Eclipse Installation, Operation and Maintenance Course

TRN-ECL-IOM-A/B/C/D

Course Specifics

Duration:	3 days
Class capacity:	10 students
Materials provided:	Student Handbook (e-Book)

Course Description

The Eclipse™ product family is a highly modular and scalable platform that delivers a unique combination of high capacity hybrid or all-packet transport, Carrier Ethernet/IP networking, and comprehensive mission critical microwave features, enabling operators to prepare for the all-IP future.

The **Eclipse Installation, Operation and Maintenance course** teaches students key functions of the Eclipse platform. The course includes an overview of all available equipment, basic configuration with the Portal craft tool, system commissioning, maintenance, diagnostics and troubleshooting. Extensive hands-on labs (nearly 50% of the course duration) offer students with scenarios they will face in real deployments in their networks.

Courses are conducted by **AVIAT expert trainers** in a mentoring environment backed by their deep technology expertise and experience in implementation of microwave wireless and IP networks.

The Eclipse Installation, Operation and Maintenance course is conducted at the Aviat Training locations or can be arranged at customer sites.

Target Audience

This course is intended for installation and service personnel responsible for installation, configuration, test and maintenance procedures for the Eclipse platform.

Prerequisites

1. Participants must complete Eclipse System Overview e-learning course.

2. Participants should have a basic understanding of Electronics, Telecommunications and IP Fundamentals and have basic computer skills.

3. Each student must bring an IBM compatible laptop PC and have administrator rights on the PC (to allow installation of the Portal craft tool).

The PC must have minimum parameters of:

- Pentium 4 or later w/ 1GB of RAM and 250 Mb of free hard drive space
- Microsoft Windows XP, Vista, or Windows 7
- USB Port
- Network card (LAN Port)
- DB9 serial port connection or adapter (optional)

Objectives

Upon successfully completing this course, participants will be able to:

- Basic installation and configuration for Eclipse equipment
- Preventative maintenance on the relevant Eclipse equipment
- Basic diagnostics and troubleshooting of the relevant Eclipse equipment.

EDUCATION SERVICES

Course Outline

Eclipse System Overview
- Introduction to Basic Overview
- Introduction to Node and Terminal Platform

Eclipse Node
- Node Concept
- Basic Architecture and Capabilities
- Indoor Units: INU and INUe
- Slot Assignment Rules
- Backplane Bus
- Node Capacity Rules and Licensing
- Plug-in Cards
- -NCC, -FAN, RACs, -DACs, -AUX, -NPC
- Node and DAC Protection
- RF Unit Overview

Installation and Commissioning
- INU Card Handling and Rules
- Indoor Installation
- Outdoor Installation
- Commissioning
- Configuration Work Flow
- Acceptance Testing
- Records Keeping
- Lab Exercise

Ethernet DAC's
- Eclipse Packet Node
- DAC GE3
- DAC GE
- Modes of Operation
- RWPR
- VLANs
- Link Aggregation
- Link Status Propagation
- QOS and Scheduling
- DAC GE3 Protection
- Lab Exercise

Eclipse Terminals

- Eclipse Terminal Overview
- Eclipse IDU GE3 16x
- Eclipse Terminal protection Operation

Eclipse ODU/RFUs

- ODU 300hp
- ODU 600
- IRU600v1, v2, and v3 (North America only)
- Antenna Mount and Coupler
- RSSI
- RAC-ODU/RFU Cable
- ODU/RFU Block Diagram

Eclipse ODU/RFU Configuration

- Protection Options
- Hot Standby 1+1
- Space Diversity
- Frequency Diversity
- Dual Protection
- TDM Ring Protection, NCM and SPDH
- CCDP with XPIC
- ACM

Portal

- Introduction to Portal Craft Tool
- Portal Installation
- Portal PC Configuration for Ethernet and V.24/RS-232 Connections
- Eclipse Network Management
- Portal Screens
- Lab Exercise

Eclipse Diagnostics and Troubleshooting

- Diagnostics Overview
- LEDs
- Alarms
- HTML Help
- Diagnostics Screens
- Loopbacks
- Event Browser
- Performance and History
- Troubleshooting Overview
- Troubleshooting Path Problems
- Troubleshooting Configuration Problems
- Lab Exercise

Preventative Maintenance
- Maintenance Overview
- Inspections
- Trend Analysis
- Fault Analysis and Reporting
- Spares
- Software Management
- Lab Exercise

