



# FULL STACK NETWORK ENGINEER

## BASIC TRAINING

The Full Stack Network Engineer Basic Training Program is designed to jumpstart and accelerate your IT Career with a hands-on approach to technical education with career mentorship. Through this program students will understand what it takes to become a network or systems engineer and learn the skills needed to be effective in the workforce across the full stack of networking technologies.

| WEEK                        | 1  | 2 | 3 | 4   | 5 | 6 |
|-----------------------------|--|---|---|---|---|---|
| <b>Course Work</b>          | <b>Full Stack Network Associate Course</b>   |   |   | <b>Cisco Certified Network Associate (CCNA) 200-301</b>   |   |   |
| <b>Description</b>          | Plan out your path in Network Engineering, and learn the skills needed to become job-ready! To begin, you will dissect the IT Industry, learn the available career options and build your career plan. You will then be guided through the most important foundational concepts and technical skills necessary to get started with full-stack networking. Get ready to skyrocket through the IT Industry and become a rockstar engineer! |   |   | The Cisco Certified Network Associate (CCNA) certification is one of the strongest associate level IT certifications in the world and proves your ability to install, configure, operate and troubleshoot enterprise networks and Cisco IOS. CCNA certified professionals understand the most core and fundamental technologies related to network engineering, and are versed in the configuration and installation of Cisco routers and switches in a broad range of IT environments. In this course students are presented with a series of premium instructional videos and hands-on labs that teach all the knowledge and skills needed to pass the 200-301 CCNA exam, obtain your CCNA certification, and get on your path to becoming a rockstar engineer! |   |   |
| <b>What You'll Learn</b>    | <p><b>GETTING STARTED IN YOUR IT CAREER</b><br/>You will begin with gaining insights into becoming a Network Engineer and understanding your career path options, and then you will move into understading the overarching IT architectures that every engineer needs to know!</p>   |   |   | <p><b>NETWORK FUNDAMENTALS RELATED TO CISCO NETWORKING</b><br/>You will learn all of the foundational network concepts found on the CCNA exam. In this section we will review network components such as routers, switches, firewalls, access-points, endpoints, servers and controllers. We will also cover topologies here as well as physical cabling and important protocols such as TCP and UDP. To wrap up and complete the network fundamentals module we will discuss operating systems and also the fundamentals of virtualization!</p>  |   |   |
|                             | <p><b>IT &amp; NETWORK ESSENTIALS</b><br/>You will dive into the most fundamental and foundational technical concepts to understand information technology and networking systems. We will cover networking basics, The OSI Model, Ethernet and VLANs, TCP &amp; UDP, Topolgies, cabling systems, network devies, IP addressing, subnetting, and routing and switching!</p>  |   |   | <p><b>NETWORK ADDRESSING &amp; MODELS</b><br/>In this section we will thoroughly break down layer 2 and layer 3 addressing with MAC, IPv4 (addressing &amp; subnetting), and IPv6. We will also look at addressing from the aspect of the Transport layer, how all of this network communication fits into a standard reference model and where we get these terms called layers.</p>   |   |   |
|                             | <p><b>IP ADDRESSING &amp; SUBNETTING</b><br/>Here we will deconstruct the worlds of IP Addressing and subnetting providing you with the easiest method for subnetting both Class C and Class B default networks. After full understanding IPv4 we will also introduce you to the world of IPv6!</p>  |   |   | <p><b>NETWORK ACCESS</b><br/>In this section we begin our dive into Cisco IOS configurations with LAN technologies such as VLANs, Trunking, layer 2 discovery protocols, port aggregation with EtherChannel/LACP, and Spanning-Tree Protocol. We will also look at Cisco Wireless Architectures, WLAN infrastructure, Wireless LAN Controllers, and WLAN setup and configuration to wrap up the LAN technologies that provide our clients with access to the network!</p>   |   |   |
|                             | <p><b>ETHERNET, LANS, &amp; SWITCHING</b><br/>You will learn all about switching and making sure you understand core switching knoweldge with Ethernet, Spanning-Tree, VLANs, cabling, and power. In this module you will also learn how to make your own cables for Ethernet!</p>   |   |   | <p><b>IP CONNECTIVITY</b><br/>In this module we will move into configuring our routers and learn all about the core routing related concepts such as routing tables, static routing and routing protocols. We will configure routers to route dynamically within the autonomous system with Open Shortest Path First version 2 (OPSFv2) and learn how we an create routing redundancy in the LAN with first hop redundancy.</p>   |   |   |
