CHAPTER 4

Validation

This chapter, which documents the testing performed on the lightly managed IES, includes the following major topics:

- System Validation Coverage, page 4-1
- System Validation Results, page 4-2

The scope of the validation for this CRD is limited compared to the extensive Cisco Validated Design process typically performed by the Cisco and Rockwell Automation subject matter authorities. The scope of testing is more narrowly focused on the lightly managed IES itself, and to a limited degree, the directly attached devices. All testing was performed in the full CPwE test lab which is a comprehensive end-to-end architecture, and the testing documented here should be viewed as an extension to the existing collection of CPwE architectures.

System Validation Coverage

Test coverage of the lightly managed IES was divided into the four areas described below:

- **Manageability**—Configuration and validation of all basic features of the lightly managed IES via the web based GUI, including port settings, VLANs, EtherChannel and MSTP.
- **Connectivity**—Validate basic connectivity through the lightly managed IES, including ping (ICMP), CIP IACS device discovery and multicast.
- **Availability**—Validate MSTP convergence time, EtherChannel member link failure and QoS Priority Port feature.
- **Security**—Validate basic security related features including SSH access to CLI for troubleshooting and port security. Note that the CLI is limited to read-only operations for troubleshooting purposes—all configuration is done through the graphical Device Manager interface.

System Validation Results

Table 4-1 lists the proof of concept test cases executed as well as their results.

Table 4-1 PoC Test Cases

Test Area	Test Case	Result	Notes
Manageability	Configure VLANs via Web GUI	Passed	
	Configure port settings via Web GUI	Passed	
	Configure MSTP via Web GUI	Passed	
	Configure EtherChannel via Web GUI	Passed	
Connectivity	Ping across connected to other IES in ring topology	Passed	
	Discover EtherNet/IP (CIP) IACS devices using RSLinx	Passed	
	Verify multicast traffic sent through IES with two uplink in EtherChannel	Passed	
	Verify multicast traffic sent through IES with single uplink	Passed	
Availability	Verify and characterize MSTP convergence	Passed	Average convergence time with MSTP was 1337 ms.
	Verify and characterize EtherChannel member link failure behavior	Passed	Average packet loss was 0.01% packet loss during link failure.
	Verify QoS Port Priority feature	Passed	
Security	Verify SSH access for troubleshooting, limited CLI commands	Passed	
	Verify port security functionality	Passed	