



ControlLogix Enhanced Redundancy System, Revision 19.52

Redundancy Module Catalog Numbers

1756-RM, 1756-RMXT

Controller Catalog Numbers

1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75

Communication Module Catalog Numbers

1756-CN2/B, 1756-CN2R/B, 1756-CN2RXT/B, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT

About This Publication

These release notes describe enhancements, corrected anomalies, and known anomalies specific to enhanced redundancy system, revision 19.52.

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About This Redundancy Firmware Bundle

This redundancy firmware bundle is comprised of series and firmware revisions for each of the modules listed in this table.

IMPORTANT

When designing, installing, and operating the redundant chassis pair for this enhanced redundancy system, revision, you can use only the modules specified in the table below.

Keep in mind the Series and Firmware Revision requirements listed **apply only to components used in the redundant chassis pair** not to components used with the redundancy system located outside the redundant chassis pair.

For example, you can use a 1756-CN2/B communication module, firmware revision 20.13, in a redundant chassis pair but you cannot use any 1756-CNB communication module in the redundant chassis pair. However, you can use any enhanced or standard ControlNet communication modules in a remote chassis.

Table 1 - Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 19.52

Cat. No.	Module Description	Series	Firmware Revision
1756-CN2	ControlLogix ControlNet bridge module	B	20.13
1756-CN2R	ControlLogix redundant media ControlNet bridge module		
1756-CN2RXT	ControlLogix-XT redundant media ControlNet bridge module		
1756-EN2T	ControlLogix EtherNet/IP bridge module	Any	4.2
1756-EN2TR	ControlLogix EtherNet/IP communication module		
1756-EN2TXT	ControlLogix-XT EtherNet/IP bridge module		
1756-L61	ControlLogix5561 controller	Any	19.52
1756-L62	ControlLogix5562 controller		
1756-L63	ControlLogix5563 controller		
1756-L63XT	ControlLogix-XT controller		
1756-L64	ControlLogix5564 controller		
1756-L65	ControlLogix5565 controller		
1756-L72	ControlLogix5572 controller		
1756-L73	ControlLogix5573 controller		
1756-L74	ControlLogix5574 controller		
1756-L75	ControlLogix5575 controller		
1756-RM	ControlLogix redundancy module	Any	3.2
1756-RMXT	ControlLogix-XT redundancy module		

The firmware bundle can be downloaded at:

<http://www.rockwellautomation/support.com>. It is identified as V19.52Enh.

Compatible Software Versions

Use these versions of software with this redundancy firmware bundle.

Table 2 - Required Software Versions for Enhanced Redundancy system, revision 19.52

Software	Version
FactoryTalk Services Platform	2.10.02 (CPR 9, SR3) ⁽¹⁾
FactoryTalk Alarms and Events	2.20.00 (CPR 9, SR2)
FactoryTalk Batch	11.00.00 ⁽²⁾
FactoryTalk View Site Edition	5.10.00 (CPR 9, SR2)
Redundancy Module Configuration Tool	7.2.7
RSLinx Enterprise	5.21 (CPR 9, SR2) ⁽³⁾
RSLinx Classic	2.57 (CPR 9, SR3)
RSLogix 5000	19.01 (CPR 9, SR 3)
RSNetWorx for ControlNet	10.01 (CPR 9, SR3)
RSNetWorx for EtherNet/IP	

(1) Use the most recent FactoryTalk Services Platform Patch Roll-up with this enhanced redundancy firmware revision. For the most recent patch roll-up, see Rockwell Automation Knowledgebase Answer ID 56184, accessible at: <http://www.rockwellautomation.com/knowledgebase/>.

(2) Use the most recent FactoryTalk Batch Patch Roll-up with this enhanced redundancy firmware revision. For the most recent patch roll-up, see Rockwell Automation Knowledgebase Answer ID 59058, accessible at: <http://www.rockwellautomation.com/knowledgebase/>.

(3) See [FactoryTalk View Software Considerations on page 4](#) for use considerations.

FactoryTalk View Software Considerations

FactoryTalk View software is required for only these human-machine interfaces (HMIs):

- PanelView Plus terminal
- VersaView industrial computer running a Windows CE operating system
- RSVIEW Supervisory Edition software

IMPORTANT

If you are using FactoryTalk View Site Edition software, install the RSLinx Enterprise HOTFIX. The HOTFIX improves the EtherNet/IP switchover time.

For more information, see Knowledgebase document ID 34592. To access Rockwell Automation's Knowledgebase, go to <http://www.rockwellautomation.com/support>.

About the Redundancy Module Configuration Tool

You can use 1756-RM or 1756-RMXT redundancy modules to commission a redundant system. These modules operate in a plug-and-play manner, that is, they can commission a system without any additional programming. However, there is additional functionality available if you use the modules with the Redundancy Module Configuration Tool (RMCT).

This enhanced redundancy system revision requires the RMCT, version 7.2.7. Version 7.2.7 is packaged with this enhanced redundancy system revision bundle.

You can use the RMCT with the 1756-RM or 1756-RMXT module to complete these tasks:

- View error diagnostics
- View partnered modules' qualification and compatibility status
- Set Auto-Synchronization parameters
- View and set Chassis ID parameters (Chassis A, Chassis B)
- Identify noncompliant modules for removal
- Configure redundancy system parameters

IMPORTANT This publication documents [Corrected Anomalies](#) and [Known Anomalies](#) associated with the RMCT. We recommend that you read these anomaly descriptions before using the RMCT, version 7.2.7.

Also, if you need to upgrade your RMCT separately from downloading this enhanced redundancy system revision or using RSLinx Classic software, version 2.57 (CPR9, SR3), see [Upgrade the Redundancy Module Configuration Tool on page 24](#).

Enhancements

These enhancements are provided with enhanced redundancy system, revision 19.52.

Table 3 - Enhancements in Enhanced Redundancy System, Revision 19.52

System Component	Enhancement
1756-A4LXT	You can use 1756-L4LXT chassis in a redundant chassis pair.
1756-EN2T, 1756-EN2TR, 1756-EN2TXT	You can use 1756-EN2Tx communication modules in a redundant chassis pair to access remote I/O modules over an EtherNet/IP network.
1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>You can use these ControlLogix controllers in an enhanced redundancy system, revision 19.52.</p> <p>IMPORTANT: There are differences between controller product families, that is, between 1756-L6x controllers and 1756-L7x controllers. For information about those differences, see ControlLogix Enhanced Redundancy System User Manual, publication 1756-UM535.</p>
1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>CIP Sync Technology</p> <p>This enhanced redundancy system revision supports the use of CIP Sync technology. CIP Sync technology provides a mechanism to synchronize clocks between controllers, I/O devices, and other automation products in your architecture with minimal user intervention.</p> <p>IMPORTANT There are differences between using CIP Sync technology in non-redundant systems and enhanced redundancy system, revision 19.52. Before you use this enhancement see these publications for a full understanding of CIP Sync technology:</p> <ul style="list-style-type: none"> ControlLogix System User Manual, publication 1756-UM001 ControlLogix Controllers, Revision 18 Release Notes, publication 1756-RN018 Integrated Architecture and CIP Sync Configuration Application Technique, publication IA-AT003 <p>Additionally, there are restrictions that apply when using CIP Sync technology in this enhanced redundancy system revision. For more information, see page 14.</p>
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>Runtime Detection of Controller Modifications</p> <p>This enhanced redundancy system revision supports Runtime Detection of Controller Modifications, also known as Controller Logging. This feature provides the option to detect and log changes made to 1756-L6x and 1756-L7x controllers without adding any auditing software.</p> <p>Advanced Process Control Instructions</p> <p>This enhanced redundancy system revision supports the use of Advanced Process Control for process or drives applications. This revision supports these Advanced Process Control instructions:</p> <ul style="list-style-type: none"> Coordinated Control (CC) Function Block Internal Model Control (IMC) Function Block Modular Multivariable Control (MMC) Function Block <p>For more information on Advanced Process Control instructions, see Logix5000 Controllers Process Control and Drives Instructions Reference Manual, publication 1756-RM006</p> <p>Partial Import Online</p> <p>This enhanced redundancy system revision supports PIO functionality in RSLogix 5000 programming software. With this feature, you can execute such tasks as importing large edits to a project while it is online and in Run mode.</p> <p>For more information on Partial Import Online, see Logix5000 Controllers Import/Export Reference Manual, publication 1756-RM084.</p>

Table 3 - Enhancements in Enhanced Redundancy System, Revision 19.52

System Component	Enhancement
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	High-integrity Add-On Instructions
	This enhanced redundancy system revision supports the use of high-integrity Add-On Instructions. High-integrity Add-On Instructions offer the capability to track instruction revisions and easily confirm instruction functionality.
1756-L72, 1756-L73, 1756-L74, 1756-L75	Redundancy System Update
	This enhanced redundancy system revision supports the Redundancy System Update feature. This feature offers the capability of performing firmware updates in the secondary control chassis while the primary control chassis is controlling outputs. For more information, see Upgrading from an Enhanced Redundancy System on page 21 .
1756-L72, 1756-L73, 1756-L74, 1756-L75	Improved Controller Scan Times
	This enhanced redundancy system revision provides improved controller scan times when using 1756-L7x controllers instead of 1756-L6x controller. The improved scan times are also found in applications that use the Series B redundancy module, that is, 1756-RM/B module.
1756-RM, 1756-RMXT	Support for Series B Hardware
	<p>This release supports the Series B 1756-RM and 1756-RMXT redundancy modules in addition to the Series A versions.</p> <p>However, the Series B 1756-RM and 1756-RMXT redundancy modules offer faster data transfer speeds on the backplane than the Series A 1756-RM and 1756-RMXT redundancy modules. The faster data transfer speeds are essential to obtain faster scan times when running a 1756-L7x controller in the redundant chassis pair.</p>
Redundancy Module Configuration Tool	Automatic Export
	The Export All button on the Event Log tab allows all the event log records and internal diagnostic data from both redundancy modules in the redundant chassis pair to be collected automatically.
	<p>Major Fault Recovery</p> <p>The redundancy module can now communicate on the backplane for most of its major fault conditions. When the redundancy module is in a major fault state but communicating on the backplane, the OK status indicator flashes red and the module display shows the 4-character error code.</p> <p>The Clear Fault button on the Event Log tab automatically becomes active as soon as a major fault occurs on the redundancy module. The Module Info tab shows the fault code & associated information. You can click the Clear Fault button to clear the fault without removing and re-inserting the module. Once the fault is cleared, the redundancy module automatically reboots and enters a primary or secondary state.</p>

Corrected Anomalies

These anomalies have been corrected with enhanced redundancy system, revision 19.52.

