

Nokia Fixed Networks Training Services Description

ConnectSuperior Fiber Network Equipment and Services



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NOKIA

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1. Customer Training Services

Evolving networks and consumer demands require a skilled workforce that acts as a differentiator. Nokia's training portfolio consists of training solutions focused on enabling customers to gain the required standards, technology and product knowledge. Our learning solutions are focused on individual learning needs. Our flexible delivery models for blended learning supports customers to learn at their convenience to complement their business objectives.

2. Nokia Training Description

Nokia training includes curriculum paths to gain the necessary understanding, knowledge & generic skills to build, operate and optimize our customers' networks & services.

Our extensive training portfolio offers everything to help our customers' workforces become skilled on Nokia's products and technology solutions.

3. Job Functions in the Network

Dimensioning & Planning courses

Focus on skills for the definition, planning and implementation of Nokia Solutions.

Identify new requirements, new capabilities and design and develop new or enhanced infrastructure to support products.

Respond to requirements of unit cost reductions, product quality improvements, new products, etc.

Operation & Maintenance courses

Focus on skills for the execution of proactive and reactive maintenance activities

Ensure continuous availability and attainment of SLA or QoS performance levels.

Perform continuous status and performance monitoring to proactively detect possible failures.

Network Optimization courses

Focus on skills to analyse root causes of performance problems like capacity bottlenecks, sub optimal-configurations etc.

Skills to develop proposals to resolving issues

4. Course Levels

“Aware”

Introductory level learning provides a general overview of a network element, product or technology. The introductory level also comprises technology and product independent courses. The courses offered under introductory level are common for all technical personnel and some of these courses are also recommended for non-technical learners.

“Standard”

Intermediate level learning typically takes place in the early phases of network implementation. These combined theory and practical sessions aim to make the participants adept at operating and maintaining a specific network element or subsystem. These are designed to equip installation, commissioning, operation and maintenance personnel with the fundamental skills required to perform the day-to-day tasks associated with the equipment.

“Advanced”

Advanced level learning provides participants with the knowledge and skills to perform higher level tasks required in a telecommunications network. These tasks involve network troubleshooting, network design, and reconfiguration as well as network performance analysis.

“Expert”

Expert level learning provides mainly product-based background knowledge to experts in our customers' organizations. The goal is to provide deeper background knowledge for engineers to enhance their skills.

5. Delivery Modes

Nokia believes in using training delivery models which fit in with customers' business models, competence needs and planned learning solutions. For example, blended learning helps people learn at a time, place and path which is most convenient.

Learning delivery formats available:

- Web Based Training
- Instructor Led Virtual Classroom Training
- Instructor Led Classroom Training
- Workshops
- Mobile Learning
- Blended Learning – a mix of web-based training and virtual, instructor-led trainings / workshops

5.1 Prerequisites

Web Based Training

Participants are enrolled in the Web Based Training individually, according to the target group and prerequisites defined in the training descriptions available in the Nokia website. Nokia is not obliged to

take special steps to meet the demands of participants that do not have the required prerequisite knowledge.

Virtual Classroom Sessions

Participants should have a secluded and peaceful area around the computer while attending Virtual Classroom Training. To be sure of this, it is worthwhile to check that PC facilities are available in case employees do not have offices and/or PCs of their own.

Participants are selected by the customer according to the target group and prerequisites defined in the learning program descriptions. Nokia is not obliged to take special steps to meet the demands of participants that do not have the required prerequisite knowledge.

Classroom Sessions

Participants are enrolled according to the target group and prerequisites defined in the training descriptions available at the Nokia internet. Nokia is not obliged to take special care to meet the demands of participants who do not have the required prerequisite knowledge.

5.2 Web Based Training

Content and Scope

Nokia supports this delivery model where customer can learn & gain knowledge at their own pace by requesting Nokia eLearning Services on a demand basis. It includes a wide range of online learning events supporting self-paced learning.

With Web Based Training Services Nokia helps its customers to enhance their learning environment by extending the availability of effective knowledge resources in their organization.

Web Based Training includes a wide range of content, covering systems, network architecture, products and platforms as well as new releases.

5.3 Virtual Classroom Training

Content and Scope

Instructor Led Virtual Classroom Training is a learning event provided via virtual classroom through the internet. Participants attend instructor guided online sessions, which can be accessed from any location that has a suitable internet connection.

The training description consists of the name of the training, the target group(s), objectives, nominal duration, prerequisites, modules, maximum number of participants and a basic description of the learning environment. The training offering is continuously updated in Nokia's Customer Learning Store <https://learningstore.nokia.com/customer/>

On enrolment to an Instructor Led Virtual Classroom session, participants will receive an enrolment email, which includes instruction on how to access the Virtual Training. The learning session may include practical exercises on Nokia learning equipment, available through Remote Lab access.

It may be possible to tailor a dedicated Virtual Classroom to meet the requirements of the customer. But this must be agreed with Nokia prior to any training booking.

Deliverables

The deliverables of Instructor Led Virtual Classroom Training include:

- Virtual Classroom Training event delivered by Nokia instructor
- Learning material
- Training confirmation of attendance

Tools

A synchronous tool to provide real-time interaction between the instructor and a group of participants is used as a platform for Instructor Led Virtual Classroom Training.

End-user computer requirements include internet connection, audio capabilities, and Virtual Classroom client software.

5.4 Classroom Training

Content and Scope

Instructor Led Classroom Training is provided by Nokia's qualified instructors, carried out in a physical learning environment.

Instructor Led Classroom Training is provided in a suitably appointed room located in either a Nokia Training Centre, customer premises or training facility. Training equipment may be located within the same room or nearby test bed for practical sessions or made remotely available through access to a Nokia lab.

It may be possible to tailor the training to meet the requirements of the customer. But this must be agreed with Nokia prior to any training booking.

Deliverables

The deliverables of Instructor Led Classroom Training include:

- Classroom Training event delivered by a Nokia instructor
- Learning material
- Training confirmation of attendance

5.5 Workshops

Content and Scope

A Workshop is an instructor-led face-to-face or virtual learning provided by Nokia to the participants. A workshop is delivered in an informal collaborative manner between the instructor and participants. The workshop is typically skill-oriented, delivered on a test bed in either a Nokia Training Centre or at the mobile operator premises. Workshops normally focus on specific tasks or skills.

5.6 Mobile Learning

Content and Scope

Nokia supports this delivery model where customer can learn & gain knowledge at their own pace by requesting Nokia Learn mobile App on a demand basis.

With mobile learning, Nokia helps its customers to enhance their learning environment by extending the availability of effective knowledge resources in their organization where learning can be consumed anywhere and at any time.

Mobile Learning includes a wide range of content, covering systems, network architecture, products and platforms.

Mobile Learning conducted on and delivered through mobile devices like smartphones and tablets supporting informal learning.

6. Offered Courses

Nokia highly recommends that the courses contained within this section are taken to achieve the minimum knowledge, skills and use of Nokia products and solutions.

All courses contained within this section are valid at the time of offer. Should the courses not be available to the customer at the time of request Nokia will advise the customer of alternative solutions that can be taken to deliver similar or equivalent learning.

