


CISCO CERTIFIED NETWORK ASSOCIATE



QUALIFICATION FILE



**Ministry of Micro, Small and Medium
Enterprises, New Delhi
(MSME-Technology Centre)**

NSQF QUALIFICATION FILE

Version 6: Draft of 08 March 2016

NSDA Reference

CONTACT DETAILS OF THE AWARDING BODY FOR THE QUALIFICATION

Name and Address of Awarding Body:

O/o DC (MSME),
Ministry of Micro, Small and Medium Enterprises
Nirman Bhawan,
Maulana Azad Road,
New Delhi - 110108

Name and Contact Details of Individual dealing with submission:

L.Raja Sekhar
Dy. General Manager
Contact No. +91 9437491950
Email- rajasekharl@yahoo.com

List of documents submitted in support of the Qualification File:

1. Detailed Curriculum (Ref: Annexure-I)

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SUMMARY

Qualification Title:

CISCO CERTIFIED NETWORK ASSOCIATE (MSME / CCNA / 70)

Nature and Purpose of the Qualification:

Nature: Certificate Course

Purpose:

To allow people in particular sector to learn new skills to deal with technological change. Computer Network professionals take care of the maintenance of computer Network, while networking involves connecting a group of computer systems for sharing data and information and WAN technologies.

Body/bodies which will award the Qualification:

MSME Technology Centre, Ministry of Micro, Small and Medium Enterprises, New Delhi

Body which will accredit providers to offer courses leading to the qualification:

MSME Technology Centre, Ministry of Micro, Small and Medium Enterprises, New Delhi

Body/bodies which will be responsible for assessment:

Examination Cell of MSME Technology Centre

Occupation(s) to which the Qualification gives access:

Network Associate/ Network Engineer/ Network Support Engineer.

Proposed level of the Qualification in the NSQF:

Level-6

Anticipated volume of training /learning required to complete the Qualification:

4 Months (520 Hours).

Entry requirements/recommendations:

Graduation in Discipline/Diploma/ Degree Engineering pass.

Progression from the qualification:

Business or organizations use this qualification as a basis in recruiting Engineers in the field of Network troubleshooting and management using Cisco IT Products.

Planned arrangements for the Recognition of Prior Learning (RPL)

No

International comparability where known:

Almost all the advanced Countries conduct training programmer on this qualification. However, the nature of course and duration of the course varies.

Formal Structure of the Qualification:

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Title of component	Mandatory / Optional	Estimated size (learning hours)	Level
Introduction to Network.	M	160	Level-6
Routing and Switching Essential.	M	160	Level-6
Scaling Network.	M	80	Level-6
Connecting Networks.	M	80	Level-6
Communication Skill	M	40	Level-6
Total		520	

Please attach any document giving further detail about the structure of the qualification – e.g. a Curriculum Document or a Qualification Pack.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

SECTION 1

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ASSESSMENT

Body/Bodies which will carry out Assessment:

Certifying Body of Cisco conducted online at Central Tool Room and Training Centre, Bhubaneswar

Will the Assessment Body be responsible for RPL Assessment?

Not yet established by Cisco

How will RPL assessment be managed and who will carry it out?

Not Applicable

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF.

1. ASSESSMENT GUIDELINE:

- Criteria for assessment based on each learning outcome, will be assigned marks proportionately to its importance.
- The assessment for the theory & practical part is based on knowledge bank of questions created by trainers and approved by Examination cell of MSME Technology Centre
- For each Individual batch, Examination cell will create unique question papers for theory part as well as practical for each examination.
- To pass the Qualification, every trainee should score a minimum of 70% cumulatively (Theory and Practical)
- Assessment comprises the following components:
 - Job carried out in labs/workshop
 - Record book/ daily diary
 - Answer sheet of assessment
 - Viva –voce
 - Progress chart
 - Attendance and punctuality

2. ASSESSORS:

MSME Technology Centre faculty looking after the course “**CISCO CERTIFIED NETWORK ASSOCIATE**”, also assesses the students as per guidelines set by Examination cell of MSME Technology Centre. Faculties have been trained from time to time to upgrade their skills on various aspects such as conduct of assessments, teaching methodology etc. These training are usually conducted online through CISCO WEBEX.

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3. ELIGIBILITY TO APPEAR IN THE EXAM:

Minimum 80% attendance is compulsory for the students to appear for the assessments.