Table 4 - Corrected Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65	<p>CORRECTED: Totalizer (TOT) instruction may continually remain in Program Mode</p> <p>Setting the ProgValueReset input puts the Totalizer into Program Mode. The ProgOper output continues to indicate the mode requested (that is, Operator mode), however, only ProgStartReq, ProgStopReq, and ProgResetReq are recognized.</p> <p>Lgx00077908</p>

Table 4 - Corrected Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-RM, 1756-RMXT	<p>CORRECTED: Cycling power to, or, updating the firmware of the 1756-RM or 1756-RMXT redundancy module or other modules in the chassis may cause the 1756-RM or 1756-RMXT redundancy module to fault and indicate error code EAM3 on the module status display.</p> <p>Rarely, after updating the firmware for the 1756-RM or 1756-RMXT redundancy module or any other modules in the chassis, the 1756-RM or 1756-RMXT redundancy module begins logging E750 faults and eventually an EAM3 fault occurs. To recover, uninstall both the 1756-RM or 1756-RMXT redundancy modules from the chassis and re-install them in the same chassis slots. Uninstalling and reinstalling only one of the modules may result in the fault appearing again.</p> <p>Lgx00094986, Lgx00099560</p> <p>CORRECTED: The redundancy module fails to detect a controller in the chassis.</p> <p>Rarely, after applying power to a redundant chassis, the 1756-RM or 1756-RMXT redundancy module does not detect all of the controllers in the chassis. When the controller is not detected, it goes into Run mode, even if it is in the secondary chassis. In addition, the Synchronization Status tab of the RMCT does not indicate that the missing controller is present.</p> <p>If the controller that fails to be detected is located in the secondary chassis, the chassis pair fails to synchronize.</p> <p>Lgx00079417</p>

Known Anomalies

This table lists the known anomalies specific to the enhanced redundancy system, revision 19.52.

Table 5 - Known Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT	<p>System Event Entry contains a module failure event when an enhanced communication module is inserted.</p> <p>The System Event History displays a 'Module Failure' entry when you insert a 1756-CN2x communication module or a 1756-EN2x communication module in the chassis while the redundant chassis pair is synchronized. This is not indicative of any module failure, instead it indicates only that an enhanced communication module was inserted in the chassis.</p> <p>Lgx00078874</p>
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-RM, 1756-RMXT	<p>After a switchover is completed, the primary redundancy module incorrectly reports a Synchronized status in RSLogix 5000 programming software, and primary ControlNet and Ethernet/IP communication modules report a No Partner status</p> <p>After a successful switchover, these components in the enhanced redundancy system give these indications:</p> <ul style="list-style-type: none"> Primary communication module is PwNS Secondary communication module is DSNP Synchronization Status tab in the RMCT shows Synchronized <p>These indications on the communications module and Synchronization Status tab incorrectly indicate that a switchover is complete but a redundancy state change is pending.</p> <p>Typically, the components should give these indications when the switchover is, in fact, complete and no state change is pending:</p> <ul style="list-style-type: none"> Primary communication module is PwDS Secondary communication module is CMPT Synchronization Status tab in the RMCT shows Disqualified <p>To force the completion of the pending state change and re-synchronize the redundant chassis pair, cycle power to the secondary chassis.</p> <p>Lgx115764</p>

Table 5 - Known Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-RM, 1756-RMXT, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>Multiple switchovers can cause connection failure to SoftLogix controllers.</p> <p>When a high number of consumed connections are routed through a ControlNet communication module in the primary chassis to a SoftLogix controller, the primary controller reports a connection failure, that is, error code 16#0203.</p> <p>This anomaly occurs despite the fact that there are no network disruptions or device power cycling.</p> <p>Lgx00115516</p>
1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>Connections may drop temporarily if a 1756-EN2Tx communication module is not configured correctly.</p> <p>If your application includes a connection from a remote controller to a primary controller over an EtherNet/IP network, you must use these configuration settings for the 1756-EN2Tx communication module in the primary chassis when it is added to the remote controller's RSLogix 5000 project:</p> <ul style="list-style-type: none"> • Rack Connection = None • Time Sync Connection = None <p>If the parameters are configured in any other combination, the connection between the remote controller and primary controller is temporarily dropped during a switchover. The connection is re-established after the switchover is complete.</p> <hr/> <p>IMPORTANT When you add the 1756-EN2Tx communication module to the primary controller's RSLogix 5000 project, you can use any settings for the parameters above with no affect on the connection from remote controller to primary controller.</p> <hr/> <p>Lgx00111615, Lgx00108809, Lgx00109656</p>
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>Redundant chassis synchronization fails when the controller is near its connection limit.</p> <p>Chassis synchronization may fail if the controller is near its connection limits. To reduce the likelihood of this anomaly, verify that you use controller connections within the limits of the controller and that at least eight controller connections are reserved for the redundant system.</p> <ul style="list-style-type: none"> • The 1756-L6x controllers support up to 250 controller connections. If your enhanced redundancy system uses these controllers, limit the number of controllers connections used to 242 or fewer connections. • The 1756-L7x controllers support up to 500 controller connections. If your enhanced redundancy system uses these controllers, limit the number of controllers connections used to 492 or fewer connections. <p>Lgx00063311</p> <hr/> <p>Alarms scanned during the continuous task may be published to the alarm server twice after a switchover.</p> <hr/> <p>If a switchover occurs and a continuous task that contains alarm instructions is scanned twice as a result, a duplicate 'out of scope' alarm entry may be indicated in the alarm summary object. To clear 'out of scope' entries, click Refresh alarm list.</p> <hr/> <p>Alarm status messages may be duplicated in the Alarm History Log in the event of a switchover.</p> <hr/> <p>To make troubleshooting duplicate alarm states easier, consider programming alarms to indicate when a redundant system switchover occurs.</p> <hr/> <p>Alarms that are acknowledged just before or during a switchover may be indicated as active and unacknowledged after a switchover. If this occurs, acknowledge the alarm a second time.</p> <hr/> <p>If an alarm is active, then inactive, and a switchover occurs before change in the alarm state is updated to the FactoryTalk server, the FactoryTalk alarm history log may not indicate the change in alarm state.</p>

Table 5 - Known Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>Alarm parameters may be lost when a switchover occurs.</p> <p>When a switchover occurs in a redundant system that uses alarms, certain alarm parameters may not be transferred to the new primary controller if the parameters have changed since the last crossload of data. Alarm parameters that may not transfer include the following:</p> <ul style="list-style-type: none"> • DeliveryER • DeliveryEN • NoSubscriber • NoConnection • CommError • AlarmBuffered • SubscNotified <p>Once the alarm data is buffered, the parameters are updated.</p> <p>Lgx00093529</p>
	<p>Alarms may fail to be acknowledged when the attempt to acknowledge them occurs during a switchover.</p> <p>If you attempt to acknowledge an alarm while a switchover occurs, a failure to acknowledge the alarm is indicated. Attempting to acknowledge the alarm a second time is successful.</p> <p>Lgx00093826</p>
	<p>A Partial Import Online to a primary controller over a ControlNet network may fail if a system switchover occurs while the PIO is still in process.</p> <p>When the anomaly occurs and the PIO fails, you may see any of these errors:</p> <ul style="list-style-type: none"> • Failed to import file 'c:\...\xxx.L5x Object already exists • Failed to import file 'c:\...\xxx.L5x Already in request mode/state • CIP error: Problem with a semaphore • Internal Object Identifier (IOI) destination unknown <p>After the switchover completes, restart the PIO with the redundant chassis pair disqualified or synchronized, and the PIO is complete.</p> <p>Lgx00114044, Lgx00113005, Lgx00111045, Lgx00111230</p>
	<p>Inhibiting equipment phase can cause disqualification.</p> <p>If you inhibit an equipment phase, or a task that includes an equipment phase, in a primary controller, the secondary controller is disqualified. This disqualification results from program sequence mismatches between the primary and secondary controllers.</p> <p>Lgx00062035</p>
	<p>When you import a routine to an empty program in a synchronized enhanced redundancy system, disqualification may occur.</p> <p>Lgx00108673</p>

Table 5 - Known Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>If tasks are not properly tuned and you execute a large PIO, the primary controller may experience a watchdog fault during the import because the Watchdog parameter is set too low. The fault causes a switchover.</p> <p>When this anomaly occurs, however, once the secondary controller goes online, it shows incorrect data in its fault log. The incorrect data appears in the Task, Program, and Routine fields.</p> <p>The fault log typically shows the following:</p> <ul style="list-style-type: none"> • Watchdog Fault (Type 06) • Task watchdog expired. May have been caused by an infinite loop, a complex program, or a higher priority task. (Code 01) • Task: <unknown> • Program: <unknown> • Routine: <unknown> <p>You must execute an upload on the secondary controller to obtain correct Task, Program, and Routine watchdog information in the event of a future watchdog fault.</p> <p>Lgx00108575</p>
	<p>When a program in the primary controller is inhibited or uninhibited, the secondary may disqualify and re-qualify.</p> <p>When changing the Inhibit Program setting, plan for secondary chassis disqualification according to potential implications that are specific to your application. Or, unschedule the program rather than inhibiting it.</p> <p>Lgx00090432</p>
1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>1756-L7x controllers display No Project message during qualification process.</p> <p>While qualification is in process in a system that uses 1756-L7x controllers, controller(s) in the secondary chassis display No Project in their Scrolling Status Display status indicator. When qualification is complete, the secondary controllers display the name of the project loaded into the primary controller.</p> <p>Lgx00115228</p>
1756-RM, 1756-RMXT	<p>Repeated connection and disconnection, or irregular insertion, of the 1756-RM or 1756-RMXT redundancy modules' fiber-optic cable results in various fault codes indicated on the module status display.</p> <p>If the 1756-RM or 1756-RMXT redundancy modules' fiber-optic cable is disconnected and connected repeatedly within short periods of time, or the cable is inserted slowly at a slight angle to the connector, the redundancy module faults and indicates error codes such as E0xx or EAxx.</p> <p>To avoid experiencing these faults, wait 5...10 seconds between disconnecting and connecting the 1756-RM or 1756-RMXT redundancy modules' fiber-optic cable and verify that the insertion is quick and straight into the connector.</p> <p>Lgx00084595, Lgx113995, Lgx113954, Lgx116055</p>

