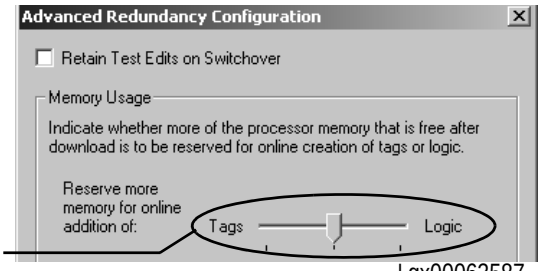
These enhancements apply only to controllers in a redundant system. For the list of enhancements for all systems, see ControlLogix Controller Revision 15 Release Notes, publication 1756-RN620.

Enhancement	Description
Update the firmware of a redundant chassis while process is running.	If your system is at revision 13, you may update the firmware in your redundant chassis without shutting down your process.
Add I/O modules while online.	At runtime, you can add 1756 I/O modules to a remote chassis via the unscheduled portion of a ControlNet network.

Corrected Anomalies in Revision 15.56

Revision 15.56 corrects these anomalies in redundant system controllers.

Corrected Anomaly	Description
The File Search Compare (FSC) instruction caused a nonrecoverable fault.	The FSC instruction caused a nonrecoverable fault if: • a major fault was declared from within the expression of an FSC instruction. • the user fault routine cleared the fault. Lgx00055522
You could not send an SLC-typed write message to a redundant controller.	An SLC-typed write message to a redundant controller produced error F007. Lgx00058402
Memory changes during prescan were not always crossloaded.	Sometimes the primary controller did not send data changes that it made during prescan to the secondary controller. Lgx00060517
Some data-table-write services were not immediately forwarded to the secondary controller.	Data-table-write, big-write, and read-modify-write services were not immediately forwarded to the secondary controller if the service used a symbolic address. Instead, they were forwarded after the next program scan. Lgx00060643
A secondary 1757-SRM module faulted with an E888 error if you unplugged a 1756-CNB module.	The secondary 1757-SRM module sometimes faulted while synchronized if you unplugged the tap to a secondary 1756-CNB module. The error code of the 1757-SRM module was E888. This error code disqualified the chassis. You had to remove and reinsert the secondary 1757-SRM module under power to recover. Lgx00060989
A synchronized chassis pair did not automatically synchronize after being disqualified.	The redundant chassis pair did not automatically synchronize after multiple cycles of disqualification caused by either unplugging the tap to a secondary 1756-CNB module or power-cycling the secondary chassis. You had to remove and reinsert the secondary 1757-SRM module under power to recover. Lgx00061808, Lgx00060991
Sometimes a module faulted after a switchover.	Sometimes a module would fault after a broken or disconnected communication cable caused a switchover. The module showed a fault code of 16#0022. Lgx00061990

Corrected Anomaly	Description
The 1757-SRM module pair lost the fiber optic connection under heavy HMI traffic.	The synchronized pair of 1757-SRM modules would sometimes lose their connection across the fiber-optic link under heavy HMI traffic conditions. This caused the secondary chassis to become disqualified either with the 1757-SRM modules showing no partner or the secondary module showing error EA91. You had to remove and reinsert the secondary 1757-SRM module under power to recover. Lgx00062847, Lgx00062839, Lgx00062171
The primary 1757-SRM module rejected a synchronization command.	The primary 1757-SRM module rejected a synchronization command when both these conditions were true: • The auto-qualification option was set to Never. • You gave the synchronization command within 30 seconds of the redundant chassis pair being disqualified. The 1757-SRM module continued to reject any synchronization command. You had to change the auto-qualification option to Always to synchronize the chassis. Lgx00062954, Lgx00058896, Lgx00037660
A 1756-ENBT module would not reply to a ping.	Sometimes you would not get a reply when you pinged a 1756-ENBT module. Lgx00062979
Updating a primary 1757-SRM module caused a nonrecoverable fault.	Updating the firmware of a 1757-SRM module in a primary chassis sometimes caused a nonrecoverable fault in the controller. This happened if the controller ran out of outgoing unconnected buffers. Lgx00063005
CompactFlash image caused a major fault.	A controller had a major fault if you: • stored a CompactFlash image using a controller that was last powered down as a disqualified secondary controller. • configured the image to go to run mode after loading. Lgx00063515
You could not download to a disqualified secondary controller without enough memory reserved for logic.	You could not download to a disqualified secondary controller if the slider was too close to Tags.  Lgx00063587

Enhancements for the 1756-CNB and 1756-CNBR Module Firmware Revision 11.003 and 7.13

1756-CNB and 1756-CNBR modules at series E and D and revision 11.003 and 7.13 now support firmware and software upgrades to a running ControlLogix redundancy configuration at version 11, 13, or 15.

Corrected Anomalies for the 1756-CNB and 1756-CNBR Module Firmware Revision 11.003 and 7.13

These anomalies have been corrected in series E firmware revision 11.003 and series D firmware revision 7.13 of the 1756-CNB and 1756-CNBR modules.

Anomaly	Description
The 1756-CNB module sent an extra report event during a locked switchover.	The 1756-CNB module sent an extra error report to the 1757-SRM module during a locked switchover. This extra report prevented the 1757-SRM module from responding to the locked switchover command. Lgx00073886 and Lgx00073887
The 1756-CNB module faulted if power was applied simultaneously to both chassis of a redundant pair.	The 1756-CNB module faulted if power was applied simultaneously to both chassis of a redundant pair. Lgx00071468 and Lgx00072090

Enhancements for the 1756-CNB and 1756 CNBR Module Firmware Revision 11.002 and 7.12

1756-CNB and 1756-CNBR modules at series E and D and revision 11 and 7 now support firmware and software upgrades to a running ControlLogix redundancy configuration at version 13, or 15.

Corrected Anomalies for the 1756-CNB and 1756-CNBR Module Firmware Revision 11.002

These anomalies have been corrected in firmware revision 11.002, series E of the 1756-CNB and 1756-CNBR modules.

Anomaly	Description
1756-CNB and 1756-CNBR modules stop communicating.	All 1756-CNB and 1756-CNBR modules with firmware revisions prior to 11.002 will stop communicating after 70.96 days of powered operation. If this occurs, the OK LED indicator will be solid red and the 4-character display on the front of the module will either freeze or scroll the message: ASSERT main.c line 1231. This problem can be avoided by removing and reinserting the ControlNet module, or cycling power to the chassis within the 71 days. Because the module will halt in another 70.96 days, you must perform a mandatory firmware upgrade to revision 11.002.
1756-CNBR module may revert to using only channel A.	If the 1756-CNBR module is the only active keeper on the network while cycling power or there is a disruption, the module may revert to using only channel A.

Application Notes

The following is the description for the minimum value for the Watchdog Time.

Minimum Value for the Watchdog Time

Set the watchdog time for each task to this value or more:

Minimum watchdog time = (2 * *maximum_scan_time*) + 150 ms

where:

Maximum_scan_time is the maximum scan time for the entire task when the secondary controller is synchronized.

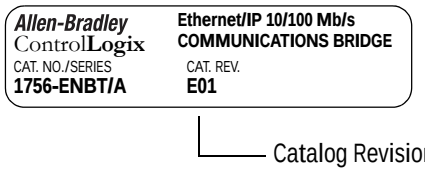
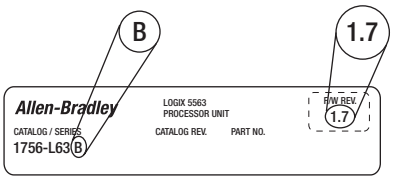
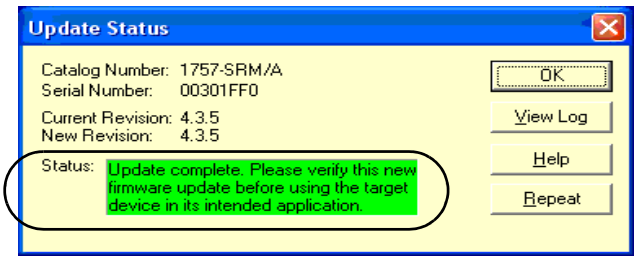
Restrictions

IMPORTANT In a redundant system, use an EtherNet/IP network only for HMI/workstation communication and messaging.