4. MARKING SCHEME:

Sr.No.	Method of Assessments	Weightage (Max. marks)	Evaluator
1	Written Test	20	Trainer + Course coordinator + Online exam conducted by CISCO.
2	Practical Test	40	
3	Viva-voce	20	
4	Class/Workshop/Lab performance	20	
TOTAL		100	

5. PASSING MARKS:

Passing criteria is based on marks obtained in attendance record, term works, assignments, practical performance, practical's on real devices and simulators and Online exams

Minimum Marks to pass practical exam – 60%

Minimum Marks to pass theory exam – 40%

6. RESULTS AND CERTIFICATION:

The assessment results are backed by evidences collected by assessors. Successful trainees are awarded the certificates by MSME Technology Centre Ministry of MSME.

ASSESSMENT EVIDENCE:

Assessment evidence comprises the following components document in the form of records:

- 1) Activity carried out in labs/workshop
- 2) Record book/ daily diary
- 3) Answer sheet of assessment
- 4) Viva –voce
- 5) Progress chart
- 6) Attendance and punctuality

Title of Component: INTRODUCTION TO NETWORK

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Outcome to be assessed	Assessment criteria for the outcome
Introduction to computer network, network topology and transmission media.	Understand the concept of Networking. Understand the advantages of networking. Working principle of Network Topologies. Identify various communication medias and cabling technique. Crimping of Ethernet Cables.
Demonstrate OSI model, protocols and IP address. Describe the Router and its functions.	Understand the responsibilities of each layers of OSI model. Understand the working principle of Transport layer. Understand the TCP and UDP protocol. Calculation of IPV4 Addressing. Sub netting of IP Address. Using FLSM & VLSM for Sub netting. Understand the IPV6 Addressing. Understand the working process of Router. Understand the needs and benefits of Router. Configuration of Router. Configuration of IPv6 addresses on router. Assigning Passwords to router. Perform Telnet function.
<p>Means of assessment. Assessing the daily work schedule in simulator and on real devices. Conducting online test after completion of Introduction to Network.</p>	
<p>Pass/Fail Scoring more than 75 % in online final test will be declared as competent. Otherwise, he/she will be declared as not yet competent.</p>	

Title of Component: ROUTING AND SWITCHING ESSENTIAL.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate basic configuration of Switch	Configuration of Switch. Configuration of SSH for Secure Access in Switch. Configuration VLANs and Trunks. Configuration of VTP. Inter-VLAN routing.
Demonstrate the working of Static routing.	Understand the Static routing. Configuration of Static and Default Routes. Configuration of CDP and Summary routes.
Describe the working principle of Dynamic Routing Protocols.	Understand the Dynamic Routing Protocols. Discuss the working principle of Distance Vector Routing. Understand the concept of RIPv1 & RIPv2.

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	<p>Understand the Link State Routing. Introduction to OSPF and OSPF DR/BDR. Understand the concept of Multi Area OSPF. Calculation of VLSM and CIDR. Loading of IOS in Routers. Resetting of password in Routers and Switches.</p>
Describe the requirement of ACLs, DHCP and NAT.	<p>Configuration of Access Control List (ACLs). Understand the types of ACLs (Standard & Extended ACLs). Identify the requirement of ACLs. Understand the requirement of DHCP. Configuration of DHCP on real devices. Understand the basic and advance concept of NAT. Configuration of Static NAT. Dynamic NAT configuration and verification on real device. PAT configuration and verification on real device.</p>
<p>Means of assessment. Assessing the daily work schedule in simulator and on real devices. Conducting online test after completion of Routing and Switching Essential.</p>	
<p>Pass/Fail. Scoring more than 75 % in online final test will be declared as competent. Otherwise, he/she will be declared as not yet competent.</p>	

Title of Component: SCALING NETWORKS.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate the working process of STP, PVST+ and RSTP.	<p>Understand the working principle of STP. Understand the STP root configuration and verification. Identify the Root Bridge on the basis of lowest Mac address. Observe the Blocking and Designated port. Understand the working process of Per VLAN Spanning Tree (PVSTP). Observe the occurrence of Rapid Spanning Tree.</p>
Introduction to HSRP	<p>Understand the concept of Virtual Routing. Understand the working principle of Hot Standby Routing Protocol.</p>
Describe the Ether Channel, Wireless Network, EIGRP and OSPFv3.	<p>Concept of link aggregation working and load balancing. Understand the basic concept of Ether Channel. Identify the types of Ether Channel. Configuration of LACP, PAGP protocols in Ether Channel. Configuration of wireless router. Basic concept of EIGRP. Configuration of EIGRP on real devices. Understand the concept of equal and unequal load balancing in EIGRP. OSPFv3 concept and configuration.</p>

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Means of assessment.