6.1 7302 7330 7360 ISAM GPON XGS-PON Basic Configuration | TAC05006-K-6202

Course number	TAC05006-K-6202
Brief Description	This course is intended for people who require knowledge on provisioning the ONT, ONT cards and ports, associating the ONT software to the ONT after retrieving the ONT software, and downloading it to the ISAM. The course also includes newer versions like XGS-PON and NGPON2 (in annex).
Target Group	<ul style="list-style-type: none"> • Personnel who install • Personnel who operate • Personnel who maintain • Personnel who deploy • Personnel who commission and integrate
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> • Acquire the ONT software • Upload the ONT software to the AMS • Prepare and download the ONT software to the NE • Understand some of the parameters of a PON port • Provision a PON port • Understand the different concepts in provisioning an ONT • Post-provision an ONT • Set the SLID in an ONT • Pre-provision an ONT using the SLID • Pre-provision ONTs using Automatic software management via the NE • Provision the ONT cards • Provision the ONT card ports • Provision XGS-PON • Provision NGPON2 (Annex / not mandatory) <p>Course Outline Student Guides</p> <p>1 - General</p> <p>1.1 - Download Student Guide</p> <p>1.2 - Lab Guide</p> <p>2 - ONT SW Management</p> <p>2.1 - ONT SW Management</p> <p>2.2 - Demo Download ONT software to NE through AMS</p> <p>3 - GPON Provisioning</p> <p>3.1 - GPON Provisioning</p> <p>3.2 - Demo PON Provisioning through CLI</p>

	<p>3.3 - Demo PON Provisioning through AMS 3.4 - Exercise PON provisioning 4 - XGS-PON Provisioning 4.1 - XGS-PON Provisioning 4.2 - Demo XGS-PON Provisioning through CLI 4.3 - Demo XGS-PON Provisioning through AMS 4.4 - Exercise XGS-PON provisioning 5 - ONT Post-Provisioning 5.1 - ONT Post-Provisioning 5.2 - Demo PON Post Provisioning through CLI 5.3 - Demo PON Post Provisioning through AMS 5.4 - Exercise PON post provisioning 6 - ONT Pre-Provisioning SLID Based 6.1 - ONT Pre-Provisioning SLID Based 6.2 - Demo Provision SLID on ONT 6.3 - Demo ONT Pre-Provisioning SLID Based through CLI 6.4 - Demo ONT Pre-Provisioning SLID Based through AMS 6.5 - Exercise ONT Pre-Provisioning SLID Based 7 - ONT Pre-Provisioning Automatic SW Management NE Based 7.1 - ONT Pre-Provisioning Automatic SW Management NE Based 7.2 - Demo ONT Pre-Provisioning Auto SW Mgmt NE Based through CLI 7.3 - Demo ONT Pre-Provisioning Auto SW Mgmt NE Based through AMS 7.4 - Exercise ONT Pre-Provisioning Auto SW Management NE Based 8 - ONT Card-Port Provisioning 8.1 - ONT Card-Port Provisioning 8.2 - Demo ONT Card-Port Provisioning through CLI 8.3 - Demo ONT Card-Port Provisioning through AMS 8.4 - Exercise ONT Card-Port Provisioning 9 - XGS-PON Provisioning 7362 mini OLT 9.1 - XGS-PON Provisioning 7362 mini OLT 10 - Annex: NGPON2 Provisioning 10.1 - Annex: NGPON2 Provisioning</p>
Prerequisite	<ul style="list-style-type: none"> The trainee must have a basic understanding of 5520 AMS, CLI commands and architectural/equipment overview of the FD and FX ISAM families. (not enforced)
Contents	
Delivery Type	Curriculum with Self-Paced Learning
Duration	05:12 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Advanced

6.2 GPON in the Access Networks Technology Introduction | TAC60001W_V4.0

Course number	TAC60001W
Brief Description	This course explains the (optical) components used in a GPON (Gigabit Passive Optical Network). It also describes the layout of a GPON and summarize its characteristics.
Target Group	
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> • Describe PON and explain the evolution and flavors of PON, XPON, etc. • Understand Broadband Access on Copper and on Fiber - Bandwidth Supply Fast, faster and faster • Drivers - Main Factors Determining the Operator's FTTX Strategy • Understand PON topology : P2P v/s P2MP • Understand GPON - Location in the network • Define Feeders, Distribution, Drops, passive components • Understand PON Evolution of standards and speeds • Understand GPON Standard Overview - ITU-T Standardization Build-up • List out GPON Benefits • Compare GPON v/s EPON • Understand Physical Layer - Wavelength Plan for GPON and XGPON and Migration • Explain GPON – Gigabit-Capable Passive Optical Networks • Understand General Characteristics - Reference Scenarios • Understand Optical Power Budget Loss • Understand Maximum Range Per Splitter - Configuration • Understand Physical Layer Wavelength Plan for GPON and XGPON coexistence • Understand OMCI – ONT Management Control Interface • Understand GPON OMCI Interoperability Explained • Understand General Characteristics - Protection Schemes and Feeder Redundancy • Explain the Solution(s) in Brief, maybe 2 slides covering all services briefly • Understand Optical Supervision and Diagnosis (with OTM and EOTDR)
Prerequisite	
Contents	<p>Section 1: Configuration</p> <ul style="list-style-type: none"> • GPON in access technology introduction
Delivery Type	Web Based Training
Duration	01:00 hrs
Maximum Number of Students	n.a.

Course Type	THY - Theoretical course
Course Level	Standard

6.3 Evolution of Broadband Access Infrastructure | TAC60003-W-0008

Course number	TAC60003-W-0008
Brief Description	<ul style="list-style-type: none"> The evolution of broadband access technologies.
Target Group	<ul style="list-style-type: none"> Everyone Everyone who interested in fixed network broadband access technologies
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe the need, evolution, and technologies of Broadband Access Infrastructure
Prerequisite	<ul style="list-style-type: none"> Basic telecommunications knowledge. (not enforced)
Contents	<ul style="list-style-type: none"> 1 - Evolution of Broadband Access Infrastructure
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.4 Overview of the ISAM family, Remotes & ONTs | TAC60021-W-0005

Course number	TAC60021-W-0005
Brief Description	<ul style="list-style-type: none"> This WBT gives an introduction of the ISAMs, micro-nodes, ONTs, and CPEs available in Nokia.
Target Group	<ul style="list-style-type: none"> Personnel who install Identify ISAM Central Office, Micro-Nodes, ONT and CPEs Personnel who operate and maintain Understand how ISAM helps operators address their challenges Personnel who deploy Describe ISAM solutions and the context in which they are more suitable Personnel who commission and integrate Fit ISAM solutions into operators network and service evolution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe how ISAM solutions fit into operators network and service evolution Identify ISAM Central Office, Micro-Nodes, ONT and CPEs Explain how ISAM helps operators address their challenges Describe ISAM solutions and the context in which they are more suitable <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> Overview of the ISAM family Remotes and ONTs <ul style="list-style-type: none"> Identify the different ISAM families Identify the different remotes Identify the different ONTs
Prerequisite	
Contents	<ul style="list-style-type: none"> 1 - <ul style="list-style-type: none"> 1.1 - Overview of the ISAM family Remotes and ONTs
Delivery Type	Web Based Training
Duration	01:00 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.5 Fixed Networks Element Management Introduction | TAC60022-W_V4.0

Course number	TAC60022-W_V4.0
Brief Description	Introduction to the element management solution of the Fixed Networks broadband access portfolio.
Target Group	
Objectives	By the end of the course, participants will be able to: <ul style="list-style-type: none"> • Describe and position the 5520 AMS, • Describe and position the 5529 Enhanced Applications, • Describe and position the Nokia Network Analyzer and, • Describe and position the POL Command Center.
Prerequisite	
Contents	Section 1: Introduction <ul style="list-style-type: none"> • Fixed Networks Element Management Introduction
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.6 FBA FTTH Technologies & Products (CNA)| TAC03521K

Course number	TAC03521K
Brief Description	To acquire high-level knowledge of access technologies including basic characteristics of fiber access. Capability of positioning the Fixed Ultra-Broadband access products in a FTTH network and understanding how these fit together. Optional courses are covering interesting technology introductions & hardware overviews, useful to continue to a higher level of expertise.
Target Group	
Objectives	
Prerequisite	
Contents	
Delivery Type	Curriculum with Self-Paced Learning
Duration	06:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.7 Altiplano Access Controller operations for ISAM based networks | FN05095-K-2212