Required Equipment for Training Sessions at Customer Sites

RADIO	One equipment rack with 48VDC power supply (note; all Eclipse equipment is positive earth) At least 1 Traffic free hop – 2 radios talking to each other. (Path has been simulated with at least 60dB of attenuation, for troubleshooting training variable attenuators are preferred however not mandatory) INU configurations each INU should include as a minimum: •RAC card (with RAC jumper cable and 50ohm cable or M/M N-type adapters to connect to ODU. •DAC card (with relevant traffic cables •Any relevant optional cards. IDU configurations, each IDU should have the following available; •Flash card •Relevant traffic cables •50ohm N-type cable for connection to ODU •ODU's should be a matching pair i.e. same sub band and TR spacing with one being Tx High and the other Tx Lo. INU configurations it is preferred although not essential to have 3 x INU and 2x Pairs of ODU's to allow nodal configurations to be made during the training.
OTHER EQUIPMENT	Not Applicable.
CLASSROOM SET UP	Sufficient in size to handle all participants, instructor, desks, chairs, classroom equipment. The room must have enough 110 AC (220) AC power and air conditioning to operate equipment, all students clients PC's and the server or radio as required. **Classroom Equipment** Marker board, SVGA or Overhead projector and screen. **Desk and Chairs** Desks or workstations with enough room for each student to write have open books, client PC and / or, keyboard and monitor. **Internet Access** Internet access through the server or through client PC.

Pricing & Scheduling

Please contact your Aviat local sales team for a quote or email aviatcareeducate@aviatnet.com and request pricing for the following items:

TRN-ECL-OVIEW-E	ECLIPSE OVERVIEW - ELEARNING -PRICE PER STUDENT
TRN-ECL-IOM-A	ECLIPSE: INSTALLATION, OPERATION AND MAINTENANCE - ILT, 3 DAYS, AVIAT TRAINING CENTER - OPEN ENROLLMENT -PER STUDENT
TRN-ECL-IOM-B	ECLIPSE: INSTALLATION, OPERATION AND MAINTENANCE - ILT, 3 DAYS, AVIAT TRAINING CENTER- 10 STUDENTS MAX
TRN-ECL-IOM-C	ECLIPSE: INSTALLATION, OPERATION AND MAINTENANCE - ILT, 3 DAYS, CUSTOMER LOCATION- 10 STUDENTS MAX
TRN-ECL-IOM-D	ECLIPSE: INSTALLATION, OPERATION AND MAINTENANCE - ILT, 3 DAYS, CUSTOMER LOCATION-WITH EQUIPMENT- ONLY FOR US- 10 STUDENTS MAX

DEPLOYING ADVANCED ECLIPSE FEATURES

TRN-ECL-ADV-L2-A/B/C/D

Course Specifics

Duration:	2 days
Class capacity:	10 students
Materials provided:	Student Handbook (e-Book)

Course Description

The Eclipse™ product family is a highly modular and scalable platform that delivers a unique combination of high capacity hybrid or all-packet transport, Carrier Ethernet/IP networking, and comprehensive mission critical microwave features, enabling operators to prepare for the all-IP future.

The Deploying Advanced Eclipse Features course builds on the foundational knowledge provided in the pre-requisite Eclipse Installation, Operation and Maintenance course (TR-ECL-IOM).

This course is targeted at providing students a thorough understanding of how to deploy the Eclipse platform in an All-IP Radio Access Network (IP-RAN) environment. The course covers overview of related Ethernet/IP fundamental concepts such as IP addressing, sub-netting, VLANs, QoS techniques, protection techniques, and synchronization and timing in an Ethernet environment.

Detailed hands-on scenarios on how to configure the Eclipse platform and specifically the advanced features of the DAC GE3 modules will be covered. Students will get a deep dive into understanding alarms and identifying system blocks that are target for troubleshooting.

Extensive hands-on labs offer students a chance to work with scenarios they will face in real deployments in their networks.

Courses are conducted by **AVIAT expert** trainers in a mentoring environment backed by their deep technology expertise and experience in implementation of microwave wireless and IP networks.

The Advance Eclipse Troubleshooting course is conducted at Aviat Training locations or can be arranged at customer sites.

Target Audience

Courses are intended for service personnel requiring an in-depth knowledge of troubleshooting and maintaining Eclipse radio platforms.

Prerequisites

- Students must demonstrate prior completion of the Eclipse Installation, Operation and Maintenance course (TR-ECL-IOM). An attendance record from the Eclipse course such as the certification of completion will be requested during the registration process. Students that have completed the TR-ECL-IOM over 12 months ago may be required to complete an online E-Learning course for the Eclipse System Overview (approximate 1-hour duration) as a refresher.

- Participants should have a basic understanding of Microwave and IP Fundamentals and have basic computer skills. These courses are available via E-learning on the AviatCare Educate site or as part of the Aviat Networks Certification program (Associate level).

