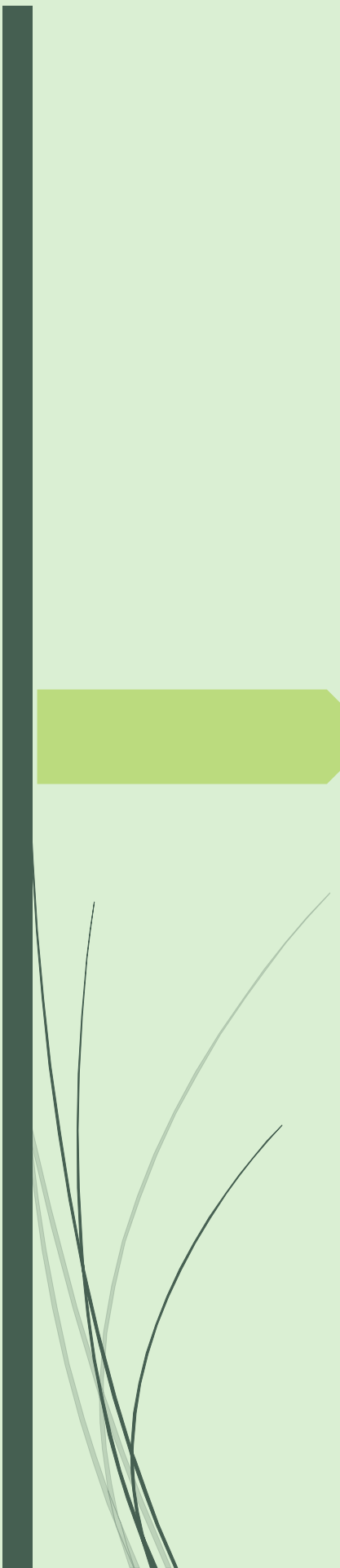


ADVANCED DIPLOMA IN COMPUTER HARDWARE AND NETWORK MANAHEMENT (ADCHNM)



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:

MSME Technology Centre,
B-36, Chandaka Industrial Area
Bhubaneswar-751024
Odisha

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:

ADVANCED DIPLOMA IN COMPUTER HARDWARE & NETWORK MANAGEMENT (ADCHNM)

Nature and Purpose of the Qualification: ADVANCED DIPLOMA

Code: MSME / ADCHNM / 51

Purpose:

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

Body/bodies which will award the Qualification:

Ministry of Micro, Small and Medium Enterprises, New Delhi
(Certificate awarded by MSME Technology Centre, Bhubaneswar)

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

Ministry of Micro, Small and Medium Enterprises, New Delhi

Body/bodies which will be responsible for assessment:

Examination Cell of Central Tool Room and Training Centre, Bhubaneswar

Occupation(s) to which the Qualification gives access:

Hardware & Network Associate/ System Service Engineer/ Technical Support Engineer.

Proposed level of the Qualification in the NSQF:

Level-6

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

6 Months (780 Hours).

Entry requirements/recommendations:

Preferably B.Sc./Diploma/ Degree Engineering pass.

Progression from the qualification:

Business or organizations use this qualification as a basis in recruiting Engineers in the field of computer hardware troubleshooting and network management.

Planned arrangements for the Recognition of Prior Learning (RPL)

Yes

International comparability where known:

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

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Formal Structure of the Qualification:			
Title of component	Mandatory / optional	Estimated size (learning hours)	Level
Power Supply	M	81	Level-6
PC Architecture	M	162	Level-6
Software Installation, Up gradation & Maintenance	M	51	Level-6
Network Essential, setup & management	M	108	Level-6
Network management & server configuration	M	108	Level-6
LINUX management & network configuration	M	108	Level-6
Basic Electronics	M	72	Level-6
Office Package	M	45	Level-6
Communication Skill	M	45	Level-6
Total		780	

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.

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SECTION 1

ASSESSMENT

Body/Bodies which will carry out Assessment:

Examination Cell of Central Tool Room and Training Centre, Bhubaneswar

Will the Assessment Body be responsible for RPL Assessment?

Yes

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

Learners who have met the requirements of any Unit Standard that forms part of this qualification may apply for recognition of prior learning to the relevant Education body. The applicant must be assessed against the specific outcomes and with the assessment criteria for the relevant Unit Standards.

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 (CTTC, Bhubaneswar)
- 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:

CTTC, Bhubaneswar faculty looking after the course “**ADVANCED DIPLOMA IN COMPUTER HARDWARE AND NETWORK MANAGEMENT**”, also assesses the students as per guidelines

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set by Examination cell of CTTC, Bhubaneswar. 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 at Xavier Institute of Management (XIMB), Bhubaneswar, Xavier Labor Relations Institute (XLRI), Jamshedpur and other renowned Institutions/Establishments of the country.

