NA939
TCP/IP Networking Fundamentals and Troubleshooting

Learn how to quickly support, troubleshoot, and maintain network functionality and uptime for System 800xA.

Course type and methods
This is a comprehensive instructor led training program with short presentations and relevant demonstrations, engaging lab exercises, and hands-on sessions and discussions.

Student Profile
This course is for operators and engineers, with basic to intermediate networking and TCP/IP knowledge, who want to design, build, and support highly functional TCP/IP based networks for System 800xA.

Prerequisites
Before attending this course, students must have familiarity with computer hardware and devices, the ability to locate unsupported devices using Device Manager, and Experience supporting previous versions of Windows Server OS.

Course objectives
Upon completion of this course the participants will be able to:
• Confidently identify, troubleshoot and participate in resolving detailed network issues including performance and mis-configuration
• Understand the OSI model in real world terms as a useful model for supporting networking and System 800xA and the Client Server Model
• Establish sessions – sockets – firewall – VPN – address translation
• Demonstrate advanced knowledge of IP addresses, subnet mask, default gateway for IP Support
• Troubleshoot common and advanced networking issues and scenarios
• Trace the complete TCP/IP packet route from workstation IP device 1 to server IP device 2
• Conduct single and multi-network traffic analysis
• Design subnetted IP networks for hands on knowledge of design considerations and support
• Install, configure, and troubleshoot IP routers, and IP devices
• Build useful packet analyzer skills to troubleshoot network issues and validate network design
• Conduct System 800xA RNRP network fault tolerance and redundancy

Main topics
Participants learn skills required to design, install, support, and troubleshoot TCP/IP devices and networks. They will utilize tools and techniques which will demystify and break-down TCP/IP networking into easy to understand blocks; leading step by step into more complex scenarios.
NA939 provides the fundamental foundation for technical network support of Windows Server 2012 for System 800xA and IP networks.

Duration
The duration is 5 days
## Course Outline

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<td><strong>Introductions</strong></td>
<td><strong>Review, discussions, System 800xA</strong></td>
<td><strong>All about TCP/IP, single network, multi-network traffic and design</strong></td>
<td><strong>All about routers, configuration</strong></td>
<td><strong>DNS, CISCO switches, CISCO terminology and common configurations</strong></td>
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<td><strong>Overview of Course</strong></td>
<td><strong>Network terminology; broadcast vs. directed, ports, ARP, NAT, DNS, proxy, TCP, UDP, DHCP, Demonstrations &amp; Labs</strong></td>
<td><strong>System 800xA RNRP on single network and multinetwork overview</strong></td>
<td><strong>Internet</strong></td>
<td><strong>Firewall, NAT, Ethernet, Applied OSI reviewed</strong></td>
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<td><strong>Begin networking with a view from 3,000 feet</strong></td>
<td><strong>Helpful command prompt utilities unveiled</strong></td>
<td><strong>IP Version 6</strong></td>
<td><strong>Subnetting, default routes</strong></td>
<td><strong>NetBIOS, WINS, OPC-DA, Other Industrial Networks</strong></td>
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<td><strong>Ethernet vs. other topologies</strong></td>
<td><strong>Characterizing services, examining frames, clientserver traffic</strong></td>
<td><strong>IP troubleshooting</strong></td>
<td><strong>Giant routing lab</strong></td>
<td><strong>Finish items requested during class</strong></td>
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<td><strong>Client server communication, packet encapsulations, and System 800xA network requirements</strong></td>
<td><strong>Begin TCP/IP</strong></td>
<td><strong>IP design</strong></td>
<td><strong>Advanced IP troubleshooting</strong></td>
<td><strong>Review</strong></td>
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<td><strong>Firewalls and other devices defined</strong></td>
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<td><strong>Analyzing IP traffic</strong></td>
<td><strong>If time allows: client to server network traffic problem</strong></td>
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<td><strong>Network traffic analysis, Demonstrations &amp; Labs</strong></td>
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<td><strong>Demonstrations and Labs</strong></td>
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