Table 5 - Known Anomalies in an Enhanced Redundancy System, Revision 19.52

System Component	Description
RSLink Communication Software, Redundancy Module Configuration Tool	<p>Upgrade RSLink communication software to version 2.56 or later, and RMCT, version 7.2.7 may not work.</p> <p>If you are using the RMCT, version 7.2.7 and upgrade RSLink communication software to version 2.56 or later, the RMCT may not function or be available for launch after the upgrade.</p> <p>Follow these steps to restore the RMCT to normal functionality:</p> <ol style="list-style-type: none"> 1. Shutdown RSLink communication software. 2. Access your computer's Control Panel and click the Change or Remove option. 3. Select RMCT and click Change/Remove. 4. Use the Repair option to restore the RMCT to reinstall all program features installed by the previous setup. <p>When you restart RSLink communication software, the RMCT functions properly.</p>
	<p>Remove RSLink communication software, version 2.55 or earlier, and RMCT and see error messages.</p> <p>If you remove RSLink communication software, version 2.55 or earlier and then remove the RMCT, you may see error messages related to .dll files.</p> <p>Click OK when the messages appear and removal completes successfully.</p>
	<p>Error may occur when downgrading RSLink communication software bundled with the RMCT.</p> <p>If you have RSLink communication software, version 2.56 or later and the RMCT, version 7.2.7 or later, installed on your computer, you may receive an error message when downgrading to RSLink communication software, version 2.55 or earlier bundled with an earlier version of the RMCT.</p> <p>As a consequence of this anomaly, instead of using the RMCT, version 5.2.3 or earlier, your computer continues to use the RMCT, version 7.2.7 or later. Follow these steps to workaround this anomaly:</p> <ol style="list-style-type: none"> 1. Uninstall the RMCT, version 7.2.7 or later, from your computer. 2. Uninstall RSLink communication software, version 2.56 or later, from your computer. 3. Install RSLink communication software, version 2.55 or earlier, with the bundled RMCT, version 5.23 or earlier.

Restrictions

This table lists restrictions applicable to enhanced redundancy system, revision 19.52. In addition to these restrictions, see the [Application Notes on page 16](#) for considerations specific to the type of application you are using.

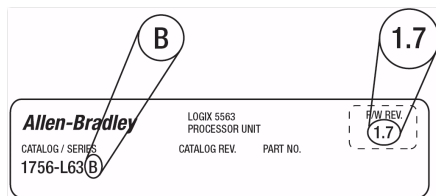
Table 6 - Restrictions in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-CN2, 1756-CN2R, 1756-CN2RXT	The 1756-CN2x/B communication module firmware is not compatible with the 1756-CN2x/A communication module hardware.
	The 1756-CN2x/B communication module firmware revision 20.13 is not compatible with the 1756-CN2x/A communication module hardware. Do not attempt to upgrade a 1756-CN2x/A communication module with 1756-CN2x/B firmware 20.13. If you attempt this update, the ControlFlash software displays a severe incompatibility warning.
	The 1756-CN2x/B communication modules provide a maximum of 128 CIP connections for standard (non redundancy) application use.
	The 1756-CN2x/B communication modules provide 131 CIP connections. However, three of the 131 CIP connections are always reserved for redundant control. These three redundant-system CIP connections always appear to be in use, even when no connections are open. Because three of the 131 CIP connections are reserved for redundancy, 128 CIP connections are available for nonredundant use.
1756-EN2T	Do not use 1756-EN2T communication modules, firmware revision 1.004 or earlier, in redundant chassis.
	1756-EN2T communication module firmware revision 1.004 is not redundancy-compliant either in standard or enhanced redundancy systems. You must upgrade 1756-EN2T communication modules to firmware revision 4.2 to use this enhanced redundancy system revision.
1756-EN2T, 1756-EN2TR, 1756-EN2TXT	You cannot use Unicast connections on an EtherNet/IP network with this enhanced redundancy system revision.
	The 1756-EN2x communication modules provide 259 CIP connections. However, three of the 259 CIP connections are always reserved for redundant control. These three redundant-system CIP connections always appear to be in use, even when no connections are open.
	Because three of the 259 CIP connections are reserved for redundancy, 256 CIP connections are available for non-redundancy use.
	You cannot use a 1756-EWEB communication module in an enhanced redundancy system, revision 19.52.
	If you are migrating from a ControlLogix standard redundancy system to an enhanced redundancy system, you must replace existing 1756-EWEB communication modules with any of the 1756-EN2Tx communication modules
	Keep in mind that when you replace a 1756-EWEB communication module with a 1756-EN2Tx communication modules your application loses functionality only available with the 1756-EWEB communication module. These are examples of functionality that is no longer available in an Enhanced Redundancy System
	<ul style="list-style-type: none"> • Open Sockets • Simple Network Time Protocol (SNTP) Client • Web pages
	You must account for this lost functionality in your RSLogix 5000 programming software project.
	IMPORTANT: You cannot perform online migration from 1756-EWEB communication modules to 1756-EN2T or 1756-EN2TR communication modules.
	Lgx00092779
	The 1756-EN2x communication modules used in the enhanced redundancy system do not provide features such as socket services, web services, or the Simple Time Network Protocol (SNTP) client that are available with the ControlLogix EtherNet/IP Web Server, 1756-EWEB communication module.
	The 1756-EN2Tx communication modules do not support Immediate Output (IOT) instructions.
	Because these modules do not support the IOT instruction, they cannot override the RPI in a remote chassis and immediately send new data over the EtherNet/IP network.

Table 6 - Restrictions in an Enhanced Redundancy System, Revision 19.52

System Component	Description
1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>There are differences between using CIP Sync technology in non-redundant systems and enhanced redundancy systems, revision 19.52.</p> <hr/> <p>IMPORTANT Before you use this enhancement in an enhanced redundancy system, revision 19.52, see these publications for a full understanding of CIP Sync technology in any system:</p> <ul style="list-style-type: none"> ControlLogix System User Manual, publication 1756-UM001 ControlLogix Controllers, Revision 18 Release Notes, publication 1756-RN018 Integrated Architecture and CIP Sync Configuration Application Technique, publication IA-AT003 <hr/> <p>Consider the following when you use CIP Sync technology in an enhanced redundancy system, revision 19.52:</p> <ul style="list-style-type: none"> If you enable CIP Sync Time Synchronization in the controllers in a redundant chassis pair, you must also enable Time Synchronization in the EtherNet/IP communication modules in the redundant chassis pair so all devices have a single path to the Grandmaster. If time synchronization is enabled in any controller in the primary chassis of a disqualified Redundant Chassis Pair, and no other devices, that is, EtherNet/IP communication modules, in the primary chassis have time synchronization enabled, the redundant chassis pair attempts to qualify. However, in these application conditions, the attempt to qualify fails. While CIP Sync technology can handle multiple paths between master and slave clocks, it resolves mastership most effectively if you configure the redundant paths so that Time Synchronization is enabled in only the minimum required number of EtherNet/IP communication modules. For example, if your redundant chassis pair has three 1756-EN2T communication modules and all are connected to the same network, enable Time Synchronization in only one of the modules. If the primary controller is the Grandmaster, the enhanced redundancy system automatically manages the CIP Sync clock attributes so that the controller in the primary chassis is always set to be the Grandmaster instead of the secondary controller. This clock management ensures a change to a new Grandmaster when the redundancy system switches over. When a switchover occurs, these events take place: <ul style="list-style-type: none"> The Grandmaster status transfers from the original primary controller to the new primary controller. This transfer may take longer to complete than if Grandmaster status was transferred between devices in a non-redundant system. The synchronization of the enhanced redundancy system may take longer to complete than when it occurs on a switchover in an enhanced redundancy system, revision 19.52, that does not use CIP Sync technology. If you attempt to use the Redundant System Update (RSU) feature to upgrade an enhanced redundancy system, revision 16.81 or earlier, that uses Coordinated System Time (CST), the enhanced redundancy system, revision 19.52 does not permit a locked switchover and the upgrade fails to complete. To work around this restriction, first disable CST Mastership in the original redundancy system and then use RSU to upgrade to enhanced redundancy system, revision 19.52.

Table 6 - Restrictions in an Enhanced Redundancy System, Revision 19.52

System Component	Description						
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75	<p>You can place a maximum of two controllers in the same chassis in a redundant chassis pair. When two controllers are used in the same chassis, they must be of the same product family. For example, you cannot place a 1756-L6x controller with a 1756-L7x controller in the same chassis.</p>						
	<p>Do not use Match Project to Controller property with redundant controllers.</p>						
	<p>If you use the Match Project to Controller property available in the Advanced tab of the Controller Properties dialog box, you cannot go online with, download to, or upload from the new primary controller after a switchover. This is because the serial number of the new primary controller is not the same as the serial number of the old primary controller and the project cannot be matched to the newly-switched-to controller.</p>						
	<p>Lgx00063573</p>						
	<p>Firmware Supervisor</p>						
	<p>You cannot use the Firmware Supervisor feature available in RSLogix 5000 programming software.</p>						
	<p>Event Tasks</p>						
	<p>You cannot use event tasks in a ControlLogix enhanced redundancy systems. When you enable redundancy, you must change event tasks to non-event tasks or delete them from your project.</p>						
	<p>SERCOS Motion or Integrated Motion on EtherNet/IP</p>						
	<p>You cannot use Motion in ControlLogix enhanced redundancy systems.</p>						
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64	<p>Update controller firmware from boot firmware may cause major non-recoverable fault.</p>						
	<p>We recommend that you upgrade controller firmware in a non-redundant chassis. When you update these controllers from the boot firmware revisions listed to higher firmware revisions, execute the update with the controller in a non-redundant chassis or primary chassis.</p>						
	<table><tr><th>Controller</th><th>Firmware Revision</th></tr><tr><td>1756-L61, 1756-L62, 1756-L63, 1756-L63XT</td><td>1.7 or earlier (boot firmware)</td></tr><tr><td>1756-L64</td><td>1.10 or earlier (boot firmware)</td></tr></table>	Controller	Firmware Revision	1756-L61, 1756-L62, 1756-L63, 1756-L63XT	1.7 or earlier (boot firmware)	1756-L64	1.10 or earlier (boot firmware)
	Controller	Firmware Revision					
	1756-L61, 1756-L62, 1756-L63, 1756-L63XT	1.7 or earlier (boot firmware)					
	1756-L64	1.10 or earlier (boot firmware)					
	<p>If you attempt the firmware update with the controller in a redundant chassis, a major nonrecoverable fault (MNRF) may occur. If the fault does occur, the controller remains in a faulted state until you attempt the firmware update again with the controller in a non-redundant chassis.</p>						
	<p>The label on the side of the controller indicates the series controller and the boot firmware revision.</p>						
							
	<p>Complete these steps to upgrade from the boot firmware revision.</p>						
<ol style="list-style-type: none">1. Install the controller in a non-redundant chassis.							
<ol style="list-style-type: none">2. Update the controller firmware.							
<ol style="list-style-type: none">3. Use the controller as necessary in the redundant chassis pair.							
	<p>After you have updated the controller beyond the boot firmware revision, you can perform any additional controller updates in either non-redundant or redundant chassis.</p>						

Application Notes

Consider these application notes when configuring, programming, and using your enhanced redundancy system, revision 19.52.