|                             | <p><b>IP ROUTING IN LANS &amp; WANS</b><br/>You will learn all about switching and making sure you understand core switching knoweldge with Ethernet, Spanning-Tree, VLANs, cabling, and power. In this module you will also learn how to make your own cables for Ethernet!</p>   |   |   | <p><b>IP SERVICES</b><br/>Here we will break down network services such as Network Timing Protocol (NTP), Dynamic Host Configuration Protocol (DHCP) and Quality of Service. We will break down and understand the Domain Name System (DNS), and learn how to manage our networks with SNMP and Syslog. We will also break down remote network access protocols and services such as Telnet and SSH, and understand how we can control and standardize network access for specific applicaitons and protocols with Quality of Service (QoS).</p>  |   |   |
|                             | <p><b>FULL STACK NETWORKING CONCEPTS</b><br/>Building upon everything learned thus far, now you will dive into network security, wireless networking, voice over IP and virtualization to give a perspective on the knowledge of a Full Stack Network Engineer!</p>  |   |   | <p><b>SECURITY FUNDAMENTALS</b><br/>With the exponential growth of networked devices and internet connectivity, security has become an essential part of all IT infrastructures as all modern computer systems are networked and connected. Any connected system can be hacked, so all network engineers must understand key security concepts and industry standard security implementations. In this module you will learn all about these topics and also how to create secure networked connectivity with site to site VPNs and enhance security on the LAN with technologies such as DHCP snooping, ARP inspection, and port security.</p>   |   |   |
|                             | <p><b>REAL WORLD NETWORK ENGINEERING</b><br/>Expand your knowledge into the real-world architectures as presented by Cisco Systems. In this module you will also expand into thinking like an engineer and get a very thorough over view of many different software tools used by real-world engineers!</p>  |   |   | <p><b>AUTOMATION AND PROGRAMMABILITY</b><br/>In this module you will learn about automated networking and device management using controller-based systems such as Cisco DNA center. In addion, we will dive into the internal network device architectures that can be conrolled with controller-based and software-defined networking. We will also discuss REST-based API (CRUD, HTTP vers, and data encoding) as it pertains to network automation and programmability as well as configuration management mechnisms such as Puppet, Chef, and Asible.</p>  |   |   |
|                             | <p><b>FULL STACK NETWORK ASSOCIATE</b><br/>Build labs and practice your configuration skills with Full Stack Networking. Build out common networking designs and deploy fundamental topolobies using Cisco IOS. Gain all the practice on real-world skills that you need before performing your Skills Qualification Check and obtaining your Full Stack Network Associate-Basic Certification!</p>                                      |   |   | <p><b>EXAM PREPARATION</b><br/>You will learn how to prepare for the CCNA certification exam. We will supply testing information to help you focus on your studies, a practice exam, and information on how to get your exam scheduled. It's time to knock out that exam and become CCNA certified.</p>   |   |   |
|                             | <p><b>FSNA CERTIFICATION: LEVEL UP!</b><br/>Get ready to become certified! In this module you will perform your FSNA certification skills check and learn what it takes to level up further and get started in your techinca career!</p>   |   |   |   |   |   |
| <b>Tools You'll Use</b>     | Cisco IOS Command Line, Cisco Packet Tracer, terminal emulators, packet sniffer, port scanner, Windows and Mac command line tools, route tracing, looking glass sites, virtualization software, password managers, note takers, text editors, screen cap tools, text comparators, TFTP and FTP server/client and syslog servers  |   |   | Cisco IOS Command Line and Cisco Packet Tracer. Practice-Labs for addtional lab simiulation, and an Exam-Prep tool for simulating exam questions and answers to get you ready for your exam!  |   |   |
| <b>Live Coaching</b>        | Weekly coaching for self paced programs, 10 hours of live weekly instruction for part-time programs, and 20 hours of live weekly instruction for full-time programs. During training students also work with our Career Services team for professional career coaching, technical and behavioural practice interviews, and professional career maps and guidance check-ins.  |   |   |   |   |   |
| <b>Certiifiacion earned</b> |    |   |   |    |   |   |



| WEEK                     | 1  | 2   | 3 | 4 | 5 | 6 | 7  | 8  | 9 | 10 | 11 | 12 |  |
|--------------------------|--|---|---|---|---|---|--|--|---|----|----|----|--|
