

ControlLogix Enhanced Redundancy System, Revision 20.058_kit2

Redundancy Module Catalog Numbers
1756-RM, 1756-RMXT, 1756-RM2, 1756-RM2XT

Controller Catalog Numbers
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT,
1756-L74, 1756-L75

Communication Module Catalog Numbers
1756-CN2/B, 1756-CN2/C, 1756-CN2R/B, 1756-CN2R/C, 1756-CN2RXT/B, 1756-CN2RXT/C, 1756-CN2RK/C, 1756-EN2T,
1756-EN2TR, 1756-EN2TXT, 1756-EN2TRXT, 1756-EN2TRK/C, 1756-EN2TK/D, 1756-EN2F/A, 1756-EN2F/B,
1756-EN2F/C

IMPORTANT Throughout this publication, the following applies:

Ethernet Communication Modules

- References to the 1756-EN2T/B and 1756-EN2TR/B (or earlier) modules also apply to the 1756-EN2TRXT/B (or earlier) modules.
- References to the 1756-EN2T/C and 1756-EN2TR/C (or earlier) modules also apply to the 1756-EN2TRXT/C (or earlier) modules.
- References to the 1756-EN2T/D and 1756-EN2TR/D modules also apply to the 1756-EN2TRXT/D modules.

ControlNet Communication Modules

- References to the 1756-CN2/B modules also apply to the 1756-CN2R/B, 1756-CN2RXT/B modules.
 - References to the 1756-CN2/C modules also apply to the 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C modules.
 - References to catalog numbers 1756-RM, 1756-RM2, 1756-RMXT, and 1756-RM2XT refer to any series of the modules.
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These release notes describe enhancements, corrected anomalies, known anomalies, restrictions, and application notes for the enhanced redundancy system revision 20.058_kit2 or earlier.

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Product Release Notes

Product release notes for the individual products that are part of this ControlLogix® Enhanced Redundancy bundle are available online within the Product Compatibility and Download Center.

For example, you can access release note information specific to the 1756-EN2T ControlLogix EtherNet/IP bridge.

For more information on product release notes, see the Product Compatibility and Download Center (PCDC) at:

<http://www.rockwellautomation.com/global/support/pcdc.page>.

About This Enhanced Redundancy Firmware Bundle

This enhanced redundancy firmware bundle, which is identified as revision 20.058_kit2, contains series firmware revisions for each of the modules that are listed in [Table 1, Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 20.058_kit2](#).

You can download the firmware bundle at the Product Compatibility and Download Center:

<http://compatibility.rockwellautomation.com/Pages/home.aspx>

In addition to information specific to the most recent firmware revision, the information from previous minor revisions is retained in these release notes.

We strongly recommend that you review the information that is provided regarding previous firmware revisions. We recommend that you do so because if you are updating your firmware through multiple previous revisions, all information specific to all revisions is applicable.

IMPORTANT When you design, install, and operate the redundant chassis pair (RCP) for this enhanced redundancy system revision, you can use only the modules that are specified in [Table 1, Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 20.058_kit2](#).

Also, remember that 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 outside the redundant chassis pair.

This enhanced redundancy system revision includes the following:

- Support using the 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C modules with firmware revision 25.005
- Support using the 1756-EN2F/C modules with firmware revision 10.009

Table 1 - Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 20.058_kit2

Cat. No.	Module Description	Series	Firmware Revision
1756-CN2	ControlLogix ControlNet bridge	B	20.022
1756-CN2R	ControlLogix redundant media ControlNet bridge		
1756-CN2RXT	ControlLogix-XT™ redundant media ControlNet bridge		
1756-CN2 ⁽¹⁾	ControlLogix ControlNet bridge	C	25.005
1756-CN2R ⁽¹⁾	ControlLogix redundant media ControlNet bridge		
1756-CN2RXT ⁽¹⁾	ControlLogix-XT redundant media ControlNet bridge		
1756-CN2RK ⁽¹⁾	ControlLogix redundant ControlNet bridge (conformal coated) module		
1756-EN2T	ControlLogix EtherNet/IP communication module	D	10.010 ⁽²⁾⁽³⁾
		C (or earlier)	5.008 or 5.028 ⁽⁴⁾⁽⁵⁾
1756-EN2TR	ControlLogix EtherNet/IP communication module	C	10.010 ⁽³⁾⁽⁶⁾
		B (or earlier)	5.008 or 5.028 ⁽⁵⁾⁽⁷⁾
1756-EN2F	ControlLogix EtherNet/IP fiber communication module	C	10.010 ⁽⁸⁾
		B (or earlier)	5.008 or 5.028 ⁽⁴⁾⁽⁵⁾

Table 1 - Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 20.058_kit2 (Continued)

Cat. No.	Module Description	Series	Firmware Revision		
1756-EN2TXT	ControlLogix-XT EtherNet/IP communication module	D	10.010 ⁽²⁾⁽³⁾		
		C (or earlier)	5.008 or 5.028 ⁽⁴⁾⁽⁵⁾		
1756-EN2TRXT	ControlLogix-XT EtherNet/IP redundant communication module	C	10.010 ⁽³⁾⁽⁶⁾		
		B	5.028 ⁽⁵⁾⁽⁷⁾		
1756-EN2TRK	ControlLogix EtherNet/IP conformal coated communication bridge	C	10.010 ⁽³⁾⁽⁶⁾		
1756-EN2TK	ControlLogix EtherNet/IP conformal coated communication bridge	D	10.010 ⁽²⁾⁽³⁾		
1756-L61	ControlLogix 5561 controller	Any	20.058		
1756-L62	ControlLogix 5562 controller				
1756-L63	ControlLogix 5563 controller				
1756-L63XT	ControlLogix-XT controller				
1756-L64	ControlLogix 5564 controller				
1756-L65	ControlLogix 5565 controller				
1756-L71	ControlLogix 5571 controller				
1756-L72	ControlLogix 5572 controller				
1756-L73	ControlLogix 5573 controller				
1756-L73XT	ControlLogix-XT controller				
1756-L74	ControlLogix 5574 controller				
1756-L75	ControlLogix 5575 controller				
1756-RM2	ControlLogix redundancy module			Any	20.009
1756-RM2K	ControlLogix redundancy module				
1756-RM2XT	ControlLogix-XT redundancy module				
1756-RM	ControlLogix redundancy module	Any	3.004		
1756-RMXT	ControlLogix-XT redundancy module				

- (1) **IMPORTANT:** The 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C modules do not support firmware revisions previous to revision 25.004. Do not attempt to update the firmware to earlier revisions.
- (2) **IMPORTANT:** The 1756-EN2T/D modules do not support firmware revisions previous to revision 10.006. Do not attempt to update the firmware to earlier revisions.
- (3) Firmware revision 10.006 or later is digitally signed. For more information on digitally signed firmware, see [page 5](#).
- (4) **IMPORTANT:** The 1756-EN2T/C (or earlier) modules do not support firmware revision 10.006 or later. Do not attempt to update the firmware to revision 10.006 or later.
- (5) Firmware revision 5.028 is digitally signed firmware. Firmware revision 5.008 is unsigned firmware. For more information on digitally signed firmware, see [page 5](#).
- (6) **IMPORTANT:** The 1756-EN2TR/C modules do not support firmware revisions previous to revision 10.007. Do not attempt to update the firmware to previous revisions.
- (7) **IMPORTANT:** The 1756-EN2TR/B (or earlier) modules do not support firmware revision 10.007. Do not attempt to update the firmware to revision 10.007.
- (8) **IMPORTANT:** The 1756-EN2F/C modules do not support firmware revisions previous to revision 10.009. Do not attempt to update the firmware to a previous version.

1756-EN2T, 1756-EN2TR, and 1756-EN2F Modules Digitally Signed Firmware

Digitally signed firmware provides more security over the unsigned firmware. This firmware differs based on the EtherNet/IP communication modules you use.

Cat. No.	Supported Firmware Revisions	Digitally Signed Firmware	Included with the Enhanced Redundancy System, Revision 20.058_kit2 Bundle
1756-EN2T/D	10.006 or later	Yes	Yes
1756-EN2T/C (or earlier)	5.008	No	Yes
	5.028	Yes	No
1756-EN2TR/C	10.007	Yes	Yes
1756-EN2TR/B (or earlier)	5.008	No	Yes
	5.028	Yes	No
1756-EN2F/C	10.009	Yes	Yes
1756-EN2F/B (or earlier)	5.008	No	Yes
	5.028	Yes	No

Firmware revision 5.028 is not included in the enhanced redundancy system, revision 20.058_kit2 firmware bundle. If you want to use it, you have to download and install this firmware separately.

IMPORTANT

When you install the digitally signed firmware, that is, firmware revision 5.028, into a 1756-EN2T/C (or earlier), 1756-EN2TR/B (or earlier), or 1756-EN2F/B (or earlier) module, the installation makes the module incompatible with some firmware revisions.

For example, after you update firmware, the module supports use of only digitally signed firmware. The module rejects any unsigned firmware updates.

You can download firmware revision 5.028 and the enhanced redundancy system, revision 20.058_kit2 firmware bundle at the Product Compatibility and Download Center:

<http://compatibility.rockwellautomation.com/Pages/home.aspx>

The firmware bundle is identified as V20.058_kit2.

TIP

Select the base catalog number in ControlFLASH™ software when updating extended temperature or conformal coated modules.

For example, select the 1756-EN2TR module when updating a 1756-EN2TRXT module. Extended temperature and conformal coated modules use the same redundancy module ControlFLASH kit.

Compatible Software Versions

Use these versions of software with this redundancy firmware bundle.

Table 2 - Required Software Versions for Enhanced Redundancy System, Revision 20.058_kit2

Software	Required Software Version, Min
CompareTool	6.10.00
ControlFLASH	14.01.00
FactoryTalk® Services Platform	2.90.00 (CPR 9, SR 9)
FactoryTalk Activation	4.00.02
FactoryTalk Alarms and Events	2.90.00 (CPR 9, SR 9)
FactoryTalk AssetCentre	6.10.00 (CPR 9 SR 7.4)
FactoryTalk Batch	12.01.00 ⁽¹⁾
FactoryTalk View Site Edition	9.00.00 (CPR 9, SR 4)
Redundancy Module Configuration Tool	8.04.01.00
RSLinX® Enterprise	5.90.00 (CPR 9, SR 5)
RSLinX Classic	3.90.00 (CPR 9, SR 9)
RSLogix 5000®	20.04.00 (CPR 9, SR 5)
RSNetWorx™ for ControlNet	26.00.00 (CPR 9, SR 9)
RSNetWorx for DeviceNet	
RSNetWorx for EtherNet/IP	

(1) 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/>.

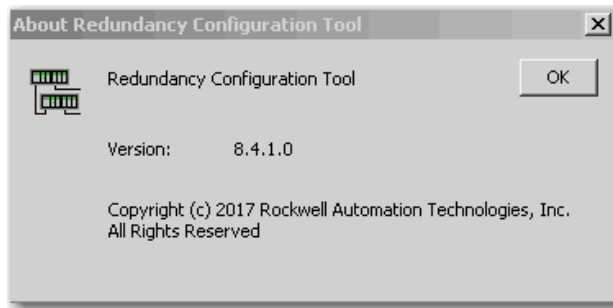
For system requirements, go to <http://www.rockwellautomation.com/rockwellsoftware/design/rslogix5000/sysreq.html>.

About the Redundancy Module Configuration Tool

The 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT redundancy modules can be used in a redundant system. We recommend that you use the Redundant Module Configuration Tool (RMCT) to commission your redundant system. To use the RMCT you must have an engineering workstation. See the ControlLogix Redundancy User Manual, publication [1756-UM535](#) for more information about the specifications for an engineering workstation.

IMPORTANT You must uninstall any existing versions of the RMCT before you install version 8.04.01.00 of the configuration tool. If you do not uninstall the previous versions, you can have difficulty if you try to install or uninstall any later versions.

This enhanced redundancy system revision requires the RMCT, version 8.04.01.00 that is packaged with this enhanced redundancy system revision bundle. The About screen for the RMCT displays 8.4.1.0 but it is the correct version.



You can use the RMCT with the redundancy modules to complete these tasks:

- View error diagnostics
- View qualification and compatibility status of partnered modules
- 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 and [Known Anomalies](#) associated with the RMCT. We recommend that you read these anomaly descriptions before using the RMCT, version 8.04.01.00

Also, if you must update your RMCT separately from downloading this enhanced redundancy system revision or by using RSLinx Classic software, version 3.90.00, see [Update the Redundancy Module Configuration Tool on page 50](#).

For a complete list of RMCT functionality, see the ControlLogix Redundancy User Manual, publication [1756-UM535](#).

These enhancements have been made in previous firmware revisions.

Table 3 - Enhancements Provided with Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier)

System Components	Enhanced Redundancy System Revision	Enhancement
1756-RM and 1756-RM2 support	20.058_kit1	Product improvements have been made to increase product resiliency to potentially disruptive activities. These enhancements have been verified not to affect product safety, performance, expected life, configuration, or operation of the product. Rockwell Automation® recommends that you follow good Industrial Control System (ICS) security practices that include regular product updates. To maintain authenticity, obtain product updates and new releases directly from Rockwell Automation.
1756-CN2/C support	20.056_kit1	The 1756-CN2, 1756-CN2R, 1756-CN2RXT, and 1756-CN2RK modules are available with firmware revision 25.005 in this enhanced redundancy bundle.
1756-EN2F/C support		The 1756-EN2F/C modules are available with firmware revision 10.009 in the enhanced redundancy bundle.
1756-CN2/C support	20.055_kit4	The 1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-CN2RK modules are available with firmware revision 25.004 in this enhanced redundancy bundle.
1756-RM2 firmware		Updated Firmware Revision The 1756-RM2 and 1756-RM2XT modules use firmware revision 20.005 in this enhanced redundancy bundle.
Redundancy Module Configuration Tool		The RMCT has been revised to version 8.02.01.
ControlLogix EtherNet/IP communication module, 1756-EN2TR/C	20.055_kit3	New Module Series and Firmware Revision The 1756-EN2TR/C module, firmware revision 10.007, is available. IMPORTANT: The 1756-EN2TR/C modules do not support firmware revisions previous to revision 10.007. Do not attempt to update the firmware to previous revisions.
		Product Resiliency Improvement This release includes enhancements that are intended to improve product resiliency to potentially disruptive activities. These enhancements have been verified not to affect product safety, performance, expected life, configuration, or operation of the product. Rockwell Automation advises customers to follow good industrial control system (ICS) security practices that include regular product updates. To help confirm authenticity, obtain product updates and new releases directly from Rockwell Automation.
		With the 1756-EN2TR/C module, firmware revision 10.007, message performance is improved over earlier revisions.
ControlLogix EtherNet/IP communication module, 1756-EN2T/D		Updated Firmware Revision The 1756-EN2T/D module uses firmware revision 10.007 in this enhanced redundancy bundle.
ControlLogix EtherNet/IP communication module, 1756-EN2T/D	20.055_kit2	The 1756-EN2T/D module, firmware revision 10.006, is available. IMPORTANT: The 1756-EN2T/D modules do not support firmware revisions previous to revision 10.006. Do not attempt to update the firmware to previous revisions.
		With the 1756-EN2T/D module, firmware revision 10.006, message performance is improved over earlier revisions.
		Product Resiliency Improvement This release includes enhancements that are intended to improve product resiliency to potentially disruptive activities. These enhancements have been verified not to affect product safety, performance, expected life, configuration, or operation of the product. Rockwell Automation advises customers to follow good industrial control system (ICS) security practices that include regular product updates. To help confirm authenticity, obtain product updates and new releases directly from Rockwell Automation.
RSLogix 5000 Software		Option to use RSLogix 5000 software, version 20.03.00 RSLogix 5000 software, version 20.03.00 includes enhancements that are intended to improve product resiliency to potentially disruptive activities. These enhancements have been verified not to affect product safety, performance, expected life, configuration, or operation of the product. IMPORTANT: For information on to update your RSLogix 5000 software project to version 20.03.00, see Rockwell Automation Knowledgebase Answer ID 565204 - RSLogix 5000 Software, Version 20.03, accessible at: http://www.rockwellautomation.com/knowledgebase/ . (log on is required.) We strongly recommend that you read the Knowledgebase article, and the associated documents that are referenced within it, before updating your RSLogix 5000 software version.

Table 3 - Enhancements Provided with Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

System Components	Enhanced Redundancy System Revision	Enhancement
Redundancy Module Configuration Tool (RMCT), 1756-RM2	20.054_kit1	Reduction in scan time of up to 35% per sync point in comparison to the 1756-RM/B module, due to higher 1756-RM2 module speed of up to 1000 Mbps.
		Redundant fiber ports for the 1756-RM2 module for crossloading; no single point of failure of a fiber cable.
		The redundancy module firmware now reports back to the RMCT about the version of the RMCT it is compatible with. If there is an incompatibility, the RMCT shows only the Module Info tab that indicates the version that the firmware is compatible with.
		You can abort a synchronization process that takes a long time (up to 10 minutes, with a PTP configuration error) to complete via the Disqualify button in the RMCT. Without this feature, you must abort qualification by taking a manual action. For example, when you cycle power to the secondary chassis or when you remove the redundancy module under power (RIUP).
		There are new causes added for partner compatibility of communication modules that appear in the RMCT Status tab under Compatibility. For example, the primary and secondary partners are not on the same network or one or both of the keepers of the partner are invalid. The partners must be communicating on the same network to synchronize. Update the keepers to valid and matching keeper values.
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.054	The 375 ms RPI limit has been increased. You can now configure I/O modules to use up to a 750 ms RPI; the same as in a simplex system.
Beginning with revision 20.054, HMI blind time due to switchover has been reduced. See page HMI Blind Time on page 31 .		
1756-L71		Support has been added for the 1756-L71 controller for redundancy Logix and Redundancy Module Configuration Tool (RMCT).
1756-EN2F		Support has been added for the 1756-EN2F communication module in the Redundancy Module Configuration Tool (RMCT).
1756-EN2T 1756-EN2TR		Sockets are supported in the 1756-EN2T and 1756-EN2TR modules.
Security		To enhance system and device-level security in systems that use our products, Rockwell Automation prescribes validated, defense-in-depth measures and design practices to enhance system and device-level security. For the latest information on security solutions and enhancements, visit http://www.rockwellautomation.com/global/capabilities/industrial-security/overview.page .
Redundancy Module Configuration Tool (RMCT), 1756-RM		The redundancy module firmware now reports back to the RMCT about the version of the RMCT that it is compatible with. If an incompatibility exists, the RMCT shows the Module Info tab that indicates the version that the firmware is compatible with.
		You can abort a synchronization process that takes a long time (up to 10 minutes, with a PTP configuration error) to complete via the Disqualify button in the RMCT. Without this feature, you must abort qualification by taking a manual action. For example, when you cycle power to the secondary chassis or when you remove the redundancy module under power (RIUP).
		There are new causes added for partner compatibility of communication modules that appear in the RMCT Status tab under Compatibility. For example, the primary and secondary partners are not on the same network or one or both of the keepers of the partner are invalid. The partners must be communicating on the same network to synchronize. Update the keepers to valid and matching keeper values.