Assessing the daily work schedule in simulator and on real devices.
Conducting online test after completion of Scaling Network.

Pass/Fail.

Scoring more than 75 % in online final test will be declared as competent.
Otherwise, he/she will be declared as not yet competent.

Title of Component: Connecting Networks.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate the concept WANs.	Understand the WAN encapsulation protocols. Understand the working process of HDLC protocol. Understand the Circuit Switched Networks. Understand the concept of Packet Switched Networks. Identify the different Public Internet Network (DSL, Cable Modems and Wi-max).
Describe the structure of PPP.	Understand the working principle of Point to Point Protocol (PPP). Configuration of PPP on real devices. Understand the types of PPP (PAP & CHAP). Authentication of PAP over PPP on real devices. Authentication of CHAP over PPP on real devices.
Introduction to Frame Relay.	Understand the concept of Lease Line Connections. Understand the concept and technical detail of Frame Relay switch. Point to Point configuration of Frame Relay.
Describe the working of VPN.	Understand the concept of Tunneling. Configuration of Virtual Private Network (VPN). Identify the types of VPN. Configuration of GRE Tunneling. Understand the concept of IP Sec. Tunneling of IPv6 over IPv4 Packets.

Means of assessment.

Assessing the daily work schedule in simulator and on real devices.
Conducting online test after completion of Connecting Networks.

Pass/Fail

Scoring more than 75 % in online final test will be declared as competent.
Otherwise, he/she will be declared as not yet competent.

SECTION 2

Evidence of Level

Title/Name of the qualification/Component: CISCO CERTIFIED NETWORK ASSOCIATE(CCNA)

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Level-6			
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process	CISCO CERTIFIED NETWORK ASSOCIATE (CCNA) qualification identifies and exhibits wide range of well-developed skill set with clear knowledge required to study of networking and the configuration of routers, switches and wireless devices etc. along with the analyzing the fault of the devices according to standard and non-standard requirements. Also the trainee is expected to be well conversant with the trouble shooting the networking devices & implementation network service of the industry/organization.	Job holder is expected to execute the study and analysis process required for various Networking Equipment, their working principles in various type of conditions which requires well developed knowledge in analysis and troubleshoot the Wide Area Networking under different conditions. The trainees also can monitor the condition of networking devices from a remote location and solve the error found if any which requires high depth of skill in through this qualification. Hence the qualification is kept at level 6 as per the process is concerned.	6
Professional Knowledge	<p>The curriculum of the qualification Advanced Diploma in Cisco Certified in Network Associate covers wide range through understanding and knowledge of different type of Networking devices used in different networks, their working principles, configuration of routers, switches and Wireless devices.</p> <p>Cisco Certified in Network Associate qualification has thorough knowledge of configuration and troubleshooting of various modern networking equipment's and hand tools to support the all these activities.</p>	Job holder's needs to have in depth knowledge and understanding IP addressing, sub netting, configuration of routers, switches and various WAN protocols. Draw out specification of the various topologies used in networking and identify them correctly, Understand the error message etc. They also gain adequate knowledge about the networking structure, LAN, protocol, OSI layers through the theoretical input. Therefore this is pegged at level 6.	6
Professional	Cisco Certified in Network	Job holder is engaged in tasks	6