Course number	FN05095-K-2212
Brief Description	<ul style="list-style-type: none"> • How to manage SNMP based access network devices with the Altiplano Access Controller GUI.
Target Group	<ul style="list-style-type: none"> • Personnel who operate and maintain SNMP based access network devices through Altiplano Access Controller
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Position the Access Controller in the life cycle of a network. • List the different elements of the Access Controller. • Explain the role of the AMS and its interworking with the Access Controller. • Explain what intent based networking is. • Use IBN to configure access devices. • Run automated tasks and policies. • Handle alarms. • Use the network inventory.
Prerequisite	<ul style="list-style-type: none"> • Knowledge of AMS and ISAM (enforced) • Understand Software Defined Access Networks (enforced)
Contents	<p>Student Guides</p> <ul style="list-style-type: none"> • 1 - AC - AMS operations <ul style="list-style-type: none"> ◦ 1.1 - Introduction ◦ 1.2 - Getting Started ◦ 1.3 - AMS Device Manager ◦ 1.4 - Network Views Application ◦ 1.5 - Intent Based Networking ◦ 1.6 - IBN Intent-types ◦ 1.7 - IBN Intents ◦ 1.8 - IBN Deploying Network Devices ◦ 1.9 - IBN Creating a Subscriber Service ◦ 1.10 - IBN intent health, topology and dependencies ◦ 1.11 - IBN managing Intents ◦ 1.12 - Profile Manager ◦ 1.13 - Alarm Analyzer application ◦ 1.14 - Inventory Manager ◦ 1.15 - PM Utilities ◦ 1.16 - Policy Manager ◦ 1.17 - Workflow Manager ◦ 1.18 - System Administration • 2 - AC - AMS operations (v)ILT <ul style="list-style-type: none"> ◦ 2.1 - Altiplano Access Controller operations for ISAM networks <p>Lab Guides</p> <ul style="list-style-type: none"> • 1 - Resource files <ul style="list-style-type: none"> ◦ 1.1 - workflows
Delivery Type	Curriculum with Self-Paced Learning

Duration	02:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Advanced

6.8 Altiplano Access Controller Administration | FN03999-K-2212

Course number	FN03999-K-2212
Brief Description	<ul style="list-style-type: none"> • This training helps you learn the general administration functions of the Access Controller. It teaches you how to use it for Provisioning, Health Monitoring, Intent based Networking and Network Visualization.
Target Group	<ul style="list-style-type: none"> • Personnel who administer Altiplano Access Controller
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Perform license management in Access Controller • Manage roles and users for Access Controller through Keycloak • Manage blueprints in Access Controller • Manage device extensions in Access Controller • Manage device software upgrades through WebDAV in Access Controller • Manage NETCONF and other device managers in Access Controller • Analyze alarms related to Access Controller in Kibana • Demonstrate how to access and manage logs related to Access Controller and devices • Demonstrate how to access and view monitoring metrics in Grafana • Explain how georedundancy is supported in Access Controller • Explain how network partitioning is performed through PAP <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • Access Controller License Management <ul style="list-style-type: none"> ◦ Manage the Access Controller license through the Access Controller WebUI NC Client application ◦ Manage the Access Controller license through the Access Controller WebUI System Administration application • User and Role Management in the Access Controller <ul style="list-style-type: none"> ◦ Access Keycloak application in Kubernetes Cluster for Access Controller. ◦ Manage roles and Access Controller users in Keycloak. • Blueprint Management in Access Controller <ul style="list-style-type: none"> ◦ Explain the purpose of blueprints in NAC. ◦ Perform download and import of blueprints in Access Controller. • Device Extension Management in AC <ul style="list-style-type: none"> ◦ Explain the purpose of device extensions. ◦ Manage device extensions through NC client. ◦ Manage device extensions through WebUI of Access Controller. • MDS to manage Device Managers in AC <ul style="list-style-type: none"> ◦ Explain the purpose of Manager Directory Service in Access Controller. ◦ Manage device managers in Access Controller through NETCONF macros. ◦ Manage device managers through System Administration application of Access Controller. ◦ Explain the mandatory parameter and its values required to create a device manager in Access Controller. • Log Management in Access Controller <ul style="list-style-type: none"> ◦ Explain the terms log scope, log type, and log level in relation to logging in Access Controller

	<ul style="list-style-type: none"> ◦ Configure logging through edit-config requests in Access Controller ◦ Demonstrate how to access different logs in Kibana • System Resource Monitoring in AC <ul style="list-style-type: none"> ◦ Explain resource monitoring through Grafana for Access Controller. ◦ Demonstrate how to access and view monitoring metrics in Grafana. • System Administration and Georedundancy <ul style="list-style-type: none"> ◦ Explain the actions functionality for action management in the Access Controller. <ul style="list-style-type: none"> ◦ Explain how georedundancy is supported in Altiplano Access Controller deployment. • Partition Access Profile <ul style="list-style-type: none"> ◦ Explain the purpose of PAP features in Altiplano AC. ◦ Manage PAPs and PAP Groups in Altiplano AC. ◦ Assign users to a PAP Group in Keycloak.
Prerequisite	<ul style="list-style-type: none"> • Understand Software Defined Access Networks (not enforced) • TAC60060 Nokia Altiplano Access Controller Introduction (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Altiplano Access Controller Administration <ul style="list-style-type: none"> ◦ 1.1 - Download Course PDF ◦ 1.2 - Access Controller License Management ◦ 1.3 - User and Role Management in the Access Controller ◦ 1.4 - Blueprint Management in Access Controller ◦ 1.5 - Device Extension Management in AC ◦ 1.6 - MDS to manage Device Managers in AC ◦ 1.7 - Log Management in Access Controller ◦ 1.8 - System Resource Monitoring in AC ◦ 1.9 - System Administration and Georedundancy ◦ 1.10 - Partition Access Profile
Delivery Type	Curriculum with Self-Paced Learning
Duration	02:50 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.9 Wi-Fi 6 Essentials | FN03915-W-2007

Course number	FN03915-W-2007
Brief Description	Wi-Fi 6 Essentials FN03915-W-2007
Target Group	<ul style="list-style-type: none"> • undefined
Objectives	<p>By the end of the course, participants will be able to:</p> <ul style="list-style-type: none"> • Identify - key advances in IEEE 802.11ax • Describe - multi-user multiple input multiple output • Restate - orthogonal frequency division multiple access • Describe - uplink scheduling and target wake timer • Contrast - the benefits of 1024-QAM • Identify - how changes symbol duration, cyclic prefix, and guard intervals are beneficial <p>Course Outline Student Guides 1 - Wi-Fi 6 Essentials 1.1 - Wi-Fi 6 Essentials</p>
Prerequisite	No prerequisites
Contents	of this course includes key advances in standards for Wi-Fi 6. The various technical aspects are discussed, and the advantages they bring to the evolving Wi-Fi environment. The course ends with a brief discussion of the application of standards to network connections, disclosing various requirements of home versus business use.
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.10 Nokia WiFi Overview| FN03925-W-2103

Course number	FN03925-W-2103
Brief Description	<ul style="list-style-type: none"> This overview describes the features and functions of the components including beacons, gateways, cloud controller, and the mobile app.
Target Group	<ul style="list-style-type: none"> Nokia employees Describe value and functions of Nokia WiFi Solution Nokia internals/Partners who sell Describe value and functions of Nokia WiFi Solution Personnel who plan Describe value and functions of Nokia WiFi Solution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Name the component parts of the Nokia WiFi solution Describe values of Nokia WiFi solution to subscribers and service providers Describe Nokia WiFi differentiation; Describe features of Nokia WiFi gateways and beacons Describe functions of Nokia WiFi mobile apps Describe functions of Nokia WiFi cloud controller
Prerequisite	<ul style="list-style-type: none"> Understand frequently used terms in ICT industry (not enforced)
Contents	<ul style="list-style-type: none"> 1 - Nokia WiFi Overview <ul style="list-style-type: none"> 1.1 - Nokia WiFi Overview
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.11 Nokia BBD New Generation Device Management Protocols | TAC60065-W-0002