| <b>Course Work</b>       | <b>Full Stack Network Associate Course</b>   |   |   |   |   |   | <b>Cisco Certified Network Associate (CCNA) 200-301</b>  |  |   |    |    |    |  |
| <b>Description</b>       | Plan out your path in Network Engineering, and learn the skills needed to become job-ready! To begin, you will dissect the IT Industry, learn the available career options and build your career plan. You will then be guided through the most important foundational concepts and technical skills necessary to get started with full-stack networking. Get ready to skyrocket through the IT Industry and become a rockstar engineer!   |   |   |   |   |   | The Cisco Certified Network Associate (CCNA) certification is one of the strongest associate level IT certifications in the world and proves your ability to install, configure, operate and troubleshoot enterprise networks and Cisco IOS. CCNA certified professionals understand the most core and fundamental technologies related to network engineering, and are versed in the configuration and installation of Cisco routers and switches in a broad range of IT environments. In this course students are presented with a series of premium instructional videos and hands-on labs that teach all the knowledge and skills needed to pass the 200-301 CCNA exam, obtain your CCNA certification, and get on your path to becoming a rockstar engineer!  |  |   |    |    |    |  |
| <b>What You'll Learn</b> | <p><b>GETTING STARTED IN YOUR IT CAREER</b><br/>You will begin with gaining insights into becoming a Network Engineer and understanding your career path options, and then you will move into understading the overarching IT architectures that every engineer needs to know!</p> <p><b>IT &amp; NETWORK ESSENTIALS</b><br/>You will dive into the most fundamental and foundational technical concepts to understand information technology and networking systems. We will cover networking basics, The OSI Model, Ethernet and VLANs, TCP &amp; UDP, Topolgies, cabling systems, network devies, IP addressing, subnetting, and routing and switching!</p> <p><b>IP ADDRESSING &amp; SUBNETTING</b><br/>Here we will deconstruct the worlds of IP Addressing and subnetting providing you with the easiest method for subnetting both Class C and Class B default networks. After full understanding IPv4 we will also introduce you to the world of IPv6!</p> <p><b>ETHERNET, LANS, &amp; SWITCHING</b><br/>You will learn all about switching and making sure you understand core switching knoweldge with Ethernet, Spanning-Tree, VLANs, cabling, and power. In this module you will also learn how to make your own cables for Ethernet!</p> <p><b>IP ROUTING IN LANS &amp; WANS</b><br/>You will learn all about switching and making sure you understand core switching knoweldge with Ethernet, Spanning-Tree, VLANs, cabling, and power. In this module you will also learn how to make your own cables for Ethernet!</p> <p><b>FULL STACK NETWORKING CONCEPTS</b><br/>Building upon everything learned thus far, now you will dive into network security, wireless networking, voice over IP and virtualization to give a perspective on the knowledge of a Full Stack Network Engineer!</p> <p><b>REAL WORLD NETWORK ENGINEERING</b><br/>Expand your knowledge into the real-world architectures as presented by Cisco Systems. In this module you will also expand into thinking like an engineer and get a very thorough over view of many different software tools used by real-world engineers!</p> <p><b>FULL STACK NETWORK ASSOCIATE</b><br/>Build labs and practice your configuration skills with Full Stack Networking. Build out common networking designs and deploy fundamental topologies using Cisco IOS. Gain all the practice on real-world skills that you need before performing your Skills Qualification Check and obtaining your Full Stack Network Associate-Basic Certification!</p> <p><b>FSNA CERTIFICATION: LEVEL UP!</b><br/>Get ready to become certified! In this module you will perform your FSNA certification skills check and learn what it takes to level up further and get started in your techincal career!</p> |   |   |   |   |   | <p><b>NETWORK FUNDAMENTALS RELATED TO CISCO NETWORKING</b><br/>You will learn all of the foundational network concepts found on the CCNA exam. In this section we will review network components such as routers, switches, firewalls, access-points, endpoints, servers and controllers. We will also cover topologies here as well as physical cabling and important protocols such as TCP and UDP. To wrap up and complete the network fundamentals module we will discuss operating systems and also the fundamentals of virtualization!</p> <p><b>NETWORK ADDRESSING &amp; MODELS</b><br/>In this section we will thoroughly break down layer 2 and layer 3 addressing with MAC, IPv4 (addressing &amp; subnetting), and IPv6. We will also look at addressing from the aspect of the Transport layer, how all of this network communication fits into a standard reference model and where we get these terms called layers.