

Preface

Converged Plantwide Ethernet (CPwE) is a collection of tested and validated architectures that are developed by subject matter authorities at Cisco and Rockwell. The testing and validation follow the Cisco Validated Design (CVD) and Cisco Reference Design (CRD) methodologies. The content of CPwE, which is relevant to both operational technology (OT) and informational technology (IT) disciplines, consists of documented architectures, best practices, guidance and configuration settings to help manufacturers with the design and deployment of a scalable, reliable, secure and future-ready plant-wide industrial network infrastructure. CPwE can also help manufacturers achieve cost reduction benefits using proven designs that can facilitate quicker deployment while helping to minimize risk in deploying new technology.

Expanding on the existing collection of CPwE CVDs, this CPwE CRD outlines key requirements and design considerations to help with the successful design and deployment of lightly managed industrial Ethernet switches (IES) in the Cell/Area Zone and sub-zones for connecting Industrial Automation and Control Systems (IACS) devices. Lightly managed IES are ideal for use in the manufacturing industry in several key scenarios, including OEM process skids and OEM machines. In these and similar use cases, a lightly managed IES provides easily replicable configurations to maintain many CPwE CVD networking best practices including segmentation, security and resiliency.

Document Organization

This document is composed of the following chapters and appendices.

Chapter/Appendix	Description
CPwE Architecture	Introduces the CPwE architecture and provides a closer look at the how sub-zones in the Cell/Area Zone are important in the OEM machine, skid and equipment builders.
Lightly Managed IES in the Sub-Zone	Describes feature highlights, available configurations and network considerations, and provides a comparison to fully managed switches.
Integrating Lightly Managed IES into the CPwE Architecture	Describes the basic configuration settings for the recommended deployment scenario for a lightly managed IES.
Validation	Describes the testing performed on the lightly managed IES.
References	Links to documents and websites that are relevant to the OEM Networking within a Converged Plantwide Ethernet Architecture CRD.
Acronyms and Initialisms	List of acronyms and initialisms used in this document.
About the Cisco Validated Design (CVD) Program	Describes the Cisco Validated Design (CVD) process and the distinction between CVDs and Cisco Reference Designs (CRDs).

Audience

The main intended audience for this document are engineers and technicians at original equipment manufacturers (OEM) machine, skid and equipment builders looking for guidance in using lightly managed industrial Ethernet switches (IES) on their equipment, and integrating into the larger CPwE architecture. Readers should already be familiar with the CPwE architectures.

Document Objective and Scope

This document briefly discusses the CPwE architecture and then focuses on the Cell/Area Zone, and sub-zones where important design and implementation considerations are examined and explained. This document is not intended to be an exhaustive analysis of every feature and option available, but instead is designed to highlight the most important capabilities of the Cisco Industrial Ethernet 1000 (IE 1000) and Allen-Bradley® Stratix® 2500 series lightly managed IES and how they relate to the CPwE architecture.

For More Information

More information on CPwE Design and Implementation Guides can be found at the following URLs:

- Rockwell Automation site:
 - <http://www.rockwellautomation.com/global/products-technologies/network-technology/architectures.page?>
- Cisco site:
 - http://www.cisco.com/c/en/us/solutions/enterprise/design-zone-manufacturing/landing_ettf.html

**Note**

This release of the CPwE architecture focuses on EtherNet/IP™, which uses the ODVA Common Industrial Protocol (CIP™) and is ready for the Industrial Internet of Things (IIoT). For more information on EtherNet/IP, see [odva.org](http://www.odva.org) at the following URL:

- <http://www.odva.org/Technology-Standards/EtherNet-IP/Overview>