Corrected Anomalies

These tables describe anomalies that are corrected in enhanced redundancy system revisions.

Table 4 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.058_kit2

Cat. No.	Description
1756-CN2/B, 1756-CN2R/B, 1756-CN2RXT/B	<p>CORRECTED: Channel faults (Late clock lock)</p> <p>A rare combination of conditions, including multiple noise sources coupled onto the ControlNet cable, can occasionally result in a module failing to lock onto the preamble within 16 bit times when the edges of the incoming data and the local sample clock initially coincide.</p> <p>These conditions occur infrequently and cause one packet to be lost. No data is corrupted and no connections are dropped.</p> <p>Changing the edge detector to run at twice the sample rate significantly improves the ability of the module to sense the preamble when these conditions occur.</p> <p><i>Anomaly first identified in firmware revision 20.009 and corrected in revision 20.022.</i></p> <p style="text-align: right;">Lgx00186820</p>
	<p>CORRECTED: Cycle Power to Unit: Assert in File CnetSchedTransmitList.cpp Line 258</p> <p>While running RSLogix 5000® V20.00.00 and RSNetWorx™ for ControlNet 21.01.00 application software, the ControlNet bridge faulted as described above.</p> <p>Fixed the mutex lock.</p> <p><i>Anomaly first identified in firmware revision 20.013 and corrected in revision 20.022.</i></p> <p style="text-align: right;">Lgx00176648</p>
	<p>CORRECTED: Rack-optimized outputs transition to a non-commanded state</p> <p>When a 1756 discrete output module using a rack-optimized connection in a remote chassis establishes a connection, outputs briefly transition to a random non-commanded state. This time period starts when a new connection is established and ends when the first data is received from the controller.</p> <p>A connection is established by one of the following:</p> <ul style="list-style-type: none"> • Downloading a project to the controller • Cycling power • Inhibiting/uninhibiting the communication bridge or adapter in the Logix application • Making the initial connection (first-time connection) • Reconnecting after a network cable break <p>Rack-optimized connections are made by configuring the communication adapter rack connection to 'Rack Optimization'. This configuration is done in the I/O configuration of RSLogix 5000® or Studio 5000® programming software. To use a direct connection, set the rack connection to 'none'.</p> <p><i>Anomaly first identified in firmware revision 20.013 and corrected in revision 20.022.</i></p> <p style="text-align: right;">Lgx00145416</p>

Table 5 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.058_kit1

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>CORRECTED: Specific Output Modules May Fail to Update After Switchover.</p> <p>Catalog Numbers: ControlLogix® 5570 and 5560 Redundant Controllers.</p> <p>When used in a redundant configuration and connected to specific module I/O devices, the processors can lose output control after a redundancy switchover. The controlling processor does not show a fault or error code indicating this behavior. However, outputs on these connected I/O devices do not change state.</p> <p>For more information, see these resources:</p> <ul style="list-style-type: none"> • Knowledgebase articles 1032479 and 1032480 • Product Notice 2017-02-002 • ControlLogix Firmware V20.057 and V24.052 Used In a Redundant Configuration with Specific Module Types - Outputs May Fail to Update After Switchover (201702002) <p><i>Anomaly first identified in firmware revision 20.057.</i></p> <p style="text-align: right;">Lgx00193627</p>

Table 6 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.057_kit1

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>The controller fails to Lock for Update.</p> <p>When using an active RSLinx® Enterprise data server, the controller fails to Lock for Update during a Redundancy System Update (RSU). Lgx00178266</p>
	<p>The Dynamix™ 1444 module experiences a connection loss.</p> <p>Dynamix 1444 module connections close during a redundancy switchover and do not recover. Lgx00178219</p>
	<p>The EDS AOP closes during switchover.</p> <p>Connections to devices that use an EDS AOP close during a redundancy switchover. The connections re-establish to the new primary controller within 3...5 seconds. Lgx00178222</p>
	<p>The secondary redundancy controller incorrectly flags a minor fault.</p> <p>A secondary redundancy controller incorrectly flags Minor Fault, Type 17 Code 11 (failure of the diagnostics of the internal controller). This fault is observed on a primary controller once switchover occurs. Lgx00158895</p>
	<p>When trying to delete a tag in the controller, the error Internal Object Identifier (IOI) destination unknown is displayed. Lgx00173078</p>
	<p>The secondary controller can MNRF when PowerFlex drives that support ADC (Automatic Drive Configuration) are in the application and the following conditions occur.</p> <ol style="list-style-type: none"> 1. Download to the Primary controller. 2. The system is synchronized, it disqualifies, and then in the process of requalifying it disqualifies again. 3. You delete drives in an online synchronized system. <p>See Rockwell Automation Knowledgebase Answer ID 776095, accessible at: http://www.rockwellautomation.com/knowledgebase/ (log on is required). Lgx00177188</p> <p>If a secondary controller is power cycled during qualification, it can result in the secondary controller MNRFing (major non-recoverable fault). This condition occurs during the early stages of qualification. Lgx00180657</p>
1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>The CPS instruction is designed to provide data integrity during the copy operation of data by not allowing any other processing to occur until the CPS instruction completes.</p> <p>In redundant controllers, other tasks can interrupt the CPS instruction, which allows the controller to send data during the execution of the CPS instruction. This condition can result in a combination of current and old data or stale data being produced. The correct data is sent at then next RPI update of the produced tag. This process affects Produced tags.</p> <p>See Rockwell Automation Knowledgebase Answer ID 787266, accessible at: http://www.rockwellautomation.com/knowledgebase/ (log on is required). Lgx00178816</p>
	<p>There is a small timing window when crossloading the key switch and controller mode information to the secondary controller during qualification that can result in the primary controller MNRFing (major non-recoverable fault). This condition has the potential to occur if there are User periodic tasks that take longer than 200 milliseconds to execute. When this condition occurs, it results in the primary controller that is MNRFed and secondary controller that could not take control since it was not synchronized.</p> <p>See Rockwell Automation Knowledgebase Answer ID 943413, accessible at: http://www.rockwellautomation.com/knowledgebase/ (log on is required). Lgx00185376</p>
1756-RM2, 1756-RM2XT	<p>Upon disconnection or physical removal of the SFP Fiber Transceiver unit from Channel 1 (CH1) or Channel 2 (CH2) of a 1756-RM2 module, an E70A or E70C minor fault occurs and cannot be cleared. This behavior has been corrected and automatically clears the minor fault upon reconnection or reinsertion of a functional SFP unit. Lgx00172988</p>

Table 7 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.056_kit1

Cat. No./System Component	Enhanced Redundancy System Revision	Description
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.056_kit1	<p>The controller can experience an MNRF (major non-recoverable fault). This condition can occur if you use the ALMA and ALMD instructions when you are connected to an FTA server. You must also have many alarm instructions that are triggered at once or a few alarm instructions that are triggered quickly for a time.</p> <p>When in a redundancy system, other factors that can cause the MNRF are:</p> <ol style="list-style-type: none"> 1. A switchover of the system. 2. Power cycle of the system. 3. Requalification of the system. <p>Also, in a redundancy system it can cause both the primary and secondary controller to MNRF.</p> <p style="text-align: right;">Lgx00151530</p>
		<p>The controller can experience a major non-recoverable fault (MNRF) when it is executed. This condition can occur if an Analog Alarm (ALMA) instruction or Digital Alarm (ALMD) instruction has a string type associated tag and the string has a negative length.</p> <p style="text-align: right;">Lgx00135333</p>
		<p>When multiple RSLE clients are connected to a redundancy system, it can result in the controller MNRFing (major non-recoverable fault). Another manifestation of the anomaly can be a Delivery Error on an alarm tag when a controller is trying to deliver notification on alarm state change.</p> <p style="text-align: right;">Lgx00145610</p>
		<p>Phase PXRQ Abort requests are not sent out if a running Phase with a pending PXRQ (IP bit is set) is put into hold.</p> <p style="text-align: right;">Lgx00154211</p>
		<p>Phase PXRQ Abort requests are sent out with invalid 'Sequence Identifier' due to a timing anomaly in a redundancy system.</p> <p style="text-align: right;">Lgx00166097</p>
		<p>A module that uses the EDS or AOP feature and that has a module configuration greater than 255 bytes errors during the configuration process and displays error code 0x05 (bad class) in the programming software. An example is the 1444 Dynamix™ module.</p> <p style="text-align: right;">Lgx00166088</p>
		<p>A Logix controller has a background task that monitors the I/O connections in the controller. A unique timing anomaly was found that could cause an invalid value to be used during the background task that results in the secondary controller experiencing a major non-recoverable fault.</p> <p style="text-align: right;">Lgx00153629</p>
		<p>Controller parameters that are associated with RSLogix 5000 software initiated trends and HMI traffic can be improperly handled between the primary and secondary controller in a qualified redundancy system. This condition can result in:</p> <ol style="list-style-type: none"> a. Major non-recoverable fault of the secondary and/or primary controller. b. Unexplained disqualifications of the secondary controller. <p style="text-align: right;">Lgx00149895</p>

Table 8 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.055_kit5 (or Earlier)

Cat. No./System Component	Enhanced Redundancy System Revision	Description
1756-CN2/C 1756-CN2R/C 1756-CN2RXT/C 1756-CN2RK	20.056_kit1	<p>CORRECTED: When the second power supply of a redundant power supply pair powers up, ControlNet interface modules that reside in the same chassis experience an overvoltage condition. The 5V power rail on the interface module briefly exceeds the maximum voltage setting in the Voltage Monitoring System (VMS). Lgx00158735</p> <p>CORRECTED: The Redundancy System Update feature takes several minutes to report that a secondary module with an earlier firmware revision is paired with a primary module that has more recent firmware. Lgx00155142</p>
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.055_kit1	<p>CORRECTED: When using PowerFlex™ 750 drives with firmware that supports Drives ADC (Automatic Drive Configuration) on powerup, the controller can become stuck in the transition to Run mode. When stuck in the transition to Run mode, the application is not executing and the outputs are not being updated. For more information, see Knowledgebase document 493802. Also refer to Product Notice 2012-10-004. Lgx00140810, Lgx0130112</p>
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.054	<p>CORRECTED: During online editing, an anomaly can occur when testing the edits to an SFC routine. Normally, test edits are applied to a test SFC routine and verified before accepting them in the logic of the program. When this anomaly occurs, test edits are implemented in the online routine. Despite an attempt to cancel the online editing operation, when the cancellation option appears to cancel the program edits, the edits are, instead, accepted. There are no workarounds for this anomaly. Lgx00119071</p>

Table 8 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.055_kit5 (or Earlier) (Continued)

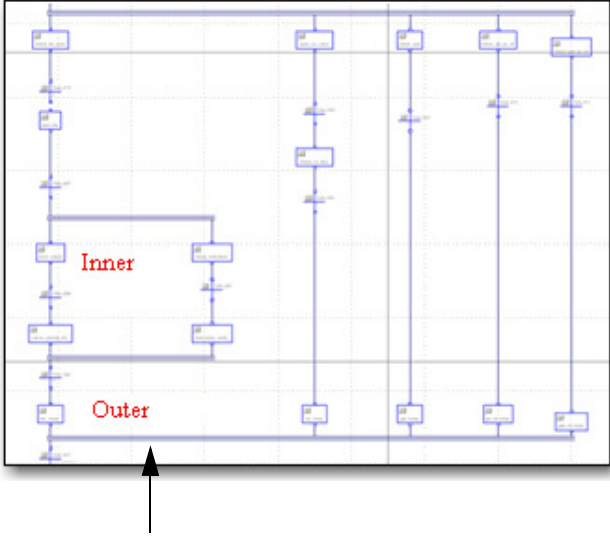
Cat. No./System Component	Enhanced Redundancy System Revision	Description
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.054	<p>CORRECTED: An anomaly can occur when you nest simultaneous branches in a sequential function chart (SFC) routine as shown in this graphic.</p>  <p style="text-align: center;">Bottom-most Steps</p> <p>During normal operations, the logic does not step out of a simultaneous branch until all incoming legs have reached their bottom-most step. In the example that is shown, the logic does not step out of the Outer simultaneous branch until the left-most leg has stepped out of the Inner simultaneous branch.</p> <p>The first time through the SFC routine, the application works as expected. On subsequent scans, however, the chart steps out of the Outer simultaneous branch even though the left leg has not reached the Inner simultaneous branch yet.</p> <p>This behavior occurs because the information in the bottom step, that is, the step next to the word Outer, remains from the previous scan. This stale information incorrectly causes the transition to move on as if the left leg is at the bottom step when it actually is not.</p> <p>To work around this anomaly, confirm that all incoming legs have reached their bottom steps in the transition. You can check the .x bits to make sure that the bottom-most step of each converging leg is active before allowing the chart to advance. This check can be added to the transition logic already present.</p> <p>For example, the steps in the following expression are the bottom steps (see the previous graphic) of the incoming legs. Each step has a timer. The transition does not move on until all step timers have reached their preset value.</p> <p>The expression can be modified to be sure that those steps are truly active. This expression is the original expression:</p> <pre>// Unit is ready to Transition Step1_ready.dn and Step2_ready.dn and Step3_ready.dn and Step4_ready.dn and Step5_ready.dn</pre> <p>This expression is the modified expression to work around this anomaly.</p> <pre>// Unit is ready to Transition Step1_ready.x and Step2_ready.x and Step3_ready.x and Step4_ready.x and Step5_ready.x and Step1_ready.dn and Step2_ready.dn and Step3_ready.dn and Step4_ready.dn and Step5_ready.dn</pre> <p>IMPORTANT: The x bit is cleared when the chart transitions out of a step.</p> <p>If you add this check to the condition, it forces the engine to wait until all of those steps are genuinely active before advancing out of the simultaneous branch.</p> <p style="text-align: right;">Lgx00118189, Lgx00116506</p>

Table 8 - Corrected Anomalies in Enhanced Redundancy System, Revision 20.055_kit5 (or Earlier) (Continued)

Cat. No./System Component	Enhanced Redundancy System Revision	Description
1756-L61 1756-L62 1756-L63 1756-L63XT 1756-L64 1756-L65 1756-L71 1756-L72 1756-L73 1756-L73XT 1756-L74 1756-L75	20.054	<p>CORRECTED: If you delete a small rung, such as a rung with just an XIC and OTE, or a rung with one instruction, such as NOP or RES, it could cause a controller to experience a major non-recoverable fault. Lgx00124861</p> <p>CORRECTED: When an alarm instruction is being modified online while it is executing, it can cause the redundancy system to disqualify. The system recovers automatically later. Lgx00117401</p> <p>CORRECTED: In some systems with one periodic task, forced output drops upon redundancy switchover. Lgx00124234</p> <p>CORRECTED: In some systems where the first scan bit (S:FS) is being analyzed, the first system scans the first scan bit again on the first scan after a switchover. Lgx00126870</p>
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-RM, 1756-RMXT		<p>CORRECTED: After a switchover is completed, the primary redundancy module incorrectly reports a Synchronized status in RSLogix 5000 software, and primary ControlNet and EtherNet/IP communication modules report a No Partner status. 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 communication module and Synchronization Status tab incorrectly indicate that a switchover is complete but a redundancy state change is pending. Typically, the components 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 resynchronize the redundant chassis pair, cycle power to the secondary chassis. Lgx00115764</p>
RPI		<p>CORRECTED: In all prior releases for ControlLogix Redundancy, the RPI to an I/O module could not be set greater than 376 ms. This setting has been enhanced to allow any RPI acceptable for the module being configured. Lgx00105642</p>
RSLinx software		<p>CORRECTED: The following RSLinx software corrections have been made:</p> <ul style="list-style-type: none"> • If you update RSLinx software to version 2.59.00 or later, it no longer stops the operation of the RMCT. If the RSLinx software version that you are updating to includes an older version of the RMCT than what is already installed, then the already-installed RMCT version is not affected. Alternatively, if the updated RSLinx version included a newer version of the RMCT, then the new RMCT version installs automatically on top of the already-installed RMCT version. • The RMCT can be successfully installed without seeing any error messages after the uninstallation of RSLinx software, version 2.57.00 or later. • With RSLinx software, version 2.57.00 or later, RSLinx software can be downgraded to an older version without any errors. For example, if you have the RMCT, version 7.02.07, installed while using RSLinx software, version 2.59.00, then you can uninstall RSLinx version 2.59.00 and successfully install RSLinx software, version 2.57.00. The RMCT, version 7.02.07, is not overwritten with the older version of the RMCT that is included in RSLinx software, version 2.57.00. To downgrade the RMCT version as well, manually uninstall and reinstall the desired RMCT version by using ADD/Remove Programs in the Control Panel. Lgx00086040
1756-RM, 1756-RMXT		<p>CORRECTED: Repeated connection and disconnection, or irregular insertion, of the fiber-optic cable for the 1756-RM or 1756-RMXT redundancy modules results in various fault codes indicated on the module status display. The redundancy module faults and indicates error codes such as E0xx or EAxx if either of the following conditions occur:</p> <ul style="list-style-type: none"> • The fiber-optic cable for the 1756-RM or 1756-RMXT redundancy modules is disconnected and connected repeatedly within short periods of time. • The cable is inserted slowly at a slight angle to the connector. <p>To avoid experiencing these faults, wait 5 . . . 10 seconds between disconnecting and reconnecting the fiber-optic cable for the 1756-RM or 1756-RMXT redundancy modules. You must also verify that the insertion is quick and straight into the connector. Lgx00084595, Lgx00113995, Lgx00113954, Lgx00116055</p>

Known Anomalies

[Table 9](#) lists the known anomalies applicable to the enhanced redundancy system, revision 20.058_kit1 (or earlier).