</p> <p><b>NETWORK ACCESS</b><br/>In this section we begin our dive into Cisco IOS configurations with LAN technologies such as VLANs, Trunking, layer 2 discovery protocols, port aggregation with EtherChannel/LACP, and Spanning-Tree Protocol. We will also look at Cisco Wireless Architectures, WLAN infrastructure, Wireless LAN Controllers, and WLAN setup and configuration to wrap up the LAN technologies that provide our clients with access to the network!</p> <p><b>IP CONNECTIVITY</b><br/>In this module we will move into configuring our routers and learn all about the core routing related concepts such as routing tables, static routing and routing protocols. We will configure routers to route dynamically within the autonomous system with Open Shortest Path First version 2 (OSPFv2) and learn how we an create routing redundancy in the LAN with first hop redundancy.</p> <p><b>IP SERVICES</b><br/>Here we will break down network services such as Network Timing Protocol (NTP), Dynamic Host Configuration Protocol (DHCP) and Quality of Service. We will break down and understand the Domain Name System (DNS), and learn how to manage our networks with SNMP and Syslog. We will also break down remote network access protocols and services such as Telnet and SSH, and understand how we can control and standardize network access for specific applicaitons and protocols with Quality of Service (QoS).</p> <p><b>SECURITY FUNDAMENTALS</b><br/>With the exponential growth of networked devices and internet connectivity, security has become an essential part of all IT infrastructures as all modern computer systems are networked and connected. Any connected system can be hacked, so all network engineers must understand key security concepts and industry standard security implementations. In this module you will learn all about these topics and also how to create secure networked connectivity with site to site VPNs and enhance security on the LAN with technologies such as DHCP snooping, ARP inspection, and port security.</p> <p><b>AUTOMATION AND PROGRAMMABILITY</b><br/>In this module you will learn about automated networking and device management using controller-based systems such as Cisco DNA center. In addion, we will dive into the internal network device architectures that can be conrolled with controller-based and software-defined networking. We will also discuss REST-based API (CRUD, HTTP vers, and data encoding) as it pertains to network automation and programmability as well as configuration management mechnisms such as Puppet, Chef, and Asible.</p> <p><b>EXAM PREPARATION</b><br/>You will learn how to prepare for the CCNA certification exam. We will supply testing information to help you focus on your studies, a practice exam, and information on how to get your exam scheduled. It's time to knock out that exam and become CCNA certified.</p> |  |   |    |    |    |  |
|                          | <b>Tools You'll Use</b>  | Cisco IOS Command Line, Cisco Packet Tracer, terminal emulators, packet sniffer, port scanner, Windows and Mac command line tools, route tracing, looking glass sites, virtualization software, password managers, note takers, text editors, screen cap tools, text comparators, TFTP and FTP server/client and syslog servers   |   |   |   |   |  | Cisco IOS Command Line and Cisco Packet Tracer. Practice-Labs for addtional lab simiulation, and an Exam-Prep tool for simulating exam questions and answers to get you ready for your exam! |   |    |    |    |  |
|                          | <b>Live Coaching</b>   | Weekly coaching for self paced programs, 10 hours of live weekly instruction for part-time programs, and 20 hours of live weekly instruction for full-time programs. During training students also work with our Career Services team for professional career coaching, technical and behavioural practice interviews, and professional career maps and guidance check-ins. |   |   |   |   |  |  |   |    |    |    |  |
|                          | <b>Certiifiacion earned</b>  |   |   |   |   |   |  |   |   |    |    |    |  |



# FULL STACK NETWORK ENGINEER

## ADVANCED TRAINING

Advanced Training begins with the Full Stack Networking Project and the goal of obtaining your Full Stack Network Professional (FSNP) real-world skills certification. By the end of the first project you will understand HQ/Branch networks and the project build-out process. You will learn how to plan, design, and implement your own Full Stack Network with a headquarters (HQ) location and two branch offices. In addition to deploying a full stack three location network, you will also deploy two more robust projects! In the next project you will deploy a Cisco ASA firewall upgrade and in the second last project you will spin up a complete Co-located Data Center for Disaster Recovery. At the end of Advanced Training each student will have rolled out three complete real-world based projects and will have their real-world skills verified via a live Skills Qualification Check (SQC) to become certified as a Full Stack Network Professional!