Performance Differences Between Redundancy Modules' Series

You can use any series of the 1756-RM or 1756-RMXT redundancy modules in an enhanced redundancy system, revision 19.52. You can also mix series within a partnered set. For example, you can use a 1756-RM/A module in the primary chassis and a 1756-RM/B module in the secondary chassis.

However, your system **experiences the best scan** performance if you use a 1756-RM/B or 1756-RMXT/B redundancy module in both chassis coupled with **1756-L7x controllers** in those chassis.

Your system will **not experience faster scan** performance when either Series A or B redundancy modules are used with a **1756-L6x controller**.

Performance Difference with 1756-L65 Controller

With enhanced redundancy system, revision 19.52, the ControlLogix 1756-L65 controller's performance differs from that of the ControlLogix 1756-L64 controller.

For more information, see the ControlLogix Enhanced Redundancy System User Manual, publication [1756-UM535](#).

EtherNet/IP Networks and Redundant Systems

Beginning with enhanced redundancy system, revision 19.52, you can execute these tasks on an EtherNet/IP network:

- HMI/workstation communication and messaging
- Communication with I/O modules in remote chassis
- Communication between devices via produced/consumed tags - For more information about this task, see [Produced/Consumed Tags Between Primary Controllers and Non-Redundant Controllers](#).

Some connections to an enhanced redundancy chassis pair may briefly drop if the connection path between the device and the redundant chassis pair is made exclusively over an EtherNet/IP network.

For more information, see [Possible Communication Delays on EtherNet/IP Networks on page 20](#).

Produced/Consumed Tags Between Primary Controllers and Non-Redundant Controllers

If controllers in the redundant chassis pair produce tags over an EtherNet/IP network that controllers in remote chassis consume, the connection from the remote controller to the redundant controller may briefly drop during a switchover if the remote chassis' EtherNet/IP communication modules do not use specific firmware revisions.

Use these firmware revisions for EtherNet/IP communication modules in the remote chassis to maintain connections during a switchover.

EtherNet/IP Communication Module in Remote Chassis	Minimum Firmware Revision
1756-EN2F	4.002
1756-EN2T	
1756-EN2TR	
1756-EN3TR	
1756-ENBT	6.001
1768-ENBT	4.001
1769-L2x	19.011
1769-L3xE	
1788-ENBT	3.001

IMPORTANT The minimum firmware revisions listed above only apply to EtherNet/IP communication modules in the remote chassis.

You can only use the ControlLogix modules in the redundant chassis pair, listed in [Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 19.52 on page 3](#).

Minimum Value for the Watchdog Time

Use this table to determine which equation to use to calculate the watchdog time for each task in your program.

If	Then use this equation
Using ControlNet I/O	$(2 * \text{maximum_scan_time}) + 150 \text{ ms}$
Using Ethernet I/O	$(2 * \text{maximum_scan_time}) + 100 \text{ ms}$

The *maximum_scan_time* is the maximum scan time for the entire task when the secondary controller is synchronized.

Synchronizing After Disqualification

If your secondary chassis becomes disqualified, or you manually disqualify it, take these actions before you try to synchronize the chassis:

- Verify that the synchronization status of the primary module is full compatibility.
- Wait at least 15 seconds after the redundant chassis are disqualified before you try to synchronize them.

Resetting the IP Address for a ControlLogix EtherNet/IP Communication Module

If necessary, you can reset a 1756-EN2x communication module's IP address to the factory default value. To return to the factory default, set the module's rotary switches to 888 and cycle power.

After cycling power to the EtherNet/IP communication module, you can either set the module's switches to the desired address or set the switches to 999 and use one of these methods to set the IP address:

- BOOTP-DHCP server
- RSLinx Classic communication software
- RSLogix 5000 programming software

For more information, EtherNet/IP Modules in Logix5000 Control Systems User Manual, publication [ENET-UM001](#).

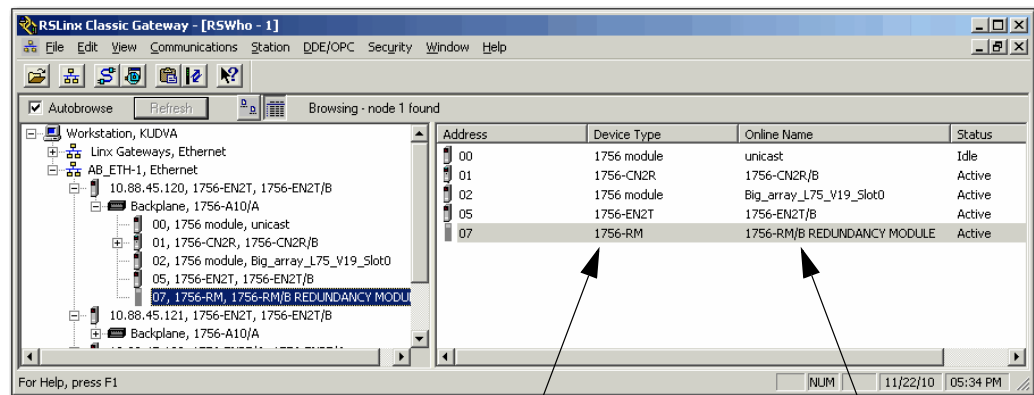
Using Different 1756-RM or 1756-RMXT Redundancy Module Firmware Revisions

The firmware bundle available for enhanced redundancy system, revision 19.52, includes a new electronic data sheet (EDS) file for the 1756-RM and 1756-RMXT redundancy modules. You must install the EDS files available with the enhanced redundancy system, revision 19.52 firmware bundle or you cannot launch or, consequently, use the RMCT, version 3.2 in an enhanced redundancy system, revision 19.52 application.

If you continue to use the EDS file made available with enhanced redundancy system, revision 16.81 and earlier, Series B redundancy modules used in an enhanced redundancy system, revision 19.52 appear as Series A redundancy modules in the Device Type column of an RSWho browse screen.

In this case, that is, using the EDS file made available with enhanced redundancy system, revision 16.81 or earlier, use the information in the Online Name column to identify your redundancy modules' Series level. The information in the Online Name column is accurate.

We recommend that you use the EDS file for redundancy modules that is included with the enhanced redundancy system, revision 19.52 firmware bundle. With the new EDS file, the RSWho software Device Type column shows a generic 1756-RM device type, as shown in this graphic.



Generic 1756-RM redundancy module device type

1756-RM/B redundancy module indication

Possible Communication Delays on EtherNet/IP Networks

Brief communication delays may occur if the connection between a component and the redundant chassis pair uses a path exclusively over an EtherNet/IP network and a switchover occurs. After the switchover is complete, communication resumes automatically.

These connection types may experience the communication delay when a switchover occurs:

- HMI to redundant chassis pair
- FactoryTalk Batch server to redundant chassis pair

The Batch Server detects the lost connection and repeatedly attempts to re-establish the connection until successful. However, while the connection is lost, the Batch Server puts the recipes, or entire batch, in the held state.

After the connection between the Batch Server and the redundant chassis pair is re-established, you can clear the communication failure and restart the recipes. The Batch Server keeps the recipes in the held state until the failure is cleared and recipes restarted.

- FactoryTalk Alarms and Events Service to redundant chassis pair

If any alarms are generated while the connection is lost, that data is buffered. When the connection is re-established, you must acknowledge the connection loss.

If your application requires that the connections described above are maintained during a switchover, we recommend that the connection bridge between the component and a redundant chassis pair with an EtherNet/IP network to ControlNet network path.

Upgrading from an Enhanced Redundancy System

You can upgrade an enhanced redundancy system revision to another while your process continues to run. This is also known as Redundancy System Update (RSU).

IMPORTANT RSU is available only when upgrading from an **enhanced** redundancy system revision to another. You cannot use this process to upgrade from a **standard** redundancy system to an enhanced redundancy system.

Complete these tasks to upgrade your redundancy system from one **enhanced** redundancy system revision to another **enhanced** redundancy revision while your process continues to run.

1. [Before You Begin](#)
2. [Upgrade the Workstation Software](#)
3. [Upgrade the Redundancy Module Configuration Tool](#)
4. [Download and Install the Redundancy Firmware Bundle](#)
5. [Add the EDS Files](#)
6. [Prepare the Redundant Chassis for the Firmware Upgrade](#)
7. [Update the Primary 1756-RM or 1756-RMXT Redundancy Module Firmware](#)
8. [Update the Secondary Chassis Firmware](#)
9. [Prepare the RSLogix 5000 Project for the Upgrade](#)
10. [Lock the System and Initiate a Switchover to Update](#)
11. [Update the New Secondary Chassis Firmware](#)
12. [Synchronize the Redundant Chassis](#)

Before You Begin

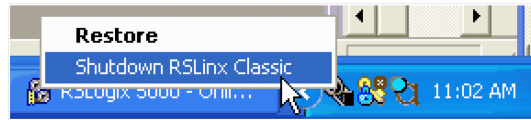
Consider these points before you begin upgrading your enhanced redundancy system to a new revision.

- During the upgrade procedures, you cannot use RSLogix 5000 programming software to change the mode of the controller. Instead, use the keyswitch on the front of the controller.
- Leave RSNetWorx for ControlNet software closed or offline throughout this procedure. If the software is open or online, you see errors in the RSNetWorx for ControlNet software during the upgrade process.
- Remember the following when completing the tasks described in the rest of this section:
 - Do not make any changes to the RSLogix 5000 project other than those identified in these tasks.
 - Verify that no one will be or is making changes to the project.
 - Do not use a FactoryTalk Batch Server to change equipment phase-states when upgrading your enhanced redundancy system.

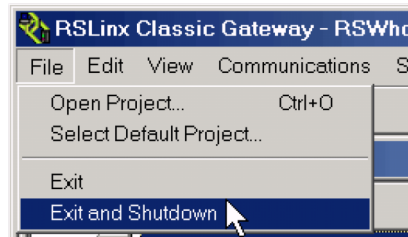
Upgrade the Workstation Software

Before you download and upgrade software for your redundant system, use one of these methods to fully shutdown RSLinx Classic software.