Course number	TAC60065-W-0002
Brief Description	This course explains the two most important protocols in the Nokia Smart Home Solution: TR-069 and OMA-DM.
Target Group	Nokia internals/Partners who plan to have an understanding of the TR-069 and OMA-DM protocols.
Objectives	By the end of the course, participants will be able to: <ul style="list-style-type: none"> • Understand the Nokia Smart Home Solution architecture, • List the functions provided by the TR-069 protocol, • Explain the session initiation and connection request in the TR069 protocol, • Explain the different Inform messages, • Understand the need for and the use of OMA-DM, • Explain a session in the OMA-DM protocol.
Prerequisite	none
Contents	Section 1: Technology <ul style="list-style-type: none"> • Digital Home: Introduction to New Generation Device Management Protocols
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.12 WiFi Fundamentals | FN05088-W-2211

Course number	FN05088-W-2211
Brief Description	<ul style="list-style-type: none"> This course explains WiFi Fundamentals.
Target Group	<ul style="list-style-type: none"> Personnel who work in WiFi product and solution. Everyone who wish to learn about WiFi technology.
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe WiFi overview of market, standards & organizations Analyze radio frequency fundamentals Describe WiFi technology essentials. Explain 802.11 Evolution and future Compare IEEE and 3GPP, WiFi 6 and 5G
Prerequisite	<ul style="list-style-type: none"> Basic telecommunications knowledge. (not enforced) Basic computer network knowledge. (not enforced)
Contents	<ul style="list-style-type: none"> 1 - WiFi Fundamentals <ul style="list-style-type: none"> 1.1 - WiFi Fundamentals
Delivery Type	Web Based Training
Duration	01:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.13 WiFi Mesh Technology | FN05089-W-2211

Course number	FN05089-W-2211
Brief Description	<ul style="list-style-type: none"> • This course explains WiFi Mesh Basics, Easy Mesh and Nokia's Implementation
Target Group	<ul style="list-style-type: none"> • Personnel who work in WiFi product and solution • Everyone who wish to learn about WiFi technology
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe the WiFi Mesh basics and the difference with other methods • Explain the WiFi Mesh technology and How Mesh networks work • Describe Nokia's Implementation of WiFi EasyMesh
Prerequisite	
Contents	<ul style="list-style-type: none"> • 1 - WiFi Mesh Technology <ul style="list-style-type: none"> ◦ 1.1 - WiFi Mesh Technology
Delivery Type	Web Based Training
Duration	01:00 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.14 NWCC Home Console | TAC60070-W-0003

Course number	TAC60070-W-0003
Brief Description	NWCC Home Console TAC60070-W-0003
Target Group	
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe the Digital Home Solution Network • Explain how to get started with ONT and OLT configuration • Explain the use of the Smart Home App
Prerequisite	
Contents	<ul style="list-style-type: none"> • 1 - Description <ul style="list-style-type: none"> ◦ 1.1 - Nokia Smart Home Application
Delivery Type	Web Based Training
Duration	00:15 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.15 Nokia WiFi End-to-End Solution Overview | FN05082-W-2210

Course number	FN05082-W-2210
Brief Description	<ul style="list-style-type: none"> This course describes an overview of the Nokia Home WiFi product and solution.
Target Group	<ul style="list-style-type: none"> Personnel who work in WiFi product and solution. Everyone who wish to learn about WiFi technology.
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe the WiFi market, Challenges, and requirements Explain Nokia's mesh-enabled product portfolio Describe Service Provider-managed WiFi, and Value-added services Discuss deployment scenarios
Prerequisite	<ul style="list-style-type: none"> Basic telecommunications knowledge. (not enforced) Basic computer network knowledge. (not enforced)
Contents	<ul style="list-style-type: none"> 1 - Nokia WiFi Product Overview <ul style="list-style-type: none"> 1.1 - Nokia WiFi Product Overview
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.16 ONU and CPE Overview | TAC60019-W-0007

Course number	TAC60019-W-0007
Brief Description	<ul style="list-style-type: none"> • The learning explains the different type of ONTs and CPEs available.
Target Group	<ul style="list-style-type: none"> • Personnel who deploy . • Personnel who operate . • Personnel who plan .
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe the different home devices • List the possible interfaces for WAN and LAN • List the different functions and their implementations • Explain the naming convention • Explain the management options <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • ONU and CPE product overview <ul style="list-style-type: none"> ◦ Describe the different home devices ◦ List the possible interfaces for WAN and LAN ◦ List the different functions and their implementations ◦ Explain the naming convention ◦ Explain the management options
Prerequisite	
Contents	<ul style="list-style-type: none"> • 1 - <ul style="list-style-type: none"> ◦ 1.1 - ONU and CPE product overview
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.17 Nokia WiFi Cloud Controller (NWCC) Introduction | FN03927-W-2206

Course number	FN03927-W-2206
Brief Description	<ul style="list-style-type: none"> • The course provides an introduction of the Cloud Controller covering its components, functions and how it inter-works with the Nokia WiFi solution.
Target Group	<ul style="list-style-type: none"> • Personnel who plan Describe value and functions of Nokia WiFi Service Controller • Personnel who install Describe value and functions of Nokia WiFi Service Controller • Personnel who commission and integrate Describe value and functions of Nokia WiFi Service Controller • Personnel who administer Describe value and functions of Nokia WiFi Service Controller
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Identify component parts of the Cloud Controller • Describe functions of Home Console • Describe functions of Network Console <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • Nokia WiFi Cloud Controller <ul style="list-style-type: none"> ◦ Describe value of Nokia WiFi Cloud Controller ◦ Illustrate Nokia WiFi Cloud Controller component parts
Prerequisite	<ul style="list-style-type: none"> • Being aware of the components in Nokia WiFi Solution (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Nokia WiFi Cloud Controller <ul style="list-style-type: none"> ◦ 1.1 - Nokia WiFi Cloud Controller
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.18 Fixed Wireless Access Technology Introduction | FN03992-W-0004

Course number	FN03992-W-0004
Brief Description	<ul style="list-style-type: none"> • This course gives an introduction about Fixed Wireless Access technologies.
Target Group	<ul style="list-style-type: none"> • Personnel who plan Fastmile
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Recognize the need for Fixed Wireless Access • Recognize the technologies used in Fixed Wireless Access • Recognize the FastMile 4G/5G solution
Prerequisite	
Contents	<ul style="list-style-type: none"> • 1 - Fixed Wireless Access Technology Introduction
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.19 Broadband Anyhaul for 5G Networking Overview | FN03901-W-2206

Course number	FN03901-W-2206
Brief Description	<ul style="list-style-type: none"> This course describes the component parts of the Broadband Anyhaul solution.
Target Group	<ul style="list-style-type: none"> Nokia internals/Partners who sell Broadband Anyhaul Solution Personnel who plan Broadband Anyhaul Solution Personnel who operate Broadband Anyhaul Solution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe Broadband Anyhaul/Xhaul Solution
Prerequisite	<ul style="list-style-type: none"> None (not enforced)
Contents	<ul style="list-style-type: none"> 1 - Broadband Anyhaul for 5G Networking Overview
Delivery Type	Web Based Training
Duration	00:15 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.20 Broadband Anyhaul Solution - Backhaul Description Overview | FN03902-W-2207

Course number	FN03902-W-2207
Brief Description	<ul style="list-style-type: none"> • A learning object to describe the unique characteristics of the Backhaul segment in Broadband Anyhaul solution.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who sell Broadband Anyhaul and Backhaul Solution • Personnel who plan Broadband Anyhaul and Backhaul Solution • Personnel who operate Broadband Anyhaul and Backhaul Solution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe Broadband Backhaul Solution
Prerequisite	<ul style="list-style-type: none"> • None (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Broadband Anyhaul Solution - Backhaul Description
Delivery Type	Web Based Training
Duration	00:15 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.21 Broadband Anyhaul Solution - Midhaul Description Overview | FN03903-W-2207