| WEEK  | 7   | 8   | 9   | 10   | 11  | 12  |
|---|---|---|---|--|---|---|
| Course Work   | Full Stack Networking Project   |   | Cisco ASA Upgrade Project   | Colo Data Center Project   | FSNP SQC Preparation Labs   | FSNP Skills Qualification Checks  |
| Description   | The Full Stack Networking Project is designed to provide an understanding of a complete HQ/Branch network and the project build-out process. Students will learn how to plan, design, and implement their own Full Stack Network with a headquarters location and two branch offices. This project is performed locally on the student's computer and all configurations are completed using the Cisco Packet Tracer network simulation software. Cisco Packet Tracer is available for free from the Cisco Networking Academy.  |   | This project based on a very common deployment: installation of a new dedicated firewall in the network. In this case, we need a more advanced internet edge device to provide better site to site VPN capabilities and also telecommuter support with Remote Access VPN.   | Another common extension of the network is to add a hot-site for disaster recovery and redundant network services. A Co-located Data Center will provide us redundancy in our infrastructure as well as our storage and server environments in the case of a disaster. | Before performing the live Skills Qualification Check (SQC) to become certified as a Full Stack Network Associate, candidates will be provided with preparation labs and lab guides that will assist with reinforcement of all the concepts and skills that are checked during the live SQC.  | During these final two weeks all students are scheduled to perform their live SQC to verify skills. Upon successful completion the candidate will be awarded the Full Stack Network Associate (FSNA) Certification. The time allotted for the SQC itself is 2 hours. This block of time includes scheduling for all students in the cohort to SQC, get feedback, coaching, and also graduation. |
| What You'll Learn   | Plan, Design and Deploy Complete Network Solutions From the Ground Up!  |   |   |  | Prove Your Skills with the FSNP Skills Check  |   |
|   |   |   |   |  |   |   |
|   | <p><b>PLANNING PHASE</b><br/>In the Planning Phase we will perform all the necessary work to plan out our project. We'll start by gathering information and learning the requirements of the project. Then, we will produce a super professional diagram that details our solution. After we have the diagram, we will work on a Bill of Materials and Statement of Work that details the entire project plan. To wrap up the Planning Phase we will present our solution to the customer or business unit and once the project is approved we can get started with the Execution Phase!</p>  |   | <p><b>PLANNING PHASE</b><br/>We'll start by gathering information and learning the requirements of the project and produce a super professional diagram and Statement of Work before we start rolling out the project in the Execution Phase!</p>   |  | <p><b>PLANNING PHASE</b><br/>We'll start by gathering information and learning the requirements of the project and produce a super professional diagram and Statement of Work before we start rolling out the project in the Execution Phase!</p>   |   |
|   | <p><b>EXECUTION PHASE</b><br/>In the Execution Phase we will implement all the equipment and technologies defined in our Statement of Work. We'll start with setting up the Headquarters core network and then add internet, WAN routing, voice, and wireless services. After the Headquarters network build out is complete we'll begin work on Branch 1 and then Branch 2. By the end of this phase you will have deployed an entire 3 facility Full Stack Network!</p>   |   | <p><b>EXECUTION PHASE</b><br/>In the Execution Phase of this project we will tear down the router that is currently providing internet edge services and replace it with the Cisco ASA dedicated Firewall. This will provide advanced site to site and remote access VPN capabilities!</p>  |  | <p><b>EXECUTION PHASE</b><br/>In this implementation we will configure and deploy the new network infrastructure at our new Colo Data Center and connect it to the Headquarters location over an internet-based VPN as well as over the Private WAN.</p>  |   |
|   | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met. We'll also tackle some support requests and make sure the customer is well taken care of before we move on to closing out the project.</p>   |   | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met before we move on to closing out the project.</p>   |  | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met before we move on to closing out the project.</p>   |   |
|   | <p><b>CLOSING PHASE</b><br/>You have arrived at the Closing Phase - It's been quite a journey! In the Closing Phase we get to have the pleasure of delivering the fully implemented Full Stack Network to the customer! To close things out gracefully we will wrap up the project with a formal close-out process and make sure we obtain feedback on the project delivery. This phase wraps up the entire project and at this point you have completed the great feat of deploying a complete HQ/branch network environment with routing, switching, voice over IP, wireless networking, and network security! Having completed this robust project you now have an understanding of what it takes to roll out an IT project from start to finish and deploy the full stack of network services! After deploying this real-world project you are ready to start preparing for your next two project deployments and your Skills Qualification Check to become certified as a Full Stack Network Professional!