- Each student must bring an IBM compatible laptop PC or an equivalent and have administrator rights on the PC.
  The PC must have minimum parameters of:

- Pentium 4 or later w/ 2GB of RAM and 250 Mb of free hard drive space
- USB Port
- Ethernet 10/100/1000Base-T LAN port with RJ-45 connector for local Ethernet connection
- 800x600 resolution, 256 color display (16-bit color)
- Microsoft Windows XP, Vista, Windows 7, or Windows 8
- TCP/IP installed and configured for LAN operation

Objectives

Upon successfully completing this course, participants will be able to:

- Understand and deploy advanced features for the Eclipse platform.
- Install, configure operate and maintain Eclipse IP radios.
- Diagnose complicated faults and troubleshoot the relevant Eclipse platform(s) with support requirements.

EDUCATION SERVICES

Course Outline

DAC GE3 Advanced VLAN Configuration

- VLAN Concepts
- DAC GE3 Advanced VLAN Configuration
- VLAN Steering
- VLAN Translation
- VLAN configuration deployment examples – Port Based, 802.1Q, Provider Bridging
- VLAN Steering Lab

Protection, Stacking and Aggregation Options

- DAC GE3 Ethernet Protection and Stacking
- Link Status Propagation – Automatic Port Shutdown on Link Failure detection
- Layer 1 Link Aggregation
- Layer 2 Link Aggregation – Static LAG and LACP
- Dual Feed protection with LACP Lab

Quality of Service (QOS)

- End to End QoS mapping and scheduling
- Shaping
- L1LA and QOS Configuration Lab

Strong Security

- End to End QoS mapping and scheduling
- Shaping
- L1LA and QOS Configuration Lab

MPLS Virtual Private Network Technology

- Secure Management concept and configuration
- Payload Encryption concept and configuration
- SNMPv3 concept and configuration
- RADIUS Server Authentication concept and configuration
- Secure Management and Payload Encryption Lab

Ethernet Ring Protection, OAM, and RSTP

- Rapid Spanning Tree Protocol (RSTP) concept for loop avoidance
- Ethernet Ring Protection Switching (ERPS) concept for fast convergence and loop avoidance and standard ITU-T G.8032v2
- Ethernet Operation, Administration and Maintenance (EOAM) concept and standard ITU-T Y.1731, IEEE 802.1ag
- Configuration Deployment examples of RSTP, ERPS and EOAM
- Loop Avoidance Labs

Synchronization Essentials

- Mobile Synchronization Requirements
- Introduction to Synchronous Ethernet (SyncE) and Precision Timing Protocol (PTP – IEEE1588) and standards
- Configuration Deployment examples using Synchronous Ethernet
- Synchronous Ethernet Lab

Adaptive Coding and Modulation

- Concept of Adaptive Coding and Modulation
- Regulatory Considerations with ACM
- ATPC with ACM
- ACM and QoS Configuration Lab

Diagnostics and Troubleshooting

- DAC GE3 System Controls screen
- Ethernet Port Mirroring using Wireshark to capture events
- DAC GE3 MAC Snapshot
- DAC GE3 History and Performance Screens
- Diagnostics and Troubleshooting Lab

EDUCATION SERVICES

Required Equipment for Training Sessions at Customer Sites

RADIO	One equipment rack with 48VDC power supply. At least 2 Traffic free hops (one HSB and one NP – 2 radios links talking to each other. (Path has been simulated with at least 60dB of attenuation, for troubleshooting training variable attenuators are preferred however not mandatory). Minimum of 4 DAC GE v3 Radio links can be hired for duration of training course if required.
OTHER EQUIPMENT	Digital multimeter. Ethernet tester.
CLASSROOM SET UP	Sufficient in size to handle all participants, instructor, desks, chairs, classroom equipment. The room must have enough 110 AC (220) AC power and air conditioning to operate equipment, all students clients PC's and the server or radio as required. Classroom Equipment • Marker board, SVGA or Overhead projector and screen. Desk and Chairs • Desks or workstations with enough room for each student to write have open books, client PC and / or, keyboard and monitor. Internet Access • Internet access through the server or through client PC.

Pricing & Scheduling

Please contact your Aviat local sales team for a quote or email aviatcareeducate@aviatnet.com and request pricing for the following items:

TRN-ECL-ADV-L2-A	ECLIPSE: CONFIGURING ADVANCE FEATURES - ILT, 2 DAYS, AVIAT TRAINING CENTER - OPEN ENROLLMENT -PER STUDENT
TRN-ECL-ADV-L2-B	ECLIPSE: CONFIGURING ADVANCE FEATURES - ILT, 2 DAYS, AVIAT TRAINING CENTER- 10 STUDENTS MAX
TRN-ECL-ADV-L2-C	ECLIPSE: CONFIGURING ADVANCE FEATURES - ILT, 2 DAYS, CUSTOMER LOCATION- 10 STUDENTS MAX
TRN-ECL-ADV-L2-D	Eclipse: Configuring Advance Features - ILT, 2 DAYS, Customer Location-with Equipment- only for US- 10 Students Max