Table 9 - Known Anomalies in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier)

Cat. No.	Description
1756-EN2T, 1756-EN2TR, 1756-EN2TXT	<p>You cannot have kits with firmware revisions 10.006 and 10.007 installed on the same computer. If you have firmware revision 10.006 installed and you attempt to install firmware revision 10.007, 10.007 generates an error directing to an incorrect .nvs file. Reinstall the desired firmware revision and ignore the error. We recommend using firmware revision 10.007 because it has corrected anomalies from firmware revision 10.006.</p> <p style="text-align: right;">Lgx00155450</p>
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-EN2F, 1756-RM, 1756-RMXT, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 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 even though there are no network disruptions or device power cycling.</p> <p style="text-align: right;">Lgx00115516</p>
1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-EN2F, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>Connections can drop temporarily if a 1756-EN2Tx communication module is not configured correctly.</p> <p>The following applies only 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 RSLogix 5000 project for the remote controller:</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 You can use any settings for the previously listed parameters with no effect on the connection from remote controller to primary controller. This condition applies only when you add the 1756-EN2Tx communication module to the RSLogix 5000 project for the primary controller.</p> <hr/> <p style="text-align: right;">Lgx00111615, Lgx00108809, Lgx00109656</p>
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>Redundant chassis synchronization fails when the controller is near its connection limit.</p> <p>Chassis synchronization can fail if the controller is near its connection limits. 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. This verification reduces the likelihood of this anomaly.</p> <ul style="list-style-type: none"> The 1756-L6x controllers support as many as 250 controller connections. If your enhanced redundancy system uses these controllers, limit the number of controllers connections that are used to 242 or fewer connections. The 1756-L7x controllers support as many as 500 controller connections. If your enhanced redundancy system uses these controllers, limit the number of controllers connections that are used to 492 or fewer connections. <p style="text-align: right;">Lgx00063311</p> <hr/> <p>Alarms that are scanned during the continuous task can be published to the alarm server twice after a switchover.</p> <p>A duplicate 'out of scope' alarm entry can be indicated in the alarm summary object. This condition occurs if a switchover occurs and a continuous task that contains alarm instructions is scanned twice as a result. To clear 'out of scope' entries, click Refresh alarm list.</p> <hr/> <p>Alarm status messages can be duplicated in the Alarm History Log if there is a switchover.</p> <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 can be indicated as active and unacknowledged after a switchover. If this condition occurs, acknowledge the alarm a second time.</p> <hr/> <p>An alarm is active, then inactive, and a switchover occurs before the change in the alarm state is updated to the FactoryTalk server. Under these conditions, the FactoryTalk alarm history log cannot indicate the change in alarm state.</p>

Table 9 - Known Anomalies in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>Alarm parameters can be lost when a switchover occurs.</p> <p>Certain alarm parameters cannot be transferred to the new primary controller if the parameters have changed since the last crossload of data. This condition occurs when a switchover occurs in a redundant system that uses alarms. Alarm parameters that cannot 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 style="text-align: right;">Lgx00093529</p>
	<p>Alarms can 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 style="text-align: right;">Lgx00093826</p>
	<p>A Partial Import Online to a primary controller over a ControlNet network can fail if a system switchover occurs while the PIO is still in process.</p> <p>When the anomaly occurs and the PIO fails, you can see any of these errors:</p> <ul style="list-style-type: none"> • Failed to import file 'c:\...\xxx.L5x Object 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 style="text-align: right;">Lgx00114044, Lgx00113005, Lgx00111045, Lgx00111230</p>
	<p>The 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 style="text-align: right;">Lgx00062035</p>
	<p>When you import a routine to an empty program in a synchronized enhanced redundancy system, disqualification can occur.</p> <p style="text-align: right;">Lgx00108673</p>

Table 9 - Known Anomalies in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>If tasks are not properly tuned and you execute a large PIO, the primary controller can experience a watchdog fault during the import. This condition occurs 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. An infinite loop, a complex program, or a higher priority task can cause this condition. (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 if there is a future watchdog fault.</p> <p style="text-align: right;">Lgx00108575</p>
	<p>When a program in the primary controller is inhibited or uninhibited, the secondary can disqualify and requalify.</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 style="text-align: right;">Lgx00090432</p>
1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 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, controllers 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 that is loaded into the primary controller.</p> <p style="text-align: right;">Lgx00115228</p>
ControlNet network	<p>If you connect a redundant controller over ControlNet by using the Controller Log feature, and a switchover occurs, the controller log entries no longer shows the name of the user. After the switchover, the user name indicates 'unknown.'</p> <p style="text-align: right;">Lgx00125445</p>

Restrictions

[Table 10](#) lists the restrictions applicable to the enhanced redundancy system, revision 20.058_kit1 (or earlier).

Table 10 - Restrictions in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier)

System Component	Description
1756-EN2T/D	The 1756-EN2T module, series D, cannot be used for SIL 2 applications as part of the safety loop. For more information on configurations for SIL 2 applications, refer to Using ControlLogix in SIL 2 Applications Reference Manual, publication 1756-RM001 .
1756-EN2T/D, 1756-EN2T/C, 1756-EN2TR	The existing 1756-EN2T/D module specification sheets do not list the modules as being SIL 2 certified. Policies currently in place by TÜV require that only the 1756-EN2T/C or the 1756-EN2TR modules be used for SIL 2 applications as part of the safety loop.
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-CN2RK	1756-CN2/B and 1756-CN2R/B module firmware is not compatible with 1756-CN2/A and 1756-CN2R/A module. You cannot update series A or B firmware on series C hardware or vice versa. The 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C module firmware is not compatible with series A and B hardware. The 1756-CN2/B and 1756-CN2R/B module firmware is not compatible with a 1756-CN2/A or 1756-CN2R/A module. Do not attempt to update a 1756-CN2/A or 1756-CN2R/A module with 1756-CN2/B or 1756-CN2R/B module firmware. If you attempt to do so, it results in ControlFLASH software displaying a severe incompatibility warning. Series A modules are not supported in redundancy. The 1756-CN2x communication modules provide a maximum of 128 CIP connections for standard (non-redundancy) application use. The 1756-CN2x 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. When using the 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, and 1756-CN2RK/C communication modules, you must set the electronic keying option to Disable Keying or Compatible Match. This requirement is because Add-on Profiles are not available for these modules.
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 update 1756-EN2T communication modules to firmware revision 5.008 to use this enhanced redundancy system revision.
1756-EN2T, 1756-EN2TR, 1756-EN2TXT 1756-EN2F	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 nonredundancy use. You cannot use a 1756-EWEB communication module in an enhanced redundancy system, revision 20.054. 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 module, your application loses functionality that is available with only the 1756-EWEB communication module. The following are examples of functionality that is no longer available in an Enhanced Redundancy System: <ul style="list-style-type: none"> • Simple Network Time Protocol (SNTP) Client • Web pages You must account for this lost functionality in your RSLogix 5000 software project. IMPORTANT: You cannot migrate online from 1756-EWEB communication modules to 1756-EN2T or 1756-EN2TR communication modules. <p style="text-align: right;">Lgx00092779</p>
1756-L75/A 1756-CN2R/B 1756-RM/B 1756-EN2T/C 1756-EN2TR/B 1756-EN2F	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. If a qualification fails due to a ControlNet scheduling issue ((29) Qualification Error - Failed Connection Duplication logged in the 1756-RM module event logs), the system continuously attempts the qualification and fails. This process continues to occur until the cause is addressed or the Auto-Qualification option is changed to Never. The visual symptom is a repetitive display sequence of QFNG/DISQ on the 1756-RM module.

Table 10 - Restrictions in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

System Component	Description
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75 1756-EN2T, 1756-EN2TR, 1756-EN2TXT 1756-EN2F	A redundant controller project cannot contain consumed Unicast connections. The project can contain produced Unicast tags that are consumed by remote consumers.
1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-EN2F, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>There are differences between CIP Sync technology in nonredundant systems and enhanced redundancy systems, revision 20.054.</p> <hr/> <p>IMPORTANT Before you use this enhancement in an enhanced redundancy system, 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 20.054:</p> <ul style="list-style-type: none"> • You must enable Time Synchronization in the EtherNet/IP communication modules in the redundant chassis pair so all devices have one path to the Grandmaster. This configuration is required if you enable CIP Sync Time Synchronization in the controllers in a redundant chassis pair. The redundant chassis pair attempts to qualify. This process occurs if Time Synchronization is enabled in any controller in the primary chassis of a disqualified Redundant Chassis Pair and no other devices in the primary chassis have time synchronization enabled. EtherNet/IP communication devices are other devices in this example. However, in these application conditions, the attempt to qualify fails. • CIP Sync technology can handle multiple paths between master and slave clocks. However, 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. • 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 process occurs if the primary controller is the Grandmaster. This clock management delivers 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 can take longer to complete than if Grandmaster status was transferred between devices in a nonredundant system. – The synchronization of the enhanced redundancy system can take longer to complete than when it occurs on a switchover in an enhanced redundancy system, revision 20.054, that does not use CIP Sync technology. • The enhanced redundancy system, revision 20.054 does not permit a locked switchover and the update fails to complete. This condition occurs if you attempt to use the Redundant System Update (RSU) feature to update an enhanced redundancy system, revision 16.081 or earlier, that uses the Coordinated System Time (CST). To work around this restriction, first disable CST Mastership in the original redundancy system and then use RSU to update to enhanced redundancy system, revision 20.054.

Table 10 - Restrictions in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

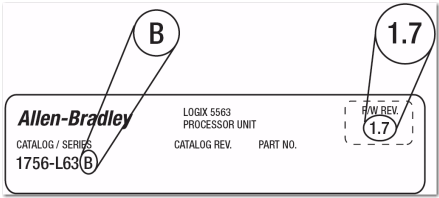
System Component	Description						
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75	<p>You can place a maximum of two controllers in the same chassis in a redundant chassis pair. When two controllers are used in the same chassis, 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>You cannot go online with, download to, or upload from the new primary controller after a switchover. This condition occurs if you use the Match Project to Controller property available in the Advanced tab of the Controller Properties dialog box. This restriction is because the serial number of the new primary controller is not the same as the serial number of the old primary controller. Due to this condition, the project cannot be matched to the newly switched to controller.</p> <p>Firmware Supervisor You cannot use the Firmware Supervisor feature available in RSLogix 5000 software.</p> <p>Event Tasks You cannot use event tasks in ControlLogix enhanced redundancy systems. When you enable redundancy, you must change event tasks to nonevent tasks or delete them from your project.</p> <p>SERCOS Motion or Integrated Motion on the EtherNet/IP Network You cannot use Motion in ControlLogix enhanced redundancy systems. A remote controller can contain motion instructions even if it is on the same network as a redundancy system.</p> <p>Under some error conditions, the 1756-RM module continually attempts to requalify the system while the error prevents it from being successful. This process causes the redundancy module error log to fill with the same error condition. If the system is in this condition, the redundancy module display cycles between QFNG and DISQ. To stop this process from happening, change the redundancy module synchronization trigger in the Redundancy Module Configuration Tool (RMCT) to Never, until the error condition is corrected.</p>						
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64	<p>Update controller firmware from boot firmware can cause major non-recoverable fault.</p> <p>We recommend that you update controller firmware in a nonredundant chassis. When you update these controllers from the boot firmware revisions that are listed to higher firmware revisions, execute the update with the controller in a nonredundant chassis or primary chassis.</p> <table border="1" data-bbox="505 1073 1386 1199"> <thead> <tr> <th>Controller</th> <th>Firmware Revision</th> </tr> </thead> <tbody> <tr> <td>1756-L61, 1756-L62, 1756-L63, 1756-L63XT</td> <td>1.007 or earlier (boot firmware)</td> </tr> <tr> <td>1756-L64</td> <td>1.010 or earlier (boot firmware)</td> </tr> </tbody> </table> <p>If you attempt the firmware update with the controller in a redundant chassis, a major non-recoverable fault (MNRF) can 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 nonredundant 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 update from the boot firmware revision.</p> <ol style="list-style-type: none"> 1. Install the controller in a nonredundant chassis. 2. Update the controller firmware. 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 nonredundant or redundant chassis.</p>	Controller	Firmware Revision	1756-L61, 1756-L62, 1756-L63, 1756-L63XT	1.007 or earlier (boot firmware)	1756-L64	1.010 or earlier (boot firmware)
Controller	Firmware Revision						
1756-L61, 1756-L62, 1756-L63, 1756-L63XT	1.007 or earlier (boot firmware)						
1756-L64	1.010 or earlier (boot firmware)						
1756-CN2, 1756-CN2R, 1756-CN2RXT, 1756-EN2T, 1756-EN2TR, 1756-EN2TXT, 1756-EN2F	<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 entry is not indicative of any module failure; instead, it indicates that only an enhanced communication module was inserted in the chassis.</p>						

Table 10 - Restrictions in Enhanced Redundancy System, Revision 20.058_kit1 (or Earlier) (Continued)

System Component	Description
1756-RM 1756-RMXT	Under rare conditions, inserting a redundancy module into a running system can cause the redundancy system to switchover or disqualify, and cause the other modules in that chassis to reset themselves. Inserting the module at an angle causes the anomaly. Make sure that the module is inserted straight into the chassis without any side-to-side or top-to-bottom movement.

Application Notes

Consider these application notes when you configure, program, and use your ControlLogix enhanced redundancy system.

Add-on Profile Availability

Add-on Profiles (AOP) offer the most current device configuration options in RSLogix 5000 software. AOPs are available between software releases.

You can download AOPs from:

<https://download.rockwellautomation.com/esd/download.aspx?downloadid=adonprofiles>

You have to be a member and sign in first to access this site.

TIP You can click the `>` symbol next to the `Custom Download Files` to expand the AOP list.

Note: The version that is listed in the tables is the version of the AOP, not the version of the supported firmware.

You use the RSLogix 5000 Module Profiles Setup Wizard to install the AOP.

IMPORTANT AOPs are not available for the 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, and 1756-CN2RK/C communication modules.

Consider the following:

- If your RSLogix 5000 software version does not allow you to configure a device to match the physical device, you must download and install the AOP for the device.

For example, if your enhanced redundancy system includes a 1756-EN2T/D module and the software project requires the module be configured with Electronic Keying = Exact Match, you must install the AOP first.

IMPORTANT When using the 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C communication modules, you can use the settings Disable Keying or Compatible Match.

- If you cannot download or install an AOP, we recommend that you use Electronic Keying = Compatible Module or Disable Keying until you can.

Maintaining SIL 2 Certified Systems

The existing 1756-EN2T/D module specification sheets do not list the modules as being SIL 2 certified. Policies currently in place by TÜV require that only the 1756-EN2T/C or the 1756-EN2TR modules be used for SIL 2 applications as part of the safety loop.

For more information on configurations for SIL 2 applications, refer to Using ControlLogix in SIL 2 Applications Reference Manual, publication [1756-RM001](#).

IMPORTANT When the V20.056_kit1 bundle was released, all controller firmware and communication module firmware in the kit had been SIL 2 certified. The 1756-RM2 and 1756-RM2XT firmware 20.005 in the bundle has not been SIL 2 certified.

The last SIL 2 certified 1756-RM2 and 1756-RM2XT firmware was 20.004 and was included in the V20.055_kit3 bundle.

You can use the SIL 2 Certified V20.004 firmware from the V20.055_kit3 in place of the V20.005 firmware from V20.056_kit1 to have a fully SIL 2 certified redundancy system. This substitution applies to firmware updates to the 1756-RM2 and 1756-RM2XT modules only.

When you make this substitution, be aware of the four anomalies that were fixed between 1756-RM2 and 1756-RM2XT firmware 20.004 and 20.005:

- Lgx137887: The text entry in the Compatibility column, for a redundant Ethernet module, on the Synchronization Tab in the RMCT can be empty or incorrect. This condition can occur even though the module can actually be incompatible. This condition applies to only a redundant Ethernet module. A Multicast address setting or 'Time To Live (TTL)' Ethernet configuration value change can be pending on a redundant Ethernet module. This condition prevents the Primary module from becoming compatible with its Partner. If this condition exists, then the Compatibility column entry for the Ethernet Module does not show correct status.

- Lgx146644 / Lgx150721: When the secondary chassis is power cycled, the communication modules can fail to resolve their redundancy states. Under this condition, the communication modules do not resolve their node addresses and the system does not synchronize.
- Lgx147077: Synchronization command fails to resynchronize the redundant chassis after a previously failed auto-synchronization attempt. If the Auto Qualification option changes from 'Always' to 'Never' after a previous auto-synchronization attempt aborts, a following synchronization command can fail. The following synchronization attempt can fail even after you correct the cause of the previous synchronization failure. To resynchronize successfully, change the Auto Qualification option back to 'Always'.

Out-of-box Switch (888) Behavior

These conditions apply to the following modules:

- 1756-EN2T/D modules, firmware 10.006 or later
- 1756-EN2TR/C modules, firmware revision 10.007 or later
- 1756-EN2F/C modules with firmware revision 10.009 or later

When the switches are set to 888 to perform an out-of-box reset and the module is installed in a chassis, remember the following:

- 1 The module does not become active on the backplane.
- 2 Other modules do not recognize the module.
- 3 RSLinx Classic software does not recognize the module.
- 4 If the module is installed in the primary chassis of a qualified redundant chassis pair, a switchover does not occur. This item does not apply to 1756-EN2T/A/B/C, 1756-EN2TR/A/B, or 1756-EN2F/A/B modules.

