




## IEC 61850 LAN Design and Testing

 2 days

 English

 Cpuc04en

Ethernet is considered a fast, reliable, and scalable local area (LAN) technology that is becoming the predominant LAN technology within electrical substations. Through a combination of lectures and instructor demonstration lab exercises, this course presents the fundamentals of Ethernet to allow students to understand and correctly apply this LAN technology within the digital substation.

### Objectives

- ▶ Understand the requirements of an IEC 61850 OT Ethernet LAN
- ▶ Understand the fundamentals of ethernet LAN operation
- ▶ Understand the fundamentals of the design, configuring, and testing of an ethernet LAN to verify the LAN meets the requirements of digital substation applications.

### Content

- ▶ Modern ethernet media
- ▶ Hub and switch operation
- ▶ Key features of managed switch web-based Interfaces
- ▶ The ethernet frame
- ▶ Switch learning
- ▶ Network redundancy (RSTP, PRP, HSR)
- ▶ MMS, GOOSE, and SV filtering using VLANs
- ▶ Data flows or “Virtual Wiring” and switch logic
- ▶ Introduction to PTP
- ▶ Introduction to testing sampled values relays with an OMICRON CMC test set
- ▶ Instructor Demonstration Lab exercises

### Solutions

DANEO 400  
IEDScout  
StationScout  
Quick CMC  
CMC GOOSE module  
CMC IEC 61850 Client/Server module

### Audience

Technical staff from electric utilities or companies involved in project planning, commissioning, or maintenance of IEC 61850 systems.

### Prerequisites

Basic knowledge of electrical engineering