استاندارد آموزش شایستگی

MikroTik Certified Routing Engineer (MTCRE)

گروه شغلی

فناوری اطلاعات

کد ملی آموزش شایستگی

نسخه	شناسه شایستگی		شناسه شغل		شناسه گروه	سطح مهارت	Isco-۰۸			
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Deputy of training

Plan and curriculums office

Competency Training standard

Title

MikroTik Certified Routing Engineer (MTCRE)

Occupational group

Information Technology(IT)

International code

2523-53-101-1

Date of standard compilation : 2015/10/13

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

National code: **2523-53-101-1**

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- 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 Routing Engineer(MTCRE)	

competency description:

MTCRE is one of the engineering course of MikroTik. Outline of this course is consist of four part:

1. Advance routing concepts and implement scenarios.
2. Advance tunnel concepts and implement related scenarios.
3. Advance Concepts of OSPF and implement related scenarios.
4. Advance Concepts of VLAN and QinQ and implement related scenarios.

The holder of MTCRE Certification knows advance options about MikroTik routing, policy routing, Advance configuration of tunnel server/client on RouterOS and also can implement OSPF protocol by any advance details. Also knows about point to point addressing and VLAN technology.

The holder of MTCRE certification have following proficiency :

- Will have the ability to understand and implement ECMP.
- Will have the ability to understand and implement advance routing options consist of policy route and routing mark and also metric options.
- Will have the ability to understand and implement different type of load balance.
- Will have the ability to understand and implement Point to point addressing.
- Will have the ability to understand and implement Site to site connectivity with tunnels (IPIP, EoIP, PPTP, SSTP, L2TP, PPPoE)
- Will have the ability to understand and implement VLAN and QinQ.
- Will have the ability to understand how OSPF protocol works (Hello protocol, Database distribution and LSA types explained)
- Will have the ability to understand OSPF network structure (Areas, Router types)
- Will have the ability to understand and implement OSPF neighbors and neighbor states (DR and BDR election)
- Will have the ability to understand and implement External Route Distribution methods (type1, type2)
- Will have the ability to understand and implement OSPF routing filters and limitations.

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	MTCRE

IRANTVTO Evaluation :(%)

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

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

competency training standard

tasks

Row	Title
1	**Static Routing**
2	**Point to point addressing**
3	**VPN**
4	**OSPF**

Training standard

Contents analysis form

Title:	time			
	theoretical	practical	total	
Static Routing	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - More specific routes - ECMP + LAB - How to force gateway over specific interface - Gateway reachability check and route distance + LAB - Routing mark and route policy + LAB - Recursive next-hop and scope/target-scope usage + - 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				

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Training standard

Contents analysis form

Title:	time			
Point to point addressing	theoretical	practical	total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - PtP address 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: VPN	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - What is VPN? - Different types of VPN - Site to site connectivity with tunnels (IPIP, EoIP, PPTP, - SSTP, L2TP, PPPoE) + LAB - VlAN and it's usage - QinQ implementation + LAB - VlAN and managed switch - VlAN and switch chip configuration on Rbs + 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				

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Training standard

Contents analysis form

Title: OSPF	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - What is OSPF? - How OSPF protocol works (Hello protocol, Database distribution and LSA types explained) - OSPF network structure (Areas, Router types) - OSPF neighbors and neighbor states (DR and BDR - election) + LAB - External Route Distribution methods (type1, type2) + - LAB - Interface cost and interface types (broadcast, NBMA, - etc.) + LAB - SPT calculation algorithm - OSPF and multicast (problems with NBMA) - Stub, NSSA and area ranges (route aggregation) + LAB - Virtual links, usage and limitations + LAB - OSPF routing filters and limitations + 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				

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

  *Required quantity for each 15 Trainees