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Skill	<p>Associate qualification have the ability to apply practical knowledge and understanding in identifying, specifying the Advance Networking components and method of troubleshooting all of these components.</p> <p>Cisco Certified in Network Associate also have the ability to perform partitioning, formatting of IOS in Routers and also can reset the password of Routers and Switches. The qualification also imparts skill for trouble shooting the entire network. They should have the capability to test network to ensure the functionality of the same after maintenance work.</p> <p>Cisco Certified in Network Associate imparts detail in depth skill to use different types of instruments to maintain the desired function.</p>	<p>such as studying, configuring, identifying, analyzing and interpreting the trouble of LAN and WAN. Planning and executing the maintenance work, using appropriate instruments within the quality framework and norms. These activities are variable in nature due to the dependency upon various types of configurations, IOS and network structures of the Industry/Organizations. They will be accustomed to wide range of maintenance for any kind of fault. These skills are at certain range of cognitive in nature and therefore fixed at level 6.</p>	
Core Skill	<p>Cisco Certified in Network Associate curriculum is designed to have reasonable good numerical abilities, mathematical calculations required for analyzing the networking components used in LAN & WAN, communication skills to receive, provide, and transmit information logically to the appropriate person or the group involved in the activities.</p> <p>Use of appropriate measuring techniques, units and number systems to express degree of</p>	<p>The job holder needs to have Generic Skills of writing, Oral and Communication Skills. Job holder prepares Documentations for maintenance history and schedule requirements. Understand the maintenance requirements/client requirement which requires reasonably good clarity in oral and the written skills and while working on the content he needs to be aware of the social, political and natural environment.</p> <p>Also the job holder is competent</p>	6

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	<p>accuracy units and number systems representing degree of accuracy. Should be able to communicate to the appropriate person in regards to health, safety, first aid etc.</p>	<p>enough to prepare the estimation and costing sheet by gathering analytical and logical data for the successful maintenance execution. Therefore it is pegged at level 6.</p>	
Responsibility	<p>Check-up procedures to ensure that maintenance objectives are finished within specified time frames are developed.</p> <p>Checkup procedures to ensure that agreed ethical and legal requirements are met are drawn.</p> <p>Cisco Certified in Network Associate is responsible for own work and learning along with full responsibility for other works and learning. The Job holder is expected to have openness to learning, ability to plan and organize own work and identify and solve problems in the course of working with in the team. Understanding the need to take initiative and manage him/herself and others and work to improve efficiency and effectiveness.</p>	<p>Job holder is required to carry out functions such as configuration, maintenance and troubleshoot the problem of networking devices and find the solution to it within specified requirement. In these activities job holder is doing the tasks independently which is the sole responsibility for him And guiding others as and when required. He/she is responsible for his/her own learning and others learning during the execution of the task. Therefore it is pegged at level 6</p>	6

SECTION 3

Evidence of Need

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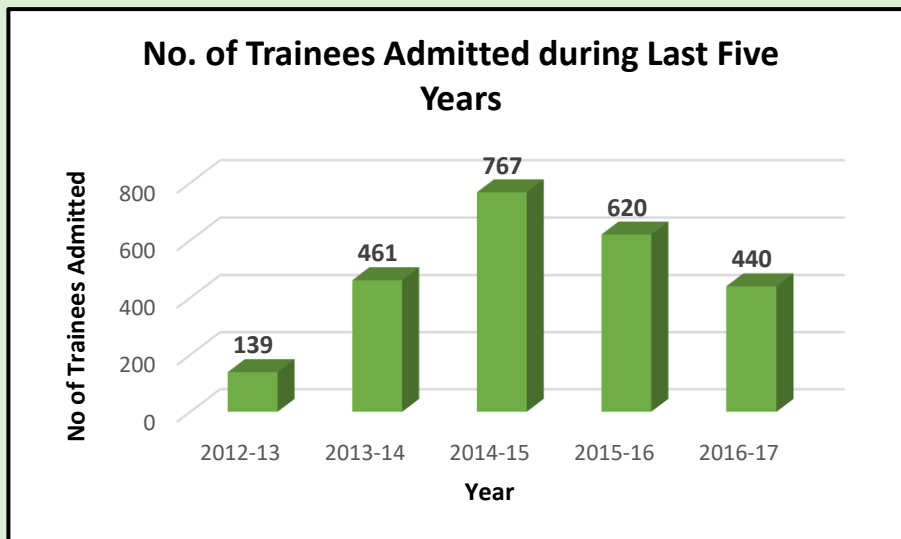
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What Evidence is there that the Qualification is needed:

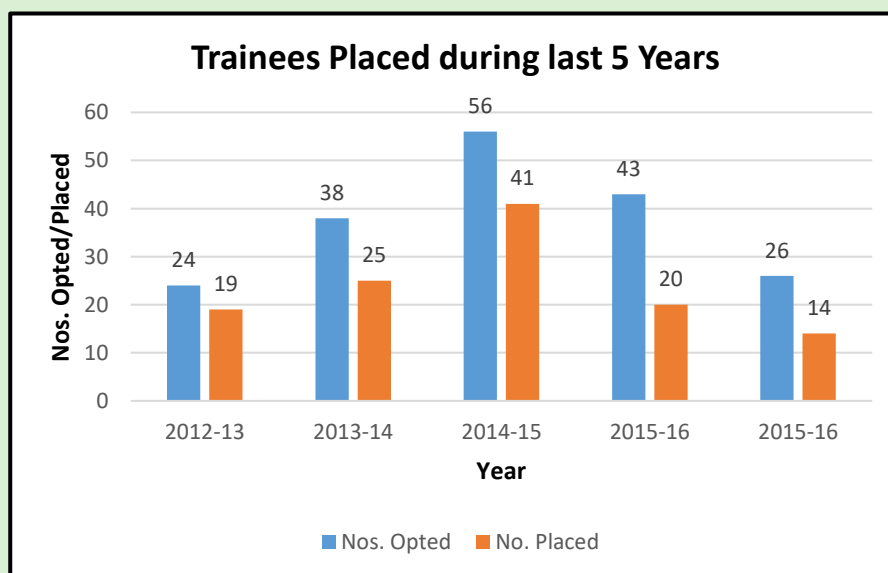
- Decision of the management review meeting.
- Industry Requirements

What is the estimated uptake of this Qualification and what is the basis of this estimate?

- The estimated uptake of this qualification in the year of 2017-18 is 200.
- The basis of this estimation is the requirements of the industries and placement of this qualification of last five years.



Trainees Trained/Trainees Opted for Placement/ Trainees placed in last five years.



What steps were taken to ensure that the Qualification(s) does/do not duplicate already existing or planned Qualifications in NSQF?

The qualification is originally designed by curriculum committee comprising the training

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head, industrial expert, academic professional experts.

The work group under the guidance of curriculum development committee already conducted desk search as well as refers the qualification packs for as a supporting document for the mapping of curriculum.

As per the search it is found that, the certificate course is not available for the skill development of the candidates in Cisco Certified in Network Associate Course of 4 month duration under Cisco Networking Academy.

What arrangements are in the place to monitor and review the Qualification(s)?

What data will be used and at what point will the Qualification(s) be revised or updated?

- The curriculum committee meeting for review will be in the month of Jan 2018 which comprising industrial expert, Training Head, Representative from existing employers.
- The data used for revision or update will be impact analysis (student and industries) and new subject area opportunities, multiple entry and exits incorporated or RPL strategy implementations.
- The curriculum review and updates, in consultation with industries and expert of respective domain, NOS approved by NSDA will also be referred to from time to time.

SECTION 4

EVIDENCE OF RECOGNITION AND PROGRESSION

What steps have been taken in the design of this or other Qualifications to ensure that there is a clear path to other Qualifications in this Sector?

