استاندارد آموزش شایستگی

MikroTik Certified User Management Engineer(MTCUME)

گروه شغلی

فناوری اطلاعات

کد ملی آموزش شایستگی

۲	۵	۲	۳	۴	۰	۵	۳	۱	۷	۷	۰	۰	۵	۱
Isco-۰۸				سطح مهارت		شناسه گروه		شناسه شغل			شناسه شایستگی			نسخه

تاریخ تدوین استاندارد : ۲۰۱۵/۱۰/۱۳

Deputy of training

Plan and curriculums office

Competency Training standard

Title

MikroTik Certified User Management Engineer (MTCUME)

Occupational group

Information Technology(IT)

International code

2523-53-104-1

Date of standard compilation : 2015/10/13

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

National code: **2523-53-104-1**

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Cooperator Specialized organizations for compiling the training standard:

- Iran Information Technology Development Co
- Iran Information Technology Development University
-Zanjan Center Technical and Vocational Training Organization

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 User Management Engineer(MTCUME)

competency description:

MTCUME is one of the engineering course of MikroTik. This course is about advance RouterOS facilities for user management.

The holder of MTCUME Certification knows advance options about PPP,PPTP,L2TP and PPPOE configuration and users , IPsec concepts and IPsec advance configuration on RouterOS , Hotspot advance configuration, advance RADIUS concepts and configurations.

The holder of MTCRE certification have following proficiency :
- Will have the ability to understand and implement PPP – L2TP – PPTP and PPPOE
- Will have the ability to understand and implement PPP Bridging
- Will have the ability to understand and implement IPSec
- Will have the ability to understand and implement HotSpot
- Will have the ability to understand and implement RADIUS

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	MTCUME

IRANTVTO Evaluation :(%)

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

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

competency training standard

tasks

Row	Title
1	**PPP**
2	**PPTP/L2TP**
3	**PPPoE**
4	**PPP Bridging**
5	**IPSec**
6	**HotSpot**
7	**RADIUS**

Training standard

Contents analysis form

Title:	time			Equipments ,tools, materials ,books
	theoretical	practical	total	
PPP	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - PPP Profile + LAB; • Local and Remote addresses; • Incoming/Outgoing Filters; • Address List; • Change TCP-MSS; • Use Encryption; • Session Timeout; • Rate-Limit configuration; • Only-one setting; - PPP Secret + LAB; • Service and Profile; • Local and Remote address; • Routes configuration; • Limit Bytes In/Limit Bytes Out configuration; - IP Pool; • Set addresses ranges; • Next Pool options;	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: PPTP/L2TP	time			
	theoretical	practical	total	
	Determined by the instructor			

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

Knowledge and Skill:
  - PPTP and L2TP;
    • Theory;
    • Comparison;
  - PPTP Client configuration + LAB;
    • Client Setup;
    • Set profile;
    • Dial-on-Demand;
    • Add Default Route and static routes;
  - PPTP Server configuration + LAB;
    • Enable server;
    • Setup profiles;
    • Add clients to /ppp secret;
    • Set static interfaces for clients;
  - L2TP Client configuration + LAB;
    • Client setup;
    • Configure profile;
    • Dial-on-Demand;
    • Add Default Route and static routes;
  - PPTP Server configuration + LAB;
    • Enable server;
    • Set profiles;
    • Add clients to /ppp secret;
    • Set Static interfaces for clients;
	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: PPPoE	time			
	theoretical	practical	total	
	Determined by the instructor			

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

| **Knowledge and Skill:**
- PPPoE server and client;
  • Theory;
  • Usage environment;
  • Comparison to othe PPP protocols;
  • PPPoE client configuration + LAB;
- Client setup;
  • Select interface;
  • Service name
  • Configure profile;
- PPPoE Server configuration + LAB;
  • Enable PPPoE server;
  • Set profiles;
  • Add clients to /ppp secret;
  • Add Static interfaces for clients;
  • Secure server by removing any IP address from PPPoE server interface;
- Encryption + LAB;
  • Set profile without encryption;
  • Set profile with encryption;
  • Configure PPPoE client without encryption;
- Interface ECMP;
  • set ECMP routes for ppp interfaces; | 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: PPP Bridging	time			
	theoretical	practical	total	
	Determined by the instructor			

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

Knowledge and Skill:
- L2TP and EoIP + LAB;
  • Set L2TP tunnel;
  • Set EoIP tunnel;
  • Create bridge and add necessary interfaces to ports;
  • Confirm you have Ethernet connectivity between remote nodes;
- L2TP and VPLS + LAB;
  • Set L2TP tunnel;
  • Set VPLS tunnel;
  • Create bridge and add necessary interfaces to ports;
- L2TP and BCP + LAB;
  • Set L2TP tunnel;
  • Use BCP to bridge PPP interface;
  • Add to bridge necessary interface;
- Multilink Protocol;
  • Enable Multilink by specifying correct MRRU settings;
  • Disable Mangle rules for MSS adjustment;
- MLPPP [optional];
  • Setup client and specify multiple interfaces for one client;
  • Set PPPPoE server with MLPPP support;
	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: IPSec	time			
	theoretical	practical	total	
	Determined by the instructor			

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

Knowledge and Skill:	Determined by the instructor			- Internet connection - MikroTik Wiki - Computer with at least 4Gbiga byte Of RAM - VMware software
- Introduction; • Theory and concepts; • Comparison to other VPN protocols; - IPSec Peer; • Use different authentication methods; • IPSec exchange modes; • Encryption and Hash algorithms; • NAT-Traversal; • Lifetime and Lifebytes; • DPD protocol; - Policy; • IPsec protocol and action; • Tunnels; • Generate dynamic Policy; - Proposal; • Encryption and Authentication algorithms; • Lifetime; • PFS; - Installed-SA; • Flush SA; - Create IPSec between two routers with NAT + LAB; • Set peer; • Set policy; • Set NAT rules; • Confirm the secure link is established;				

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: HotSpot	time			
	theoretical	practical	total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
- Introduction;
  • Concepts;
  • Usage environments;
  • Setup HotSpot with default settings + LAB;
- HotSpot Login Methods + LAB;
  • HTTP CHAP/PAP;
  • MAC;
  • Cookie;
  • HTTPS;
  • Trial;
  • RADIUS
- Users + LAB;
  • Add users;
  • Set MAC-address for user;
  • Set MAC-address forusername;
  • Limit Uptime and Limit Bytes In/Out;
  • Reset limits for user;
- Monitor Users;
  • Host Table;
  • Active Table;
  • SNMP for users;
- Profile + LAB;
  • Keepalive timeout;
  • Shared users;
  • Rate-Limit;
  • Address-list;
  • Incoming/Outgoing filter;
  • Incoming/Outgoing Packet Mark;
- Bypass HotSpot;
  • walled-garden;
  • walled-garden ip;
  • ip-binding;
- Customize HotSpot + LAB;
  • Advertisement;
  • Customize pages;
	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: RADIUS	time			
	theoretical	practical	total	
	Determined by the instructor			

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

Knowledge and Skill:
 	
- RADIUS client + LAB;
  • add radius client;
  • set service;
  • use-radius for the specific servic
- RADIUS server;
- User Manager + LAB;
  • Install the latest user-manager;
  • Add routers;
  • Add users;
  • Set profile;
- • RADIUS incoming
	Determined by the instructor (table)	- 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	

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

  *Required quantity for each 15 Trainees