Course number	FN03903-W-2207
Brief Description	<ul style="list-style-type: none"> • A learning object to describe the unique characteristics of the Midhaul segment in Broadband Anyhaul solution.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who sell Broadband Anyhaul and Midhaul Solution • Personnel who plan Broadband Anyhaul and Midhaul Solution • Personnel who operate Broadband Anyhaul and Midhaul Solution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe Broadband Midhaul Solution
Prerequisite	<ul style="list-style-type: none"> • None (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Broadband Anyhaul Solution - Midhaul Description
Delivery Type	Web Based Training
Duration	00:15 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.22 Broadband Anyhaul Solution - Fronthaul Description Overview | FN03904-W-2207

Course number	FN03904-W-2207
Brief Description	<ul style="list-style-type: none"> • A learning object to describe the unique characteristics of the Fronthaul segment in Broadband Anyhaul solution.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who sell Broadband Anyhaul and Fronthaul Solution • Personnel who plan Broadband Anyhaul and Fronthaul Solution • Personnel who operate Broadband Anyhaul and Fronthaul Solution
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe Broadband Fronthaul Solution
Prerequisite	<ul style="list-style-type: none"> • None (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Broadband Anyhaul Solution - Fronthaul Description
Delivery Type	Web Based Training
Duration	00:15 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Aware

6.23 SDAN solution in FN Introduction | TAC03533-K

Course number	TAC03533-K
Brief Description	This learning provides you an introduction to the Nokia Altiplano management platforms and the Software Defined Access Networks technology. You will learn the basics of the Access Controller, as well as SDN and NFV, and how both are used in the Fixed Networks products.
Target Group	
Objectives	
Prerequisite	
Contents	
Delivery Type	Curriculum with Self-Paced Learning
Duration	03:05 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.24 SDAN Technologies & Products | TAC03534K

Course number	TAC03534K
Brief Description	<p>This curriculum provides you an introduction of the Altiplano Access controller management platform, and Lightspan nodes which are used in the Nokia SDAN solution.</p> <p>As well as an introduction to XGS-PON, 25G-PON and FAST.</p> <p>And an introduction to the different protocols used in the SDAN solution, such as IPFIX, Netconf, Yang,....</p> <p>Recommended prerequisite: TAC03533K Altiplano and SDAN in FN Introduction</p>
Target Group	
Objectives	
Prerequisite	
Contents	
Delivery Type	Curriculum with Self-Paced Learning
Duration	07:20 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.25 Multicast and IGMP Basics Introduction | TAC60006-W-0004

Course number	TAC60006-W-0004
Brief Description	<ul style="list-style-type: none"> This WBT is designed for those who need to understand the basics of Multicast (MC) and IGMP.
Target Group	<ul style="list-style-type: none"> Personnel who needs to know the basics on MC and IGMP
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Identify the need for Multicast Describe the methods of Data Delivery (Unicast, Broadcast and Multicast) Describe the mapping IP Multicast to MAC Explain what IGMP is used for Describe the different IGMP versions Differentiate between IGMP snooping and proxy
Prerequisite	
Contents	<ul style="list-style-type: none"> 1 - Multicast and IGMP basics <ul style="list-style-type: none"> 1.1 - Multicast and IGMP basics Introduction
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.26 QoS Basics | TAC60007-W-0002

Course number	TAC60007-W-0002
Brief Description	<ul style="list-style-type: none"> This 30 minute WBT is designed for those that need to understand the basics of Quality of Service (QoS).
Target Group	<ul style="list-style-type: none"> Personnel who needs to know the basics on QoS
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe what Quality of Service (QoS) is and why it's needed Explain the process steps of QoS
Prerequisite	
Contents	<ul style="list-style-type: none"> 1 - QoS Basics <ul style="list-style-type: none"> 1.1 - QoS basics
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.27 Fiber principles | TAC60008-W-0003

Course number	TAC60008-W-0003
Brief Description	This 45 minute WBT will explain the basic fundamentals in using fiber as a transmission media
Target Group	Nokia Engineers or Business Partners
Objectives	By the end of the course, participants will be able to: <ul style="list-style-type: none"> • Understand how fiber works; reflection, refraction, what is it made of, • Identify the different fiber types, connectors and lambdas used, • Explain the different components used in fiber transmission.
Prerequisite	
Contents	
Delivery Type	Web Based Training
Duration	00:45 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.28 LACP & LAG Explained | TAC60017-W-0002

Course number	TAC60017-W-0002
Brief Description	<ul style="list-style-type: none"> This course explains what link aggregation is and how it has to be configured.
Target Group	<ul style="list-style-type: none"> Personnel who needs to know more on LACP and LAG
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Describe a link aggregation Configure a LAG
Prerequisite	
Contents	<ul style="list-style-type: none"> 1 - LACP & LAG Explained <ul style="list-style-type: none"> 1.1 - LACP & LAG Explained
Delivery Type	Web Based Training
Duration	00:30 hrs
Maximum Number of Students	n.a.
Course Type	THY - Theoretical course
Course Level	Standard

6.29 Lightspan SX-4-8-16F Basic Commissioning | FN05059-V-2112

Course number	FN05059-V-2112
Brief Description	<ul style="list-style-type: none"> • This course explains the basic commissioning of the Lightspan SX-4, 8 and 16F: It is the turn-up procedure so the Distribution Point Unit (DPU), in this case the Lightspan SX, is present in the Altiplano Device Manager.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who commission and integrate Personnel who plan to commission and integrate Lightspan SX. • Nokia internals/Partners who deploy Personnel who plan to deploy Lightspan SX. • Nokia internals/Partners working in Provisioning Personnel who plan to provision Lightspan SX. • Personnel who maintain Personnel who plan to maintain Lightspan SX.
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe SX-16F, SX-8F, SX-4F interface ports • Describe Lightspan SX call-home mechanism • Explain Altiplano device creation using Altiplano Web applications • Explain Device creation using Altiplano Controller macros and RPC messages • Explain Device creation using Altiplano Intent CLI • Explain How to enable CLI access • Explain How to configure fixed management IP address and Altiplano device creation for fixed IP <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • Lightspan SX interface ports overview <ul style="list-style-type: none"> ◦ Describe the interface ports for management of the Lightspan SX nodes • Lightspan SX Call-home Mechanism <ul style="list-style-type: none"> ◦ Describe Lightspan SX call home mechanism ◦ Describe X.509 certificates for Lightspan and Altiplano ◦ Explain How to restart call-home • Device Creation Using Access Controller Web Application <ul style="list-style-type: none"> ◦ Create SX device using Access Controller IBN provisioning application ◦ Create SX device using Access Controller Network Views application • Device Creation Using Altiplano Macros and RPC Messages <ul style="list-style-type: none"> ◦ Create Devices using Altiplano macros ◦ Create Devices using NETCONF/YANG RPC messages • Device Creation Using Intent CLI <ul style="list-style-type: none"> ◦ Create Device using Intent CLI • Netconf-console to Open ssh Port 2024 <ul style="list-style-type: none"> ◦ Describe how to enable CLI access • Fixed Management IP Address with CLI <ul style="list-style-type: none"> ◦ Explain how to configure a fixed management IP address with CLI and RPC