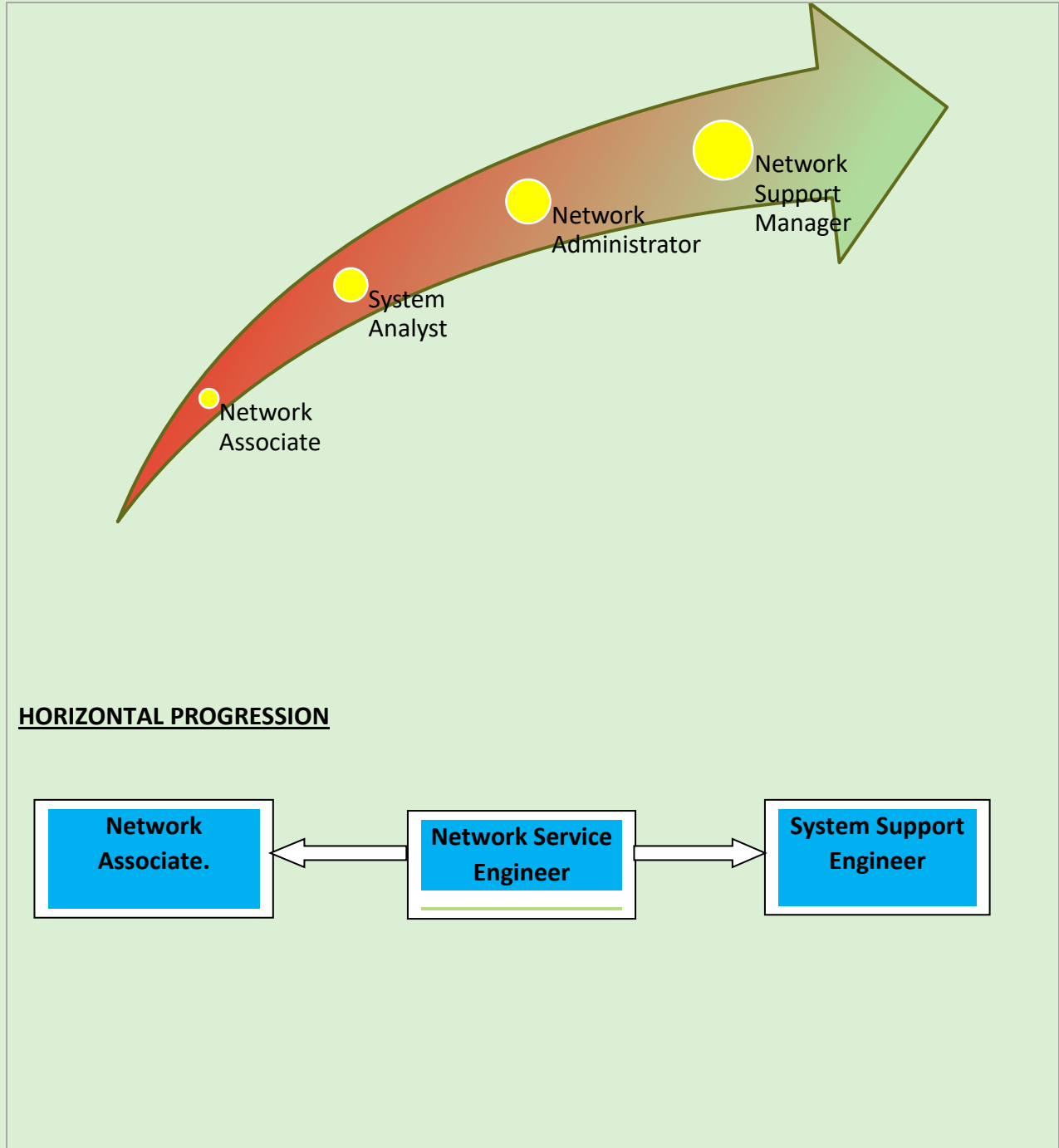
While designing this qualification proper care is taken to linkup with the skill development in the field of computer networking and other areas.

Qualifying trainee will obtain a Certificate in 'Cisco Certified in Network Associate'. After 2 year of experience give the opportunities to the trainees to work as System Analyst as a career progression with this position and experience of 3 years gives career scope of Network Administrator and 5 years' experience leads to Network Support Manager. Also he/she can become an entrepreneur in this sector after getting 3 year of experience. The below mention diagrams represent the vertical mobility for the job holder as a job progression in Information Technology Sector.

VERTICAL PROGRESSION

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SOME OF THE RECRUITERS FOR THE CCNA TRAINEES

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1	Subham Digicare IT Centre(SDIC), Bhubaneswar
2	Sylvesa Infotech Pvt. Limited, Bhubaneswar
3	AH Web Solutions Pvt Ltd. Bhubaneswar
4	GL Solutions, Bhubaneswar
5	Fortunate Technologies Pvt. Ltd. Bhubaneswar
6	Printlink Computer and Communication Pvt Ltd. Bhubaneswar
7	Elevation Tekhnologia, Bhubaneswar
8	Ardent Computech Pvt. Ltd, Bhubaneswar
9	Addsoft Technologies Pvt. Ltd., Bhubaneswar
10	Cosmic Net Technologies, (CSEZ), Bhubaneswar
11	Hardib Technology Pvt. Ltd., Bhubaneswar
12	HCL Infosystems Ltd., Bhubaneswar
13	In2IT Technologies Pvt. Ltd. Bhubaneswar
14	Blaze Communications Systems Pvt. Ltd. Bhubaneswar
15	Axis Software Private Limited
16	FilternOx Systems Pvt. Ltd. Bhubaneswar
17	Kohinoor Technical Institute, Angul
18	Innodust Techsolution Pvt. Ltd. Bhubaneswar
19	Planning Academy, Bhubaneswar
20	Veezone Reach, Bhubaneswar
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