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 + Examiner nominated by Examination Cell of CTTC, Bhubaneswar
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, viva or oral exam, module test, practical exam and final exam.

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 CTTC, Bhubaneswar.

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

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Title of Component: POWER SUPPLY

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate the different types of power supply and working principle.	Design and verify Different types of Power supply.
Demonstrate working of internal circuit of Switch Mode Power Supply.	Trace out internal circuit of SMPS.
Demonstrate the procedure to soldering and de-soldering the components.	Solder and de-solder the components.
Demonstrate the procedure to find the fault and repair.	Troubleshoot the fault and repair the SMPS.
Means of assessment-1 Assessing the daily work schedule sheet. Conducting written test after completion of this power supply.	
Means of assessment-2 Assessing the daily work schedule sheet. Conducting skill test after completion of this power supply.	
Pass/Fail Scoring more than 40% in written test and more than 60% in practical test will be declared as competent. Otherwise, he/she will be declared as not yet competent.	

Title of Component: PC ARCHITECTURE

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate hardware peripherals of computer.	Identify various hardware peripherals.
Demonstrate the advantage and disadvantage, working principle and procedure to troubleshoot common issues.	Assemble and disassemble to laptop & desktop computer. Trace their fault and repair them.
Demonstrate BIOS program of computer.	Manage and setup PC hardware using BIOS program.
Demonstrate the working principle of monitor (CRT, LCD and LED). Common problem of monitor and their solution.	Assemble and disassemble to different monitor and identify the parts. Trace their fault and repair them.
Demonstrate types of printer, working principle and common problem.	Assemble and disassemble to different printer, identify the parts and solve their issues.

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Means of assessment-1

Assessing the daily work schedule sheet.

Conducting written test after completion of PC Architecture.

Means of assessment-2

Assessing the daily work schedule sheet.

Conducting model test after completion of PC Architecture.

Pass/Fail

Scoring more than 40% in written test and more than 60% in practical (Model) test will be declared as competent.

Otherwise, he/she will be declared as not yet competent.

Title of Component: SOFTWARE INSTALLATION, UP-GRADATION AND MAINTENANCE

Outcome to be assessed	Assessment criteria for the outcome
Customization of OS, their Features and advantages	Customization of OS, their Features and advantages
Customization of OS, their Features and advantages	Manage and upgrade the software.
Describe the process of Software Maintenance.	Install & uninstall of software, and checking error code with solution Use of Backup & Recovery tools procedure of storage devices

Means of assessment-1

Assessing the daily work schedule sheet.

Conducting written test after completion of Software Installation.

Means of assessment-2

Assessing the daily work schedule sheet.

Conducting practical test on Software Installation, Up-gradation.

Pass/Fail

Scoring more than 40% in written test and more than 60% in practical test in CNC will be declared as competent.

Otherwise, he/she will be declared as not yet competent.

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Title of Component: NETWORK ESSENTIAL, SETUP AND MANAGEMENT.

Outcome to be assessed	Assessment criteria for the outcome
Introduction to computer network, network topology and transmission media.	Identify various communication medias and cabling technique.
Demonstrate OSI model, protocols and IP address.	Calculate IP address, subnet mask, sub netting and super netting.
Demonstrate about network devices.	Identify various network devices and mange Local Area Network. Share resource in the network.
Demonstrate about network architecture, features of windows server 2003 and advantages.	Configure and manage domain using windows server.
Means of assessment-1 Assessing the daily work schedule sheet. Conducting written test after completion of this component.	
Means of assessment-2 Assessing the daily work schedule sheet Conducting test after completion of this Network Essential, Setup and Management.	
Pass/Fail Scoring more than 40% in written test and more than 60% in practical test will be declared as competent. Otherwise, he/she will be declared as not yet competent.	

Title of Component: NETWORK MANAGEMENT AND SERVER CONFIGURATION.

Outcome To Be Assessed	Assessment criteria for the outcome
Demonstrate features and advantages of Microsoft Windows server.	Configure domain using Microsoft Windows server.
Demonstrate about DHCP service, DHCP scope and reservation.	Configure DHCP server. Manage DHCP scope and IP reservation.
Demonstrate about Windows Deployment Service.	Configure WDS server.
Introduction to wireless devices and zero configure process.	Configure Wireless Device and N-Computing Technology.
Means of assessment-1 Assessing the daily work schedule sheet.	

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Conducting written test after completion of this component.

Means of assessment-2

Assessing the daily work schedule sheet.