- Right-click the RSLinx Classic icon in the notification area of the screen and choose Shutdown RSLinx Classic.



- With RSLinx Classic software open, from the File menu, choose Exit and Shutdown.



Install the software required for your redundant system configuration. See [Compatible Software Versions](#) on [page 4](#) for software versions required for use with this enhanced redundancy system revision.

Use the installation instructions or release notes provided with each software version for installation procedures and requirements.

Download and Install the Redundancy Firmware Bundle

Download and install the redundancy firmware revision bundle from the Rockwell Automation Support website at:

<http://www.rockwellautomation.com/support>

The redundancy firmware bundles are posted in the Downloads section and are classified in the Control Hardware category.

Upgrade the Redundancy Module Configuration Tool

The RMCT, version 7.2.7, is included in the enhanced redundancy system, revision 19.52 bundle. Once this bundle is installed, you can use the RMCT, version 7.2.7. However, you may later need to reobtain and install the RMCT, version 7.2.7.

Complete these steps if you ever need to reinstall the RMCT, version 7.2.7.

1. Access Knowledgebase Answer ID 29511 (available at <http://www.rockwellautomation.com/knowledgebase/>).
2. Download the version listed for this redundancy firmware revision.
3. Open the executable file and use the Installation Wizard to install the tool.

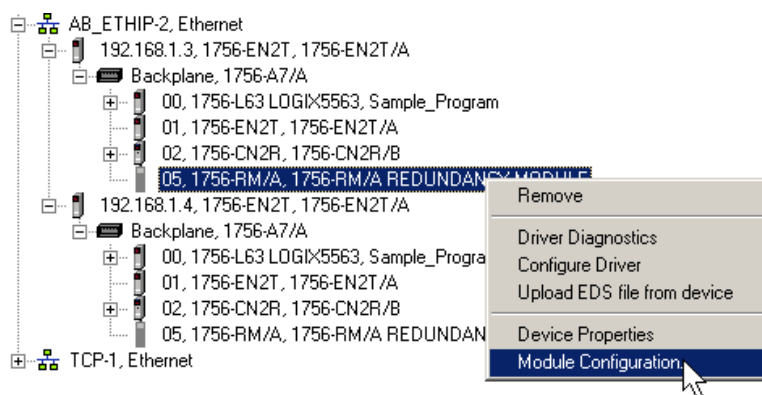
Verify Your RMCT Version

Complete these steps to check or verify the version of the RMCT you have installed.

1. Launch RSLinx Classic software.
2. Click RSWho.

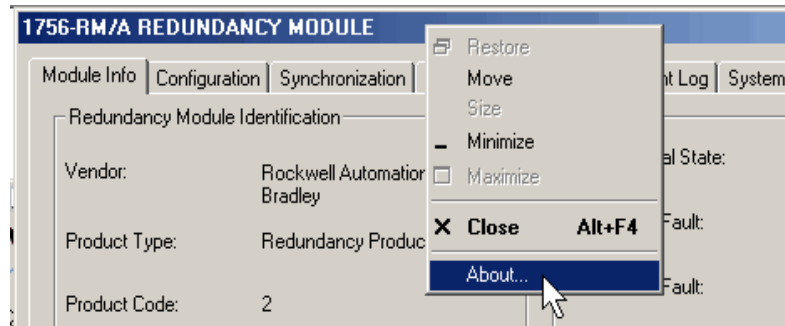


3. Right-click your redundancy module and choose Module Configuration.

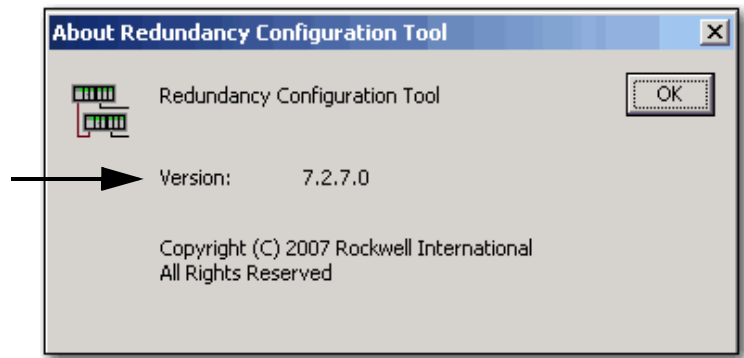


The Module Configuration dialog box opens.

4. Right-click the title bar and select About.



The About dialog box opens and indicates the RMCT version.



TIP

The RMCT launches at the version that is compatible with the 1756-RM or 1756-RMXT redundancy module firmware that is currently installed.

If you upgrade your RMCT version but do not upgrade your 1756-RM or 1756-RMXT redundancy module firmware revision compatible with the new RMCT version, the About dialog box may not reflect the new RMCT version.

Add the EDS Files

If needed, obtain EDS files for modules in your system from the Rockwell Automation Support website at:

<http://www.rockwellautomation.com/resources/eds/>.

Once you have downloaded the required EDS file, launch the EDS Hardware Configuration Tool by choosing Start > Programs > Rockwell Software > RSLinx Tools > EDS Hardware Installation Tool.

The tool then prompts you to Add or Remove EDS files.

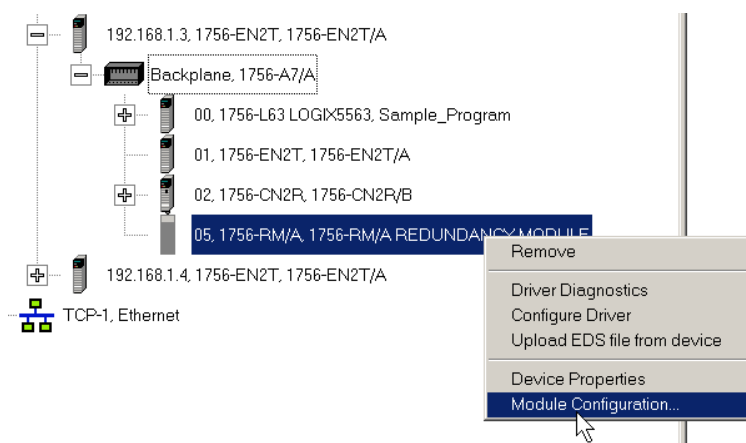
Prepare the Redundant Chassis for the Firmware Upgrade

Complete these steps to prepare both the primary and secondary redundant chassis for redundancy firmware upgrades.

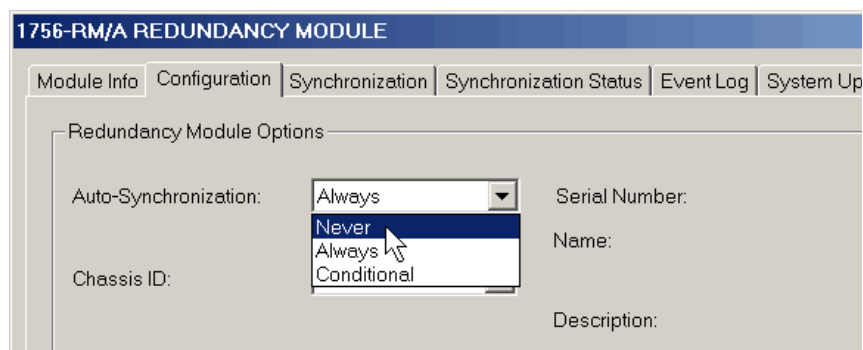
1. Set the keyswitch of the primary and secondary controllers to REM.

If the redundant controllers in both chassis of the redundant chassis pair are not in Remote Program (REM) mode, the redundancy firmware upgrade cannot be completed.

2. Open RSLink Classic software and browse to the redundancy module.
3. Right-click the redundancy module and select Module Configuration.

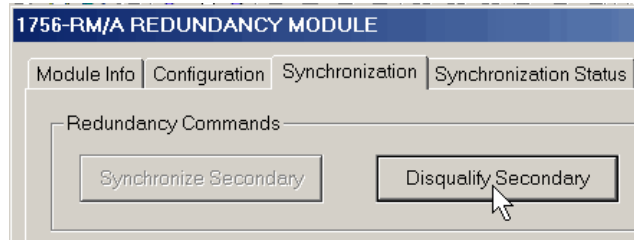


4. Click the Configuration tab.
5. From the Auto-Synchronization pull-down menu, choose Never.



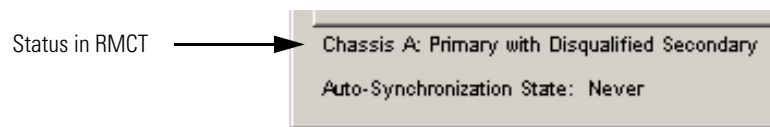
6. Click Apply, then click Yes.

7. Click the Synchronization tab.



8. Click Disqualify Secondary, then click Yes.

The secondary chassis is disqualified as indicated by the RMCT at the bottom-left of the RMCT and on the redundancy module's status display.



9. Click OK and close the RMCT.

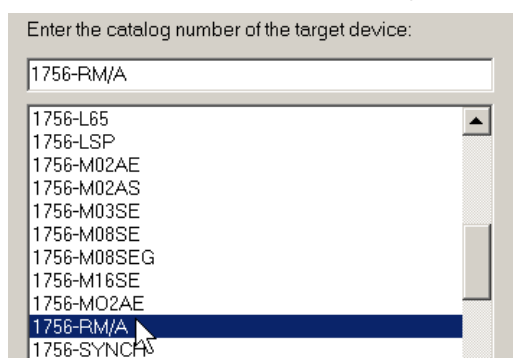
Closing the RMCT helps prevent a timeout from occurring when the redundancy module's firmware is upgraded.

Update the Primary 1756-RM or 1756-RMXT Redundancy Module Firmware

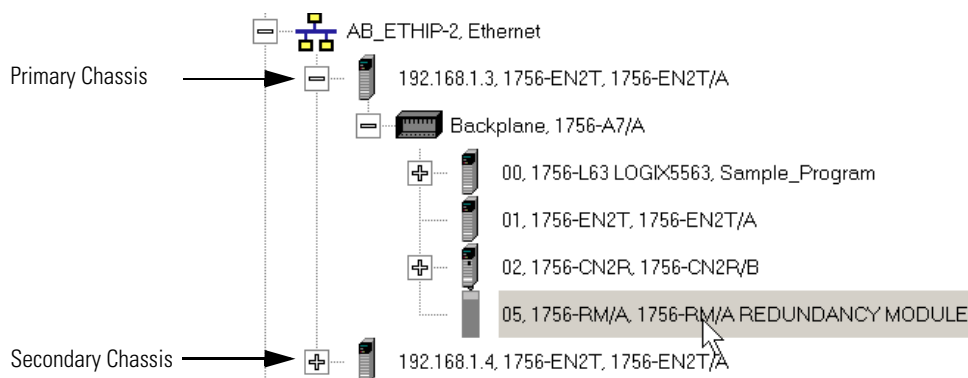
Wait 45 seconds before you begin updating the 1756-RM firmware. During this time, the redundancy module conducts internal operations to prepare for an upgrade.