Performance Differences between Redundancy Module Series

You cannot mix 1756-RM2 or 1756-RM2XT redundancy modules with 1756-RM/B (or earlier) modules in a RCP. For example, you cannot use a 1756-RM module in the primary chassis and a 1756-RM2 module in the secondary chassis.

When you use a partnered set of 1756-RM2 modules in enhanced redundancy systems, revisions 20.054_kit1 (and later), the fiber channel between the modules can reach speeds as fast as 1000 Mbps.

You can use a mix of 1756-RM module series or 1756-RMXT module series in enhanced redundancy system, revision 20.054 (or later). You can also mix series of RM redundancy modules within a partnered set. For example, you can use a 1756-RM module in the primary chassis and a 1756-RM/B module in the secondary chassis.

TIP Your enhanced redundancy system experiences the best scan performance if it uses 1756-L7x controllers with 1756-RM2 modules in the RCP.

Performance Difference with 1756-L65 Controller

With enhanced redundancy system, revision 20.054 and later, the performance of the ControlLogix 1756-L65 controller differs from the performance of the ControlLogix 1756-L64 controller.

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

EtherNet/IP Networks and Redundant Systems

Some connections to an enhanced redundancy chassis pair can 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 [Communication Interruption on EtherNet/IP Networks on page 30](#).

Produced/Consumed Tags between Primary Controllers and Nonredundant Controllers

The connection from the remote controller to the redundant controller can briefly drop during a switchover. This condition can occur if the EtherNet/IP communication modules of the remote chassis do not use specific firmware revisions. The controllers in the redundant chassis pair must also produce tags over the EtherNet/IP network that the controllers in the remote chassis consume.

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

Table 11 - Minimum Firmware Revision for Communication Modules

EtherNet/IP Communication Module in Remote Chassis	Minimum Firmware Revision
1756-EN2F	5.008 (unsigned) 5.028 (signed)
1756-EN2T	4.002
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 that are listed in [Table 11](#) apply only to EtherNet/IP communication modules in the remote chassis.

In a redundant chassis pair, you can use only the ControlLogix modules that are listed in [Table 1](#).

Minimum Value for the Watchdog Time

To set Watchdog time for your 1756-L6x controllers, use this table to determine which equation to use to calculate the time for each task.

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

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

To set the 1756-L7 controller initial task tuning, follow these steps.

IMPORTANT This configuration works only when there is no Continuous task that is configured in the Logix application.

1. Monitor the Max Scan Time for each task while the redundant chassis pair is synchronized.
2. Set the Watchdog times for each task to 3 times the Max Scan Time.
3. To configure each Task Period, use the Logix 5000™ Task Monitor Tool.⁽¹⁾
 - Adjust the Task periods of each so that the maximum scan time is less than 80% of the task period rate.

The screenshot shows the Logix 5000 Task Monitor Tool interface. The 'Performance' tab is selected, displaying a table of tasks with columns for Name, Rate, CPU, Priority, Last Scan, Max Scan, Watchdog, Overlap, and Status. The tasks listed are AD_MainTask, Dynamic_Acinator, Pls, Simulation, SQs, UP_Premix_01, UP_Reactor_01, and UP_Reactor_02. At the bottom of the window, the status bar shows 'Firmware: 17.02.57', 'Processes: 07', and 'CPU Utilization: 38%'. A red arrow points to the 'CPU Utilization: 38%' text.

Name	Rate	CPU	Priority	Last Scan	Max Scan	Watchdog	Overlap	Status
AD_MainTask	100,000us	20.92%	10	32,360us	32,812us	500,000us	0	Runn
Dynamic_Acinator	250,000us	0.00%	10	0	0	250,000us	0	Inhibi
Pls	20,000us	3.60%	14	872us	34,086us	500,000us	0	Runn
Simulation	100,000us	8.74%	10	20,150us	20,540us	500,000us	0	Runn
SQs	50,000us	1.08%	13	498us	33,172us	500,000us	0	Runn
UP_Premix_01	100,000us	0.94%	10	2,590us	3,060us	500,000us	0	Runn
UP_Reactor_01	100,000us	0.60%	10	3,370us	3,602us	500,000us	0	Runn
UP_Reactor_02	100,000us	0.52%	10	4,130us	4,196us	500,000us	0	Runn

(1) See the PlantPAx® Distributed Control System Reference Manual, publication [PROCES-RM001](#).

- Adjust the Task periods so that the Logix CPU% utilization is never above 75%.
- While performing these tests, the HMI and any other external systems must be connected to the Logix controller.

IMPORTANT Verify that there are no task overlaps.

Synchronizing after Disqualification

If your secondary chassis becomes disqualified, or you manually disqualify it, perform the following 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.

Different 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware Revisions

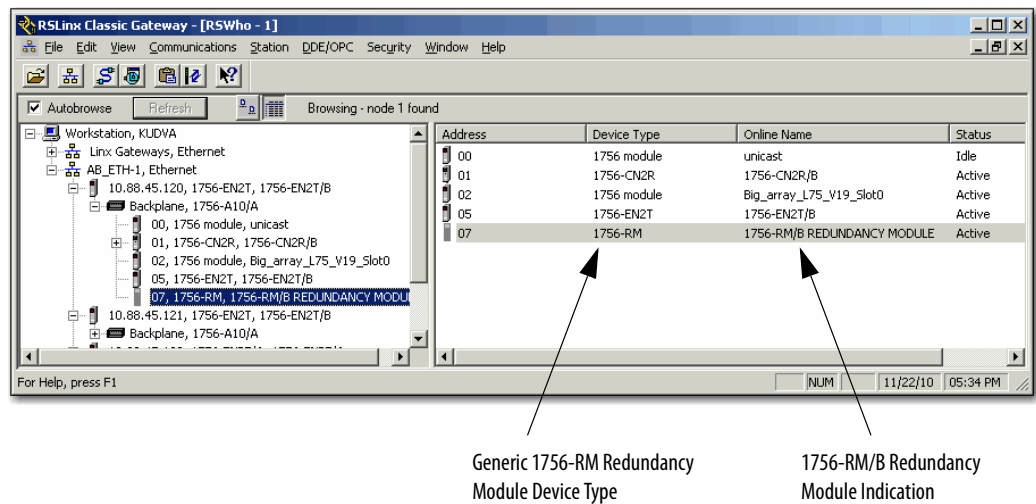
The firmware bundle available for enhanced redundancy system, revision 20.054_kit1 (or later), includes a new electronic data sheet (EDS) file for the 1756-RM2 modules and 1756-RM2XT modules. Enhanced redundancy system, revision 16.081, firmware bundles include an earlier, different EDS file for 1756-RM modules and 1756-RM2XT modules.

Failure to install the new EDS files available in enhanced redundancy system, revisions 20.054_kit1 (or later), firmware bundles prevents the use of RMCT, version 8.04.01.

1756-RM2/B modules and 1756-RM2XT/B modules appear as series A modules in the Device Type column of an RSWho browse screen. This condition occurs if you use the EDS files available with enhanced redundancy system, revision 16.081, in an enhanced redundancy system, firmware revision 20.054.

In this case, use the information in the Online Name column to identify the series level of your redundancy modules. 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 20.054_kit1 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.



Communication Interruption on EtherNet/IP Networks

Brief communication interruption occurs if the connection between RSLinx Enterprise software 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 can experience the communication delay when a switchover occurs:

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

IMPORTANT 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 are 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.

We recommend that the connection bridge between the component and a redundant chassis pair with an EtherNet/IP network to ControlNet network path, or exclusive ControlNet connection. This recommendation is valid if your application requires that the connections that are described previously are maintained during a switchover.

IMPORTANT I/O connections do not experience delays when a switchover occurs.

HMI Blind Time

After a switchover, the time between the communication (updating active data) interruption and the restoration (resumes updates) is often referred to as 'HMI Blind Time.'

Beginning with revision 20.054, HMI blind time due to switchover has been reduced.

IMPORTANT RSLinx Enterprise software version 5.50.04 is required beginning with version 20.054.

HMI blind time is dependent on several system variables. Variables that determine this length of time are as follows.

- Operating system
- Quantity and types of tags on scan in RSLinx Enterprise software
- Client screen update rates
- Number of program and controller scope tags in the redundant controller
- Controller loading that includes the following:
 - Number of tasks and scan rates (assumes no continuous task)
 - Memory usage
 - Null task percentage available
 - Network traffic

Based on testing with Windows Server 2003 software, 'HMI Blind Time' was reduced 40...80%. User results vary based on the variables that are listed previously.

Update the RSLogix 5000 Software Version

This section describes how to update your RSLogix 5000 software and, later, the software project, when the following system conditions exist:

IMPORTANT

Before you update your RSLogix 5000 software version, consider the following:

- We **strongly recommend** that you read Rockwell Automation Knowledgebase Answer ID 565204 - RSLogix 5000 Software, Version 20.03, accessible at: <http://www.rockwellautomation.com/knowledgebase/>. A login is required to access the article.
 - Updating the RSLogix 5000 software to version 20.04 is optional.
 - If desired, you can continue to use RSLogix 5000 software version 20.01.00.
 - You **cannot** install RSLogix 5000 software, **revision 20.01.00 and revision 20.03.00**, on the **same computer simultaneously**.
-

- You are using enhanced redundancy system, revisions 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.
- Your system is using RSLogix 5000 software and project, version 20.01.00.
- You want to update RSLogix 5000 software to version 20.04.
- You can take the project offline, that is, the system is not required to continue to run during the software update.

If your system must continue to run during the software update, you must use the Redundancy System Update option. This option is described on [page 48](#).

Complete the following steps to update the RSLogix 5000 software version and project in your enhanced redundancy system.

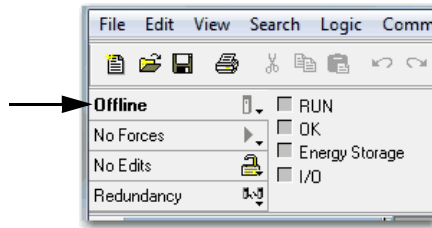
IMPORTANT

There are multiple methods available to update the RSLogix 5000 software version in your enhanced redundancy system. The specific tasks that are required vary by system configuration and requirements.

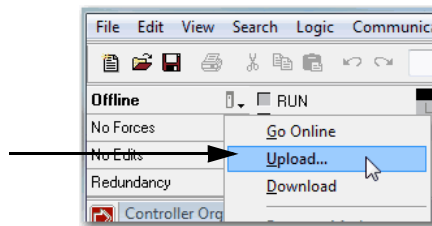
This section describes one of the methods available.

For more information on how to update your RSLogix 5000 software version, see Rockwell Automation Knowledgebase Answer ID 565204 referenced previously.

1. If your RSLogix 5000 project is online, go offline.

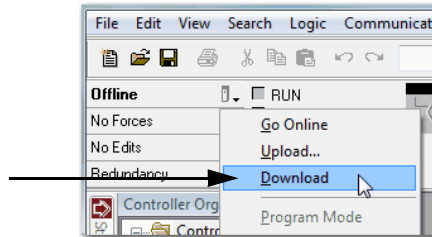


2. Update the computer to use RSLogix 5000 software, version 20.04.
3. Upload the project from the primary controller.



RSLogix converts the project to version 20.04 during the upload.

4. Save the project.
5. Download the new project to the controller.



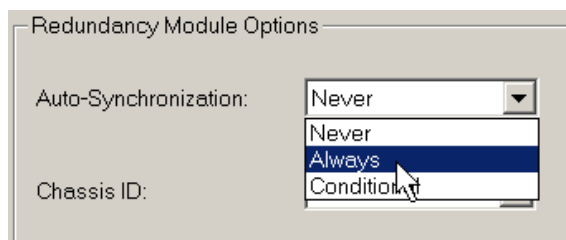
Replace a Module in the Secondary Chassis That Has the Same Catalog Number and Firmware Revision

These steps only apply when the primary chassis is at revision 20.058_kit2. These steps are used when performing a direct communication module replacement, for example, when replacing a communication module in the secondary chassis with a module that has the same:

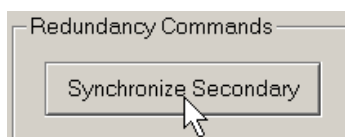
- Catalog number
- Series
- Firmware (after updating the firmware, if necessary)

When you replace communication modules, make sure that the node address (for ControlNet modules), rotary switches, and Port Configuration (for Ethernet modules) match the existing modules.

1. Using the Redundancy Module Configuration Tool (RMCT):
 - a. Set Auto-qualification to Never.
 - b. Disqualify the redundant chassis pair (if not already disqualified).
2. Remove the module from the secondary chassis and replace it with the new module.
3. If applicable, update the module firmware by using ControlFLASH.
4. In the RMCT, from the Auto-Synchronization pull-down menu, choose your preferred method.



5. Manually synchronize the chassis, if needed.



Replace 1756-EN2T, 1756-EN2TR, or 1756-EN2F Modules

This section describes how to replace ControlLogix EtherNet/IP communication modules in a ControlLogix enhanced redundancy system.

You can replace EtherNet/IP communication modules in this enhanced redundancy system as follows:

- Replace 1756-EN2T/C (or earlier) modules with 1756-EN2T/D modules.
- Replace 1756-EN2TR/B (or earlier) modules with 1756-EN2TR/C modules.
- Replace 1756-EN2F/B (or earlier) modules with 1756-EN2F/C modules.

If you want to replace the Ethernet communication module with the same catalog number and same firmware revision in the secondary chassis, then see [Replace a Module in the Secondary Chassis That Has the Same Catalog Number and Firmware Revision on page 34](#).

IMPORTANT

The following section describes the requirements and tasks that are used to replace 1756-EN2T modules with 1756-EN2T/D modules.

The same requirements and tasks apply when you replace 1756-EN2TR modules with 1756-EN2TR/C modules. The same requirements and tasks also apply when you replace 1756-EN2F/B (or earlier) modules with 1756-EN2F/C modules. The only differences are between specific catalog numbers and series levels.

For example, before replacing 1756-EN2T modules, make sure that you have installed the correct firmware on all 1756-EN2T/D modules.

The same task applies when you replace 1756-EN2TR modules. That is, before you replace 1756-EN2TR modules, make sure that you have installed the correct firmware on all 1756-EN2TR/C modules.

You can replace the 1756-EN2T modules with 1756-EN2T/D modules by using the following methods:

- [Synchronization and Switchover for the 1756-EN2T Modules](#) - Use this method if the following conditions exist:
 - The module being replaced is a 1756-EN2T module in a system revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2 and Electronic Keying is not set to Exact match.

For more information on this method, see [page 36](#).
- [Update the Firmware by Using Redundancy System Update](#) - You must use this method if either of the following conditions exist:
 - You are updating for an enhanced redundancy system, revisions 19.052, 19.053, 19.053 Oct. 2011, 19.053_kit1, 20.054 Enh, 20.054 Enh_kit1 to revision 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.

TIP

Electronic Keying = Exact Match, Compatible Module, or Disable Keying.

- The module being replaced is a 1756-EN2T module in a system revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2 with Electronic Keying set to Exact Match. You must install the AOP described in [Add-on Profile Availability on page 22](#) for the 1756-EN2T/D module to use Exact Match.

For more information on this method, see [Update the Firmware by Using Redundancy System Update on page 48](#)

IMPORTANT

Consider the following:

- Before replacing 1756-EN2T/C (or earlier) modules, make sure that you have installed the correct firmware on all 1756-EN2T/D modules.
 - When you upgrade 1756-EN2T/C (or earlier) modules to 1756-EN2T/D modules, you must do so in pairs. If not the system cannot synchronize after a switchover.
 - Partnered pairs of 1756-EN2T modules must use the same values for the following parameters for IP address swapping to work in the system:
 - IP addresses
 - Network Mask
 - Gateway address
-

Synchronization and Switchover for the 1756-EN2T Modules

You can replace 1756-EN2T modules with 1756-EN2T/D modules without using the Redundancy System Update (RSU) feature. You can only do this if the module being replaced is a 1756-EN2T module in a system at revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.

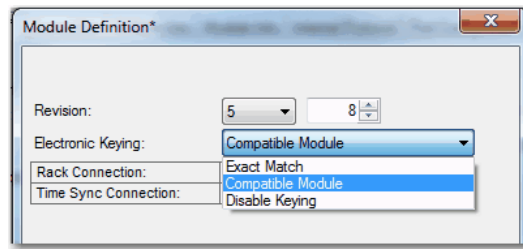
Complete these steps to replace 1756-EN2T modules with 1756-EN2T/D modules.

1. Make sure the existing module and replacement module use the same IP, Network Mask, and Gateway addresses.
2. If the Redundancy Module Configuration Tool (RMCT) is not at version 8.04.01.00, update to version 8.04.01.00.
3. If you are using a 1756-RM2 module, update the firmware to 20.09.

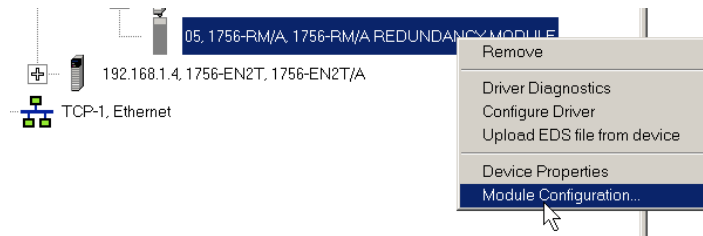
See [About the Redundancy Module Configuration Tool on page 7](#) for instructions.

4. In the RSLogix 5000 software, go online with the primary controller.

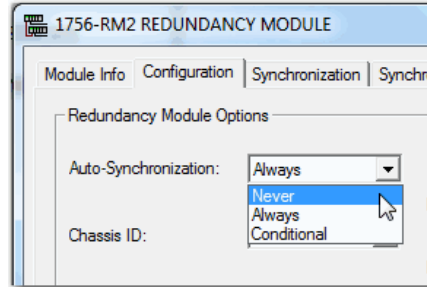
- For each module, verify that the Electronic Keying is set to Compatible Module or Disable Keying.