Conducting practical test to configure services in Microsoft server.

Pass/Fail

Scoring more than 40% in written test and more than 60% in Design test will be declared as competent. Otherwise, he/she will be declared as not yet competent.

Title of Component: LINUX MANAGEMENT AND NETWORK CONFIGURATION (RHEL).

Outcome to be assessed	Assessment criteria for the outcome
Introduction to LINUX Operating System and LINUX file system.	Install Red Hat Enterprises Linux OS Manage Linux Graphical Environment and tools features
Demonstrate Linux file permission and up gradation	Change the ownership of User, Group & Other Upgrade Service Packages by RHN Configure YUM Server Package management
Demonstrate function of various server in LINUX.	Configure DNS, DHCP server, Apache web server, FTP and SAMBA server
Demonstrate the Troubleshooting process of Linux.	Change boot process of Linux OS & password of root in rescue mode.

Means of assessment-1

Assessing the daily work schedule sheet.

Conducting written test after completion of this component.

Means of assessment-2

Assessing the daily work schedule sheet.

Conducting practical test to configure DNS, DHCP server, Apache web server, FTP and SAMBA server.

Pass/Fail

Scoring more than 40% in written test and more than 60% in practical test will be declared as competent.

Otherwise, he/she will be declared as not yet competent.

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Title of Component: SOFT SKILL.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate Communication Skills, use language as a tool of communication.	Understand the Basics of Communication, Soft Skills, and nonverbal communication – body language.
Demonstrate and improve the participant's English language skills.	Read The Sounds of English – Vowels & Consonant. Word Accent – Accent, Tone, Pitch.
Demonstrate Personality Development	Learn Presentation Skills, Newspaper reading, Body Language – positive gestures, handshakes, eye contact, smiles, styles of walking, hand movements, etc. Role Plays and Situation Handling, Personal and Career Development (Career Counseling).
Demonstrate Full Dress Rehearsal	Learn to Present an effective cover letter, resume/curriculum vitae, Group Discussion, Personal Interview, Corporate Interface.
Means of assessment-1 Assessing the daily work schedule sheet Conducting written test after completion of this component	
Means of assessment-2 Assessing the daily work schedule sheet. Conducting mock drill.	
Pass/Fail Scoring more than 40% in written test and more than 60% in practical test will be declared as competent. Otherwise, he/she will be declared as not yet competent.	

Title of Component: BASIC ELECTRONICS.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate the types of basic electronics components and working principle	Identify the various electronics components.
Demonstrate about analogue and digital multimeter.	Use of multimeter to test voltage, current, resistant, various components, electronics circuit in online and offline.
Demonstrate work principle of various electronics circuit.	Construct various electronics circuit and measure their output by using multimeter.
Means of assessment-1 Assessing the daily work schedule sheet.	

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Conducting written test after completion of this component.

Means of assessment-2

Assessing the daily work schedule sheet.

Conducting practical test on designing electronics circuit.

Scoring more than 40% in written test and more than 60% in practical test will be declared as competent.

Otherwise, he/she will be declared as not yet competent.

Title of Component: OFFICE PACKAGES.

Outcome to be assessed	Assessment criteria for the outcome
Demonstrate to the office package and its tools.	Install & verify Office Package.
Demonstrate the use of Microsoft word.	Basic of word processing tools and various menus to process document format their style and settings.
Demonstrate the use of Microsoft excel.	Spreadsheet database program skill to manage the report, chart with various functions to utilize on related field.
Demonstrate the use of Microsoft PowerPoint.	Power Point program to setup the slide, design, layout and themes on organization way.
Means of assessment-1 Assessing the daily work schedule sheet. Conducting written test after completion of this component.	
Means of assessment-2 Assessing the daily work schedule sheet. Conducting practical test to create document/spread sheet and presentation using office package.	
Pass/Fail Scoring more than 40% in written test and more than 60% in practical test will be declared as competent. Otherwise, he/she will be declared as not yet competent.	