Do not use an EtherNet/IP network for:

- communication with I/O modules.
- communication between devices via produced/consumed tags.

Restriction	Details
Attempting to update a system with busy 1756-L55M*xx* controllers will result in a loss of system control.	A system that is locked for update requires additional processor resources. A CPU utilization of a synchronized pair of 1756-L55M*xx* controllers that exceeds 80% suggests that adequate processor resources are not available to your application. For additional information on how to verify if your application can provide adequate processor resources during a system update, consult these publications. • ControlLogix Redundancy System User Manual, publication 1756-UM523 • Logix 5000 Controllers Design Considerations Reference Manual, publication 1756-RM094
Do not upgrade a 1757-SRM module from version 2.*xx* or earlier directly to version 4.3 or later.	Flashing a 1757-SRM module from version 2.*xx* or earlier directly to version 4.3 or later causes the 1757-SRM module to become permanently inoperable. To avoid this from occurring, you must first flash the 1757-SRM module to any of the versions 3.*xx* included in the version 13 redundancy bundles. Once the 1757-SRM module is at one of the versions 3.*xx*, you can successfully flash to version 4.*xx*.
Do not use ControlLogix5564 controllers.	You cannot use this revision with 1756-L64 controllers.
Do not use 1756-CN2 modules in a redundant chassis.	You cannot use this revision with 1756-CN2 ControlNet bridge modules in a redundant chassis.
Do not use equipment phases.	This revision will not let you download a project that has equipment phases, nor will it let you create equipment phases online.
Version 2.6 or later of the 1757-SRM configuration tool does not work with revision 11 or earlier systems.	Version 2.6 or later of the 1757-SRM System Redundancy Module Configuration tool can cause the 1757-SRM module to fault when used with redundancy firmware revisions 11 or earlier. • This 1757-SRM module fault is caused from viewing the SRM Event Log with a configuration tool at Version 2.6 or later while the redundant chassis firmware is at version 11 or earlier. • Use version 2.6 or later of the configuration tool only with revision 13 or later ControlLogix redundancy systems. • RSLinx programming software, version 2.43 or later, automatically installs version 2.6 or later of the configuration tool. • To connect to a revision 11 or earlier redundancy system, remove the configuration tool and install a compatible version. Use version 2.5 of the configuration tool for revision 11 redundancy systems.

Restriction	Details
Make sure your 1756-ENBT modules are catalog revision E01 or later.	To use a 1756-ENBT module in a redundant controller chassis, make sure its catalog revision is E01 or later. Otherwise, the secondary chassis will not synchronize with the primary chassis.  To find the catalog revision of a module, look at the label on the side of the module or box. **Example**: Use a catalog revision of E01, E02, …, F01, for example.
For a series B controller with revision 1.7 firmware, use a nonredundant chassis to update it the first time.	**Example** Once out of its box, your controller's label shows it to be series B, with revision 1.7 firmware.  Perform this procedure to... 1. Put the controller in a nonredundant chassis. 2. Update the controller. 3. Put the controller in the redundant chassis. Otherwise the controller will have a nonrecoverable fault. After you update it the first time, you can update it in the redundant chassis from then on. **Exception** The controller is already running in your system. You want to update it to a later revision. In this case, leave it where it is and update it there.
Give a 1757-SRM module several minutes or more to update.	It takes several minutes to update a 1757-SRM module and the module resets itself at least four times. A 1757-SRM module with revision 3.37 or earlier firmware may become inoperative if you interrupt the update process. Wait until you see this box turn green and say Update complete.  If the update fails, leave the power on and try again. The update failed if you see: • the Update Status window turn red and say the update failed. • that the OK LED indicator on the 1757-SRM module is flashing and the four-character display is blank.

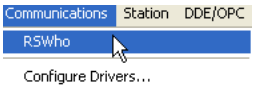
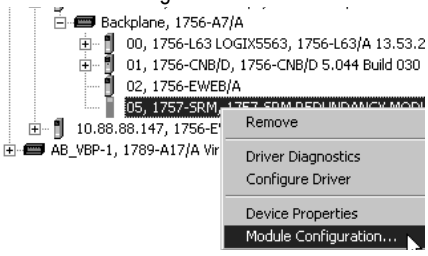
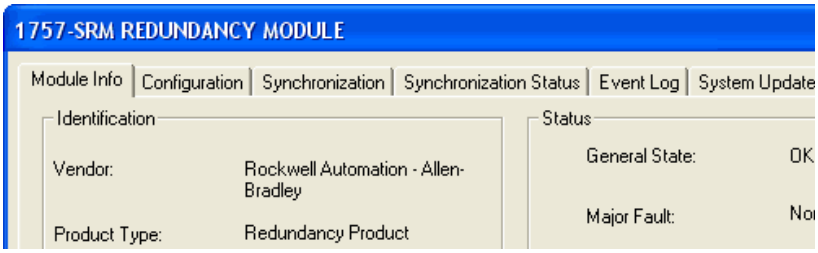
Restriction	Details
Wait at least 45 seconds after the redundant chassis are disqualified before you try to synchronize them.	If your secondary chassis becomes disqualified or you manually disqualify it, do these actions before you try to synchronize the chassis: • Make sure the synchronization status of the primary modules is full compatibility. • Wait at least 45 seconds before you give the command to synchronize the secondary chassis.
If you unplug the fiber optic cable between the 1757-SRM modules, wait until they stabilize before you reconnect it.	If you unplug the fiber-optic cable between the 1757-SRM modules, check the synchronization status of the secondary 1757-SRM module before you reconnect the cable. Wait until the module's status is secondary with no partner before reconnecting the cable. Otherwise, the secondary 1757-SRM module could fault with an EA91 error.

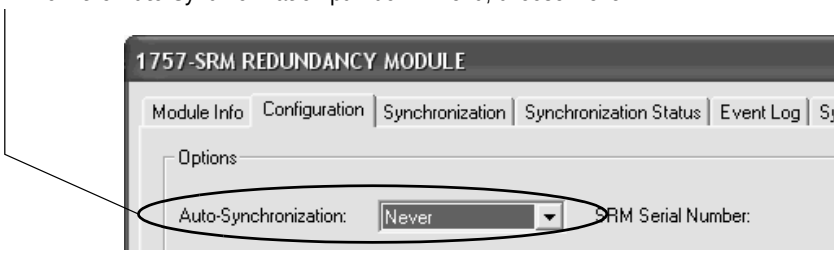
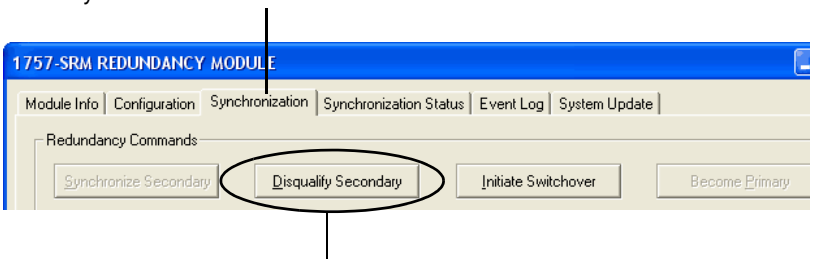
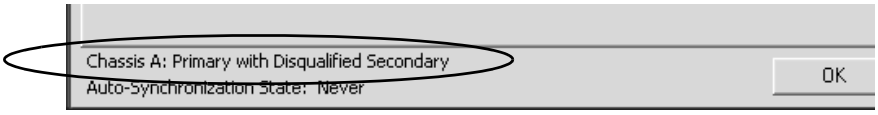
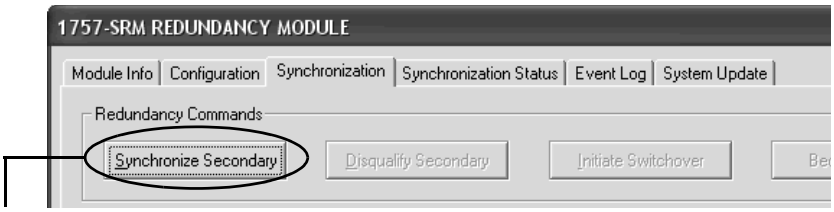
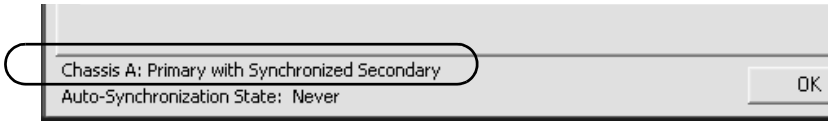
Update a System That Is Already at Revision 11 or 13