</p> |   | <p><b>CLOSING PHASE</b><br/>Another successful project rolled out! In the world of Information Technology we are constantly upgrading, building, and extending our services to support more technologies and users on the network. The Cisco ASA Upgrade project was essential in providing the company with additional network services for the remote branches and telecommuting workforce. This project is a great example of an upgrade being performed in the network and will help to solidify the real-world engineering perspective and what is required to be an outstanding engineer.</p> |  | <p><b>CLOSING PHASE</b><br/>In this last project we added a new element to the network that was crucial for its continued function and survivability - a Colo Data Center! This is a key element for network resiliency and medium to large organizations almost always need to add this type of redundancy in order to keep their business up and running during potential disasters. At the Colo DC you deployed a fully functional DR-site network giving the company redundancy in their network access as well as DR server functions and critical backups! You now understand what it takes to roll out a new Data Center site and are ready to move on to focus on your SQC and becoming FSNP certified!</p> |   |
|   | <p><b>NETWORK DIAGRAMMING AND PRESENTING THE SOLUTION</b><br/>Throughout the FSNE Advanced Training program students will work on planning and designing the project solution. In order to complete the SQC each student must first create a thorough network diagram and perform a live presentation of the solution that is recorded in a live setting.</p>   |   | <p><b>RACK, INSTALL, AND CABLING</b><br/>Confirm your core knowledge in connecting devices in an IT rack, connecting the local console connection and wiping and reloading device configurations. Your knowledge of cabling for Ethernet is also tested here as you must understand the appropriate types of cables to use in various scenarios. These are skills that are pertinent in the field and confirmation of these skills kicks off the FSNP certification process.</p>  |  | <p><b>BASIC CISCO IOS CONFIGURATION</b><br/>Network devices have a common configuration as the base level and this is the part of the configuration process where your consistency and accuracy of the basic configurations are checked. We also ensure your understanding of things like modes of configuration, configuring clock settings, login banners, and verifying your knowledge of how device configurations are saved as well as the different Cisco IOS syntax.</p>   |   |
|   | <p><b>OBTAIN PERTINENT DEVICE INFORMATION</b><br/>In this part of the Skills Qualification Check NexGenT Instructors confirm your knowledge on all device identifying information which is crucial for success in the field. Things such as identifying device serial number, MAC addresses, and versions of software are checked.</p>  |   | <p><b>CONFIGURE A CISCO IOS ACCESS SWITCH</b><br/>This part of the SQC NexGenT Instructors will confirm your ability to deploy a fully functional access switch configured to branch services with multiple VLANs, Trunking, Voice over IP, Quality of Service, and remote access and device management.</p>  |  | <p><b>NETWORK DEVICE FUNCTIONS &amp; BASIC TROUBLESHOOTING</b><br/>Here we will verify your knowledge of how to observe network connectivity and device functions using the MAC Address Table, VLAN database, Routing Table and using basic troubleshooting tools such as Ping and Traceroute. We will also observe your knowledge in how to troubleshoot common interface errors such as input/output errors on a switchport, CRC errors, and speed/duplex issues.</p>   |   |
| <p><b>PROTECT ACCESS TO THE MANAGEMENT PLANE</b><br/>Network infrastructure security is as good as its weakest link, and we ensure all students are very knowledgeable on network device local and remote access security. We check configurations of access control lists and protecting access to the VTY lines of all network devices as well as proper IOS syntax encryption, properly configured login credentials, and ensuring that Secure Shell is deployed for remote access with Telnet being disabled.</p> |   | <p><b>CONFIGURE BRANCH ROUTER SERVICES</b><br/>In this stage NexGenT Instructors will verify the students ability to fully configure all branch router services such as DHCP, 802.1Q trunking with sub-interfaces, interface configuration, BGP Peering to the private wan, Access Control Lists, IOS Firewall inspection, Network Address Translation, and secure public internet access connectivity.</p> |   |  |   |   |
| Tools You'll Use  | Cisco IOS Command Line, Cisco Packet Tracer, Statements of Work, Network Diagrams, IP address and subnetting planning sheets,   |   |   |  |   |   |
| Live Coaching   | Weekly coaching for self paced programs, 10 hours of live weekly instruction for part-time programs, and 20 hours of live weekly instruction for full-time programs. During training students also work with our Career Services team for professional career coaching, technical and behavioural practice interviews, and professional career maps and guidance check-ins.   |   |   |  |   |   |
| Certification earned  |   |   |   |  |   |   |

| WEEK                 | 13  | 14  | 15 | 16  | 17 | 18  | 19 | 20  | 21 | 22  |  |
|----------------------|---|---|----|---|----|---|----|---|----|---|--|
