

CISCO TRAINING	Service Provider Voice		
Classroom Training	5 Days		

## INTRODUCTION

Cisco® IP Radio Access Network (RAN) Solution is a family of IP-based solutions that extends Cisco IP network intelligence from your network core to the edge by preparing all RAN traffic for transport over pseudowires (PWE3) or carrier-metro ethernet. By providing access agnostic platforms, the Cisco solution creates a cost-effective, manageable environment for legacy network convergence by establishing a common backbone for migration from traditional, disparate networks to the converged Cisco IP/Multiprotocol Label Switching (MPLS) mobile architecture. Cisco's IP RAN Solution provides industry standard pseudowires (PWE3) for any application protocol as well as Cisco's Optimized Pseudowire for use in optimizing GSM and UMTS RANs.

Built on the Cisco 7600 Series platform and Cisco MWR-2941 platform, the Cisco IP RAN Mobile Transport over Packet (MToP) solution uses industry-standard pseudowires (PWE3) to extend the packet-based core closer to the edge of the network. It flattens the multiple layers of the RAN onto a single MPLS network by encapsulating and transporting time-division multiplexing (TDM) and ATM traffic over MPLS. Cisco also provides a RAN Optimization (RANO) solution built on the ONS 15464 platform and Cisco MWR-2941 platform designed to optimize Global System for Mobile Communications (GSM) and Universal Mobile Telecommunications Service (UMTS) RAN architectures over a E1/T1 backhaul and offloading bandwidth intensive traffic such as High Speed Packet Access (HSPA) over cost efficient IP broadband media.

This training is designed to teach attendees how to configure and test the Cisco IP RAN Solution. Both standards based and Cisco optimized pseudowires, architectures, features, and network designs will be covered. In the hands-on labs, attendees will build a Cisco IP RAN Solution Network to transport voice and data traffic over both a reduced capacity T1/E1 backhaul transport network and an Ethernet backhaul transport network.

## OBJECTIVES

Upon completion of this course, students should be able to configure and test the Cisco IP RAN Solution and:

- Relate the importance of the Cisco IP RAN Solution to the service provider markets
- Describe, configure, and troubleshoot the various Cisco IP RAN Solutions
- Understand and describe alarms and redundancy in the solution
- Use the network management product to monitor Cisco IP RAN Solutions
- Size and understand how to stage trials to production deployment
- Identify the configuration and platform differences between Cisco optimized pseudowire and industry standard based pseudowire
- Validate and troubleshoot configurations

## TARGET AUDIENCE

- Customers purchasing or considering Cisco IP RAN Solution
- Field sales, systems engineers, Customer Advocacy and Advanced Services personnel working with mobile wireless service providers
- Partners or mobile wireless service providers implementing or planning a Cisco IP RAN Solution lab and field trials for mobile wireless service providers

## PREREQUISITES

Before attending this course, it is required that students have:

- A basic understanding of IP, GSM, CDMA, and T1/E1 signaling
- Experience with Cisco IOS® Software configuration and monitoring (troubleshooting and debugging)
- A basic understanding of Simple Network Management Protocol (SNMP) and network management

## COURSE OUTLINE

- Introduction
- GSM 101
- UMTS 101
- Cisco RAN Transport Solution Overview (High-Level)
- Solution Hardware and Software Overview
- Standards Based Pseudowire - PWE3 101
- Clocking Standards
- Mobile Transport over Packet (MToP) Solution Part 1
- Mobile Transport over Packet (MToP) Solution Part 2
- Cisco Optimized Pseudowire for GSM (RANO)
- ONS CTS Overview and Provisioning (RANO)
- Cisco Optimized Pseudowire for UMTS (RANO)
- Advanced Technical Overview (RANO)
- Network Management (MWTM)

## LAB OUTLINE

- PWE3
  - 7600/2941 PWE3 MPLS PSN Backhaul
  - 7600/2941 PWE3 SAToP & CESoPSN Configuration
  - 7600/2941 PWE3 ATMoMPLS Configuration
  - 7600/2941 PWE3 QoS Configuration
  - 7600/2941 PTPv2 Clocking Configuration
- Cisco RAN-O
  - PC Setup for using CTC
  - Enable Redundancy for ONS-RAN-SVC Module
  - Provisioning E1 Circuits Using CTC
  - IP Backhaul Configuration
  - GSM-Abis Interface Configuration
  - Quality of Service Configuration
- MWTM
  - Network Management Configuration
  - MWTM Windows Client Installation
  - MWTM Monitoring With Traffic

## INCLUDED MATERIALS

- Student guide