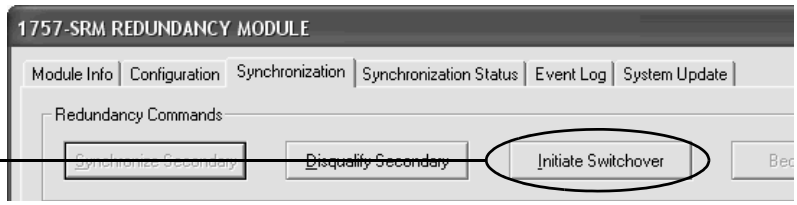
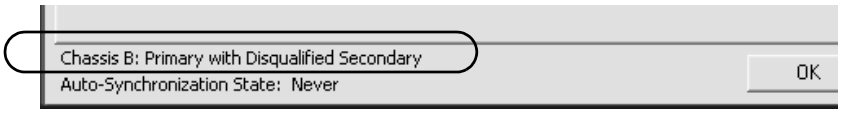
Use this procedure to update the firmware and controllers of your redundant chassis without shutting down your process.

IMPORTANT

- Use this procedure only if your system is already at revision 11 or 13 or you need to update 1756-L55 controllers to the appropriate 1756-L6*x* controllers.
- Do not view the SRM Event Logs in the SRM Configuration tool if your system is being updated from V11.
- Do not use this procedure if:
  - your system is at revision 8.
  - your system is not operating yet.
- During this procedure, you will not be able to use RSLogix 5000 software to change the mode of the controller. Use the keyswitch on the front of the controller to change its mode.
- Leave RSNetWorx for ControlNet software closed or offline throughout this procedure. Otherwise, you will see errors in the RSNetWorx software during the update process.
- During this procedure:
  - Do not make any changes to the RSLogix 5000 project other than the ones called out in this procedure.
  - Make sure no one else makes changes to the project.

Step	Details
1. Update the software	A. Go to the tool tray of your computer and shut down RSLinx programming software.  B. Update these software programs. 1. RSLogix 5000 programming software 2. RSLinx programming software 3. 1757-SRM System Redundancy Module Configuration tool **Note:** If you are at version 11, do not try to view the SRM Event Logs until the update to V15 is completed. 4. RSNetWorx programming software 5. ControlFLASH firmware update kit. **Note:** If you are planning to remove version 11 or 13 of your RSLogix 5000 programming software, wait until you have completed and validated your update.
2. Add the latest EDS files.	Start ⇒ Programs ⇒ Rockwell Software ⇒ RSLinx Tools ⇒ EDS Hardware Installation Tool
3. Put the keyswitches in the REM position.	Put the keyswitch of each redundant controller to the REM position. Otherwise, you will not be able to update the system.
4. Open the 1757-SRM configuration tool for the primary chassis.	A. Start RSLinx programming software. B. From the Communications pull-down menu, choose RSWho.  C. Browse to and right-click the 1757-SRM module in the primary chassis.  The Module Configuration dialog appears. 

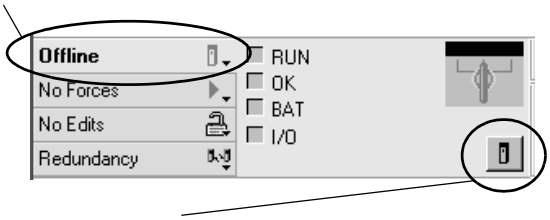
Step	Details
5. Disqualify the secondary chassis.	A. Click the Configuration tab. B. From the Auto-Synchronization pull-down menu, choose Never.  C. Click Apply and then Yes. D. Select Synchronization.  E. Select Disqualify Secondary and then Yes.
The secondary chassis is disqualified.	 F. Click OK.
6. Update the 1757-SRM module in the secondary chassis.	A. Start the ControlFLASH firmware update tool. B. Update the 1757-SRM module in the secondary chassis. After the update is complete, wait at least 45 seconds before attempting to synchronize the chassis.
7. Synchronize the chassis.	A. Go to the 1757-SRM configuration tool.  B. Select Synchronize Secondary and click Yes.
The chassis are synchronized.	

Step	Details
8. Initiate a switchover.	 A. Select Initiate Switchover and click Yes. B. Wait for the system to switchover.
The other chassis is now the primary chassis.	
9. Update all module firmware in the new secondary chassis, and perform the optional update to controller hardware in the new secondary chassis.	A. Use the ControlFlash firmware update tool to update all of the modules in the new secondary chassis **EXCEPT THE** 1757-SRM. **Note:** If you are updating from a V13.5, V13.6 or V13.7 ControlLogix System and if you have a 1756-ENBT module or a 1756-EWEB module in your redundant chassis, you may experience a Duplicate Node condition on the secondary modules after updating their firmware. The condition can be corrected as follows: • If you performed the firmware update via ControlNet, you can proceed to step B and the Duplicate Node condition will clear after the 1757-SRM resets. • If you performed the firmware update via Ethernet, you will have to power cycle the new secondary chassis to recover from the Duplicate Node condition. Then proceed to step B, after the SRM completes its power up. B. Use the ControlFlash firmware update tool to update the 1757-SRM module **last** in the new secondary chassis. **Important** • You cannot convert a 1756-L6*x* controller to a 1756-L55M*xx* controller. • Updating controller hardware is an optional procedure. • To perform this optional hardware update procedure, your secondary controller must have at least as much memory as the primary controller.

Primary Controller	Memory Size (Kbytes)	Compatible 1756-L55 Secondary Controller	Compatible 1756-L6x Secondary Controller
L55-M12, L55-M22	750	All	L61, L62, or L63
L55-M13, L55-M23	1536	L55-M13, L55-M23, L55-M14, L55-M24, L55-M16	L61, L62, or L63
L55-M14, L55-M24	3584	L55-M14, L55-M24, L55-M16	L62, L63
L55-M16	7680	L55-M16	L63
L61	2048	None	L61, L62, or L63
L62	4098	None	L62 or L63
L63	8192	None	L63

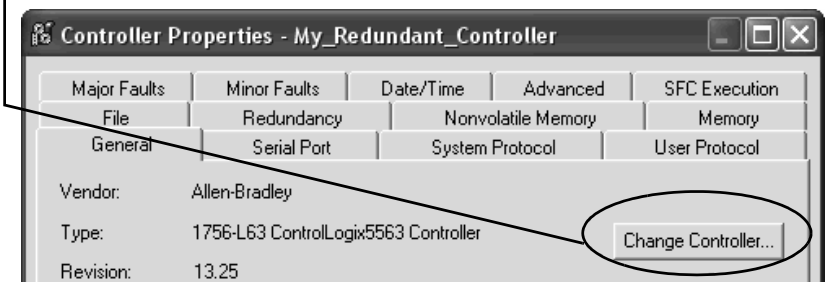
Step	Details
10. Prepare the RSLogix 5000 project for the update.	A. Start RSLogix 5000 programming software and go online to the primary controller. B. Set the watchdog time for each task to this value or greater: Minimum watchdog time = (2 * *maximum_scan_time*) + 150 ms where: *Maximum_scan_time* is the maximum scan time for the entire task when the secondary controller is synchronized. C. Cancel or assemble any test edits. D. Remove all SFC forces from the project. E. Make sure that you do not need to make any changes to: • I/O Forces — Once you start this procedure, you will not be able to disable or enable I/O forces until you update both chassis. • I/O configuration. You can make those changes again when the update is done and both chassis synchronize. F. Save the project.