| Course Work          | Full Stack Networking Project   |   |    | Cisco ASA Upgrade Project   |    | Colo Data Center Project  |    | FSNP SQC Preparation Labs   |    | FSNP Skills Qualification Checks  |  |
| Description          | The Full Stack Networking Project is designed to provide an understanding of a complete HQ/Branch network and the project build-out process. Students will learn how to plan, design, and implement their own Full Stack Network with a headquarters location and two branch offices. This project is performed locally on the student's computer and all configurations are completed using the Cisco Packet Tracer network simulation software. Cisco Packet Tracer is available for free from the Cisco Networking Academy.  |   |    | This project based on a very common deployment: installation of a new dedicated firewall in the network. In this case, we need a more advanced internet edge device to provide better site to site VPN capabilities and also telecommuter support with Remote Access VPN.   |    | Another common extension of the network is to add a hot-site for disaster recovery and redundant network services. A Co-located Data Center will provide us redundancy in our infrastructure as well as our storage and server environments in the case of a disaster.  |    | Before performing the live Skills Qualification Check (SQC) to become certified as a Full Stack Network Associate, candidates will be provided with preparation labs and lab guides that will assist with reinforcement of all the concepts and skills that are checked during the live SQC.  |    | During these final two weeks all students are scheduled to perform their live SQC to verify skills. Upon successful completion the candidate will be awarded the Full Stack Network Associate (FSNA) Certification. The time allotted for the SQC itself is 2 hours. This block of time includes scheduling for all students in the cohort to SQC, get feedback, coaching, and also graduation. |  |
| What You'll Learn    | Plan, Design and Deploy Complete Network Solutions From the Ground Up!  |   |    |   |    |   |    | Prove Your Skills with the FSNP Skills Check  |    |   |  |
|                      |   |   |    |   |    |   |    | <p><b>NETWORK DIAGRAMMING AND PRESENTING THE SOLUTION</b><br/>Throughout the FSNE Advanced Training program students will work on planning and designing the project solution. In order to complete the SQC each student must first create a thorough network diagram and perform a live presentation of the solution that is recorded in a live setting.</p> <p><b>RACK, INSTALL, AND CABLING</b><br/>Confirm your core knowledge in connecting devices in an IT rack, connecting the local console connection and wiping and reloading device configurations. Your knowledge of cabling for Ethernet is also tested here as you must understand the appropriate types of cables to use in various scenarios. These are skills that are pertinent in the field and confirmation of these skills kicks off the FSNP certification process.</p> <p><b>BASIC CISCO IOS CONFIGURATION</b><br/>Network devices have a common configuration as the base level and this is the part of the configuration process where your consistency and accuracy of the basic configurations are checked. We also ensure your understanding of things like modes of configuration, configuring clock settings, login banners, and verifying your knowledge of how device configurations are saved as well as the different Cisco IOS syntax.</p> <p><b>OBTAIN PERTINENT DEVICE INFORMATION</b><br/>In this part of the Skills Qualification Check NexGenT Instructors confirm your knowledge on all device identifying information which is crucial for success in the field. Things such as identifying device serial number, MAC addresses, and versions of software are checked.</p> <p><b>CONFIGURE A CISCO IOS ACCESS SWITCH</b><br/>This part of the SQC NexGenT Instructors will confirm your ability to deploy a fully functional access switch configured to branch services with multiple VLANs, Trunking, Voice over IP, Quality of Service, and remote access and device management.</p> <p><b>NETWORK DEVICE FUNCTIONS &amp; BASIC TROUBLESHOOTING</b><br/>Here we will verify your knowledge of how to observe network connectivity and device functions using the MAC Address Table, VLAN database, Routing Table and using basic troubleshooting tools such as Ping and Traceroute. We will also observe your knowledge in how to troubleshoot common interface errors such as input/output errors on a switchport, CRC errors, and speed/duplex issues.</p> <p><b>PROTECT ACCESS TO THE MANAGEMENT PLANE</b><br/>Network infrastructure security is as good as it's weakest link, and we ensure all students are very knowledgeable on network device local and remote access security. We check configurations of access control lists and protecting access to the VTY lines of all network devices as well as proper IOS syntax encryption, properly configured login credentials, and ensuring that Secure Shell is deployed for remote access with Telnet being disabled.</p> <p><b>CONFIGURE BRANCH ROUTER SERVICES</b><br/>In this stage NexGenT Instructors will verify the students ability to fully configure all branch router services such as DHCP, 802.1Q trunking with sub-interfaces, interface configuration, BGP Peering to the private wan, Access Control Lists, IOS Firewall inspection, Network Address Translation, and secure public internet access connectivity.</p> |    |   |  |