Prerequisite	<ul style="list-style-type: none"> • TAC60071W: SDAN solution in Fixed Networks (not enforced) • Nokia Altiplano Access Virtualizer introduction (not enforced) • TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Lightspan SX-4-8-16 Overview <ul style="list-style-type: none"> ◦ 1.1 - Lightspan SX interface ports overview ◦ 1.2 - Lightspan SX Call-home Mechanism • 2 - Altiplano Device Creation <ul style="list-style-type: none"> ◦ 2.1 - Device Creation Using Access Controller Web Application ◦ 2.2 - Device Creation Using Altiplano Macros and RPC Messages ◦ 2.3 - Device Creation Using Intent CLI ◦ 2.4 - Netconf-console to Open ssh Port 2024 ◦ 2.5 - Fixed Management IP Address with CLI ◦ 2.6 - Lab Exercises
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Standard

6.30 Lightspan L2 Forwarding configuration | FN03953-V-2112

Course number	FN03953-V-2112
Brief Description	<ul style="list-style-type: none"> This course explains the Layer 2 forwarding configuration on the Lightspan device. The configuration is done with the Altiplano Access Controller and where possible with vCLI.
Target Group	<ul style="list-style-type: none"> Personnel who deploy Personnel who commission and integrate Personnel working in Provisioning Personnel working in Service Fulfillment
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Explain the Layer 2 service configuration through intents on the Altiplano Access Controller Configure the Layer 2 service configuration through intents on the Altiplano Access Controller Explain the Layer 2 service configuration using Altiplano intent CLI Configure the Layer 2 service configuration using Altiplano intent CLI <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> L2 configuration with Altiplano intents <ul style="list-style-type: none"> Explain the Layer 2 service configuration through intents on the Altiplano Access Controller Configure the Layer 2 service configuration through intents on the Altiplano Access Controller L2 configuration with Altiplano intent CLI <ul style="list-style-type: none"> Explain the Layer 2 service configuration using Altiplano intent CLI Configure the Layer 2 service configuration using Altiplano intent CLI
Prerequisite	<ul style="list-style-type: none"> TAC05059: Lightspan SX-16F basic commissioning (not enforced) FN03917: Lightspan_DF_Basic_Commissioning (not enforced) FN03956: Lightspan FX Basic commissioning (not enforced) FN03958: Lightspan_g.fast_basic_configuration (not enforced) FN03955: Lightspan xPON basic configuration (not enforced)
Contents	<ul style="list-style-type: none"> 1 - General <ul style="list-style-type: none"> 1.1 - Download Student Guide 1.2 - Lab Guide 2 - Configuration <ul style="list-style-type: none"> 2.1 - L2 configuration with Altiplano intents 2.2 - L2 configuration with Altiplano intent CLI 2.3 - Exercise L2 configuration with Altiplano
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed

Course Level	Standard
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6.31 Lightspan xPON basic configuration | FN03955-V-2112

Course number	FN03955-V-2112
Brief Description	<ul style="list-style-type: none"> This course explains the configuration of an ONT on a Lightspan DF, FX or MF device.
Target Group	<ul style="list-style-type: none"> Personnel who deploy Lightspan xPON
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Explain the use of intents on the Access Controller to configure an ONT. Configure an ONT using intents on the Access Controller. Explain the use of Altiplano intent vCLI on the Access Controller to configure an ONT. Configure an ONT using Altiplano intent vCLI on the Access Controller. <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> Configure an ONT through intents on the Access Controller <ul style="list-style-type: none"> Explain the use of intents on the Access Controller to configure an ONT. Configure an ONT using intents on the Access Controller. Configure an ONT using the Altiplano intent vCLI. <ul style="list-style-type: none"> Explain the use of Altiplano intent vCLI on the Access Controller to configure an ONT. Configure an ONT using Altiplano intent vCLI on the Access Controller.
Prerequisite	<ul style="list-style-type: none"> TAC60071W: SDAN solution in Fixed Networks (not enforced) Nokia Altiplano Access Virtualizer introduction (not enforced) TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced) Lightspan Basic commissioning FX, DF-16, MF-2 (not enforced)
Contents	<ul style="list-style-type: none"> 1 - General <ul style="list-style-type: none"> 1.1 - Download Student Guide 1.2 - Lab Guide 2 - Configuration <ul style="list-style-type: none"> 2.1 - Configure an ONT through intents on the Access Controller 2.2 - Configure an ONT using the Altiplano intent vCLI. 2.3 - Exercise - Configure an ONT on a Lightspan device
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed

Course Level	Standard
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6.32 Lightspan FX Basic Commissioning | FN03956-V-2112

Course number	FN03956-V-2112
Brief Description	<ul style="list-style-type: none"> This course explains the Basic Commissioning of the FX from a customer point of view. The focus trun-up a Lightspan FX and device creation in the Altiplano Access Controller.
Target Group	<ul style="list-style-type: none"> Personnel who commission and integrate Personnel who plan to commission and integrate Lightspan FX. Personnel who maintain Personnel who plan to maintain Lightspan FX. Personnel responsible for troubleshooting Personnel who are a responsible for Lightspan FX troubleshooting. Personnel who deploy Personnel who plan to deploy Lightspan FX
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Explain Lightspan FX Turn-up Procedure Explain the Altiplano Device Creation
Prerequisite	<ul style="list-style-type: none"> TAC60071W: SDAN solution in Fixed Networks (not enforced) Nokia Altiplano Access Virtualizer introduction (not enforced) TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced)
Contents	<p>Student Guides</p> <ul style="list-style-type: none"> 1 - General <ul style="list-style-type: none"> 1.1 - Student Guide 1.2 - Lab Guide 2 - Configuration <ul style="list-style-type: none"> 2.1 - Lightspan FX Product Overview 2.2 - Lightspan FX Turn-up Procedure 2.3 - Altiplano Device Creation <p>Lab Guides</p> <ul style="list-style-type: none"> 1 - Lab Guide <ul style="list-style-type: none"> 1.1 - Lightspan FX Basic Commissioning – Exercise Book
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Standard

6.33 Lightspan g.fast basic configuration | FN03958-V-2112

Course number	FN03958-V-2112
Brief Description	<ul style="list-style-type: none"> • This course explains the basic configuration of a g. fast port on the Lightspan SX-4, 8 or 16F device.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who commission and integrate . • Nokia internals/Partners who deploy . • Nokia internals/Partners who sell . • Nokia internals/Partners responsible for trials, pilots or early rollout . • Nokia internals/Partners working in Provisioning .
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Explain the use of intents on the Access Controller to configure a G.FAST port. • Configure a G.FAST port using intents on the Access Controller. • Explain the use of Altiplano intent vCLI on the Access Controller to configure a G.FAST port. • Configure a G.FAST port using Altiplano intent vCLI on the Access Controller. <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • G.fast configuration with Altiplano intents <ul style="list-style-type: none"> ◦ Explain the use of intents on the Access Controller to configure a G.FAST port. ◦ Configure a G.FAST port using intents on the Access Controller. • G.fast configuration using the Altiplano intent vCLI <ul style="list-style-type: none"> ◦ Explain the use of Altiplano intent vCLI on the Access Controller to configure a G.FAST port. ◦ Configure a G.FAST port using Altiplano intent vCLI on the Access Controller.
Prerequisite	<ul style="list-style-type: none"> • TAC60071W: SDAN solution in Fixed Networks (not enforced) • Nokia Altiplano Access Virtualizer introduction (not enforced) • TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced) • TAC05059 SX-4-8-16F basic commissioning (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - General <ul style="list-style-type: none"> ◦ 1.1 - Download Student Guide ◦ 1.2 - Lab Guide • 2 - Configuration <ul style="list-style-type: none"> ◦ 2.1 - G.fast configuration with Altiplano intents ◦ 2.2 - G.fast configuration using the Altiplano intent vCLI ◦ 2.3 - Exercise G.fast configuration
Delivery Type	Classroom
Duration	0.5 days

Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Advanced

6.34 Lightspan DF16-GM Basic Commissioning | FN03917-V-2112

Course number	FN03917-V-2112
Brief Description	<ul style="list-style-type: none"> • This course explains the Basic Commissioning of the Lightspan DF. The principles of certificates are explained and device creation in the Altiplano Controller is demonstrated. Also, the creation through vCLI is explained.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who commission and integrate Personnel who plan to commission and integrate Lightspan DF-16GM. • Nokia internals/Partners who deploy Personnel who plan to deploy Lightspan DF-16GM. • Nokia internals/Partners who sell Personnel who plan to sell Lightspan DF-16GM. • Nokia internals/Partners responsible for trials, pilots or early rollout Personnel who are responsible for Lightspan DF-16GM troubleshooting. • Nokia internals/Partners working in Provisioning Personnel who are responsible for Lightspan DF-16GM Provisioning.
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Describe the DF-16GM product and interface ports • Explain DF - 16GM Call - home Mechanism • Explain Lightspan DF device creation using Altiplano Controller Applications • Explain Lightspan DF device creation using Altiplano Intent vCLI • Explain Lightspan DF-16GM fixed management IP configuration
Prerequisite	<ul style="list-style-type: none"> • TAC60071W: SDAN solution in Fixed Networks (not enforced) • Nokia Altiplano Access Controller Operations (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - Lightspan DF-16GM Overview <ul style="list-style-type: none"> ◦ 1.1 - Lightspan DF-16GM Device and Interfaces Introduction ◦ 1.2 - Lightspan DF-16GM Call-home Mechanism • 2 - Device Configuration <ul style="list-style-type: none"> ◦ 2.1 - Device Creation Using Access Controller Applications ◦ 2.2 - Configure the DF-16GM through vCLI ◦ 2.3 - Lightspan DF Fixed Management IP Configuration
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Standard

6.35 Lightspan Multicast configuration | FN03951-V-2112

Course number	FN03951-V-2112
Brief Description	<ul style="list-style-type: none"> • This course explains the basic configuration of multicast on the Lightspan SX-4, 8 or 16F with Altiplano Access Controller intents.
Target Group	<ul style="list-style-type: none"> • Nokia internals/Partners who commission and integrate • Nokia internals/Partners who deploy • Nokia internals/Partners responsible for trials, pilots or early rollout • Nokia internals/Partners working in Provisioning
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> • Explain the use of intents on the Access Controller to configure multicast. • Configure the multicast service configuration through intents on the Altiplano Access Controller • Explain the use of Altiplano intent CLI on the Access Controller to configure multicast • Configure the multicast service configuration using Altiplano intent CLI <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> • Multicast configuration with Altiplano intents <ul style="list-style-type: none"> ◦ Explain the use of intents on the Access Controller to configure multicast ◦ Configure the multicast service configuration through intents on the Altiplano Access Controller • Multicast configuration with Altiplano intent CLI <ul style="list-style-type: none"> ◦ Explain the use of Altiplano intent CLI on the Access Controller to configure multicast ◦ Configure the multicast service configuration using Altiplano intent CLI
Prerequisite	<ul style="list-style-type: none"> • TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced) • Lightspan basic commissioning (not enforced) • Lightspan g.fast basic configuration (not enforced) • Lightspan xPON basic configuration (not enforced)
Contents	<ul style="list-style-type: none"> • 1 - General <ul style="list-style-type: none"> ◦ 1.1 - Download Student Guide ◦ 1.2 - Lab Guide • 2 - Configuration <ul style="list-style-type: none"> ◦ 2.1 - Multicast configuration with Altiplano intents ◦ 2.2 - Multicast configuration with Altiplano intent CLI ◦ 2.3 - Exercise Multicast configuration with Altiplano intents
Delivery Type	Classroom
Duration	0.5 days

Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Advanced

6.36 Lightspan QoS configuration | FN03952-V-2212

Course number	FN03952-V-2212
Brief Description	<ul style="list-style-type: none"> This course explains the configuration of QoS through intents in the Access Controller.
Target Group	<ul style="list-style-type: none"> Personnel who deploy Lightspan
Objectives	<p>The learner will be able to:</p> <ul style="list-style-type: none"> Explain the use of intents in the Access Controller to configure QoS <p>In detail the learner will be able to:</p> <ul style="list-style-type: none"> QoS configuration <ul style="list-style-type: none"> Describe QoS in Lightspan Explain how to use intents in the Access Controller to configure QoS
Prerequisite	<ul style="list-style-type: none"> TAC60071W: SDAN solution in Fixed Networks (not enforced) Nokia Altiplano Access Virtualizer introduction (not enforced) TAC05057K+TAC05058K: Nokia_Altiplano_Access_Virtualizer_Operations+installation and administration (not enforced) FN03956: FX Basic commissioning (not enforced) FN03953: L2 configuration (not enforced)
Contents	<ul style="list-style-type: none"> 1 - General <ul style="list-style-type: none"> 1.1 - Download Student Guide 1.2 - Lab Guide 2 - Configuration <ul style="list-style-type: none"> 2.1 - QoS configuration
Delivery Type	Classroom
Duration	0.5 days
Maximum Number of Students	8
Course Type	PTB - Practical and theoretical course with testbed
Course Level	Standard

7. Additional Recommended courses:

8. Training Facilities

Instructor Led Classroom Sessions

Where classroom sessions are delivered at Nokia premises with Nokia test beds then Nokia assumes full responsibility for ensuring the suitability of both the classroom and testbed for the training session. Where classroom sessions are delivered at customer premises using remote connectivity to a Nokia lab Nokia is responsible for ensuring the test bed is prepared and suitable for the training session. The customer is responsible for providing a suitable room for the session and appropriate connectivity for connection to Nokia remote lab.

Where the classroom sessions are delivered on customer premises using a customer testbed then the customer is fully responsible for ensuring both the room & testbed are suitable for the training session. Nokia will provide details of the facilities, configuration, equipment & connectivity required in advance of the sessions using customer classrooms and/or customer testbeds.

Where needed Nokia will provide access to Learning Platform to facilitate the delivery of training content for the classroom sessions.

Virtual Classroom Sessions

Where sessions are delivered Virtually using remote connectivity to a Nokia lab Nokia is responsible for ensuring the test bed is prepared and suitable for the training session. The customer is responsible for providing suitable environment for the session and appropriate connectivity for connection to Nokia remote lab.

Nokia will provide details of the facilities, configuration, equipment & connectivity required in advance of the Virtual sessions.

Where needed Nokia will provide access to the Nokia Learning Platform to facilitate the delivery of training content for the virtual classroom sessions.

9. Training Documentation

The default method for delivering training documentation is in electronic format (e-Documentation). Each participant will receive prior to the training, an email with which contains a download link, enabling each participant to download and save a copy of the documentation. Downloads will be available one (1) week prior to course start date and four (4) weeks after the course end date. The electronic documentation is provided in .pdf format and allows the participant to add / edit and save notes within the course material. It is advised that course participants bring their laptops to the training event or download and print a copy of the training documentation.

10. Course Evaluation

The default method for providing the end of course evaluation is via electronic format. Participants will receive an email with a URL for accessing the evaluation. On the final day of the training the Training will allow time for the evaluation to be completed. The evaluation can be accessed via PC, smartphone and tablets.

11. Certificate of Participation

The default method for providing the Certificate of Participation is via electronic format, which can be downloaded, saved and printed

12. Terms and Conditions for Customer Training Services

This Amendment (hereinafter "Amendment") to the [insert name of Care agreement], is entered into by and between:

NOKIA Legal Entity, a corporation validly organized and existing under the laws of Governing Law, having its principal place of business at Legal Entity Address, business identity code Legal Entity Registration Information, including its Affiliates ("Nokia"); and

Customer Legal Entity, a company incorporated under the laws of Country with its principal office at Composite Address registration number Tax Code 1 (the "Buyer"). registration number Tax Code 2 (the "Supplier"). registration number VAT Registration Number (the "Supplier").

Each of the above referred to individually as a "Party" and jointly as the "Parties".