Complete these steps to upgrade the firmware of modules in the secondary chassis.

1. Launch ControlFlash software and click Next.
2. Select the redundancy module catalog number and click Next.



3. Browse to the redundancy module and select it.



4. Click OK.
5. Select the firmware revision to upgrade to and click Next.
6. Click Finish.

The firmware begins to update. When the upgrade is complete, the Update status dialog box indicates completion.

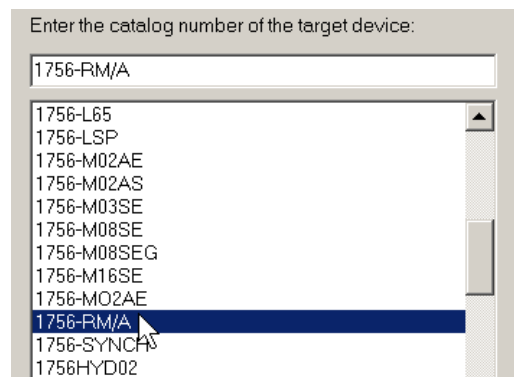
Status: Update complete. Please verify this new firmware update before using the target device in its intended application.

Update the Secondary Chassis Firmware

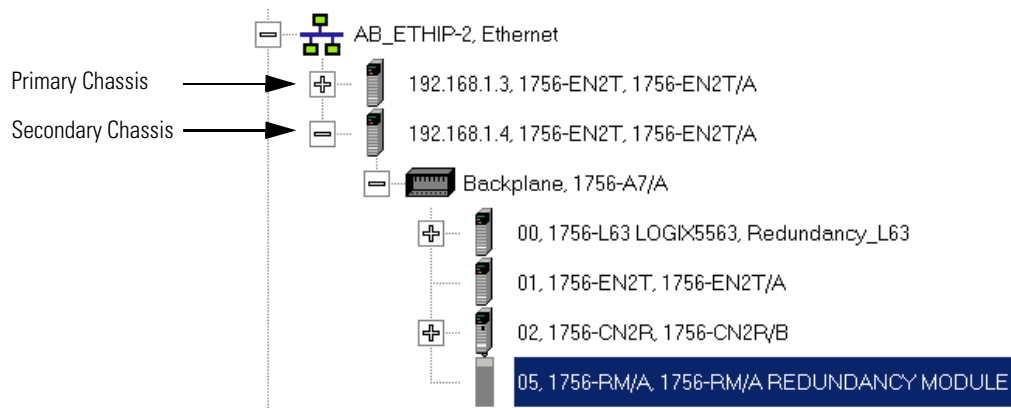
Wait 45 seconds before you begin updating the secondary chassis firmware. During this time, the redundancy module conducts internal operations to prepare for an upgrade.

Complete these steps to upgrade the firmware of modules in the secondary chassis.

1. Launch ControlFlash software and click Next.
2. Select the redundancy module catalog number and click Next.



3. Browse to the redundancy module and select it.



4. Click OK.
5. Select the firmware revision to upgrade to and click Next.
6. Click Finish.

The firmware begins to update. When the upgrade is complete, the Update status dialog box indicates completion.

Status: Update complete. Please verify this new firmware update before using the target device in its intended application.

7. If you are replacing or upgrading your controller hardware, remove the controller from the secondary chassis and replace it with the new controller.

Use this table to determine if your planned primary and secondary controllers can be used together in the redundant chassis.

Table 7 - Controller Compatibility

Primary Controller	Compatible Secondary Controller
1756-L61	1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65
1756-L62	1756-L62, 1756-L63, 1756-L64, 1756-L65
1756-L63	1756-L63, 1756-L64, 1756-L65
1756-L64	1756-L64, 1756-L65
1756-L65 ⁽¹⁾	1756-L65
1756-L72	1756-L72, 1756-L73, 1756-L74, 1756-L75
1756-L73	1756-L73, 1756-L74, 1756-L75
1756-L74	1756-L74, 1756-L75
1756-L75	1756-L75

(1) In the ControlLogix enhanced redundancy system, revision 19.52, the ControlLogix 1756-L65 controller's performance differs from that of the ControlLogix 1756-L64 controller.

For more information, see the ControlLogix Enhanced Redundancy System User Manual, publication [1756-UM535](#).

8. Complete steps [2...6](#) for each module in the secondary chassis, including the new controller, if applicable.

Once you have upgraded the firmware for each module in the secondary chassis, prepare the RSLogix 5000 project for the upgrade.

Prepare the RSLogix 5000 Project for the Upgrade

Complete these steps to prepare the RSLogix 5000 program and controllers for the upgrade.

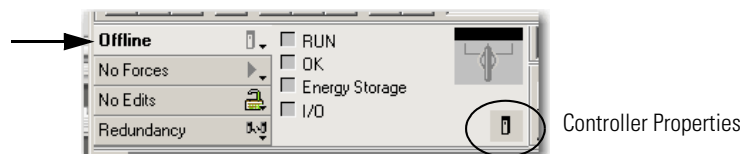
1. Launch RSLogix 5000 programming software and go online with the primary controller.
2. Verify that the watchdog time is set to a value that corresponds with the requirements of the enhanced redundancy system revision and your application.

See [Minimum Value for the Watchdog Time](#) on [page 18](#) for information about calculating the minimum watchdog time.

3. Cancel or assemble any pending test edits.
4. Remove all Sequential Function Chart (SFC) forces from the project.
5. Verify that no changes need to be made to the following:
 - I/O forces
 - I/O configuration

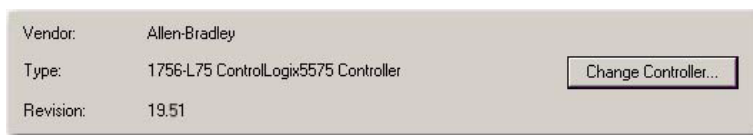
After this step, changes to I/O cannot be made until after the enhanced redundancy system revision upgrade is complete and both chassis are synchronized.

6. If you are upgrading an enhanced redundancy system, revision 16.81 or earlier, disable CST Mastership.
7. Configure the controllers and communication modules in the redundant chassis pair as necessary.
8. Save the project.
9. Go offline.



10. Click Controller Properties.

11. Click Change Controller.



Vendor: Allen-Bradley
 Type: 1756-L75 ControlLogix5575 Controller
 Revision: 19.51

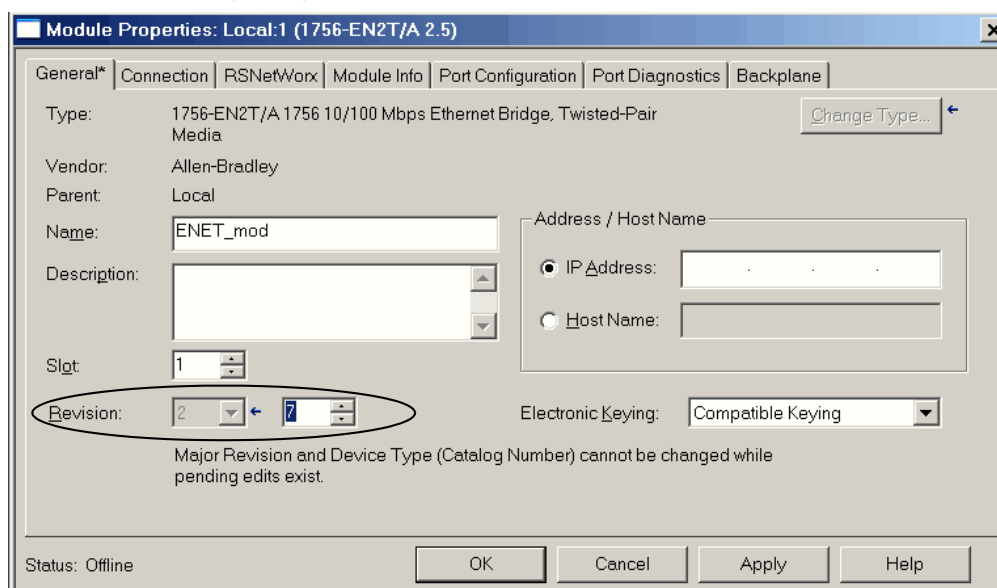
Change Controller...

12. Specify the controller revision to which you are upgrading.

13. If you installed a new controller while upgrading the primary chassis firmware, specify the new controller catalog number.

14. Click OK.

15. Access the Module Properties for each communication module in the chassis and specify the module firmware revision to which you are upgrading.



Module Properties: Local:1 (1756-EN2T/A 2.5)

General* | Connection | RSNetWorx | Module Info | Port Configuration | Port Diagnostics | Backplane

Type: 1756-EN2T/A 1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media
 Vendor: Allen-Bradley
 Parent: Local
 Name: ENET_mod
 Description:
 Slot: 1
 Revision: 2
 Address / Host Name:
 IP Address:
 Host Name:
 Electronic Keying: Compatible Keying

Major Revision and Device Type (Catalog Number) cannot be changed while pending edits exist.

Status: Offline

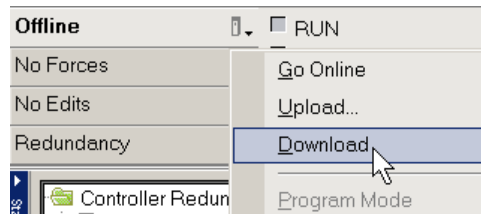
OK Cancel Apply Help

TIP

If you are unable to specify the new revision, you may need to change the Electronic Keying parameter to Compatible Keying.

16. Save the project.
17. Download the project to the secondary controller.

The secondary controller is at the higher network address of the two available for the redundant chassis.