|                      | <p><b>PLANNING PHASE</b><br/>In the Planning Phase we will perform all the necessary work to plan out our project. We'll start by gathering information and learning the requirements of the project. Then, we will produce a super professional diagram that details our solution. After we have the diagram, we will work on a Bill of Materials and Statement of Work that details the entire project plan. To wrap up the Planning Phase we will present our solution to the customer or business unit and once the project is approved we can get started with the Execution Phase!</p>  |   |    | <p><b>PLANNING PHASE</b><br/>We'll start by gathering information and learning the requirements of the project and produce a super professional diagram and Statement of Work before we start rolling out the project in the Execution Phase!</p>   |    | <p><b>PLANNING PHASE</b><br/>We'll start by gathering information and learning the requirements of the project and produce a super professional diagram and Statement of Work before we start rolling out the project in the Execution Phase!</p>   |    |   |    |   |  |
|                      | <p><b>EXECUTION PHASE</b><br/>In the Execution Phase we will implement all the equipment and technologies defined in our Statement of Work. We'll start with setting up the Headquarters core network and then add internet, WAN routing, voice, and wireless services. After the Headquarters network build out is complete we'll begin work on Branch 1 and then Branch 2. By the end of this phase you will have deployed an entire 3 facility Full Stack Network!</p>   |   |    | <p><b>EXECUTION PHASE</b><br/>In the Execution Phase of this project we will tear down the router that is currently providing internet edge services and replace it with the Cisco ASA dedicated Firewall. This will provide advanced site to site and remote access VPN capabilities!</p>  |    | <p><b>EXECUTION PHASE</b><br/>In this implementation we will configure and deploy the new network infrastructure at our new Colo Data Center and connect it to the Headquarters location over an internet-based VPN as well as over the Private WAN.</p>  |    |   |    |   |  |
|                      | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met. We'll also tackle some support requests and make sure the customer is well taken care of before we move on to closing out the project.</p>   |   |    | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met before we move on to closing out the project.</p>   |    | <p><b>CONTROLLING PHASE</b><br/>In the Controlling Phase we will perform all of our final testing and make sure all deliverables in the Statement of Work have been met before we move on to closing out the project.</p>   |    |   |    |   |  |
|                      | <p><b>CLOSING PHASE</b><br/>You have arrived at the Closing Phase - It's been quite a journey! In the Closing Phase we get to have the pleasure of delivering the fully implemented Full Stack Network to the customer! To close things out gracefully we will wrap up the project with a formal close-out process and make sure we obtain feedback on the project delivery. This phase wraps up the entire project and at this point you have completed the great feat of deploying a complete HQ/branch network environment with routing, switching, voice over IP, wireless networking, and network security! Having completed this robust project you now have an understanding of what it takes to roll out an IT project from start to finish and deploy the full stack of network services! After deploying this real-world project you are ready to start preparing for your next two project deployments and your Skills Qualification Check to become certified as a Full Stack Network Professional!</p> |   |    | <p><b>CLOSING PHASE</b><br/>Another successful project rolled out! In the world of Information Technology we are constantly upgrading, building, and extending our services to support more technologies and users on the network. The Cisco ASA Upgrade project was essential in providing the company with additional network services for the remote branches and telecommuting workforce. This project is a great example of an upgrade being performed in the network and will help to solidify the real-world engineering perspective and what is required to be an outstanding engineer.</p> |    | <p><b>CLOSING PHASE</b><br/>In this last project we added a new element to the network that was crucial for its continued function and survivability - a Colo Data Center! This is a key element for network resiliency and medium to large organizations almost always need to add this type of redundancy in order to keep their business up and running during potential disasters. At the Colo DC you deployed a fully functional DR-site network giving the company redundancy in their network access as well as DR server functions and critical backups! You now understand what it takes to roll out a new Data Center site and are ready to move on to focus on your SQC and becoming FSNP certified!</p> |    |   |    |   |  |
|                      | Tools You'll Use  | Cisco IOS Command Line, Cisco Packet Tracer, Statements of Work, Network Diagrams, IP address and subnetting planning sheets,   |    |   |    |   |    |   |    |   |  |
|                      | Live Coaching   | Weekly coaching for self paced programs, 10 hours of live weekly instruction for part-time programs, and 20 hours of live weekly instruction for full-time programs. During training students also work with our Career Services team for professional career coaching, technical and behavioural practice interviews, and professional career maps and guidance check-ins. |    |   |    |   |    |   |    |   |  |
| Certification earned |   |   |    |   |    |   |    |   |    |   |  |