- In the RSLinx Classic software, start the RMCT for the 1756-RM module in the primary chassis.

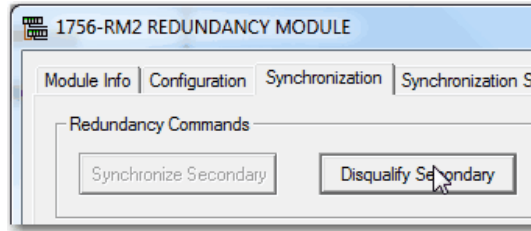


- On the Configuration tab, from the Auto-Synchronization pull-down menu, choose Never.



- Click Apply.

9. On the Synchronization tab, click Disqualify Secondary.

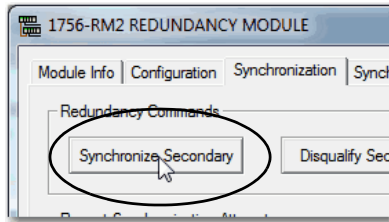


10. Make a note of the Port Configuration of the secondary Ethernet module.
 - IP Address
 - Network Mask
 - Gateway Address
11. Disconnect the Ethernet cables from the secondary Ethernet module.
12. Turn off power to the secondary chassis.
13. Remove the 1756-EN2T module from the secondary chassis.
14. Set the 1756-EN2T/D module switches to 888, insert the module in the secondary chassis, and turn on power on to the chassis.
 - a. After the reset is complete, turn power off to the secondary chassis, remove the module from the secondary chassis.
 - b. Set the switches to the same settings as on the 1756-EN2T module that was removed.
 - c. Reinsert the module into the secondary chassis, reattach the cable, and Turn on power to the secondary chassis.
 - d. Bridging across the backplane (or via the USB port of the Ethernet module), configure the Port Configuration of the secondary Ethernet module to match the Port Configuration of the Ethernet module from [step 10 on page 38](#).
 - e. If you have not already updated the firmware of the 1756-EN2T/D module, update the module to firmware revision 10.010.
15. Repeat steps [10...14](#) for all Ethernet modules in the secondary chassis.
16. Verify that the Synchronization Status tab indicates that the modules are fully compatible.

The screenshot shows a software window titled "1756-RM2/A REDUNDANCY MODULE". It has six tabs: "Module Info", "Configuration", "Synchronization", "Synchronization Status", "Event Log", and "System Update". The "Synchronization Status" tab is active. Below the tabs is a table with the following data:

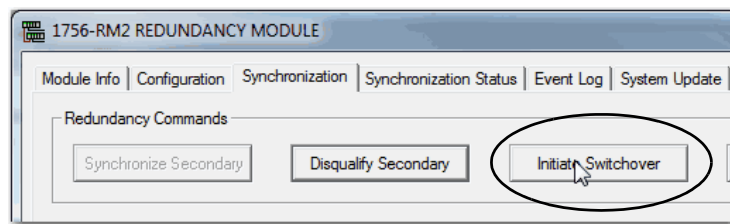
Slot	% Complete	Module Name	Module Revision	Secondary Readiness	State	Compatibility
0	100	1756-L75/B LOGIX5575	20.54	Synchronized	Primary	Full
1	100	1756-L75/B LOGIX5575	20.54	Synchronized	Primary	Full
2	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
3	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
4	100	1756-CN2R/B	20.20	Synchronized	Primary	Full
5	100	1756-CN2R/B	20.20	Synchronized	Primary	Full
6	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
7	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
8	---	<empty>	---	---	---	---
9	100	1756-EN2T/B	5.8	Synchronized	Primary	Full
10	---	<empty>	---	---	---	---
11	---	<empty>	---	---	---	---
12	100	1756-RM2/A REDUNDAN...	20.5	Synchronized	Primary	Full

17. On the Synchronization tab, synchronize the secondary chassis.



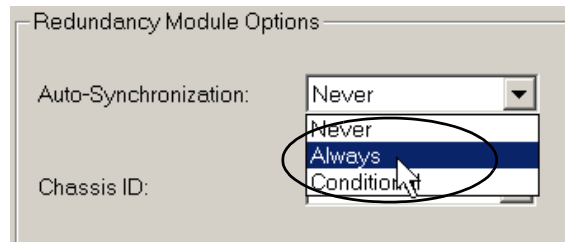
Wait for synchronization to complete.

18. Initiate a switchover.



19. Disconnect the Ethernet cables from the secondary Ethernet module.
20. Turn off power to the secondary chassis.
21. Remove the 1756-EN2T module from the secondary chassis.
22. Set the 1756-EN2T/D module switches to 888 and insert it in the secondary chassis and turn on power to the secondary chassis.
- After the reset is complete, turn power off to the secondary chassis, remove the module from the secondary chassis.
 - Set the switches to the same settings as on the 1756-EN2T module that was removed.
 - Reinsert the module into the secondary chassis, reattach the cable, and turn on power to the secondary chassis.
 - Bridging across the backplane (or via the USB port of the Ethernet module), configure the Port Configuration of the secondary Ethernet module to match the Port Configuration of the Ethernet module from [step 10 on page 38](#).
 - If you have not already updated the firmware of the 1756-EN2T/D module, update the module to firmware revision 10.010
23. Repeat the steps [19... 25](#) for all Ethernet modules in secondary chassis.

24. On the Configuration tab, from the Auto-Synchronization pull-down menu, choose Always.



25. Click Apply, Yes, and OK.
26. Verify that the secondary chassis has qualified.

Replace 1756-CN2 Modules

This section describes how to replace ControlLogix ControlNet communication modules in a ControlLogix enhanced redundancy system. You can replace ControlNet communication modules 1756-CN2/B, 1756-CN2R/B, and 1756-CN2RXT/B modules with 1756-CN2/C, 1756-CN2R/C, 1756-CN2RXT/C, or 1756-CN2RK/C modules.

IMPORTANT ControlNet Communication Modules

- References to the 1756-CN2/B modules also apply to the 1756-CN2R/B, 1756-CN2RXT/B modules.
 - References to the 1756-CN2/C modules also apply to the 1756-CN2R/C, 1756-CN2RXT/C, 1756-CN2RK/C, modules.
 - References to catalog numbers 1756-RM, 1756-RM2, 1756-RMXT, and 1756-RM2XT refer to any series of the modules.
-

IMPORTANT

The following section describes the requirements and tasks that are used to replace 1756-CN2 modules with 1756-CN2/C modules.

The same requirements and tasks apply when you replace 1756-CN2R modules with 1756-CN2R/C modules with the only differences being between specific catalog numbers and series levels.

For example, before replacing 1756-CN2/B modules, make sure that you have installed the correct firmware on all 1756-CN2/C modules.

If you must replace the ControlNet module with the same catalog number and same firmware revision in the secondary chassis, see [Replace a Module in the Secondary Chassis That Has the Same Catalog Number and Firmware Revision on page 34](#).

You can replace the 1756-CN2/B modules with 1756-CN2/C modules by using the following methods:

- [Synchronization and Switchover for the 1756-CN2/B Modules](#) - Use this method if the following two conditions are met:
 - The module being replaced is a 1756-CN2/B module that is in a system at revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.
 - If electronic keying is set to disable or compatible module.

For more information on this method, see [page 42](#).

- [Update the Firmware by Using Redundancy System Update](#) - You **must** use this method if either of the following conditions are met:
 - You are updating an enhanced redundancy system, revisions 19.052, 19.053, 19.053 Oct. 2011, 19.053_kit1, 19.053_kit2, 20.054 Enh, 20.054 Enh_kit1, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.
 - The module being replaced is a 1756-CN2/B module that is in a system at revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2 and the electronic keying set to exact match.

For more information on this method, see [page 48](#).

IMPORTANT When you upgrade 1756-CN2/B modules to 1756-CN2/C modules, you must do so in pairs. If not, the system cannot synchronize after a switchover.

Replace 1756-CN2/B modules with 1756-CN2/C modules, and 1756-CN2RXT/B modules with 1756-CN2RXT/C modules.

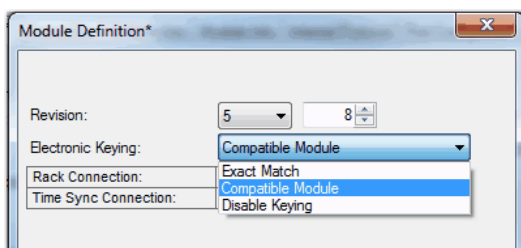
Synchronization and Switchover for the 1756-CN2/B Modules

You can replace 1756-CN2/B modules with 1756-CN2/C modules without using the Redundancy System Update (RSU) feature if the following conditions exist:

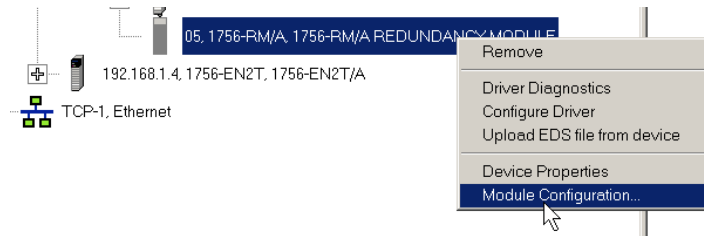
- The module being replaced is a 1756-CN2/B module that is in a system at revision 20.055_kit1, 20.055_kit2, 20.055_kit3, 20.055_kit4, 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.

Complete these steps to replace 1756-CN2/B modules with 1756-CN2/C modules.

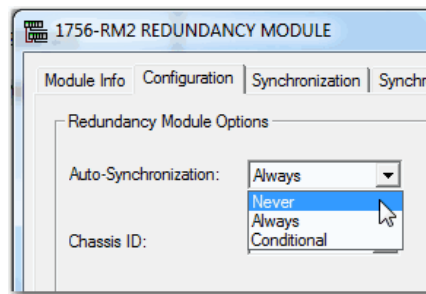
1. Add the EDS files for the Revision 25 1756-CN2/C modules, if you have not already done so.
2. Make sure the existing module and replacement module use the same ControlNet node address.
3. If the Redundancy Module Configuration Tool (RMCT) is not at version 8.04.01.00, update to version 8.04.01.00.
4. If you are using a 1756-RM2 module, update the firmware to 20.005.
5. With RSLogix 5000 software, go online with the primary controller.
6. For each 1756-CN2/B module, verify that Electronic Keying is set to Compatible Module or Disable Keying.



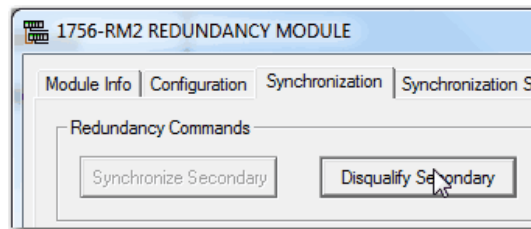
7. In the RSLinx Classic software, start the RMCT for the 1756-RM or 1756-RM2 module in the primary chassis.



- a. Start RSLinx Classic Software.
 - b. Select Communications and choose RSWho.
 - c. Open the branches of your network until you find the 1756-RM or 1756-RM2 module in the primary chassis.
 - d. Right-click the 1756-RM or 1756-RM2 module, and choose Module Configuration.
8. On the Configuration tab, from the Auto-Synchronization pull-down menu, choose Never.



9. Click Apply and then Yes.
10. On the Synchronization tab, click Disqualify Secondary and then click Yes.

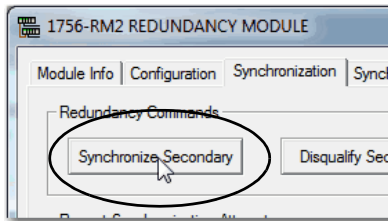


11. Turn off power to the secondary chassis.
12. Remove the 1756-CN2/B modules from the secondary chassis.
13. Make sure that the node addresses of the replacement ControlNet modules match the existing modules.
14. Insert each 1756-CN2/C module into the secondary chassis, reconnect the module to the network, and turn on power to the chassis.

15. If you have not already updated the firmware of the 1756-CN2/C modules, use the ControlFLASH update tool to update the firmware of each 1756-CN2/C module in secondary chassis.
16. Verify that the Synchronization Status tab indicates that the modules are fully compatible.

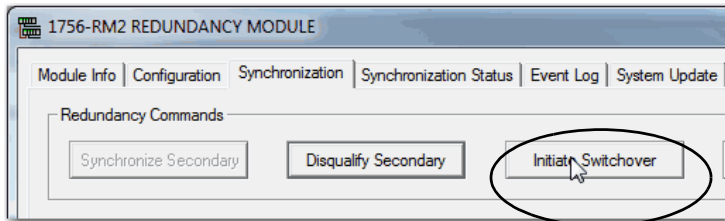
Slot	% Complete	Module Name	Module Revision	Secondary Readiness	State	Compatibility
0	100	1756-L75/B LOGIX5575	20.54	Synchronized	Primary	Full
1	100	1756-L75/B LOGIX5575	20.54	Synchronized	Primary	Full
2	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
3	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
4	100	1756-CN2R/B	20.20	Synchronized	Primary	Full
5	100	1756-CN2R/B	20.20	Synchronized	Primary	Full
6	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
7	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
8	---	<empty>	---	---	---	---
9	100	1756-EN2T/B	5.8	Synchronized	Primary	Full
10	---	<empty>	---	---	---	---
11	---	<empty>	---	---	---	---
12	100	1756-RM2/A REDUNDAN...	20.5	Synchronized	Primary	Full

17. On the Synchronization tab, synchronize the secondary chassis.



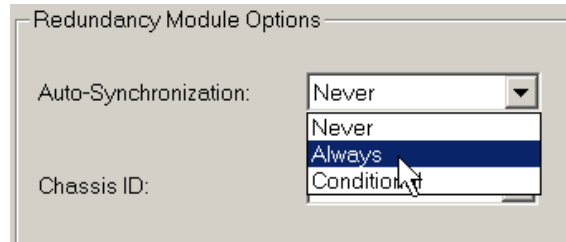
Wait for synchronization to complete.

18. Initiate a switchover.

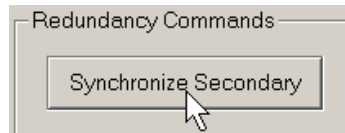


19. Turn off the power to secondary chassis and then remove the 1756-CN2/B modules from the secondary chassis.
20. Make sure to match the node address of replacing the ControlNet module with existing module.
21. Insert each 1756-CN2/C module into the secondary chassis, reconnect the module to the network, and turn on power to the chassis.
22. If you have not already updated the firmware of the 1756-CN2/C modules, use ControlFLASH to update the firmware of each 1756-CN2/C module in secondary chassis.

23. In the RMCT, from the Auto-Synchronization pull-down menu, choose your preferred method.



24. Manually synchronize the chassis, if needed.



25. Click Apply, Yes, and OK.
26. Verify that the secondary chassis has qualified.

Update the RSLogix 5000 Software Version and Replace 1756-EN2T, 1756-EN2TR, or 1756-CN2 Modules

This section describes the following for your enhanced redundancy system:

- How to update your RSLogix 5000 software
- How to update the software project
- How to replace ControlLogix EtherNet/IP or ControlNet communication modules

The process applies when the following system conditions exist:

- You are using enhanced redundancy system, revision 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.
- Your system is using RSLogix 5000 software and project, version 20.01.00.
- You want to update RSLogix 5000 software to version 20.04.00.

IMPORTANT Before you update the RSLogix 5000 software version on your computer, consider the following:

- We **strongly recommend** that you read Rockwell Automation Knowledgebase Answer ID 565204 - RSLogix 5000 Software, Version 20.04, accessible at: <http://www.rockwellautomation.com/knowledgebase/>. A login is required to access the article.
 - Updating the RSLogix 5000 software to version 20.04.00 is optional, but recommended.
 - If desired, you can continue to use RSLogix 5000 software version 20.01.00.
 - You **cannot** install RSLogix 5000 software, **revision 20.01.00 and revision 20.04.00**, on the **same computer simultaneously**.
-

- You want to perform one of the following module replacements:
 - Replace 1756-EN2T/C (or earlier) modules with 1756-EN2T/D modules
 - Replace 1756-EN2TR/B (or earlier) modules with 1756-EN2TR/C modules
 - Replace 1756-EN2F/B modules with 1756-EN2F/C modules
 - Replace 1756-CN2/B modules with 1756-CN2/C modules

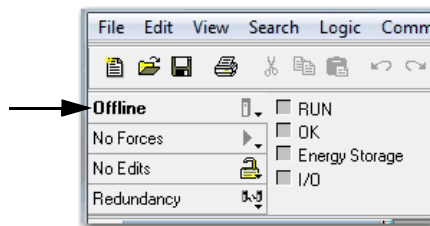
Complete the following steps to update the RSLogix 5000 software version and project in your enhanced redundancy system.

IMPORTANT There are multiple methods available to update the RSLogix 5000 software version in your enhanced redundancy system. The specific tasks that are required vary by system configuration and requirements.

This section describes one of the methods available.

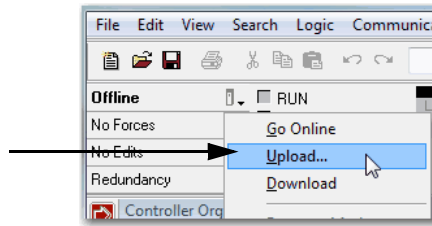
For more information on how to update your RSLogix 5000 software version, see Rockwell Automation Knowledgebase Answer ID 565204 referenced previously.

1. If your RSLogix 5000 project is online, go offline.

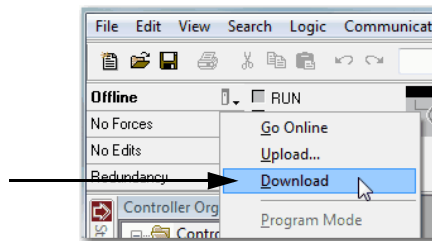


2. Update the computer to use RSLogix 5000 software, version 20.04.00.

3. Upload the project from the primary controller.



4. Convert the project to version 20.04.00 and save it.
5. Download the new project to the controllers and resume normal operation.