Step	Details
11. Change the project revisions.	A. Go offline.



B. Click the Controller Properties icon.

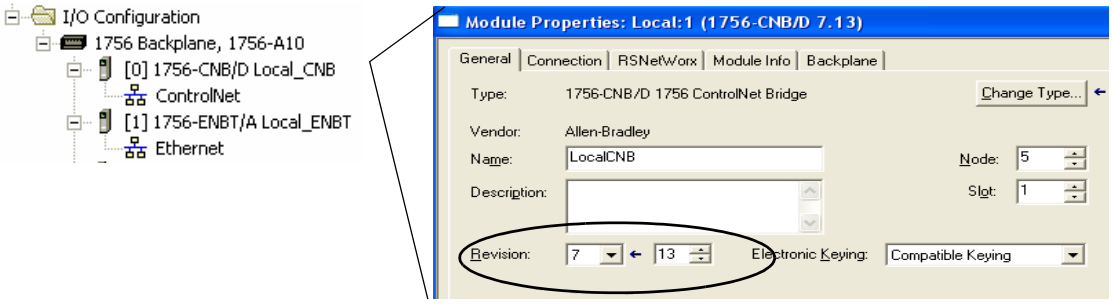
C. Select Change Controller to update the controller's type and revision.



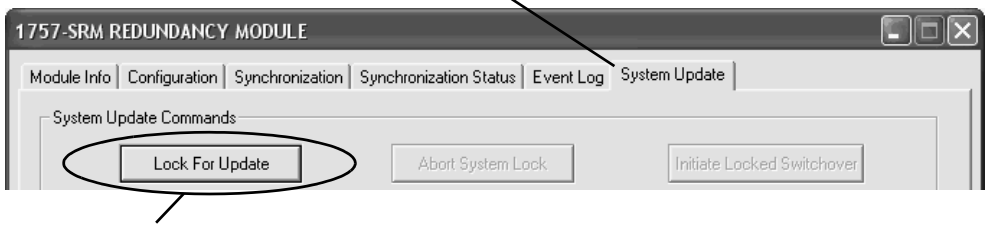
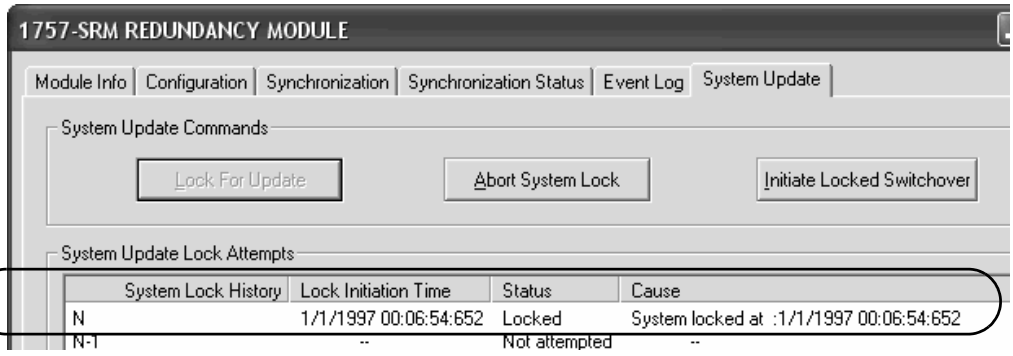
Example: Change the controller from revision 11 or 13 to revision 15, and, if need be, change the controller module type.

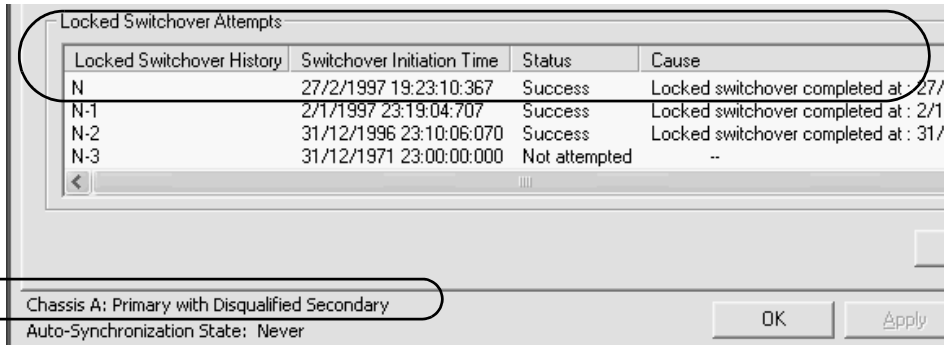
D. Change the revision of each local communication module to match what its revision will be after you update its firmware.

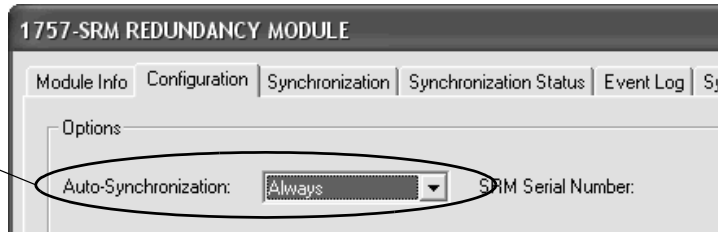
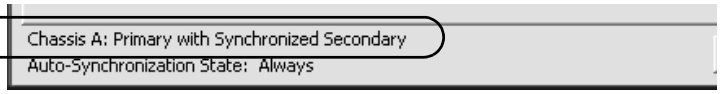
Example: Suppose you plan to update the firmware of each 1756-CNB series D module in the redundant chassis to revision 7.13. In that case, open the properties for each 1756-CNB series D module in the chassis and set the revision to 7.13.



Note: If you cannot select the new revision, then, from the Electronic Keying pull-down menu, choose either Compatible Keying or Disable Keying.

Step	Details
12. Download the project to the secondary controller.	**Important**: If I/O forces are enabled in the offline project, the software asks if you want to enable the forces in the controller. Even if you choose **No**, I/O forces stay enabled in the primary controller and become enabled in this controller after you switch over. A. Use RSLogix 5000 programming software to download the project to the controller in the secondary chassis. The secondary chassis has the higher network address of the redundant pair. B. After the download is complete, go offline. C. Wait at least 45 seconds before attempting to lock the system for update. **Important:** Stay offline until you finish this procedure.
13. Lock the system for update.	**Important:** Do not abort a system lock. Otherwise, you will clear the project from the secondary controller. **Important:** Do not remove any communication cables while you are locking the system for update. A. Open the 1757-SRM module configuration tool for the primary chassis. B. Click the System Update tab.  C. Select Lock For Update and choose Yes. D. Wait for the system to lock. It takes longer than a normal synchronization. **Note:** If the System Update Lock Attempts status column shows Aborted, consult the Known Anomaly Lgx00065410 on page 4 to determine possible cause and recovery method.  The system is locked.

