

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# CIP Virtualization Overview

Project 2016-02 – CIP Modifications

CIP SDT Members  
March, 2020

**RELIABILITY | ACCOUNTABILITY**



- Virtualization Overview
- Clarification for Permitted Architectures
- Additional Capabilities Enabled
- CIP Standards Impact

- What is Virtualization?
  - Comparison to the Interconnected BES
- Reliability Benefits
- Security Benefits

# Clarification for permitted architectures

Hypervisors are the EMS of Virtualized infrastructure

- What is a Hypervisor?
- Benefits of Hypervisors
- Challenges for CIP Compliance
- Changes Made

Virtual Machines are a now “Form” of computing

- What is a Virtual Machine?
- Benefits of Virtual Machines
- Challenges for CIP Compliance
- Changes Made

Containers are an even newer “Form” of computing

- What is a Container?
- Benefits of Container
- Challenges for CIP Compliance
- Changes Made

## What do Super ESPs have to do with Virtualization?

- What is a Super ESP?
- Benefits of Super ESP
- Challenges for CIP Compliance
- Changes Made



## Management of the infrastructure, like Dispatch

- What is a:
  - Management System?
  - Management Interface?
  - Management Module?
- Benefits of Management Systems
- Challenges for CIP Compliance
- Changes Made

# Additional Capabilities Enabled

## Enhanced and Automated Access Control through Zero Trust

- What is Zero Trust?
- Benefits of Zero Trust
- Challenges for CIP Compliance
- Changes Made

## Hardware and Software Reduction through Logical Isolation and common trust levels

- What can be reduced?
- Benefits of Hardware and Software Reduction
- Challenges for CIP Compliance
- Changes Made

## Automated control and compliance through Network Access Control

- What is a Network Access Control?
- Benefits of Network Access Control
- Challenges for CIP Compliance
- Changes Made

- Technical Standards impact:
  - CIP-005 – biggest impact
  - CIP-007 – minor impact
  - CIP-010 – moderate impact
- Definitions
- Conforming changes to other Standards

- Drafting Technical Rationale and Implementation Guidance for each:
  - CIP-005
  - CIP-007
  - CIP-010
- Virtualization and Future Technologies –  
What's in it for me V2 (soon to be released)

- Weekly Conference Calls – Thursdays 3:00 – 5:00 p.m. eastern



A stylized map of North America, including the United States, Canada, and Mexico. The map is rendered in shades of blue and grey. A horizontal band of medium blue color passes behind the map, serving as a background for the title text.

# Questions and Answers

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