6. Use one of the methods that are described in [Replace 1756-EN2T, 1756-EN2TR, or 1756-EN2F Modules on page 35](#) to replace the ControlLogix EtherNet/IP communication modules.
7. Use one of the methods that are described in [Replace 1756-CN2 Modules on page 41](#) to replace the ControlLogix ControlNet communication modules.

Update the Firmware by Using Redundancy System Update

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

IMPORTANT

Remember the following before using this section:

- RSU is available when updating only from an **enhanced** redundancy system revision to another. You cannot use this process to update from a **standard** redundancy system to an enhanced redundancy system.
- You can update only from firmware revision 19.052 or later, to firmware revision 20.055, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2. Therefore, if you are not updating from ControlLogix enhanced redundancy system, revision 19.052 or later, ignore this section.
- The term 1756-RM is synonymous with 1756-RM2 in the text and graphics throughout this section.
- You must use this process if the following conditions exist:
 - You are updating from an enhanced redundancy system, to revision 20.055_kit5, 20.056_kit1, 20.057_kit1, 20.058_kit1, or 20.058_kit2.
 - Your RSLogix 5000 software project requires EtherNet/IP modules to use Electronic Keying = Exact Match.
You must install the AOP described on [page 22](#) for the 1756-EN2T/D, 1756-EN2TR/C, or 1756-EN2F/C modules to use Exact Match.

Complete the steps in this table to update your redundancy system from one **enhanced** redundancy system revision to another **enhanced** redundancy revision while your process continues to run.

Task	Page
Before You Begin	49
Update the Workstation Software	50
Update the Redundancy Module Configuration Tool	50
Verify Your RMCT Version	51
Add the EDS Files	52
Prepare the Redundant Chassis for the Firmware Update	52
Update the Primary Chassis 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware	54
Update the Secondary 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware and the Firmware of All Other Modules in the Secondary Chassis	55
Prepare the RSLogix 5000 Project for the Update	60
Lock the System and Initiate a Switchover to Update	62
Update the New Secondary Chassis Firmware	64
Synchronize the Redundant Chassis	66

Before You Begin

Consider these points before you begin updating your enhanced redundancy system to a new revision:

- During the update procedures, you cannot use RSLogix 5000 software to change the mode of the controller. Instead, use the mode switch 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 update process.
- Remember the following when completing the tasks described in the rest of this section:
 - Do not change the RSLogix 5000 project with changes other than those changes identified in these tasks.
 - Verify that no one is changing the project.
 - Do not use a FactoryTalk Batch Server to change equipment phase-states when updating your enhanced redundancy system.

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/>

Follow these steps.

1. From the Get Support Now menu, click the Downloads link.
2. Under Additional Resources, click Firmware Updates.
3. Click Control Hardware.
4. Click the 1756-Lxx Enhanced Redundancy Bundle file.
The Flash Firmware Updates window appears.
5. Enter your Serial Number.
6. Click Qualify For Update.
7. Click Finish when the Qualified For Update window appears.
8. Download the zipped file.
9. Install the Redundancy Firmware Bundle.

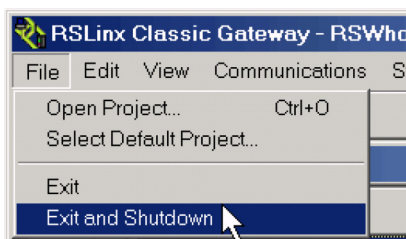
Update the Workstation Software

Before you download and update software for your redundant system, use one of these methods to shut down 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 that is required for your redundant system configuration. See [Compatible Software Versions on page 6](#) for software versions that are required for use with this enhanced redundancy system revision.

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

Update the Redundancy Module Configuration Tool

The RMCT, version 8.04.01.00, is included in the enhanced redundancy system, revision 20.058_kit1 bundle. Once this bundle is installed, you can use the RMCT, version 8.04.01.00.

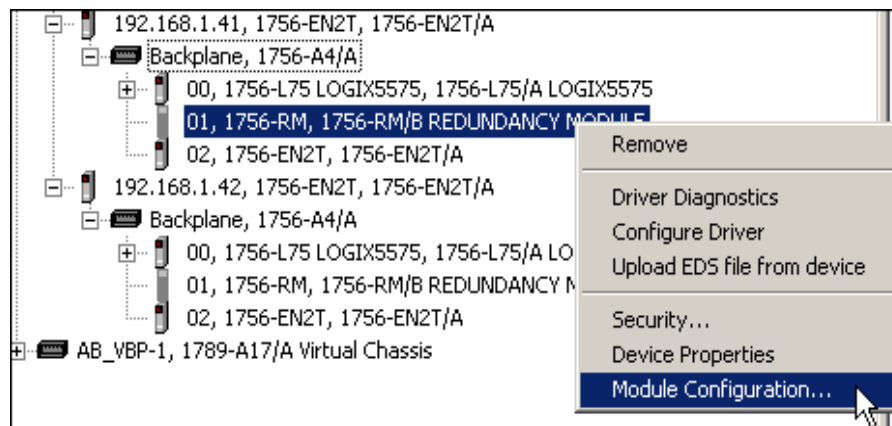
Verify Your RMCT Version

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

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

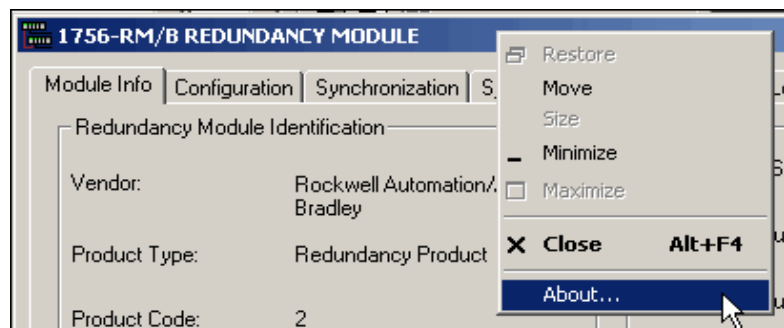


3. Right-click your redundancy module and choose Module Configuration.

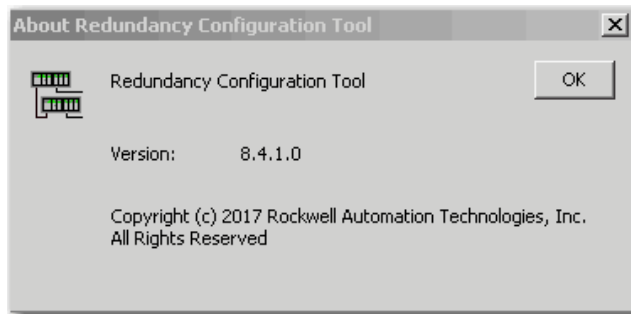


The Module Configuration dialog box opens.

4. Right-click the title bar and choose 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 installed.
- The About dialog box cannot reflect the new RMCT version. This condition occurs if you update your RMCT version but do not update your 1756-RM or 1756-RMXT redundancy module firmware revision compatible with the new RMCT version.

Add the EDS Files

If needed, obtain EDS files for modules in your system from the Rockwell Automation website at:
<http://www.rockwellautomation.com/resources/eds/>.

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

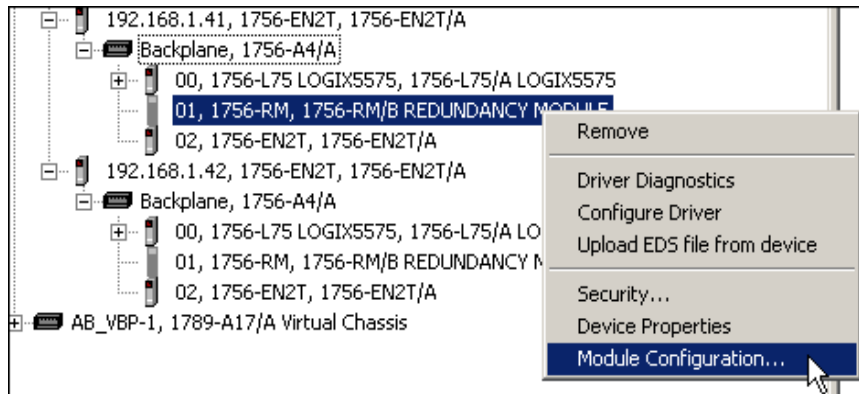
The tool then prompts you to Add or Remove EDS files.

Prepare the Redundant Chassis for the Firmware Update

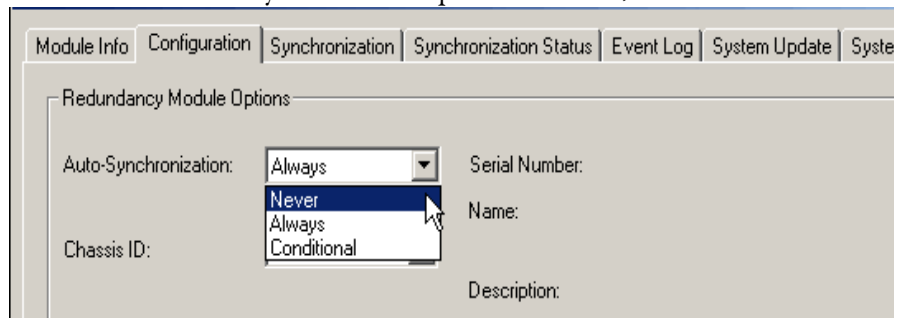
Complete these steps to prepare both the primary and secondary redundant chassis for redundancy firmware updates.

1. Set the mode switch 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 update cannot be completed.
2. Open RSLinx Classic software and browse to the redundancy module.

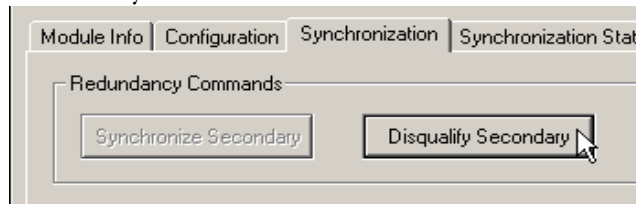
- Right-click the redundancy module and choose Module Configuration to open the RMCT.



- Click the Configuration tab in the RMCT.
- From the Auto-Synchronization pull-down menu, choose Never.

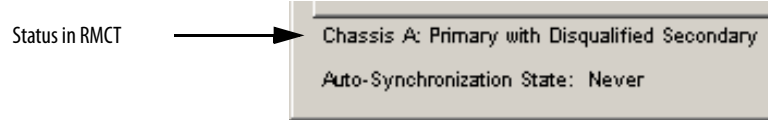


- Click Apply, and then click Yes.
- Click the Synchronization tab.



- Click Disqualify Secondary, and then click Yes.

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



9. Click OK and close the RMCT.

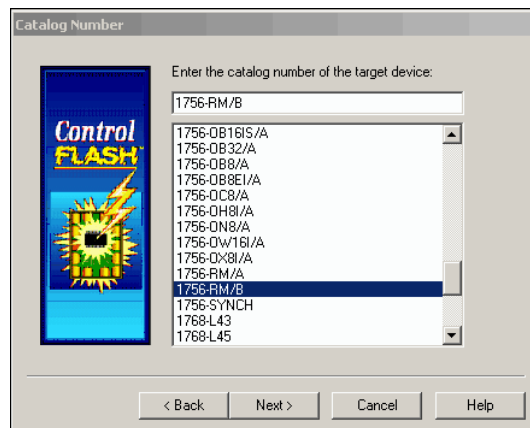
Closing the RMCT helps prevent a timeout from occurring when the firmware for the redundancy module is updated.

Update the Primary Chassis 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware

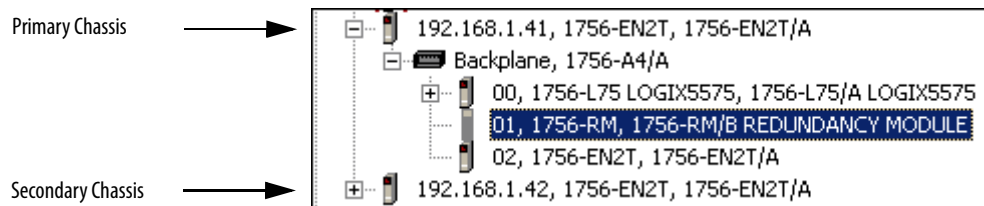
Wait at least 45 seconds before you begin updating the 1756-RM firmware. During this time, the redundancy module conducts internal operations to prepare for an update.

Complete these steps to update the firmware of the 1756-RM module in the primary chassis.

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



3. Browse to the module and select it.



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

The firmware begins to update. When the update 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 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware and the Firmware of All Other Modules in the Secondary Chassis

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

Complete these steps to update the firmware in the secondary chassis.

1. Complete the following steps for each module in the secondary chassis, including a new controller, if applicable.
2. If you are replacing or updating your module hardware, remove the module from the secondary chassis and replace it with the new module.

IMPORTANT When replacing communications modules, make sure that the node address (for ControlNet modules), rotary switches, and Port Configuration (for Ethernet modules) match the existing modules.

If you are replacing a controller, use this table to determine if your planned primary and secondary controllers can be used together in the redundant chassis.

Table 12 - 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-L71	1756-L71, 1756-L72, 1756-L73, 1756-L74, 1756-L75
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 19.052, the performance of the ControlLogix 1756-L65 controller differs from the performance of the ControlLogix 1756-L64 controller. For more information, see the ControlLogix Redundancy System User Manual, publication [1756-UM535](#).

IMPORTANT Controller compatibility is the same for the XT controllers as the standard controllers.

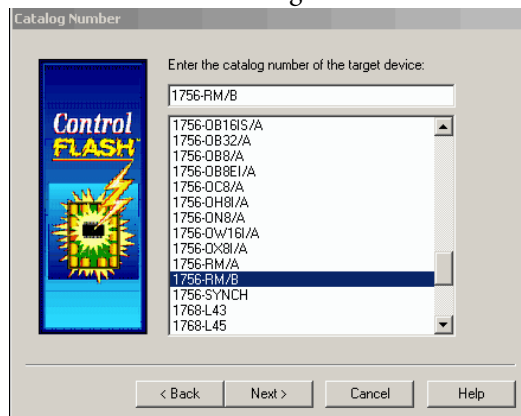
3. Consider these important steps in this table.

IMPORTANT

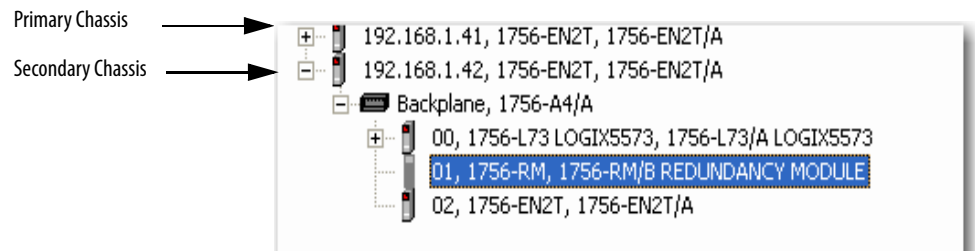
- Continue with [step 12 on page 57](#), if you are updating from a system using revision 19.052, 19.053, 19.053 Oct 2011, or 19.053_kit1, and you are either:
 - a. Updating 1756-EN2T/C (or earlier) modules with 1756-EN2T/C (or earlier) modules and the modules being replaced have rotary switches set to 2...254.
 - b. Replacing 1756-EN2T/C (or earlier) modules with EN2T/D modules, and the modules being replaced have rotary switches set to 2...254.

4. Launch ControlFLASH software and click Next.

5. Select the module catalog number and click Next.

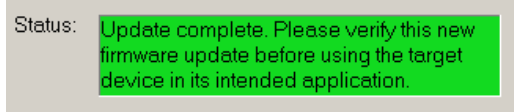


6. Browse to the module and select it.



7. Click OK.
8. Select the firmware revision to update to and click Next.
9. Click Finish.

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



10. Repeat [steps 2 ...9](#) for the next module in the chassis.
11. If this module is the last module, continue to [Prepare the RSLogix 5000 Project for the Update on page 60](#).
12. Make a note of the Port Configuration of the **primary** Ethernet module including the following:
 - IP Address
 - Network Mask

- Gateway Address

The screenshot shows the 'Port Configuration' dialog box with the following settings:

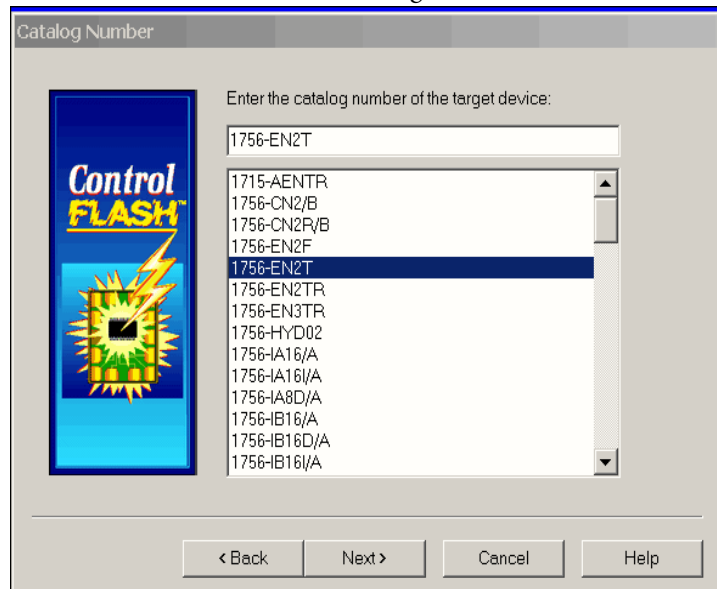
- Network Configuration Type:** Static (selected), Dynamic (unselected)
- Dynamic Options:** Use DHCP to obtain network configuration (unselected), Use BOOTP to obtain network configuration (unselected)
- IP Address:** 192 . 168 . 1 . 41
- Network Mask:** 255 . 255 . 255 . 0
- Gateway Address:** 0 . 0 . 0 . 0
- Primary Name Server:** 0 . 0 . 0 . 0
- Secondary Name Server:** 0 . 0 . 0 . 0
- Domain Name:** (empty)
- Host Name:** (empty)
- Auto-negotiate port speed and duplex:**
- Current Port Speed:** 100
- Current Duplex:** Full duplex
- Status:** Network Interface not Configured

13. Disconnect the Ethernet cables from the secondary Ethernet module.
14. If a 1756-EN2T/D module is the replacement module, then set the 1756-EN2T/D module switches to 888 and insert it in the secondary chassis.
15. After the reset is complete, remove the module from the secondary chassis.
16. If a 1756-EN2T/C module is being updated, remove the 1756-EN2T/C module from the secondary chassis.
17. Set the switches to 999 and reinsert the module into the secondary chassis.
18. Bridging across the backplane (or via the USB port of the Ethernet module), configure the Port Configuration of the **secondary** Ethernet module to match the Port Configuration of the **primary** Ethernet module from [step 12](#).

