

Preface

The *Converged Plantwide Ethernet (CPwE) Design and Implementation Guide* represents a collaborative development effort from Cisco Systems and Rockwell Automation. It is built on, and adds to, design guidelines from the Cisco Ethernet-to-the-Factory (EttF) solution and the Rockwell Automation Integrated Architecture™. The CPwE solution is designed for industrial Ethernet applications. Although CPwE is applicable to multiple industries, this *Design and Implementation Guide (DIG)* focuses on the manufacturing industry.

For more information about the EttF solution, refer to the following URL:

<http://www.cisco.com/en/US/docs/solutions/Verticals/EttF/EttFDIG.html>

For more information about the Rockwell Automation Integrated Architecture, refer to the following URL:

<http://www.ab.com/networks/architectures.html>

Document Organization

The CPwE DIG contains the following chapters and appendices:

Chapter or Appendix	Description
Chapter 1, "Converged Plantwide Ethernet Overview"	Provides an overview of the business need, justification, benefits, and features of the Cisco and Rockwell Automation joint CPwE solution.
Chapter 2, "Converged Plantwide Ethernet Solution"	Provides an overview of the Converged Plantwide Ethernet (CPwE) solution architecture, which describes the various systems, components, and their relation to each other to provide context to the networking function and technical requirements.
Chapter 3, "CPwE Solution Design—Cell/Area Zone"	Describes the key requirements and technical considerations for the Cell/Area zone and related Industrial Automation and Control System (IACS) applications.

Chapter or Appendix	Description
Chapter 4, “CPwE Solution Design—Manufacturing and Demilitarized Zones”	Provides an overview and basic design considerations for the Manufacturing and Demilitarized zones of the CPwE architecture.
Chapter 5, “Implementing and Configuring the Cell/Area Zone”	Describes the configurations and configuration options to implement the recommendations and best practices described in Chapter 3, “CPwE Solution Design—Cell/Area Zone.”
Chapter 6, “IACS Network Security and the Demilitarized Zone”	Describes the network security for the IACS network protecting the systems, applications, infrastructure, and end-devices.
Chapter 7, “Testing the CPwE Solution”	Describes the test plans and environment used to validate the key concepts outlined in the CPwE solution.
Chapter 8, “CIP Motion”	Describes the implementation of CIP Motion on EtherNet/IP and extends the design recommendations described in Chapter 3, “CPwE Solution Design—Cell/Area Zone” and Chapter 5, “Implementing and Configuring the Cell/Area Zone.”
Chapter 9, “CIP Sync Sequence of Events”	Describes the implementation of CIP Sync time synchronization on EtherNet/IP and extends the design recommendations described in Chapter 3, “CPwE Solution Design—Cell/Area Zone,” and Chapter 5, “Implementing and Configuring the Cell/Area Zone.”
Chapter 10, “DHCP Persistence in the Cell/Area Zone”	Describes the implementation of Dynamic Host Configuration Protocol (DHCP) persistence on an EtherNet/IP network.
Appendix A, “Key Terms and Definitions”	Lists and defines the key terms used in this DIG.
Appendix B, “Test Result Analysis”	Provides comparison and analysis of the test results in Appendix C “Complete Test Data.”
Appendix C, “Complete Test Data”	Provides the data generated from the CPwE solution testing.
Appendix D, “Configurations”	Provides configurations for key components of the CPwE solution.
Appendix E, “Reference Documents”	Lists reference documents for additional information.