Step	Details
14. Initiate a Locked Switchover.	 A. Select Initiate Locked Switchover and choose Yes. B. Wait for the system to switchover. A locked switchover takes about as long as a normal switchover.
The other chassis is now the primary chassis.	
15. Update all module firmware in the new secondary chassis.	Use the ControlFLASH firmware update tool to update the rest of the modules in the new secondary chassis. You have already updated the 1757-SRM module in this chassis. **Important:** If you chose to update your controller hardware as described in Step 9, you also must replace your existing controller in this chassis with the controller type you chose to migrate to.

Step	Details
16. Synchronize the chassis.	A. Go to the 1757-SRM configuration tool for the primary chassis. B. Click the Configuration tab. C. From the Auto-Synchronization pull-down menu, choose the desired option.  D. Click Apply and then Yes. The chassis synchronize.  E. Change the date and time in the 1757-SRM module. F. Choose OK.

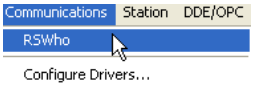
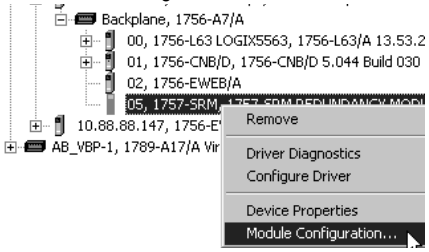
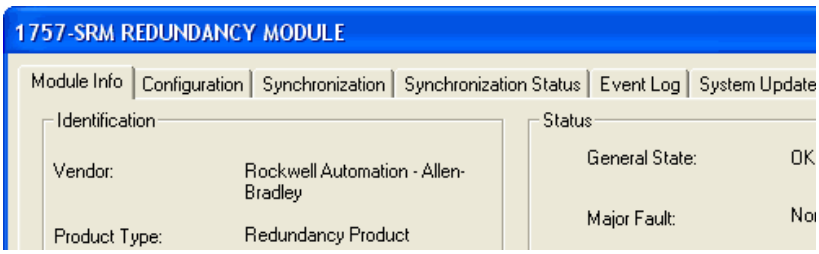
Update a System that is Already at Revision 15

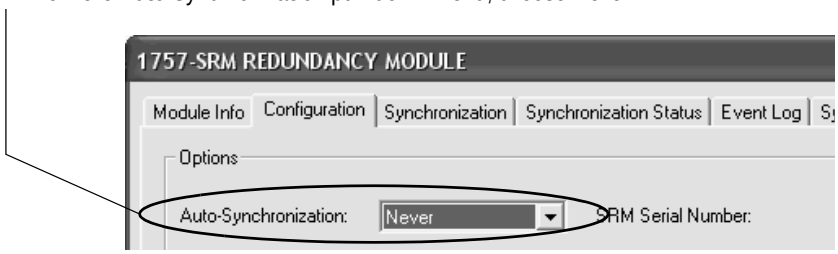
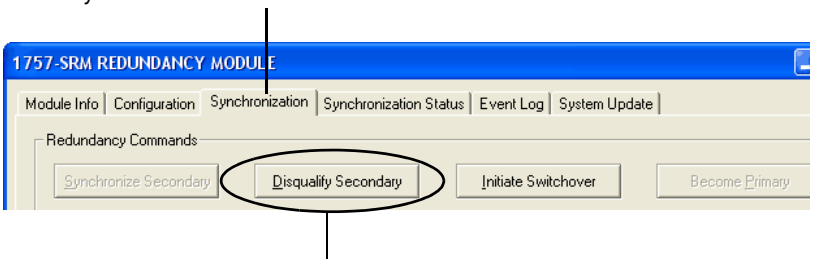
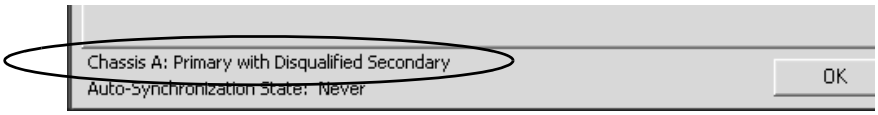
Use this procedure to update the firmware and controllers of your redundant chassis without shutting down your process.

IMPORTANT

- Use this procedure only if your system is already at revision 15 or you need to update 1756-L55 controllers to the appropriate 1756-L6*x* controllers.
- During this procedure, you will not be able to use RSLogix 5000 software to change the mode of the controller. Use the keyswitch on the front of the controller to change its mode.
- Leave RSNetWorx for ControlNet software closed or offline throughout this procedure. Otherwise, you will see errors in the RSNetWorx software during the update process.
- During this procedure:
  - Do not make any changes to the RSLogix 5000 project other than the ones called out in this procedure.
  - Make sure no one else makes changes to the project.

Step	Details
1. Update the software	A. Go to the tool tray of your computer and shut down RSLinx programming software.  B. Update these software programs. 6. RSLogix 5000 programming software 7. RSLinx programming software 8. 1757-SRM System Redundancy Module Configuration tool 9. RSNetWorx programming software 10.ControlFLASH firmware update kit.
2. Add the latest EDS files.	Start ⇒ Programs ⇒ Rockwell Software ⇒ RSLinx Tools ⇒ EDS Hardware Installation Tool
3. Put the keyswitches in the REM position.	Put the keyswitch of each redundant controller to the REM position. Otherwise, you will not be able to update the system.

Step	Details
4. Open the 1757-SRM configuration tool for the primary chassis.	A. Start RSLinx programming software. B. From the Communications pull-down menu, choose RSWho.  C. Browse to and right-click the 1757-SRM module in the primary chassis.  The Module Configuration dialog appears. 

Step	Details
5. Disqualify the secondary chassis.	A. Click the Configuration tab. B. From the Auto-Synchronization pull-down menu, choose Never.  C. Click Apply and then Yes. D. Select Synchronization.  E. Select Disqualify Secondary and then Yes.
The secondary chassis is disqualified.	 F. Click OK.
6. Update the 1757-SRM module in the primary chassis.	A. After performing step 5 wait at least 45 seconds for the primary 1757-SRM module to become ready. B. Update only the firmware of the 1757-SRM module in the primary chassis.

Step	Details
7. Update all module firmware in the secondary chassis, and perform the optional update to controller hardware in the new secondary chassis.	Use the ControlFlash firmware update tool to update all of the modules in the secondary chassis. **Important** • You cannot convert a 1756-L6*x* controller to a 1756-L55M*xx* controller. • Updating controller hardware is an optional procedure. • To perform this optional hardware update procedure, your secondary controller must have at least as much memory as the primary controller.

Primary Controller	Memory Size (Kbytes)	Compatible 1756-L55 Secondary Controller	Compatible 1756-L6x Secondary Controller
L55-M12, L55-M22	750	All	L61, L62, or L63
L55-M13, L55-M23	1536	L55-M13, L55-M23, L55-M14, L55-M24, L55-M16	L61, L62, or L63
L55-M14, L55-M24	3584	L55-M14, L55-M24, L55-M16	L62, L63
L55-M16	7680	L55-M16	L63
L61	2048	None	L61, L62, or L63
L62	4098	None	L62 or L63
L63	8192	None	L63

8. Prepare the RSLogix 5000 project for the update.

   A. Start RSLogix 5000 programming software and go online to the primary controller.

   B. Set the watchdog time for each task to this value or greater:

      Minimum watchdog time = (2 * *`maximum_scan_time`*) + 150 ms

      where:

      `Maximum_scan_time` is the maximum scan time for the entire task when the secondary controller is synchronized.