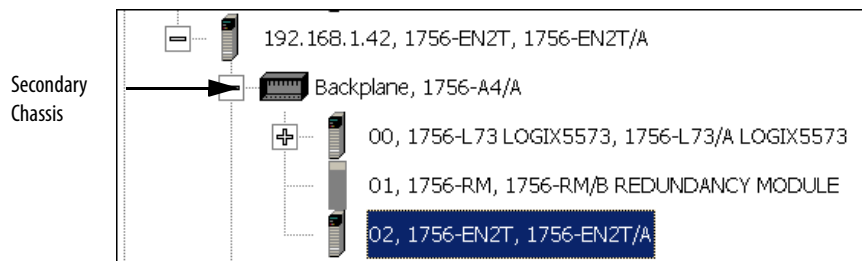
19. Confirm the **secondary** 1756-EN2T/D module is at firmware revision 10.010 or that the EN2T/C (or earlier) module is at firmware revision 5.008.

If necessary, complete the following steps to update module firmware.

- a. Launch ControlFLASH software and click Next.
- b. Select the Ethernet module catalog number and click Next.

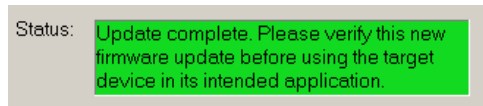


- c. Browse to the module and select it.



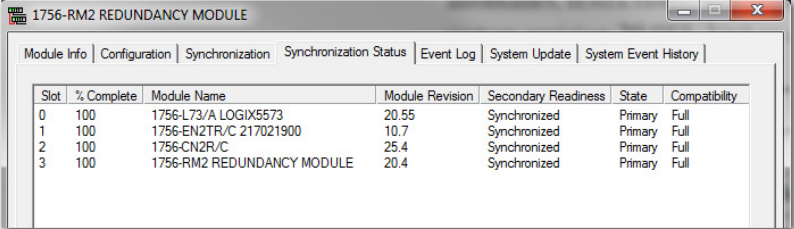
- d. Click OK.
- e. Select the firmware revision to update to and click Next.
- f. Click Finish.

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



Wait for the update to complete.

20. After the update completes, connect the Ethernet cable to the secondary Ethernet module, and wait for communication to resume on the network.
21. To verify that compatibility is Full for all communication modules in the chassis, check the Synchronization tab in the RMCT.



Slot	% Complete	Module Name	Module Revision	Secondary Readiness	State	Compatibility
0	100	1756-L73/A LOGIX5573	20.55	Synchronized	Primary	Full
1	100	1756-EN2TR/C 217021900	10.7	Synchronized	Primary	Full
2	100	1756-CN2R/C	25.4	Synchronized	Primary	Full
3	100	1756-RM2 REDUNDANCY MODULE	20.4	Synchronized	Primary	Full

22. Repeat [steps 2...21](#) for the next module in the chassis.

Once you have either replaced or updated the firmware for each module in the secondary chassis, prepare the RSLogix 5000 project for the update.

Prepare the RSLogix 5000 Project for the Update

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

1. Launch RSLogix 5000 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.

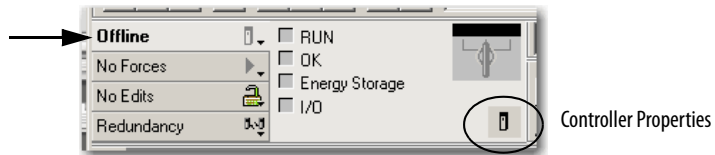
See [Minimum Value for the Watchdog Time on page 27](#) for information about how to calculate the minimum watchdog time.

3. Cancel or assemble any pending test edits.
4. Remove all sequential function chart (SFC) forces from the project.
5. Verify that no changes must 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 update is complete and both chassis are synchronized.

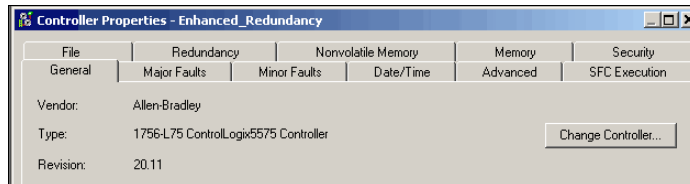
6. Configure the controllers and communication modules in the redundant chassis pair as necessary.
7. Save the project.

8. Go offline.



9. Click Controller Properties.

10. Click Change Controller.

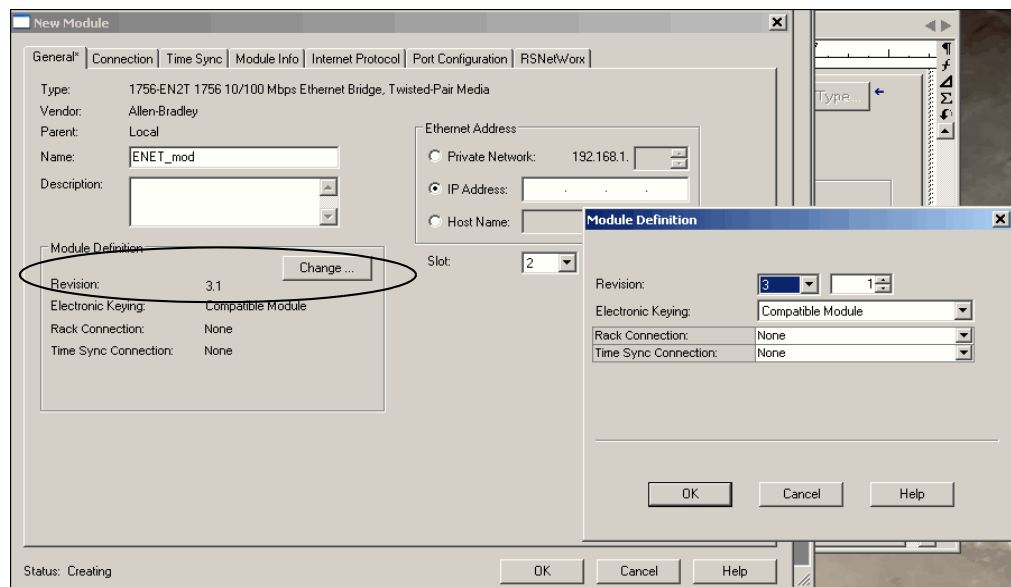


11. Specify the controller revision that you are updating to.

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

13. Click OK.

14. Access the Module Properties for each communication module in the chassis and specify the module firmware revision that you are updating to.

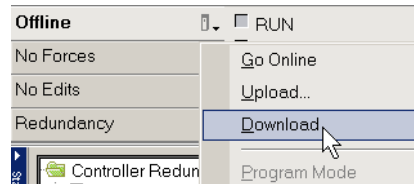


TIP

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

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

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



17. 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

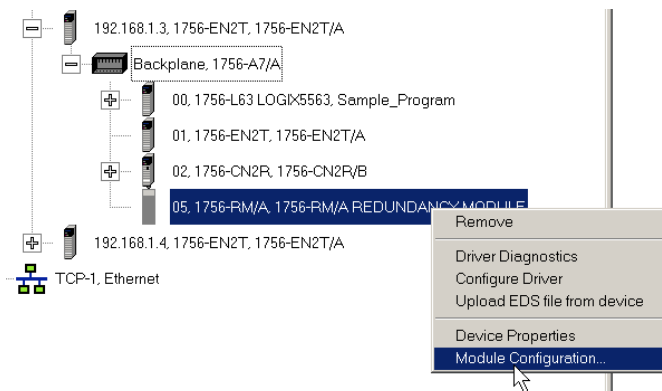
Once you have downloaded the RSLogix 5000 project you prepared, complete these steps to lock your system and initiate a switchover.

IMPORTANT

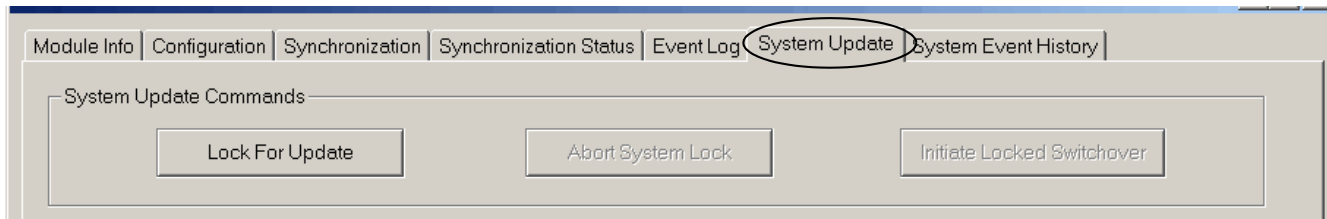
Remain offline while completing these steps.

- Once you have locked the system, do not abort the system lock. If you abort the system lock during this procedure, it clears the project from the secondary controller.
- Do not disconnect any communication cables while completing these steps.
- If you complete a locked switchover, it causes SFC instructions to be reset to their initial state. This action can result in SFC instructions executing twice.

1. In RSLinx Classic software, right-click the 1756-RM or 1756-RMXT redundancy module in the primary chassis and choose Module Configuration to open the RMCT.



2. Click the System Update tab.



3. Click Lock For Update, and then click Yes.

4. Wait for the system to lock.

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

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	—

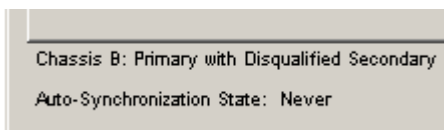
5. Click Initiate Locked Switchover, and then click Yes.



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.

Locked Switchover Attempts			
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 After 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 updated and the system is synchronized.

Update the New Secondary Chassis Firmware

IMPORTANT Update the Gateway address of the primary chassis Ethernet module to 192.168.1.1, if you are updating from a system using revision 19.052, 19.053, 19.053 Oct 2011, or 19.053_kit1, and Electronic Keying is set to Exact Match, Compatible Module or Disable Keying and you are doing one of the following:

- Updating 1756-EN2T/C (or earlier) modules with 1756-EN2T/C (or earlier) modules, and the modules being replaced have rotary switches set to 2...254
- Replacing 1756-EN2T/C (or earlier) modules with EN2T/D modules, and the modules being replaced have rotary switches set to 2...254

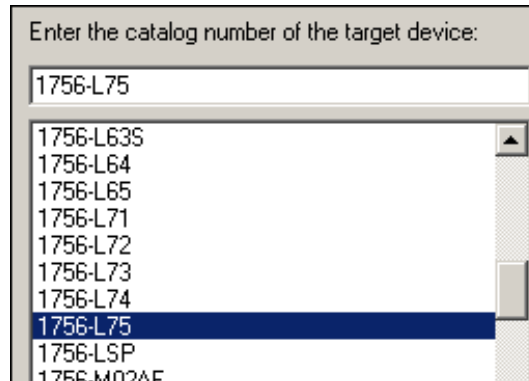
Complete these steps to update the firmware of all modules in the new secondary chassis, except for the 1756-RM or 1756-RMXT redundancy module that was already updated as described in [Update the Primary Chassis 1756-RM2, 1756-RM2XT, 1756-RM, or 1756-RMXT Redundancy Module Firmware on page 54](#).

1. If you are replacing and updating your module hardware, remove the module from the secondary chassis and replace it with the new module.

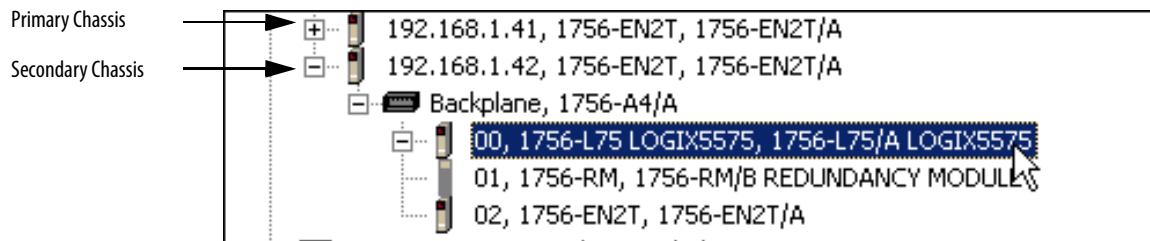
TIP When replacing communications modules, make sure that the node address (for ControlNet modules), rotary switches, and Port Configuration (for Ethernet modules) match the existing modules.

2. If it is an Ethernet module:
 - a. Make a note of the rotary switch setting on the modules that you are replacing.
 - b. Set rotary switches on the replacement module to 888 and insert the module into the chassis.
 - c. After reset completed, remove the module.
 - d. Set the rotary switches to original values that you noted in [step a](#).
 - e. Insert the module.
 - f. Go into the module properties and restore the values that you noted in [step 12 on page 57](#).
3. Launch ControlFLASH software and click Next.

4. Select the module catalog number and click Next.

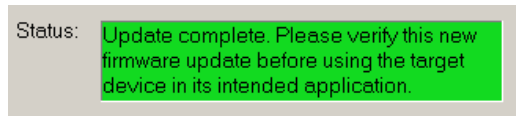


5. Browse to the module and select it.



6. Click OK.
7. Select the firmware revision to update to and click Next.
8. Click Finish.

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



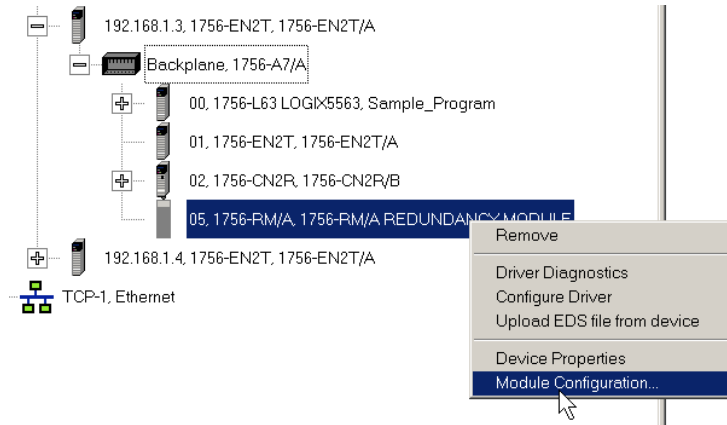
9. Complete steps 1...8 for each module in the new secondary chassis, including the new controllers, if applicable.

Once you have either replaced or updated 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 updated to the same revision.

1. In RSLinx software, right-click the 1756-RM or 1756-RMXT module in the primary chassis and choose Module Configuration to open the RMCT.

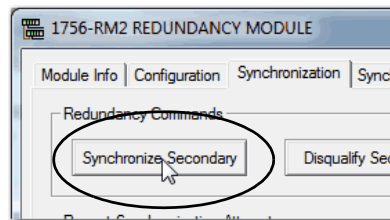


IMPORTANT

You only have to do steps 2...5 if you are updating from a system using revision 19.052, 19.053, 19.053 Oct 2011, or 19.053_kit1 and you do one of the following:

- Updating 1756-EN2T/C (or earlier) modules with 1756-EN2T/C (or earlier) modules, and the modules being replaced have rotary switches set to 2...254
- Replacing 1756-EN2T/C (or earlier) modules with EN2T/D modules, and the modules being replaced have rotary switches set to 2...254

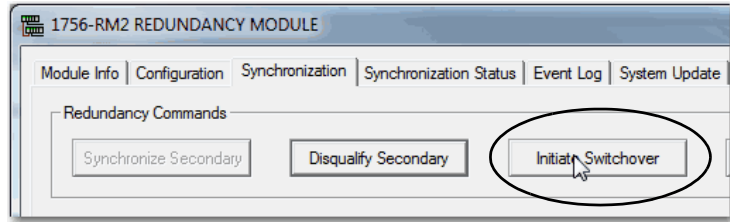
2. On the Synchronization tab, synchronize the secondary chassis.



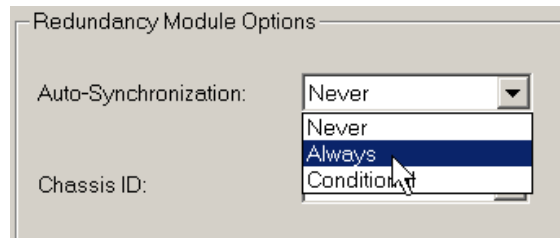
Wait for synchronization to complete.

[Steps 3...7](#) are only applicable if the Ethernet switches are set between 2...254.

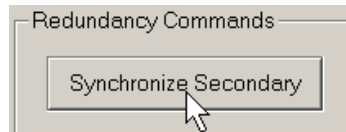
3. Initiate a switchover.



4. In the new secondary, set the rotary switches back to the original configuration.
5. Repeat this process for all Ethernet modules that need the rotary switches set back to 2...254.
6. From the Auto-Synchronization pull-down menu, choose the frequency that suits your application.



7. Manually synchronize the chassis, if needed.



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

Your redundant system firmware update is now complete.

Update IP Address Set Via Software to Address Set Via Rotary Switches

This section describes how to change EtherNet/IP address settings set by software to IP addresses set by rotary switches when your system must continue to operate during the update.

