GE
Grid Solutions

Industrial Communications MDS

Product Training & Certification 2021

User Guide

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MDS Product Training & Certification 2021– User Guide - Version: 1.0

Industrial Communications Courses

GE's Industrial Communications training is offered in two levels, a 2-day basic product training or a 5-day certification Training. Training can be held at our factory, on-site in your facility, or virtually.

Factory Training	Customer Site Training	Virtual Training
GE provides training at our training center in Rochester NY. GE's training provides customers with high-quality knowledge to be safe, efficient and successful in configuring, deploying, and operating their communication networks.	To increase the number of employees who can benefit from training, GE MDS Technical Training offers the option of conducting training courses in person at customer facilities. These on-site courses can be customized to a specific product or a range of products.	Virtual courses enable additional employees to participate in GE training sessions remotely, all while maintaining training effectiveness by making available demo equipment for a hands-on experience. GE virtual training can be customized to meet customer needs.

Orbit MCR & ECR Product Training {no master station products}

- Managed Connected Router (MCR – larger form factor)
- Edge Connected Router (ECR – smaller form factor)
- (Cellular & Wi-Fi Emphasis)

MDS Orbit Platform (2 Days)

Day 1 - Networking Basics, Wireless Basics, Introduction to MDS Orbit Platform

Day 2 – XML “display set”, Orbit NICs, Orbit Bridging, MCR-900/LN Basics, Cell Interface, Wi-Fi Interface, SIM Options, DNS, Firewall Basics, Basic Routing

MDS Orbit Platform Advanced Certification (5 Days)

Day 3 - Terminal Server/Serial Service, DDNS, VLANs, Creating VLANs, Configuring Interfaces, Configuring Firewall, Port Forwarding, Quality of Service (QoS), Prioritization, Fairness, Traffic Shaping, Dynamic Routing, RIPv2, OSPF

Day 4 - Security: Firewall, Tamper Detection Configuration, Radius User Authentication, OTP and Admin/Tech/Operator Password, 802.1x Certificate Management, Securing Nx-900 and LN: PSK: AES-128/256, EAP: RADIUS w/ 802.1x Certificates, Securing Cell: IPSec VPN Tunnel, Dynamic VPN, Static NAT (1:1 NAT), GRE, IP/GRE, Ethernet/GRE

Day 5 - Point to Multipoint Serial Over Cell, Interface Failover/Failback, Summary of Topics Covered throughout the Week, Written Exam, 80% Pass required for Certification.

Master Station with Orbit Remote Product Training

- Master Station (MPRL – Licensed Narrowband, MPRU – Unlicensed 900 MHz)
- Managed Connected Router (MCR – larger form factor)
- Edge Connected Router (ECR – smaller form factor)
- Emphasis on Licensed Narrowband (LN) and Unlicensed 900 MHz (NX915)

MDS Orbit Platform (2 Days)

Day 1 - Networking Basics, Wireless Basics, Introduction to MDS Orbit Platform

Day 2 – XML “display set”, Orbit NICs, Orbit Bridging, MCR-900/LN Basics, Cell Interface, SIM Options, DNS, Firewall Basics, Basic Routing

MDS Orbit Platform Advanced Certification (5 Days)

Day 3 - Terminal Server/Serial Service, DDNS, VLANs, Creating VLANs, Configuring Interfaces, Configuring Firewall, Port Forwarding, Quality of Service (QoS), Prioritization, Fairness, Traffic Shaping, Dynamic Routing, RIPv2, OSPF

Day 4 - Security: Firewall, Tamper Detection Configuration, Radius User Authentication, OTP and Admin/Tech/Operator Password, 802.1x Certificate Management, Securing Nx-900 and LN: PSK: AES-128/256, EAP: RADIUS w/ 802.1x Certificates, Securing Cell: IPSec VPN Tunnel, Dynamic VPN, Static NAT (1:1 NAT), GRE, IP/GRE, Ethernet/GRE

Day 5 - Point to Multipoint Serial Over Cell, Interface Failover/Failback, Summary of Topics Covered throughout the Week, Written Exam, 80% Pass required for Certification.

GE MDS SD Master and Remote Training

Basic MDS SD and SD Master Station (2 Days)

Day 1 – Installation and Maintenance, Configuration, Feature / Application Outline

Day 2 – Network Topologies (How and why to choose), Pinouts and Types of Serial polling capability, Setup basic Pt to Point network, Basic serial polling (B and A Modems), IP Payload and polling (Transparent Mode), IP Payload polling in Packet w/ MAC mode Ethernet Bridging.

MDS SD and SD Master Station advanced topics available:

- Advanced Bridge Filter & LAN Filter), Terminal Server in SDx and SDMS (via Console and Web), Hands on lab covering Bridged IP data w/ terminal server Vs. IP payload data.
- Store and Forward, System ID, Peer to Peer, Encryption all modes, Security, VRC's, VLANS.

Additional Products

TransNET

- Key Features
- Network Topologies
- Network Management
- Store-and-Forward Operation
- Configuration Software
- Setup
- Maintenance

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iNET-II

- Features
- Interfacing
- System Configurations
- Unit Configuration
- Menus and Management
- Security Configuration

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Fundamentals of Radio Frequency Communications (RF Fundamentals)

Maximize the performance of your communications network by increasing your knowledge of RF and basic Data test equipment utilized in the wireless communications industry. This two-day Fundamentals course is an ideal refresher course and an excellent introductory course

Day 1 - Radio Frequency (RF) Fundamentals

- Overview
- Units of Measurement and RF Terminology
- Wave and Signal Mechanics
- Antenna Basics
- RF Interconnections
- Link Mechanics
- Applications and Characteristics
- Evaluation Radio Paths
- Multipath
- Feed lines
- System Design
- Understanding and Mitigating Interference

Day 2 - Radio Interfacing

- Serial interfacing overview
- Serial interfacing basics
- Data Terminal Equipment (DTE)
- Data Communications Equipment (DCE)
- Electrical Standards
- Short-haul Modems
- Fiber Interfaces and Fiber Modems
- Multi-drop Interfacing
- Interface Conversions
- Special Purpose Interface Devices
- RF Test Equipment
- Data Test Equipment
- Grounding and Installation
- Troubleshooting

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