   C. Cancel or assemble any test edits.

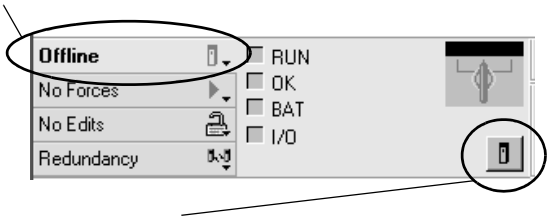
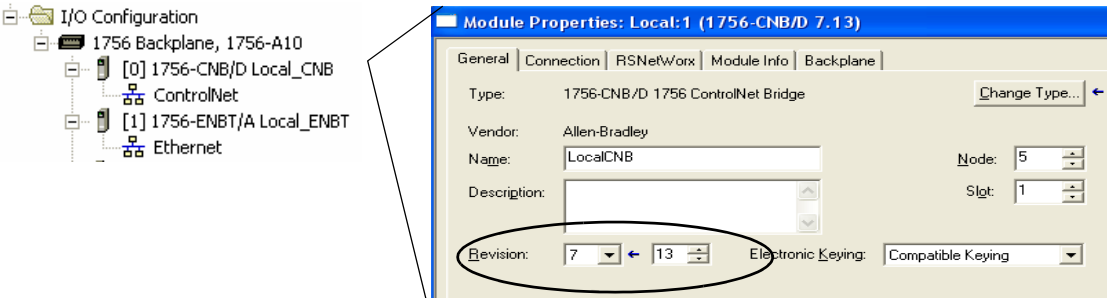
   D. Remove all SFC forces from the project.

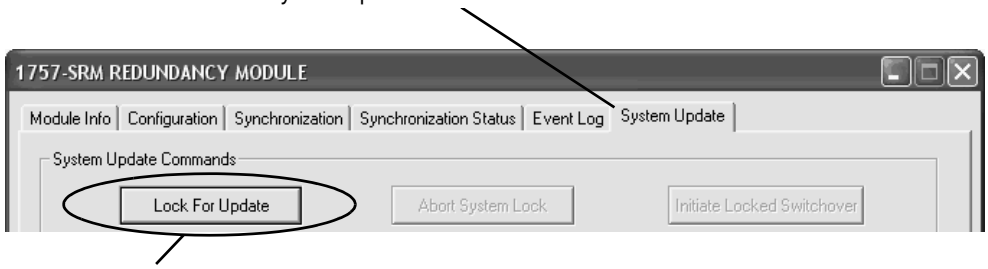
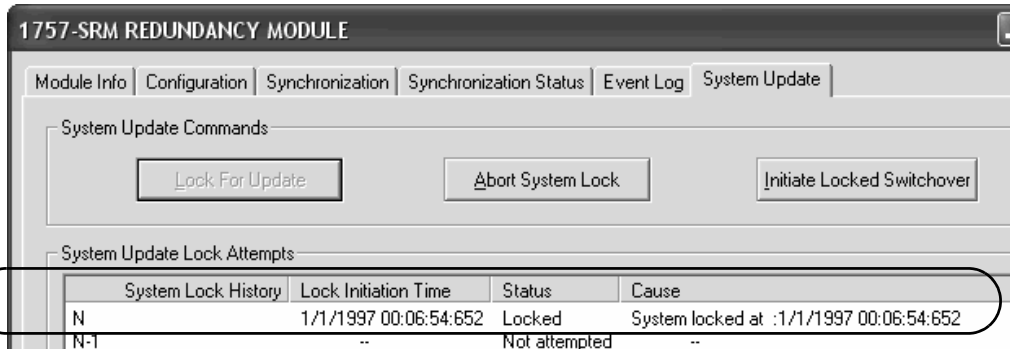
   E. Make sure that you do not need to make any changes to:

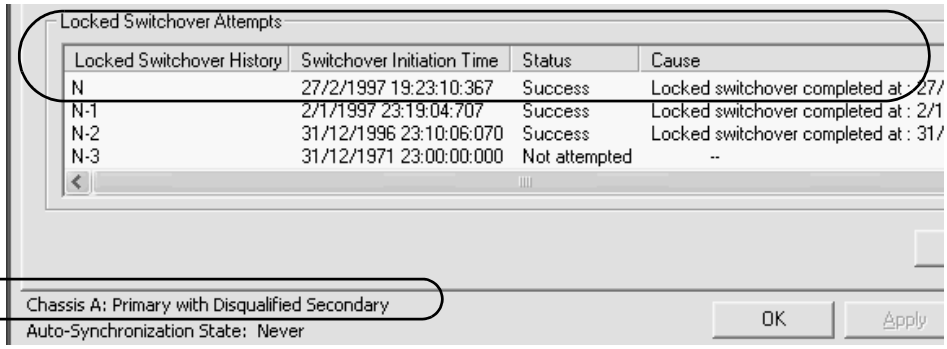
      • I/O Forces — Once you start this procedure, you will not be able to disable or enable I/O forces until you update both chassis.
      • I/O configuration.

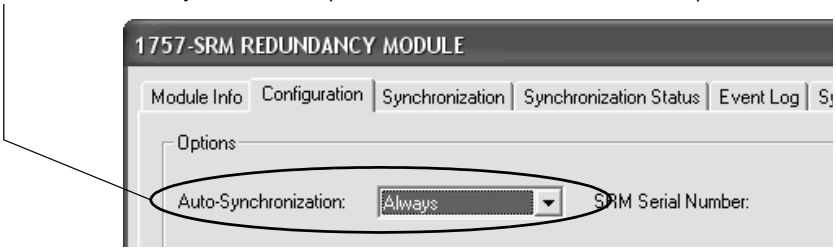
      You can make those changes again when the update is done and both chassis synchronize.

   F. Save the project.

Step	Details
9. Change the project revisions.	A. Go offline.  B. Click the Controller Properties icon. C. Select Change Controller to update the controller's type if you performed the optional hardware update in step 7. D. Change the revision of each local communication module to match what its revision will be after you update its firmware. **Example:** Suppose you plan to update the firmware of each 1756-CNB series D module in the redundant chassis to revision 7.13. In that case, open the properties for each 1756-CNB series D module in the chassis and set the revision to 7.13.  **Note**: If you cannot select the new revision, then, from the Electronic Keying pull-down menu, choose either Compatible Keying or Disable Keying.
10. Download the project to the secondary controller.	**Important**: If I/O forces are enabled in the offline project, the software asks if you want to enable the forces in the controller. Even if you choose **No**, I/O forces stay enabled in the primary controller and become enabled in this controller after you switch over. A. Use RSLogix 5000 programming software to download the project to the controller in the secondary chassis. The secondary chassis has the higher network address of the redundant pair. B. After the download is complete, go offline. C. Wait at least 45 seconds before attempting to lock the system for update. **Important:** Stay offline until you finish this procedure.

Step	Details
11. Lock the system for update.	**Important:** Do not abort a system lock. Otherwise, you will clear the project from the secondary controller. **Important:** Do not remove any communication cables while you are locking the system for update. A. Open the 1757-SRM module configuration tool for the primary chassis. B. Click the System Update tab.  C. Select Lock For Update and choose Yes. D. Wait for the system to lock. It takes longer than a normal synchronization.  The system is locked.

Step	Details
12. Initiate a Locked Switchover.	 A. Select Initiate Locked Switchover and choose Yes. B. Wait for the system to switchover. A locked switchover takes about as long as a normal switchover.
The other chassis is now the primary chassis.	
13. Update all module firmware in the new secondary chassis.	Use the ControlFLASH firmware update tool to update the rest of the modules in the new secondary chassis. You have already updated the 1757-SRM module in this chassis. **Important:** If you chose to update your controller hardware as described in step 7, you also must replace your existing controller in this chassis with the controller type you chose to migrate to.

Step	Details
14. Synchronize the chassis.	A. Go to the 1757-SRM configuration tool for the primary chassis. B. Click the Configuration tab. C. From the Auto-Synchronization pull-down menu, choose the desired option.  D. Click Apply and then Yes. The chassis synchronize.  E. Change the date and time in the 1757-SRM module. F. Choose OK.

Store a Project to Nonvolatile Memory While Your Process is Running

Use this procedure to store an updated project and firmware to the nonvolatile memory of the controller while your process is running.

IMPORTANT Use this procedure only with a 1756-L6*x* controller.