One reason to change IP address settings to the rotary switch option is if your system is experiencing a Duplicate IP address condition and IP address swapping is disabled.

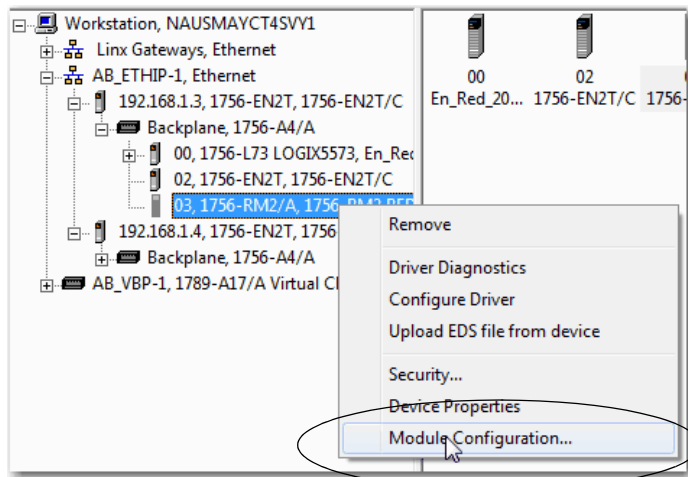
IMPORTANT

Remember the following before using this section:

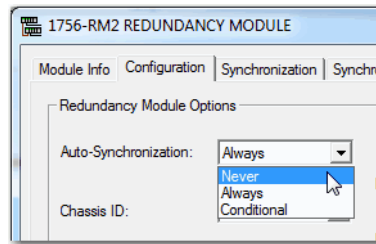
- If you are replacing 1756-EN2T/C (or earlier) modules, firmware revision 5.008 (or later), ignore this section.
- If you are replacing 1756-EN2T/D modules, ignore this section.
- You must execute this procedure before the Redundancy System Update procedure.
- **You must physically be present** at the location of the redundant chassis to do this update.
- You can update only from firmware revision 19.052 or later, to firmware revision 20.055, 20.056, 20.057_kit1, 20.058_kit1, 20.058_kit2. Therefore, if you are not updating from ControlLogix enhanced redundancy system, revision 19.052 or later, ignore this section.
- The term 1756-RM is synonymous with 1756-RM2 in the text and graphics throughout this section.

Complete the following steps.

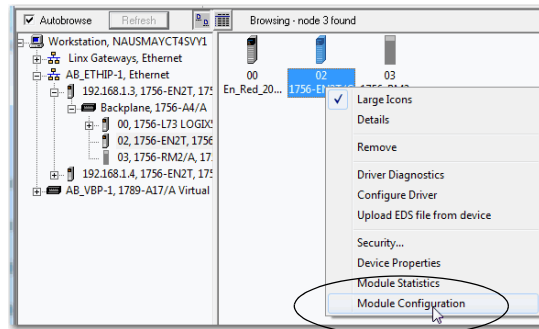
1. Open RSLinx Classic software and browse to the redundancy module.
2. Right-click the redundancy module in the primary chassis and choose Module Configuration.



3. Verify that the chassis are synchronized.
4. On the Configuration, choose Never from the Auto-Synchronization pull-down menu.

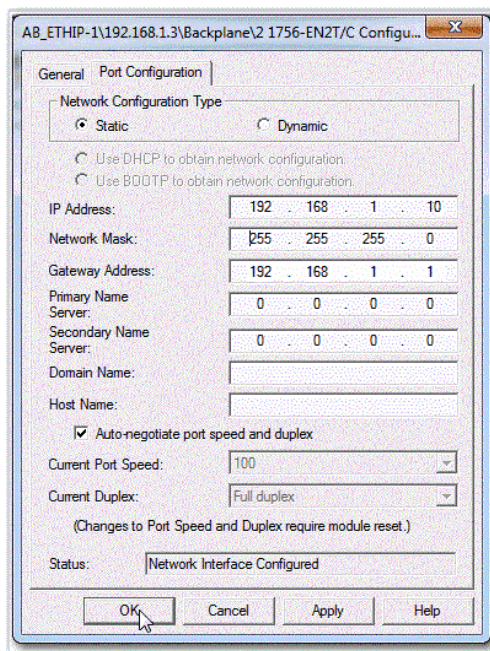


5. Click Apply, and then click Yes.
 6. Remove the secondary 1756-EN2T module from its chassis and disconnect the Ethernet cables from the module.
 7. Configure the IP address on the primary 1756-EN2T module.
- The following steps use RSLinx Classic software.
- a. Right-click the module icon and choose Module Configuration.



- b. On the Port Configuration tab, enter the desired IP address, Network Mask (if not entered automatically), and click OK.

This example uses the values in the following screen capture.



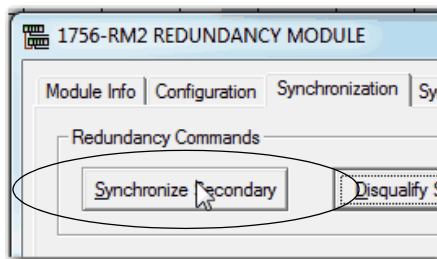
8. Set the rotary switches on the removed secondary module to 888.
9. Reinstall the module into the secondary chassis.

IMPORTANT Make sure that the module is not physically connected to the network before reinstalling it.

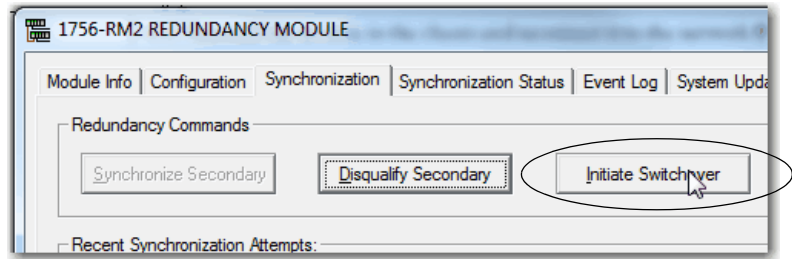
10. After the module resets, remove it again.
11. Set the rotary switches on the secondary module to the desired IP address.
12. Reinstall the module in the chassis and reconnect it to the network.

Any Duplicate IP address errors that existed previously are no longer present.

13. On the Synchronization tab in the RMCT, click Synchronize Secondary to synchronize the chassis.



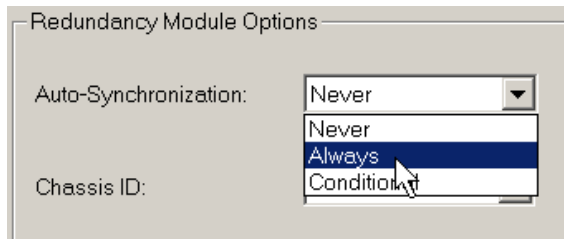
14. On the same tab, click Initiate Switchover to switch the primary and secondary chassis in the system.



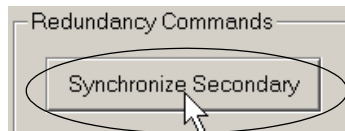
15. Remove the new secondary 1756-EN2T module from its chassis and disconnect the Ethernet cables from the module.
16. Set the rotary switches on the removed secondary module to 888.
17. Reinstall the module into the secondary chassis.

IMPORTANT Make sure that the module is not physically connected to the network before reinstalling it.

18. After the module resets, remove it again.
19. Set the rotary switches on the secondary module to the desired IP address.
20. Reinstall the module in the chassis and reconnect it to the network.
Any Duplicate IP address errors that existed previously are no longer present.
21. In the RMCT, from the Auto-Synchronization pull-down menu, choose your preferred method.



22. Verify that the chassis are synchronized. Manually synchronize the chassis, if needed.



23. Click Apply, and then click Yes.

Replace 1756-RM/B (or Earlier) Modules with 1756-RM2 Modules

You can replace your current redundancy modules with 1756-RM2 modules without initiating a switchover.

TIP For the following steps, 'redundancy modules' refers to 1756-RM or 1756-RM/B modules.

Before executing these steps, review [Table 1](#) and [Table 2](#).

- [Required Series and Firmware Revisions for Components Used in an Enhanced Redundancy System, Revision 20.058_kit2 on page 3](#)
- [Required Software Versions for Enhanced Redundancy System, Revision 20.058_kit2 on page 6](#)

1. Install the compatible version of the RMCT software.
You must shut down RSLinx Classic software to install the software, and then restart RSLinx Classic software after the installation is complete.
2. On the RMCT Configuration tab, from the Auto-Synchronization pull-down menu, choose Never.
3. Disqualify the redundant chassis pair (if not already disqualified) by using the RMCT.
4. Unplug the fiber cable on both of the redundancy modules.
5. Close any open RMCT sessions that are connected to the current redundancy modules that are being replaced.
6. Remove the redundancy module pair (in any order) from the redundant chassis.
7. Insert the 1756-RM2 redundancy module pair (in any order) in the redundant chassis into the same slots as the redundancy modules.
8. If not already installed, use RSLinx Classic software to upload the EDS file for the 1756-RM2 module.

If needed, obtain the EDS file for the 1756-RM2 module. Right-click the module in RSWho and choose 'Upload EDS file from device'.

9. Update the primary and secondary 1756-RM2 modules to the appropriate firmware revision.
10. Reconnect the fiber cable on either CH1 or CH2 of the 1756-RM2 redundancy module.
11. Optional: Connect a second fiber cable on the remaining channel for fiber redundancy.
12. Wait for at least 45 seconds after connecting the fiber cables.
13. Launch the RMCT again for the newly installed 1756-RM2 modules.
14. On the RMCT Configuration tab, from the Auto Synchronization pull-down menu, choose your original value.

15. Synchronize the system again (if it is not already qualified) by using the RMCT.

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

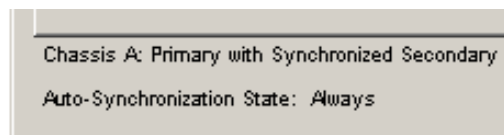
This section describes how to store a project to a nonvolatile memory card in a secondary controller without interrupting your process.

IMPORTANT We recommend that you store the same project on the nonvolatile memory cards of both controllers. By doing so, 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 the nonvolatile memory cards of both controllers, 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 in this procedure.

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

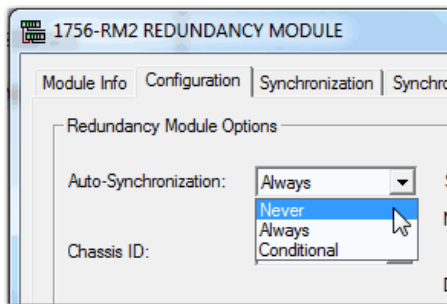
1. Verify that the redundant chassis are synchronized.



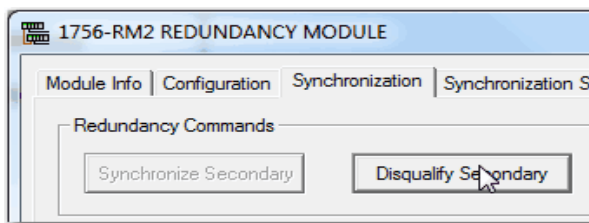
If the redundant chassis are not synchronized, synchronize them before continuing with the next step.

2. In the RMCT, click the Configuration tab.

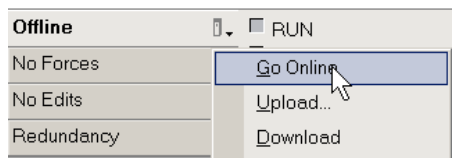
- From the Auto-Synchronization pull-down menu, choose Never.



- Click Apply, and then click Yes.
- On the Synchronization tab, click Disqualify Secondary.



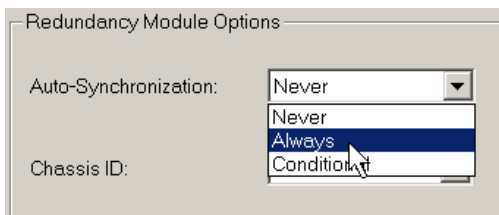
- In RSLogix 5000 software, go online with the secondary controller.



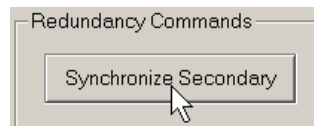
- Use the steps that are described in the Logix 5000 Controllers Nonvolatile Memory Card Programming Manual, publication [1756-PM017](#), to store the project.

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

- In the RMCT, from the Auto-Synchronization pull-down menu, choose your preferred method.

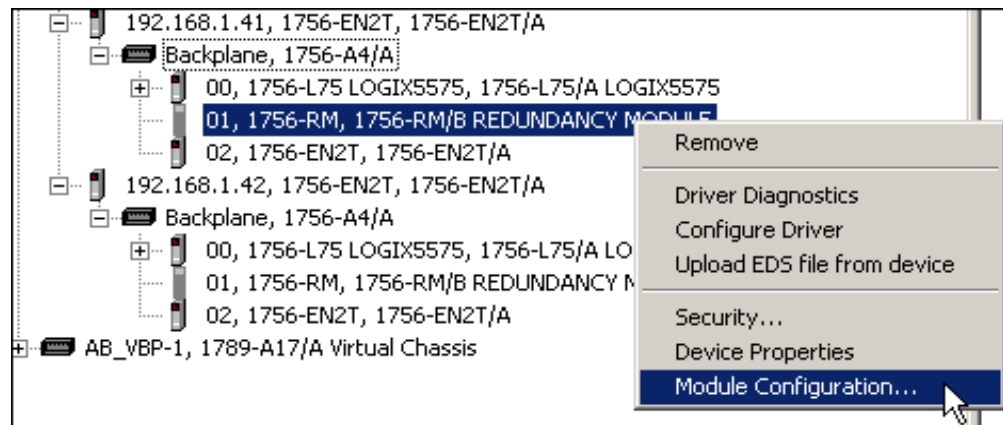


9. Depending on your Auto-Synchronization setting, manually synchronize the chassis if needed.

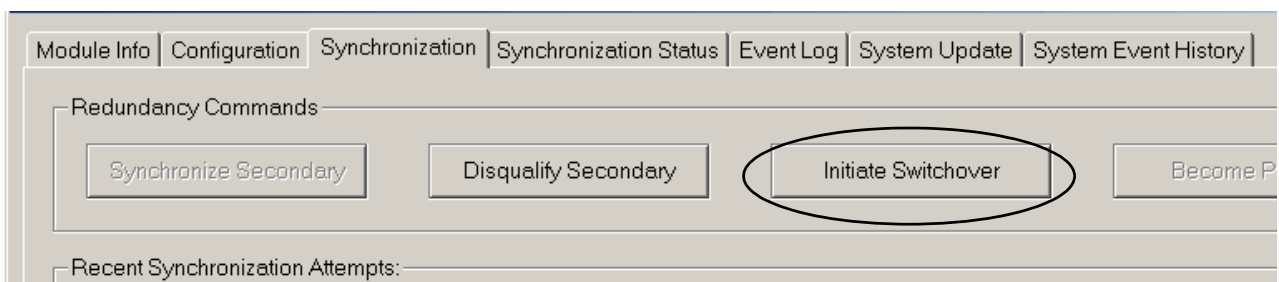


If you do not need to store the project to the nonvolatile memory card in the primary controller, you are done.

10. If you want to store the project to the nonvolatile memory card of the primary controller, execute a switchover as described in these steps.
- a. In RSLinx Classic software, right-click the 1756-RM module and choose Module Configuration to open the RMCT for the **primary** redundancy module.

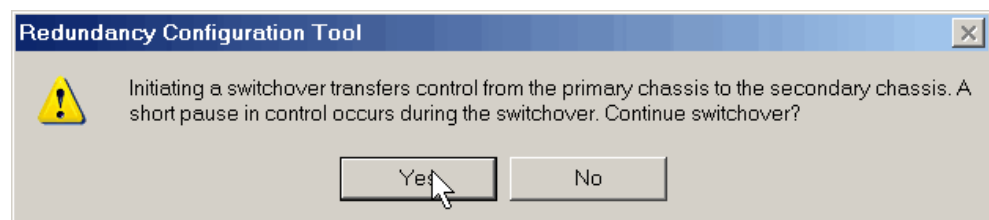


- b. Click the Synchronization tab.
- c. Click Initiate Switchover.



The Redundancy Configuration Tool dialog box opens.

11. Click Yes.



Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
ControlFLASH Firmware Upgrade Kit User Manual, publication 1756-UM105	Contains information on how to update device firmware.
ControlLogix Controllers, Revision 18 Release Notes, publication 1756-RN018	Describes enhancements, anomalies, and restrictions for ControlLogix and GuardLogix® controllers, revision 18.
ControlLogix Redundancy User Manual, publication 1756-UM535	Provides design, installation, and troubleshooting information specific to the enhanced redundancy system.
ControlLogix System User Manual, publication 1756-UM001	Contains information on how to install, configure, program, and operate a ControlLogix system.
FactoryTalk Batch PhaseManager™ User's Guide, publication BATCHX-UM011	Provides instruction for PhaseManager, FactoryTalk Batch, and RSLogix 5000 software to develop a batch automation system by using phase logic for Logix 5000 controllers.
Integrated Architecture and CIP Sync Configuration Application Technique, publication IA-AT003	Explains CIP Sync technology and how you can synchronize clocks within the Rockwell Automation Integrated Architecture.
Logix 5000 Controllers Nonvolatile Memory Card Programming Manual, publication 1756-PM017	Describes how to access and use a memory card in Logix 5000 controllers.
PhaseManager User Manual, publication LOGIX-UM001	Provides details about PhaseManager software and includes details about tags that are associated with the PHASE data type.
Using ControlLogix in SIL 2 Applications Safety Reference Manual, publication 1756-RM001	Describes typical SIL 2 implementations using ControlLogix equipment.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.
Rockwell Automation Technical Support Knowledgebase, available at http://www.rockwellautomation.com/knowledgebase/	Provides details about how to assemble and mount the controller, how to update firmware, and controller technical specifications.

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

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware and release notes.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help 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.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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