معاونت پژوهش، برنامه‌ریزی و سنجش مهارت

دفتر پژوهش، طرح و برنامه‌ریزی درسی

استاندارد آموزش شایستگی

MikroTik Certified Traffic Control Engineer (MTCTCE)

گروه شغلی

فناوری اطلاعات

کد ملی آموزش شایستگی

تاریخ تدوین استاندارد : ۲۰۱۵/۱۰/۱۳

Deputy of training

Plan and curriculums office

Competency Training standard

Title

MikroTik Certified Traffic Control Engineer (MTCTCE)

Occupational group

Information Technology(IT)

International code

2523-53-103-1

Date of standard compilation : 2015/10/13

Control of board on content compilation and accreditation: Plan and curriculums office

National code: **2523-53-103-1**

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- Iran Information Technology Development Co
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Revision Process:

- Scientific content
- According to market
- Equipment
- Tools

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Definitions:

Job standard:

The characteristics ' required competencies and abilities for Efficient Performance in work environment is called "the Job standard", and sometimes "The Occupational standard"

Training standard:

The Training Map for achieving the Job's subset Competencies.

Job title:

Is a set of Tasks and Abilities which is expected from an employed person in the defined level

Job description:

A statement covering the most important elements of a job, namely the position or title of the job, the duties, job's relation with other jobs in a occupational field, the responsibilities, workplace conditions and required performance standards.

Course duration:

The minimum of time which is required to achieve the training objects.

Admission requirements:

The minimum of competencies and abilities which are obligatory for a potential admission.

Evaluation:

The process of collecting evidence and judgment about wetter a competency is achieved or not. Include: written examination, practical examination

Required Qualifications for Trainers**:**

The minimum of Trainer's technical and vocational abilities which the trainer is required to have.

Competency:

The ability of efficient performing a duty in a variety of workplaces conditions

Knowledge:

The minimum set of facts and mental capacities which is necessary for achieving a competency. This can include science, (Mathematics, physics, chemistry or biology), technology or technical.

Skill:

The minimum coordination between mind and body for achieving an ability or competency. It normally applied to practical skills.

Attitude:

A set of emotional behaviors required for achieving a competency and can have non-technical skills and occupational ethics.

Safety:

The cases which doing or not doing something can cause harm or accident

Environmental Consideration:

A set of consideration about the act which should be done to minimize the environmental damage or pollution.

competency title:	

MikroTik Certified Traffic Control Engineer(MTCTCE)

competency description:

MTCRE is one of the engineering course of MikroTik. This course is about advance RouterOS facilities for QoS and traffic control.

The holder of MTCTCE Certification knows advance options about packet flow diagram , adavance options of firewall NAT/Mangle/Filter , he know also about advance concepts of QoS consist of HTB and different type of Queue, advance options of DHCP client/server/relay, and advance configuration of Web Proxy.

The holder of MTCRE certification have following proficiency :

- Will have the ability to understand and implement Packet flow diagram
- Will have the ability to understand and implement Firewall filter/nat/mangle
- Will have the ability to understand and implement Quality of Service
- Will have the ability to understand and implement DNS client/cache DHCP client/relay/server
- Will have the ability to understand and implement Web Proxy

admission requirements:

minimum degree of education: Post first year of high school
minimum physical and mental ability:-
prerequisite skills: CompTIA Network+ certification – MTCNA Certification

Course duration:

Course duration : 64 hours

Course Evaluation :(%)

Number of questions	25
Passing score	60%
Conditional	50-59%
Fail	0-49%
Duration	60 Minutes
Available Language	English
Associated Certification	MTCTCE

IRANTVTO Evaluation :(%)

Written Examination:25%
Practical Examination:65%
Ethics:10%

- MTCTCE degree holders with 2 years experience
- Computer related Bachelor with 2 years experience

competency training standard tasks

Row	Title
1	**Packet flow diagram**
2	**Firewall filter/nat/mangle**
3	**Quality of Service**
4	**DNS client/cache**
5	**DHCP client/relay/server**
6	**Web Proxy**