Step	Details
1. Make sure the chassis are synchronized.	Synchronize the chassis if they are not already synchronized.
2. Disqualify the secondary chassis.	A. Open the 1757-SRM configuration tool for the primary chassis. B. Set the Auto-Synchronization option to Never. C. Disqualify the secondary chassis.
3. Store the secondary controller's project.	A. Go online to the secondary controller. B. Store the project to the nonvolatile memory of the secondary controller. For step-by-step procedures on how to store a project, see the Logix5000 Controllers Common Procedures Programming Manual, publication 1756-PM001. **Important**: Do not go back online to the secondary controller until you complete the rest of the steps in this procedure.
4. Initiate a switchover.	A. Go to the 1757-SRM configuration tool. B. Synchronize the chassis. C. Initiate a switchover.
5. Store the new secondary controller's project.	A. Go online to the new secondary controller. B. Store the project to the nonvolatile memory of the secondary controller. For step-by-step procedures on how to store a project, see the Logix5000 Controllers Common Procedures Programming Manual, publication 1756-PM001. **Important**: Do not go back online to the secondary controller until you complete the rest of the steps in this procedure.
6. Synchronize the chassis.	A. Go to the 1757-SRM configuration tool. B. Set Auto-Synchronization to the desired option. C. Synchronize the chassis.

Change CNB modules from Series D to Series E

Use this procedure to replace your 1756-CNB or 1756-CNBR series D modules with newer series E modules.

IMPORTANT

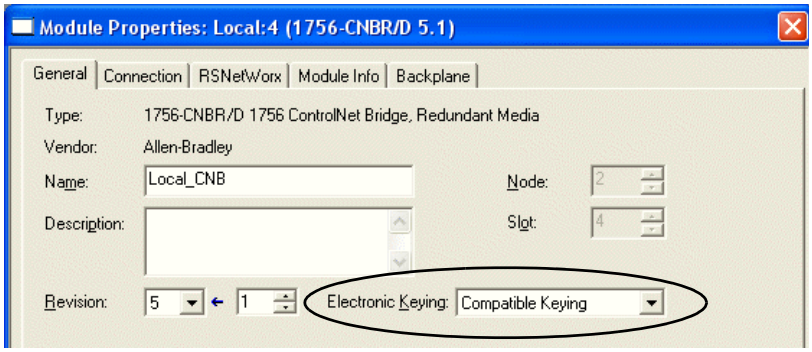
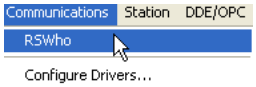
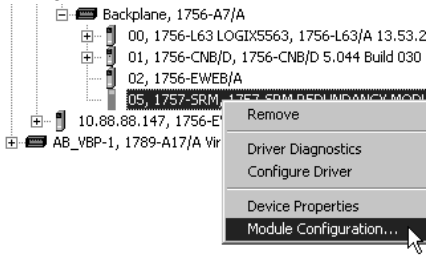
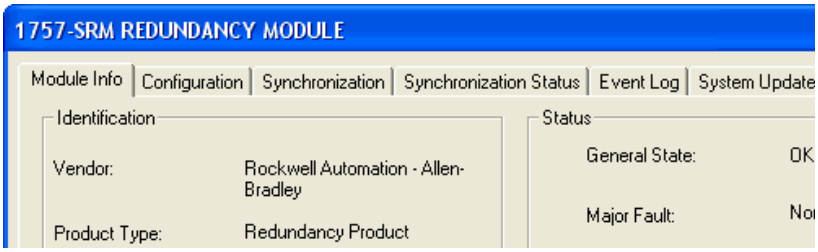
- Use this procedure only if your redundancy system is already at revision 15.
- Replace 1756-CNB modules with 1756-CNB modules and 1756-CNBR modules with 1756-CNBR modules. Otherwise, your chassis will not synchronize.
- Finish this procedure once you start it.
- Each module must be the same series as its partner in the other redundant chassis. If you replace a module with a different series, you must replace the partner module with one of the same series.

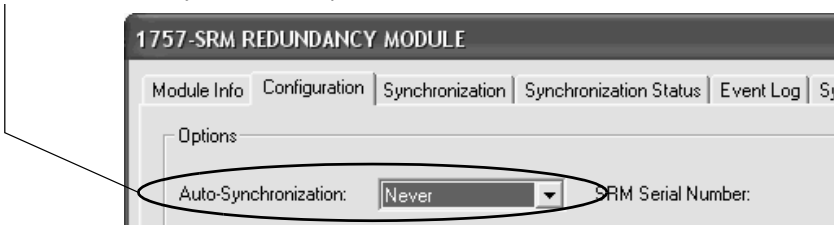
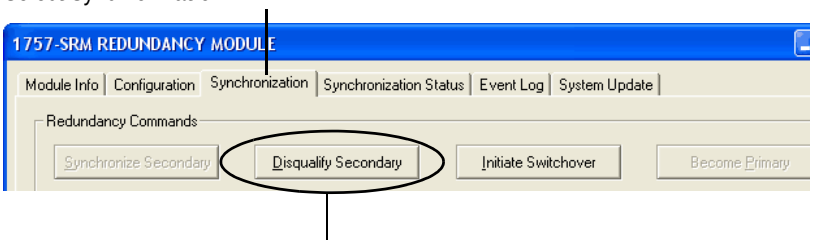
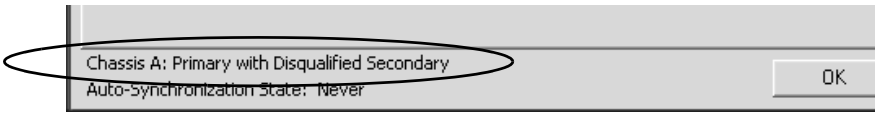
Before You Begin

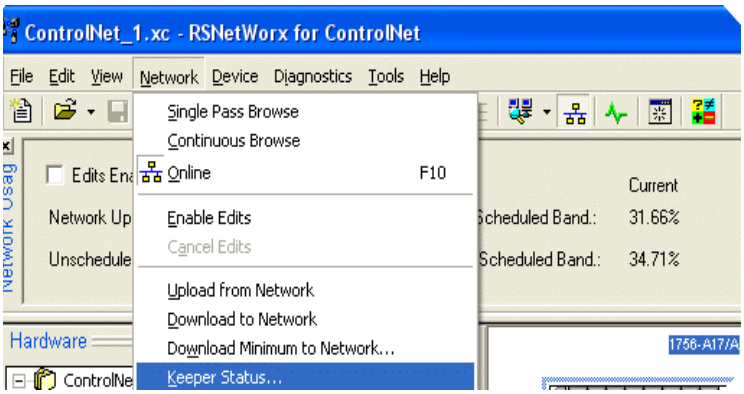
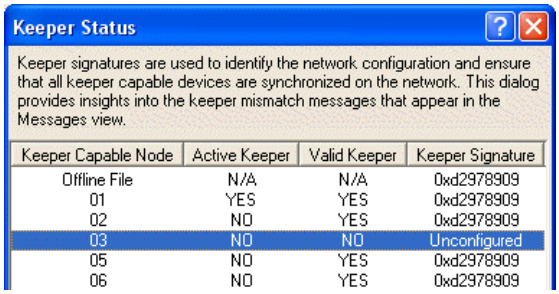
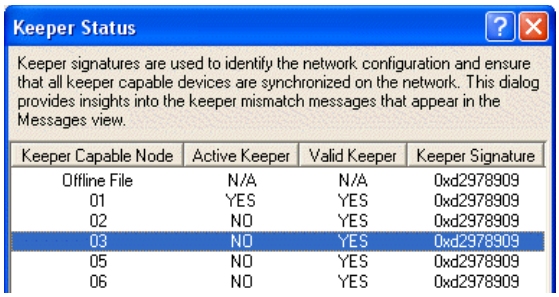
This procedure is easier to complete if you first update the firmware of the 1756-CNB or 1756-CNBR series E modules.