18. After the download is complete, go offline.

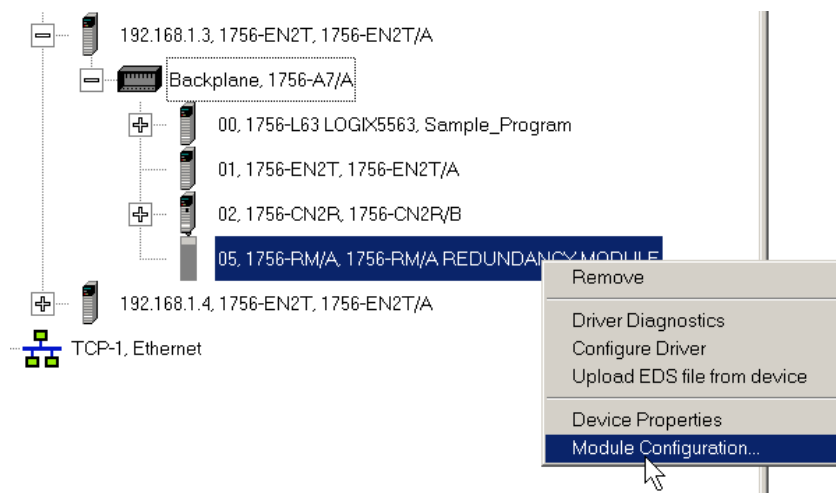
You are now ready to lock the system and initiate a locked switchover to update the primary chassis. Continue with [Lock the System and Initiate a Switchover to Update](#).

Lock the System and Initiate a Switchover to Update

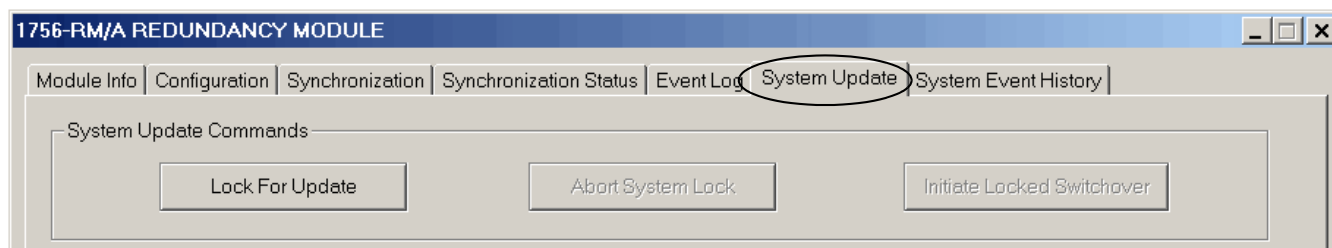
Once you have downloaded the RSLogix 5000 project you prepared, complete these steps to lock your system and initiate a switchover.

-
- | | |
|------------------|---|
| IMPORTANT | <ul style="list-style-type: none">• Remain offline while completing these steps.• Once you have locked the system, do not abort the system lock. Aborting the system lock during this procedure clears the project from the secondary controller.• Do not disconnect any communication cables while completing these steps.• Completing a locked switchover causes SFC instructions to be reset to their initial state. This may result in SFC instructions executing twice. |
|------------------|---|
-

1. Open the RMCT for the 1756-RM or 1756-RMXT redundancy module in the primary chassis.



2. Click the System Update tab.



3. Click Lock For Update, then click Yes.
4. Wait for the system to lock.

The System Update Lock Attempts log indicates when the system lock is complete.

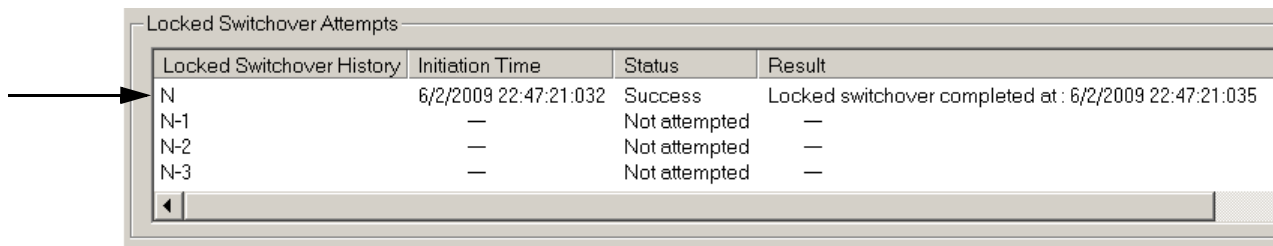
The screenshot shows the 'System Update Lock Attempts' log window. It contains a table with the following data:

System Update Lock Attempts			
System Lock History	Initiation Time	Status	Result
N	6/2/2009 22:45:07:175	Locked	System locked at :6/2/2009 22:45:38:849
N-1	—	Not attempted	—
N-2	—	Not attempted	—
N-3	—	Not attempted	—

5. Click Initiate Locked Switchover, then click Yes.

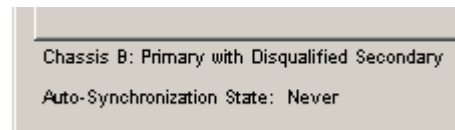


This step results in your secondary chassis assuming control and becoming the primary chassis. When the switchover is complete, the Locked Switchover Attempts log indicates success.

A screenshot of a software window titled "Locked Switchover Attempts". It contains a table with four columns: "Locked Switchover History", "Initiation Time", "Status", and "Result". The first row shows a successful switchover at 6/2/2009 22:47:21:032. Subsequent rows show failed attempts. An arrow points to the first row.

Locked Switchover History	Initiation Time	Status	Result
N	6/2/2009 22:47:21:032	Success	Locked switchover completed at : 6/2/2009 22:47:21:035
N-1	—	Not attempted	—
N-2	—	Not attempted	—
N-3	—	Not attempted	—

In addition to the log, the text in chassis status row indicates the switchover state.



Once your locked switchover is complete, update the firmware revisions for modules in the new secondary chassis.

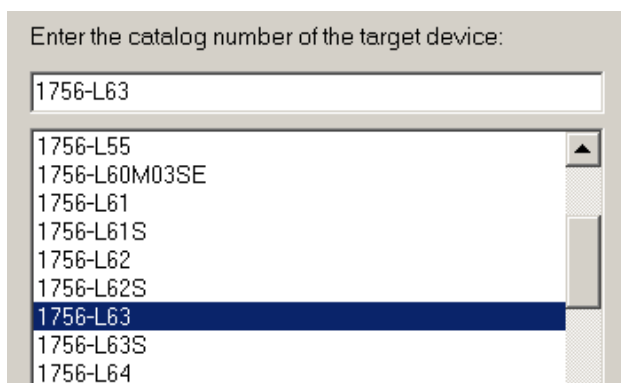
IMPORTANT Following the locked switchover, secondary controllers no longer contain a user application and their configuration settings are reset to the factory-default settings.

The new secondary controllers use the default settings and the components in the secondary chassis are upgraded and the system is synchronized.

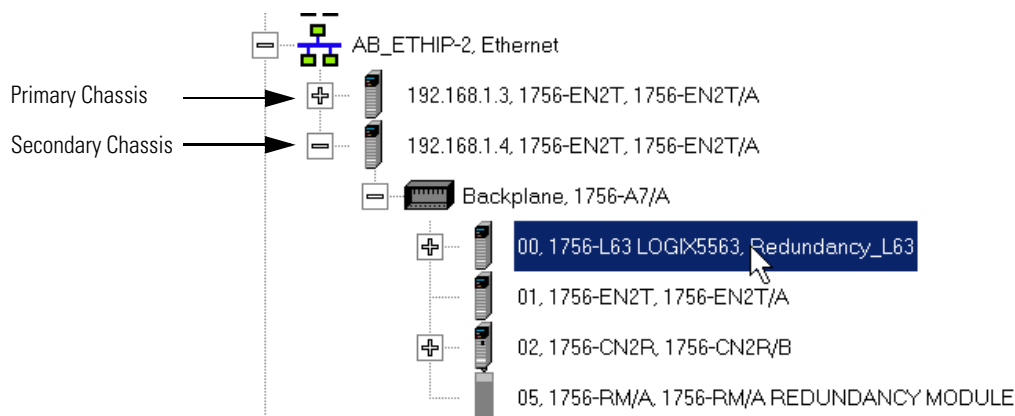
Update the New Secondary Chassis Firmware

Complete these steps to upgrade the firmware of all of the modules in the new secondary chassis, except for the 1756-RM or 1756-RMXT redundancy module that was already updated as described in [Update the Primary 1756-RM or 1756-RMXT Redundancy Module Firmware on page 28](#).

1. If you are replacing and upgrading your controller hardware, remove the controller from the secondary chassis and replace it with the new controller.
2. Launch ControlFlash software and click Next.
3. Select the module catalog number and click Next.



4. Browse to the module and select it.



5. Click OK.

6. Select the firmware revision to upgrade to and click Next.
7. Click Finish.

The firmware begins to update. When the upgrade is complete, the Update status dialog box indicates completion.

Status: Update complete. Please verify this new firmware update before using the target device in its intended application.

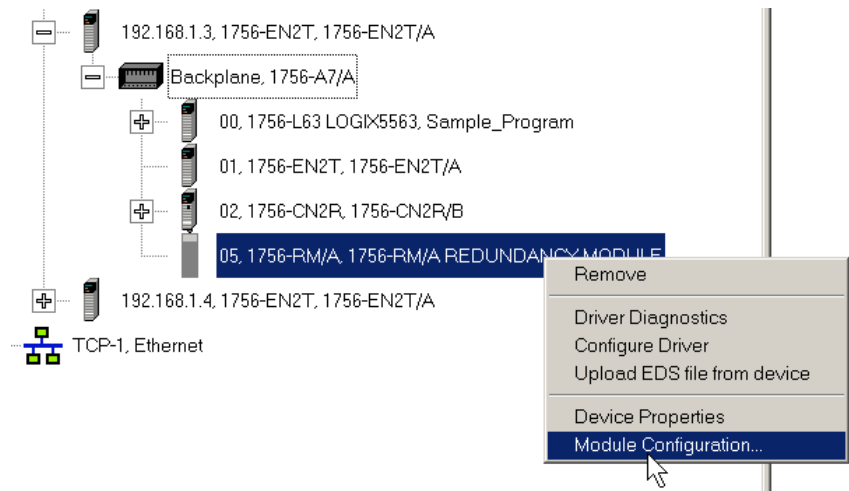
8. Complete steps 2...7 for each module in the new secondary chassis, including the new controllers, if applicable.

Once you have upgraded the firmware for each of the modules in the new secondary chassis, continue by synchronizing the redundant chassis.