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SECTION 2

Evidence of Level

Title/Name of the qualification/Component: Advanced Diploma in Computer Hardware & Network Management			
			Level-6
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process	Advanced Diploma in Computer Hardware and Network Management qualification identifies and exhibits wide range of well-developed skill set with clear knowledge required to study circuit diagram of Desk top, Laptop, Server, Printers, Scanners 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 hardware & implementation network service of the industry/organization.	Job holder is expected to execute the study and analysis process required for various IT Equipment, their working principles in various type of conditions which requires well developed knowledge in study and analysis under different conditions. The trainees also can monitor the condition of peripheral devices from a remote location and solve the fault 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	The curriculum of the qualification Advanced Diploma in Computer Hardware and Network Management covers wide range thorough understanding and knowledge of different type of Electronics components used in different sections of a PC, their working principles, study of various components and sections behaviour in different conditions and electrical supply input and output etc. along with inclusion of detailed study of Circuit diagram.	Job holders needs to have in depth knowledge and understanding circuit design, properties of individual elements/components, Electricity supply input and desired output, Draw out specification of the various components used in PC and identify them correctly, Understand the error message etc. They also gain adequate knowledge about the networking structure, topology, protocol, OSI layers through the theoretical input. Therefore this is pegged at level 6.	6

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	<p>Advanced Diploma in Computer Hardware and Network Management qualification has thorough knowledge of operations of various modern measuring and checking equipment and hand tools to support the all these activities.</p>		
Professional Skill	<p>Advanced Diploma in Computer Hardware and Network Management qualification have the ability to apply practical knowledge and understanding in identifying, specifying the Hardware components and method of assembling all of these components to make the system assembly.</p> <p>Advanced Diploma in Computer Hardware and Network Management also have the ability to perform partitioning, formatting and loading various operating systems and application software to make the system fully functional to get the desired output. The qualification also imparts skill for trouble shooting the system and the entire network. They should have the capability to test systems to ensure the functionality of the same after maintenance work.</p> <p>Advanced Diploma in Computer Hardware and Network Management imparts detail in depth skill to use different types of instruments to maintain the desired function.</p>	<p>Job holder is engaged in tasks such as studying, checking, identifying, analyzing and interpreting the trouble of computer systems and the networks mainly 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 system configurations, Operating systems and network structures of the Industry/Organizations. They will be accustomed to wide range of maintenance for any kind of fault like mechanical, electrical, Electronics etc. These skills are at certain range of cognitive in nature and therefore fixed at level 6.</p>	6

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<p>Core Skill</p>	<p>Advanced Diploma in Computer Hardware and Network Management curriculum is designed to have reasonable good numerical abilities, mathematical calculations required for analyzing the electronics components used in circuit diagram, 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 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>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 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>	<p>6</p>
<p>Responsibility</p>	<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>Advanced Diploma in Computer Hardware and Network Management 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</p>	<p>Job holder is required to carry out functions such as circuit study operating electronics/electrical measurement and checking instruments, analyse the problem 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>	<p>6</p>

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	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.		
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SECTION 3

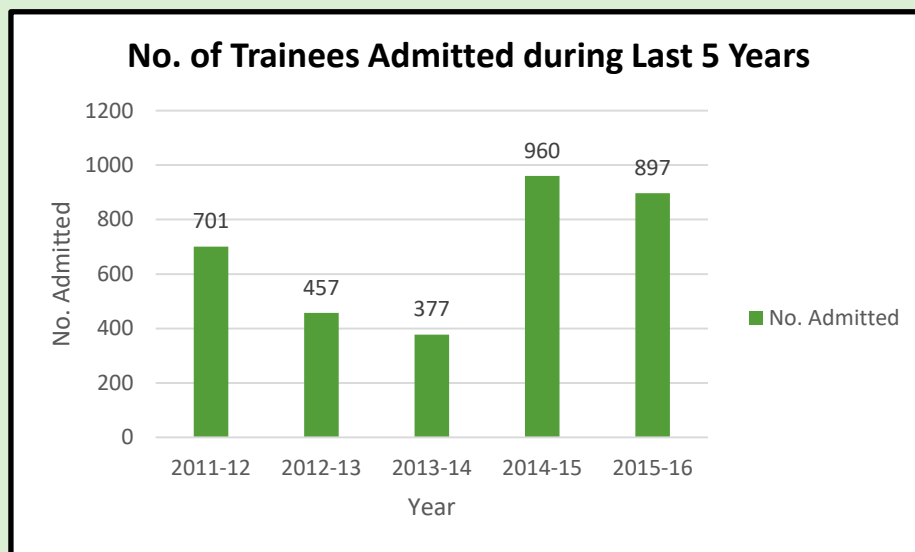
Evidence of Need

What Evidence is there that the Qualification is needed:

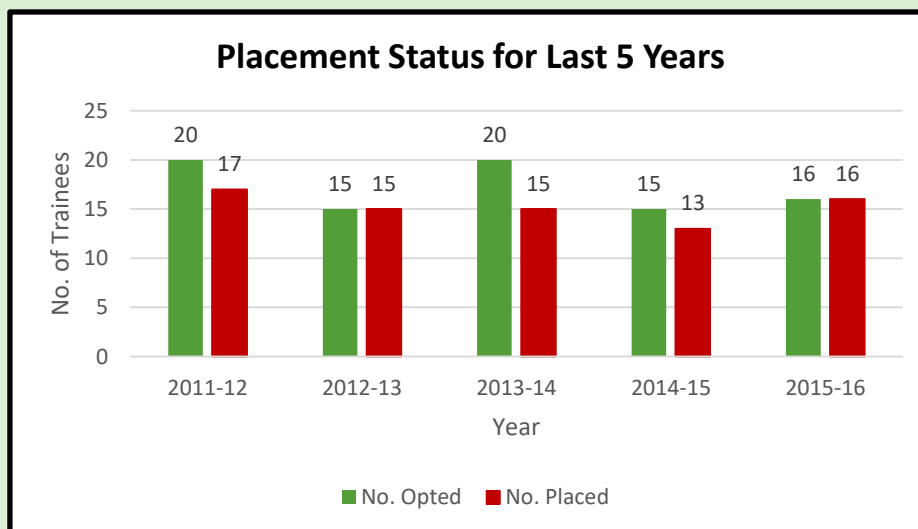
- Decision of the management review meeting.
- Industry Requirements

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 2016-17 is 500.
- 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.



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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 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 Advanced Diploma in Computer Hardware & Network Management Course of 6 month duration under ITES and ELECTRONICS Sector Skill Council.

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?

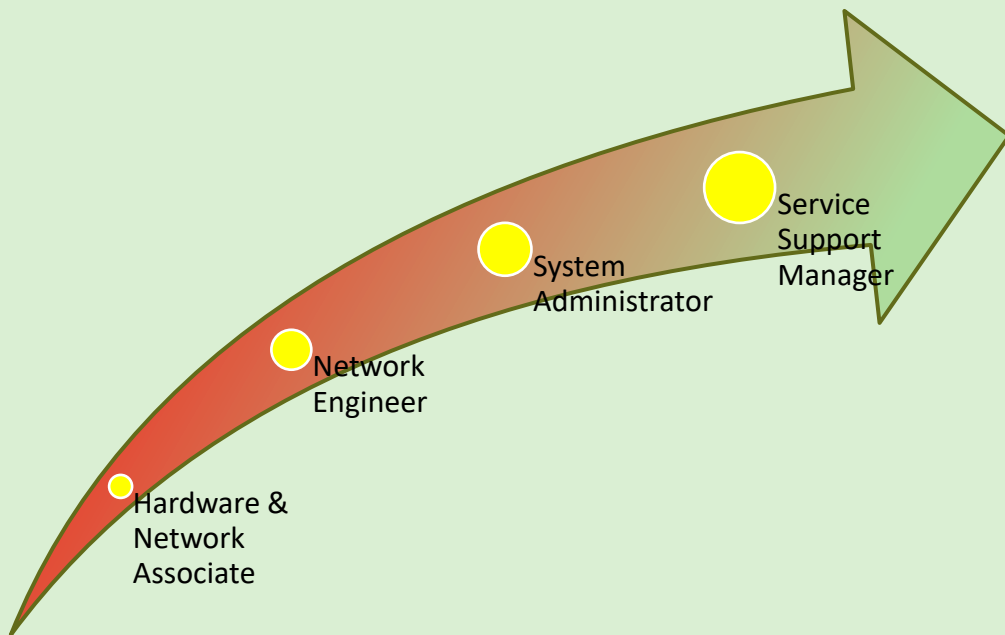
While designing this qualification proper care is taken to linkup with the skill development in the field of computer hardware & networking and other areas.

Qualifying trainee will obtain a CTTC, Bhubaneswar Certificate in 'Advanced Diploma in computer hardware & network management'. After 2 year of experience give the opportunities to the trainees to work as Network Engineer as a career progression with this position and experience of 3 years gives career scope of System Administrator and 5 years' experience leads to Service 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.

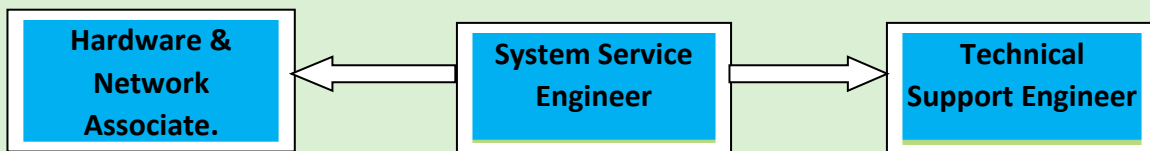
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VERTICAL PROGRESSION



HORIZONTAL PROGRESSION



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SOME OF THE RECRUITERS FOR THE ADCHNM TRAINEES

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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