



**ITU Training Programme on  
Certified IPv6 Network Engineering – Level 1 (CNE6 Level 1) for Arab LDCs  
Khartoum-Sudan, 25-29 Dec 2016**

**TRAINING OUTLINE**

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**COURSE DESCRIPTION**

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Title	<b>Certified IPv6 Network Engineering – Level 1 (CNE6 Level 1)</b>
Objectives	<ul style="list-style-type: none"><li>✓ Understand the differences and similarities between IPv4 and IPv6</li><li>✓ Identify that deploying IPv6 will enable continued IP networking growth</li><li>✓ Be able to create a deployment plan for IPv6 in your organization</li></ul>
Dates	<b>25-29 Dec. 2016</b>
Duration	5 Days
Registration deadline	<b>1<sup>st</sup> Dec. 2016</b>

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**LEARNING OUTCOMES**

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- ✓ Understand the Internet Ecosystem and its resource management framework
- ✓ Understand the limitations in the current version of the Internet Protocol
- ✓ Understand the features of IPv6
- ✓ Be able to develop an IPv6 migration plan

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**TARGET POPULATION**

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- ✓ Network Engineers and Applications Developers; who have been restricted with IPv4 limitations,
- ✓ Network Administrator; who are aware of the IPv4 exhaustion,
- ✓ IT manager; who want to convince the organization administrators to migrate to IPv6,
- ✓ CTO; who think about organization business continuity,
- ✓ Academic Staff; who believe that IPng is an essential part of the Future Networks,
- ✓ Student and Researchers; who need to bridge the gap on his knowledge in networking concepts.

## Prerequisites

It is assumed that participants are familiar with the common IP terminology and have an adequate knowledge of basic network configuration. IPv4 is briefly reviewed when highlighting the new features on IPv6, however a fair experience on IPv4 routing configuration is necessary.

A good knowledge of general networking concepts is compulsory, that include;

- ✓ TCP/IP and OSI,
- ✓ IPv4 features (Header, Classes, Subnetting, etc.),
- ✓ Routing Protocols and Routed Protocols,
- ✓ Router configuration skill.

## TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Dr. Ahmed Abdalla Mohamed Ali	<a href="mailto:ahmedflaminko@yahoo.com">ahmedflaminko@yahoo.com</a>
Eng. Sara Alamin	<a href="mailto:sara.alamin90@gmail.com">sara.alamin90@gmail.com</a>
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## EVALUATION

Participants need to attend all sessions including the practical hands on session and perform the experiments. Besides, they have to pass the subjective and the objective exams at the end of the course.

## TRAINING SCHEDULE AND CONTENTS / AGENDA

The CNE6 Level 1 courses required 24 hours in Four days, (18 hours for presentations, 6 hours for hands-on Labs)

### Course Contents

<b>Day 1:</b>
<ul style="list-style-type: none"><li>• Introduction to Internet Eco-System</li><li>• IPv6 Motivation and Overview</li><li>• IPv6 and addressing Architecture</li><li>• Packet Structure &amp; Header Formats</li></ul>
<b>Day 2:</b>
<ul style="list-style-type: none"><li>• ICMPv6 &amp; Neighbor Discovery</li><li>• Subnetting</li><li>• Router configuration<ul style="list-style-type: none"><li>○ GNS3 Installation &amp; Configuration<ul style="list-style-type: none"><li>▪ Lab 1 – Basic Router configuration</li></ul></li></ul></li></ul>
<b>Day 3:</b>
<ul style="list-style-type: none"><li>• Transition Mechanism<ul style="list-style-type: none"><li>○ Dual stack</li><li>○ Tunneling<ul style="list-style-type: none"><li>▪ Manual Tunneling</li><li>▪ Lab 2 – Manual Tunneling configuration</li><li>▪ Automatic Tunneling</li></ul></li></ul></li></ul>

- Lab 3 – 6 to 4 tunneling configuration

#### Day 4:

- Translation
  - NAT-PT
- Revision

#### Day 5:

- CNE6v1-Exam

### Daily Schedule

Serial	Topic	Time
1.	Registration and Opening (1 <sup>st</sup> Day)	08:00 – 10:00
2.	Session -1	09:00 – 11:00
3.	Coffee Break	11:00 – 11:30
4.	Session -2	11:30 – 13:30
5.	Lunch	13:30 – 14:30
6.	Session -3	14:30 – 15:30
7.	Coffee Break	15:30 – 16:00
8.	Session -4	16:00 – 17:00

## METHODOLOGY

CNE6 Level 1 is 2/3 theoretical session 1/3 practical session. Theoretical session will be in the form of Instructor-led presentations, case studies, assignments, and quizzes .A round of Q&A and discussion will be held after each session.

Hands-on sessions are facilitated with a Virtual Network Lab. The participant required to bring Laptop with network connectivity.

## TRAINING COORDINATION

### TRAINING COORDINATOR

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### ITU COORDINATOR

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## REGISTRATION

Please fill the registration form and return it back to Eng. Mustafa Al Mahdi, Associate Programme Officer of ITU-Arab Regional Office ([mustafa-ahmed.al-mahdi@itu.int](mailto:mustafa-ahmed.al-mahdi@itu.int)), and Eng. Akram Omer Hassanin, IT Manager, NTC-Sudan ([akram@ntc.gov.sd](mailto:akram@ntc.gov.sd))