Training standard

Contents analysis form

<table>
<tr>
<td rowspan="3">Title:
Packet flow diagram</td>
<td colspan="3">time</td>
<td rowspan="2"></td>
</tr>
<tr>
<td>theoretical</td>
<td>practical</td>
<td>total</td>
</tr>
<tr>
<td colspan="3">Determined by the instructor</td>
</tr>
<tr>
<td colspan="4">Knowledge ,skill ,attitude ,safety, Environmental Consideration</td>
<td>Equipments ,tools, materials ,books</td>
</tr>
<tr>
<td rowspan="2">Knowledge and Skill:
-   Why this diagram is necessary?
-   Full overview of all things covered by diagram
-   Simple examples how packet travels through
-   the diagram (routing, bridging, connection to router etc.) + LAB
-   More complex examples of diagram usage + LAB</td>
<td colspan="3">Determined by the instructor</td>
<td rowspan="5">- Internet connection
- MikroTik Wiki
- Computer with at least 4Gbiga byte Of RAM
- VMware software</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Attitude:
Speed and accuracy in doing the right thing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health & Safety:
Compliance with safety protection in the workplace</td>
<td></td>
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<tr>
<td>Environmental Consideration:
Compliance with environmental protection</td>
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</tr>
</table>

Training standard

Contents analysis form

Title: Firewall filter/nat/mangle	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
- Connection tracking
- Filter + LAB
  o chains (default/custom)
  o all rule "actions" covered
  o most common rule "conditions" covered
- NAT + LAB
  o chains (default/custom)
  o all rule "actions" covered
  o most common rule "conditions" covered
  o NAT helpers
- Mangle + LAB
  o chains (default/custom)
  o all rule "actions" covered
  o most common rule "conditions" covered
- Some complicated rule "conditions" covered ("advanced", "extra" tab) + LAB
- uPNP
	Determined by the instructor			- Internet connection
				- MikroTik Wiki
				- Computer with at least 4Gbiga byte Of RAM
				- VMware software

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: Quality of Service	Time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
 - HTB
   HTB general information
   HTB implementation (queue tree)
   HTB structure + LAB
   HTB Dual Limitation + LAB
   HTB priority + LAB
 - Burst + LAB
 - Queue types
   FIFO + LAB
   SFQ + LAB
   RED + LAB
   PCQ + several LABs
   queue size + LAB
 - Simple queues + LAB
 - Simple queue and queue tree interaction
	Determined by the instructor			- Internet connection
				 - MikroTik Wiki
				 - Computer with at least 4Gbiga byte Of RAM
				 - VMware software

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: DNS client/cache	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration		Equipments ,tools, materials ,books
Knowledge and Skill: - Basic configuration + LAB - Static DNS Entry + LAB	Determined by the instructor	- Internet connection - MikroTik Wiki - Computer with at least 4Gbiga byte Of RAM - VMware software
Attitude: Speed and accuracy in doing the right thing		
Health & Safety: Compliance with safety protection in the workplace		
Environmental Consideration: Compliance with environmental protection		

Training standard

Contents analysis form

Title:	time			
DHCP client/relay/server	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - DHCP communication analysis - DHCP-client identification/ configuration + LAB - DHCP server configuration + LAB: DHCP networks DHCP options (build-in and custom) IP Pool o advanced DHCP - DHCP relay configuration + LAB	Determined by the instructor			- Internet connection - MikroTik Wiki - Computer with at least 4Gbiga byte Of RAM - VMware software
Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: Web Proxy	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration	Equipments ,tools, materials ,books

Knowledge and Skill:
 - Basic configuration
 - Proxy rule lists
     o Access list + LAB
     o Direct Access list + LAB
     o Cache list + LAB
 - Regular expression + LAB
	- Internet connection
	 - MikroTik Wiki
	 - Computer with at least 4Gbiga byte Of RAM
	 - VMware software

Attitude: Speed and accuracy in doing the right thing	
Health & Safety: Compliance with safety protection in the workplace	
Environmental Consideration: Compliance with environmental protection	

Determined by the instructor (in Knowledge and Skill time cells)

Equipment & Tools & Materials & Resources (books, site, software…) form mikrotik.com and wiki.mikrotik.com

  *Required quantity for each 15 Trainees