WHEREAS the Parties have entered into a Agreement Name agreement effective [insert date] (hereinafter "Agreement"); and

WHEREAS now the Parties wish to make changes to the Agreement as follows.

NOW THEREFORE IT IS HEREBY AGREED:

Changes to the Agreement

The Parties have agreed to replace and amend the present section "Terms and Conditions for Training Services" of the Agreement to read as in the following Section 15

No Other Modifications

All other terms and conditions of the Agreement and any other Amendment or Addendum made thereto, shall remain in force and effect unchanged, unless explicitly stated in this Amendment, and shall apply to this Amendment in full and this Amendment shall form an integral part of the Agreement.

Capitalised terms shall have the meaning ascribed to them in the Agreement, except to the extent explicitly set out otherwise in this Amendment.

Order of Precedence

In the event of a conflict between the terms of this Amendment and the terms of the Agreement, the terms of this Amendment shall prevail with respect to the subject matters herein.

Effective Date

This Amendment becomes effective Agreement Start Date (hereinafter "Effective Date").

Signatures.

This Agreement may be executed in any number of counterparts by either handwritten signatures or e-signatures. By using e-signature to sign this Agreement, the Parties acknowledge that execution in this manner creates a binding contract between the Parties.

IN WITNESS WHEREOF, the Parties have caused this Amendment to be signed in two (2) identical originals by their duly authorized representatives.

13. Definitions

“Delivery” refers to a training service which may be delivered as a self-study through electronic means, as a delivery with clear objectives via Instructor led classroom delivery or Instructor led virtual delivery, as a workshop with loosely defined subjects, as a seminar with specific theoretical topics, or as any other training product provided by Nokia.

“Private Delivery” is a training service which is delivered for a single Customer.

“Public Seat” is a training service open for all of Nokia Customers and for which the Customer has licensed a seat.

“Training Proposal” means the document issued by Nokia detailing the Training services to be provided.

“Training Venue” means the address at which the Training is to be provided by Nokia as set out in the Training Proposal.

“Training Day” Unless otherwise agreed, the standard length of a classroom training day is seven (7) hours, including a one-hour lunch break and appropriate morning/afternoon breaks.

Participant is a person of the customer’s organization who has been enrolled on the training.

14. Training Services

In order for Nokia to ensure that Training Services can be delivered, Buyer needs to provide the following information: course name, training description, dates, location, preferred training venue, duration, and number of participants

Customer acknowledges that Nokia training schedule and offer have a validity period of fourteen (14) calendar days., Nokia reserves the right to use scheduled resources otherwise and without further notice if no written acceptance is received.

Training is provided only for Nokia Customers, their authorized employees. Nokia competitors and their personnel may not attend Training, e-learning or virtual classroom training

Nokia reserves the right to request proof of identify of a Participant before the Training Services are being delivered not identified participants will be excluded from the training.

Classroom & virtual classroom sessions have a maximum number of students that can be accommodated within the session. Should additional students attend a session without prior agreement then Nokia reserves the right to either cancel the session or charge an additional fee per student

15. Confidential Information, Equipment and Intellectual Property

Ownership of all copyright and other intellectual property rights of course materials provided during the training, including but not limited to documentation, data, technical information, know-how specifications, drawings, and designs (hereafter "Information") furnished or produced by the Customer to or for Nokia, together with the copyright, design rights, or any other intellectual property rights shall be the exclusive property of Nokia and shall be treated as confidential by the Customer

Nokia grants the Customer a non-exclusive, non-transferable, non-assignable limited license to use, internally, a single copy of the Nokia course material for the sole benefit of each eligible participant registered for the applicable Training irrespective of the delivery format (e-learning, dedicated or virtual Instructor-Led classroom training.)

All material and Information provided by Nokia to participants during the Training cannot be re-used to provide or assist in the delivery of, a similar Training to any Customer personnel or Customer third party.

For those situations where Nokia provides its customised course content, the intellectual property ownership contained in such content remains the property of Nokia.

16. Fees and Payment Terms

The fees for the Training Services shall be set out in the purchase order. All invoices shall be payable within 30 (thirty) days of the date of the applicable invoice. For all instructor-led training Nokia shall be entitled to invoice the Customer upon completion of the training. For all self-paced learning (including web-based training and videos) Nokia shall be entitled to invoice the Customer after it has made the learning available to the Customer's employees.

Nokia's invoice shall quote the number of the agreement or order – on the provision that the Customer has provided a specific reference.

All prices are expressed exclusive of value added tax and the Customer shall pay the applicable VAT in addition to the price.

17. Training Venue

The Training shall be performed at the Training Venue on the date agreed and specified in the applicable purchase order. The Training Venue cannot be changed, without prior approval by Nokia

If the Training Venue is at the Customer's premises, the Customer shall be responsible for providing an appropriate environment, necessary equipment and connectivity to deploy the Training. In addition, Customer shall be responsible for identifying a contact person with whom Nokia will coordinate any applicable logistics.

The Customer is responsible for providing the list of participants to Nokia no later than 14 (fourteen) days prior to the Training start date.

Nokia will provide the participant with course material in electronic format (e-doc) prior to the Training service in order for the material to be downloaded by the participant and printed if required paper format documentation may be provided, upon request, with an additional cost to the Customer.

18. Training services Cancellation Terms

Cancellation 28 calendar days prior to commencement of training session

No fee will be charged

Cancellation 21 - 28 calendar days prior to commencement of training session

If the Customer cancels or reschedules the Training 21-28 calendar days prior to Training start day, 50% of the course fee plus non-reimbursable travel costs will be charged to Customer.

If Nokia cancels a Training during this time, an alternative Training delivery date will be provided in accordance to a date agreed with the Customer.

Cancellation within 20 calendar days of the commencement of the training session

If the Customer cancels the Training 0 -20 calendar days prior to Training start day, 100% of the course fee plus non-reimbursable travel costs will be charged to Customer.

If Nokia cancels the Training during this time, an alternative Training delivery date will be provided in accordance to a date agreed with the Customer. Any cancellation of self-study bookings is only possible upon prior agreement between the participant and Nokia.

19. Limitation of Liability

Nokia's liability for any direct losses, damages, costs and expenses, including legal fees, awarded against or incurred or paid by the Customer Nokia as a result of Nokia' breach of this Agreement shall be limited to the total amount paid by the Customer for the Training.

20. Disputes

Any dispute or claim must be registered with Nokia within 7 days of completion of the relevant Training, otherwise the Customer shall be deemed to have waived such claim.

21. Nokia obligations

Nokia agrees to provide a quality training experience to Customer. This includes: an instructor qualified to conduct the course(s) as well as all necessary training materials sufficient for the number of registered participants on the scheduled dates.

The Customer will assure that the participants have completed the necessary pre-requisites otherwise Nokia cannot be held liable for delivery quality.

Every Training will be evaluated upon completion with a training evaluation, conducted online evaluation only; the participant is requested to complete the online evaluation during the last day of the course.

The online evaluations submitted by Customer participants on the training delivery will be considered a key indicator of the Training quality.

Whenever a Training event is evaluated by Customer as of inadequate quality, Nokia will investigate the incident and determine the underlying root causes. This investigation will take into account the input of the Customer participants as well as the instructor. Nokia will share the result of the investigation with the Customer.

In case of inadequate quality, corrective actions will be decided upon by Nokia. Corrective actions could include among others (i) repetition of the same Training for the same group of Customer participants without any additional fees chargeable to customer except for travel and accommodation expenses, (ii) refund of the training fees, partially or totally, except for travel and accommodation expenses.

Each participant of a Training Course is required to attend for at least 80% of the Training duration in order to be considered 'Successful'. If a participant does not attend 80% of the training the Trainer will have the option not to mark the participant 'Successful' and therefore the said participant will not be able to download their Recognition of Participation and their Training History will not be updated as having completed the Training.