Synchronize the Redundant Chassis

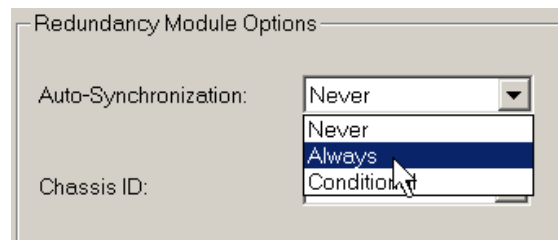
Complete these steps to synchronize the redundant chassis after firmware in both chassis have been upgraded to the same revision.

1. Launch the RMCT for the 1756-RM or 1756-RMXT redundancy module in the primary chassis.

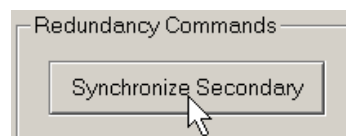


2. Click Module Configuration.

3. From the Auto-Synchronization pull-down menu, choose the frequency that suits your application.



4. Click Apply, then click Yes.
5. Synchronize the chassis.



6. Set the redundancy module date and time according to your preference.
7. Click OK.
8. Close the RMCT.

Your redundant system firmware upgrade is now complete.

Storing a Project to a Nonvolatile Memory Card While Your Process Is Running

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

IMPORTANT The ControlLogix controllers use these nonvolatile memory cards.

Cat. No.	Nonvolatile Memory Card
1756-L6x	1784-CF64 or 1784-CF128 CompactFlash cards
1756-L7x	1784-SD1 or 1784-SD2 Secure Digital cards

This section describes how to store a project to a nonvolatile memory card in a secondary controller without interrupting your process.

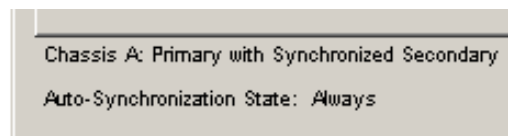
IMPORTANT We recommend that you store the same project on both controllers' nonvolatile memory cards. By doing so, you can be assured that if a controller, primary or secondary, loses the project from its internal memory, you can load the most recent project back onto that controller.

If you store the same project on both controllers' nonvolatile memory cards, while the process is running, you must save the project on the controllers while they are in the secondary controller state. To do so, you save the project on the secondary controller, conduct a switchover and save the project on the new secondary controller.

For more information, see the steps below.

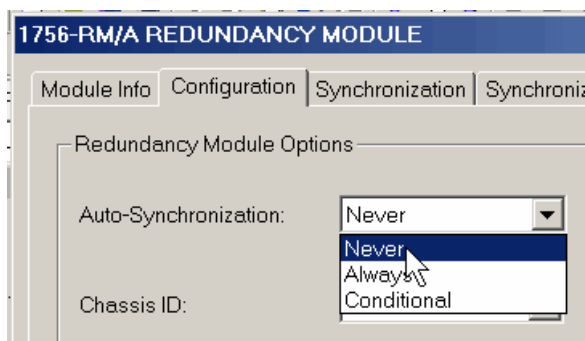
Complete these steps to store the project to the nonvolatile memory card on a secondary controller.

1. Verify that the redundant chassis are synchronized.

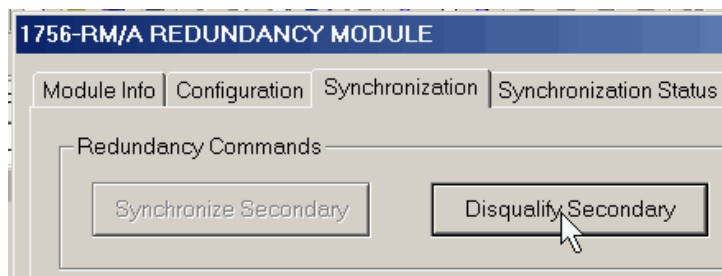


If the redundant chassis are not synchronized, synchronize them before continuing with the next step.

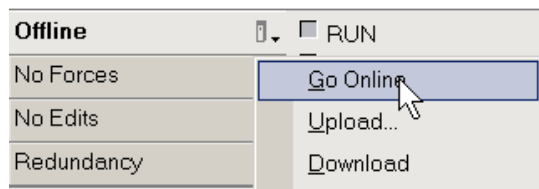
2. In the RMCT, click the Configuration tab and choose Never from the Auto-Synchronization pull-down menu.



3. Click Apply, then click Yes.
4. In the Synchronization tab, click Disqualify Secondary.



5. In RSLogix 5000 programming software, go online with the secondary controller.

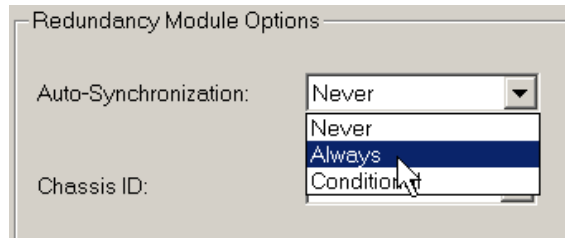


6. Use the steps described in the Logix5000 Controllers Nonvolatile Memory Programming Manual, publication [1756-PM017](#) to store the project.

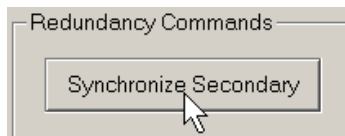
IMPORTANT

Remain offline after you have stored the project to nonvolatile memory. You must stay offline through the remainder of this procedure.

7. In the RMCT, set the Auto-Synchronization parameter according to your preference.

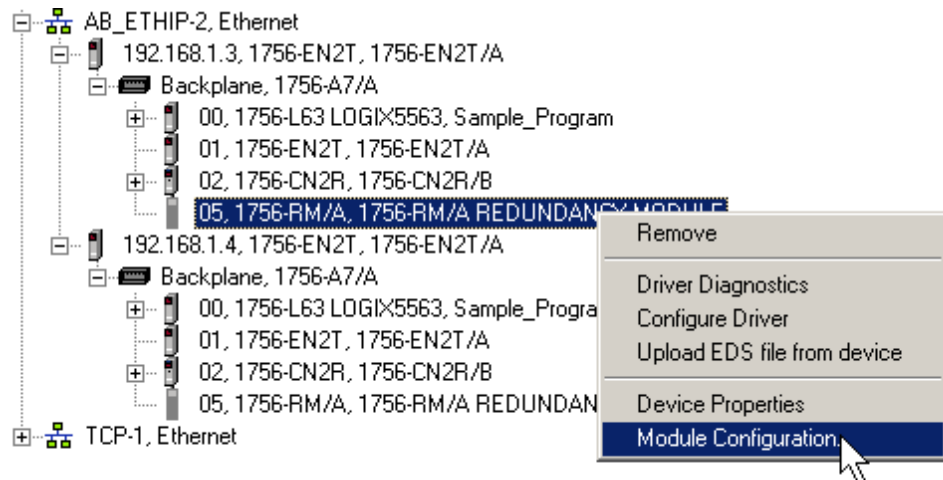


8. Synchronize the chassis.

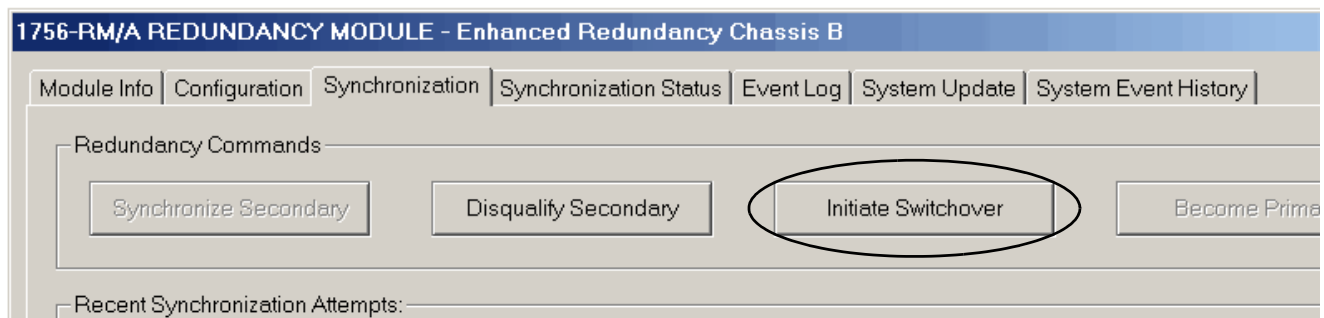


If you do not need to store the project to the nonvolatile memory card in the primary controller, you are done.

9. If you want to store the project to the primary controller's nonvolatile memory card, execute a switchover as described in these steps:
 - a. In RSLinx Classic software, access the RMCT for the **primary** redundancy module.

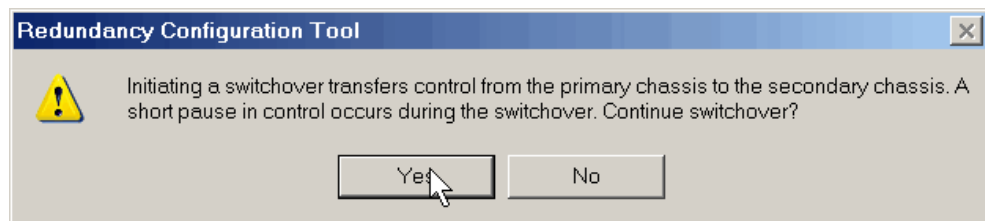


- b. Click the Synchronization tab.
- c. Click Initiate Switchover.



The Redundancy Configuration Tool dialog box opens.

- 10. Click Yes.



The switchover begins. When the switchover is complete, the previously primary controller is now the secondary controller.

- 11. Return to [step 1 on page 39](#) to store the project on the new secondary controller.

Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
ControlLogix Enhanced Redundancy System User Manual, publication 1756-UM535	Provides design, installation, and troubleshooting information specific to the enhanced redundancy system.
FactoryTalk Batch PhaseManager User's Guide, publication BATCHX-UM010	This a guide for those using PhaseManager, FactoryTalk Batch, and RSLogix 5000 software to develop a batch automation system using phase logic for Logix5000 controllers.
PhaseManager User Manual, publication LOGIX-UM001	This manual provides details about using PhaseManager software and includes details about tags associated with the PHASE data type.
Rockwell Automation's Technical Support Knowledgebase, available at http://www.rockwellautomation.com/knowledgebase/	Provides details about how to assemble and mount the controller, how to upgrade firmware, and controller technical specifications.
ControlFLASH Firmware Upgrade Kit Quick Start, publication 1756-QS105	Contains information on how to upgrade module firmware.
ControlLogix Controllers User Manual, publication 1756-UM001	Contains information on how to install, configure, program, and operate a ControlLogix system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at
<http://www.rockwellautomation.com/literature>

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