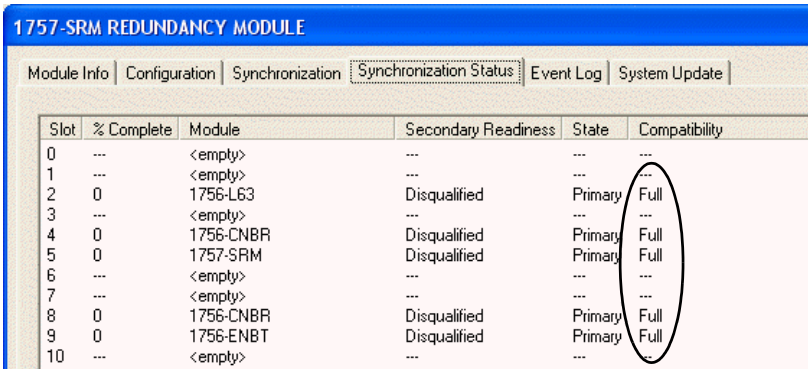
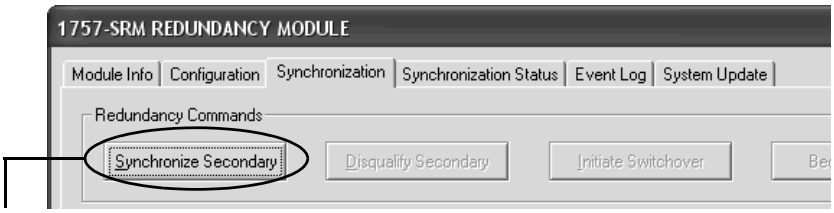
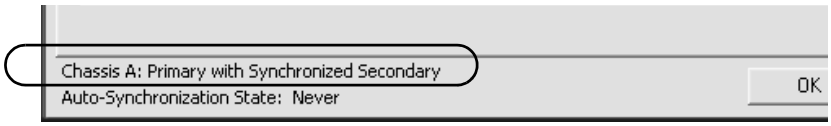
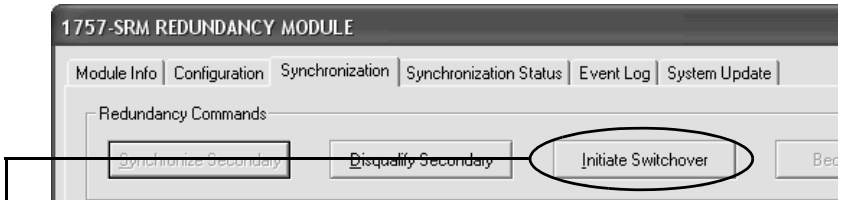
If the CNB modules are	And you	Then
Revision 11.1 or later	→	Go to Actions and start the procedure. You do not need to update the firmware of the modules.
Not revision 11.1 or later	Have a nonredundant chassis with an open slot	1. Add the revision 11 EDS files for the 1756-CNB modules, if you have not already done so. 2. Put one of the 1756-CNB modules into the open slot of the nonredundant chassis. 3. Use ControlFlash software and update the firmware of the 1756-CNB module. 4. Remove the 1756-CNB module. 5. Repeat steps 1...4 for the rest of the 1756-CNB modules. 6. Go to Actions and start the procedure.
	Do not have a nonredundant chassis with an open slot	Go to Actions and start the procedure. You will have to use the secondary chassis to update the modules.

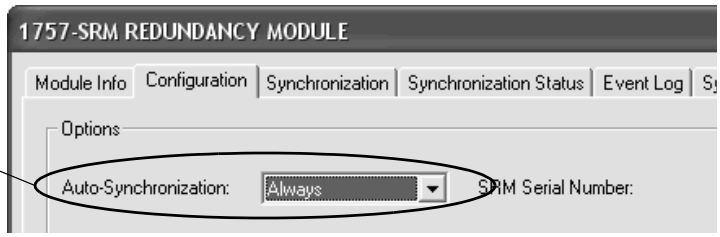
Actions

Step	Details
1. Add the latest EDS files.	Add the revision 11 EDS files for the 1756-CNB and 1756-CNBR series E modules, if you have not already done so,
2. Prepare the RSLogix 5000 project.	A. Start RSLogix 5000 programming software and go online with the primary controller. B. For each 1756-CNB or 1756-CNBR series D module in the local chassis, from the Electronic Keying pull-down menu, choose either Compatible Keying or Disable Keying and apply the changes.  C. Save the project.
3. Open the 1757-SRM module configuration tool for the primary chassis.	A. Start RSLinx programming software. B. From the Communications pull-down menu, choose RSWho.  C. Browse to and right-click your 1757-SRM module and choose Module Configuration.  The Module Configuration dialog appears. 

Step	Details
4. Disqualify the secondary chassis,	A. Click the Configuration tab. B. From the Auto-Synchronization pull-down menu, choose Never.  C. Click Apply and then Yes. D. Select Synchronization.  E. Select Disqualify Secondary and then click Yes.
The secondary chassis is disqualified.	 F. Click OK.
5. Did you already update the firmware of the series E modules?	Did you already update the firmware of the series E modules? • Yes — Go to step 7. • No — Continue with step 6.
6. Update the firmware of the series E modules.	A. Remove the 1757-SRM module from the secondary chassis. B. Set the address of each series E module to the address of its corresponding series D module plus one. C. Replace each series D module with the corresponding series E module. **Important:** Make sure you connect the correct ControlNet tap to each module. D. Use ControlFlash software to update the firmware of each series E module. E. Remove the series E modules from the secondary chassis and set their addresses to match the original series D modules. F. Repeat steps B...E for the second set of series E modules. G. Put the secondary 1757-SRM module back into the secondary chassis. H. Put one set of series E modules into the secondary chassis. **Important:** Make sure that you use the correct address, slot, and ControlNet tap for each module. I. Go to step 8.

Step	Details
7. Replace the 1756-CNB modules in the secondary chassis.	Replace the 1756-CNB modules in the secondary chassis with series E modules. As you replace the modules: • make sure that you set each module to the same address as the module that it is replacing. • make sure that you connect the correct ControlNet tap. To avoid connecting the wrong tap, replace the modules one at a time and reconnect the ControlNet tap.
8. Update the keeper signatures of the 1756-CNB modules.	A. Start RSNetWorx for ControlNet software, and open the network configuration file. B. Go online with the network. You do not have to browse the entire network. C. Select Network and choose Keeper Status.  D. Select the node number of the secondary 1756-CNB module and click Update Keeper.  E. Verify that the keeper signature has been updated.  F. Repeat steps D and E for the other 1756-CNB modules in the secondary chassis. G. Click Close.

Step	Details
9. Reset the secondary 1756-CNB modules.	A. Cycle power to the secondary chassis. B. Select the Synchronization Status tab, and verify that the modules are fully compatible. 
10. Synchronize the secondary chassis.	A. Select Synchronization.  B. Select Synchronize Secondary and choose Yes. C. Wait for the chassis to synchronize. The chassis are synchronized. 
11. Initiate a switchover.	 Select Initiate Switchover and choose Yes.
12. Replace the 1756-CNB modules in the new secondary chassis.	Repeat steps 7...9 for the 1756-CNB modules in the new secondary chassis.

Step	Details
13. Synchronize the chassis.	A. Go to the 1757-SRM module configuration tool for the primary chassis. B. Select the Configuration tab. C. From the Auto-Synchronization pull-down menu, choose the desired option.  D. Click Apply and Yes.

Additional Resources

For more information on the ControlLogix redundancy system, see ControlLogix Redundancy System User Manual, publication 1756-UM523.

You can view or download publications at http://literature.rockwellautomation.com. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

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If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

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Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

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Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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