

Training Catalog

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September 2012 - October 2013

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Introduction

Fujitsu delivers next-generation optical transport and data networking solutions optimized for metropolitan, regional, long-haul, and high-capacity applications.

Fujitsu Educational Services offers comprehensive training programs covering general technology, system planning and engineering, turn-up and test, network management systems, and operations, maintenance, and trouble clearing for all Fujitsu products.

Fujitsu training may be held at the Richardson, Texas, campus, or instructors may be scheduled to come directly to your site to deliver standard courses or custom training solutions at your facility. All classes are limited to a minimum and maximum student count, depending on the course to be taught and quantity of equipment available.

The types of classes referenced in this catalog are:

- **In-House Class** – Classes delivered at Fujitsu's Richardson, Texas Training Center. In-House classes include hands-on practice exercises using the latest versions of Fujitsu hardware and software. In-House Class seats are included in most Fujitsu service contracts.
- **Specially Scheduled In-House Class** – Classes delivered at Fujitsu's Richardson Texas Training Center for students from one company. Seats for Special In-House Classes are not included in Fujitsu Service Contracts.
- **Custom Class** – Customized delivery of our standard courses is available to meet your unique needs by combining two courses into one class, or by changing the course duration.
- **Suitcase Class** – Classes based on standard courses that are delivered on-site at the customer's facility.

Richardson, Texas Training Center Classes

Regularly Scheduled In-House Classes

Fujitsu offers regularly scheduled classes based on our standard courses at our Richardson, Texas Training Center. You can view the current class schedules with available seats, and register for classes, online at the following URL:

<https://partners.fnc.fujitsu.com/training/resources/jsp/frameset/>

Specially Scheduled Classes

We can provide a price quotation to schedule a class exclusively for your employees at Fujitsu's Richardson, Texas Training Center. Fujitsu Educational Services offers classes based on standard courses on a pre-scheduled basis. However, if your organization needs a class at a time other than when one is scheduled, we will work with you to schedule a class that will accommodate your needs. Specially scheduled classes require a minimum tuition charge for eight students. A maximum student count applies and varies depending on the course. Contact the Fujitsu Training Coordinator at ed.svcs@fnc.fujitsu.com to discuss your requirement and to request a price quotation.

Custom Classes

A maximum of two courses may be combined into one custom class. We can provide a price quotation for a custom class. Custom classes are based on our standard courseware, but the delivery will be modified to meet your specific needs. If the total duration is reduced as compared to standard courses, some material may necessarily be omitted from the class. Which material is omitted and which will be included will be decided by mutual agreement. Contact the Fujitsu Training Coordinator at ed.svcs@fnc.fujitsu.com to discuss your requirement and to request a price quotation.

Enroll now at <http://partners.fnc.fujitsu.com/training>

Suitcase Classes (On-site)



Standard Classes

Our standard catalog courses can be presented on-site at the customer location. Fujitsu provides all required documentation for courses on CD-ROM or DVD. Other student materials are distributed at the beginning of the class. To schedule a suitcase class, please submit a completed suitcase training request e-form through the Partners website at least 30 days prior to your requested start date. The Fujitsu Training Coordinator will contact you.

<https://partners.fnc.fujitsu.com/training/resources/jsp/frameset/>

Custom Suitcase Classes

Custom suitcase classes are based on our standard courseware, but the delivery can be modified to meet your specific needs. For example, two courses may be combined into one custom class, or the delivery of a standard course can be changed to cover only the sections that apply to your network application of Fujitsu products. If the total duration is reduced as compared to standard courses, some material will necessarily be omitted from the class. Contact the Fujitsu Training Coordinator at ed.svcs@fnc.fujitsu.com to request a price quotation.

Suitcase Class Information

To discuss your requirement, email your Fujitsu sales representative or our training coordinator at: ed.svcs@fnc.fujitsu.com.

Payment

Payment must be received at least 15 business days prior to the class start date.

Suitcase Class Requirements

Equipment and Facility Requirements for Suitcase Classes

Fujitsu equipment, facility, and educational tools required for suitcase classes include:

- Classroom or conference room of adequate size to accommodate students and equipment

- Noise-free environment with sufficient lighting and comfortable air conditioning
- Work space (tables and chairs) appropriate to class size
- Flip chart or dry marker/chalk board with appropriate markers or chalk and erasers
- Data projector with stand or table and screen
- Sufficient AC power for the equipment and PCs

To avoid distractions, no other work should be in progress near the classroom area.

Equipment for Lab Exercises

The following is required for Turn-Up and Test, and Maintenance and Trouble Clearing courses:

- Dedicated non-traffic-bearing equipment installed with power and all required plug-in units
- One node per two students (optimum)
- Optical power light meter with adapter(s)
- Test set capable of testing DS1, DS3, OC-3 to OC-192 and GbE, depending on the course.
- Multimeters and optical test sets
- DSX1 with patch cords for all equipment with T1 connections
- Attenuators, fiber jumpers, and cleaners sufficient for network connections
- ESD protection (for example, wrist straps and heel straps)

Contact the Fujitsu training coordinator to discuss specific equipment requirements.

Student Computer Requirements for Training at the Customer's Location

The customer or student is responsible for providing a minimum of one PC or laptop per node with the following minimum capabilities:

- Operating system:
 - Windows 7 32/64 bit Professional
 - Windows XP Professional (Service Pack 1 or 2)
 - Windows Vista Business (Service Pack 1)
- 1.2 GHz CPU recommended
- 512 MB RAM recommended
- 400 MB available hard disk space
- CD-ROM drive
- LAN card or serial craft interface port and connection cable

Note: NETSMART 500 software connects to NEs using a serial port connection or TCP/IP. The TCP/IP settings on your computer must be properly configured. See your system administrator for assistance with your TCP/IP settings. TCP/IP is the preferred method for connecting to an NE with NETSMART 500 software.

- 16-bit color
- 1024 x 768 resolution
- Web browser:
 - Microsoft Internet Explorer® Version 8.0 or later
 - Mozilla® Firefox® Version 3.0 or later

Enroll now at <http://partners.fnc.fujitsu.com/training>

Fujitsu Training Policies and General Information

Start and Stop Time

Classes are normally scheduled from 8AM to 5PM. The instructor may adjust the class time according to class conditions and student load. Students must be in attendance for the entire duration of the class to receive a certificate of completion. There are morning and afternoon breaks, as well as a one-hour lunch break. For lunch, a cafeteria is located in the Richardson facility. During breaks, students may use the soft drink, coffee, and vending machines near the classrooms.

Cancellation of Enrollment or Substitution

To cancel enrollment in a Richardson class, notify Fujitsu Educational Services in writing by fax or e-mail. If the cancellation occurs ten or more business days before the scheduled class, no cancellation fee is charged. Cancellations received within nine business days prior to the class start date, as well as "no shows," are subject to the full tuition. If you need to substitute a student within nine business days of the class start date, please email Fujitsu Training at ed.svcs@fnc.fujitsu.com.

Class Cancellation Policy

Fujitsu Educational Services makes every effort to avoid cancellation of scheduled classes. If a Fujitsu cancellation is necessary, the student will be notified at least ten business days prior to the scheduled start date. If cancellation of a requested class is necessary by the customer, Fujitsu's Training Coordinator must be contacted by the requestor at least 10 business days prior to the class start date in order to receive proper credit.

Availability and Wait List

All course delivery (in-house and suitcase) is limited to a first-come, first-served basis. Your request for classes already filled will be placed on a wait list. If an opening becomes available, the next student registered to the wait list is notified that a seat is available. Seats are filled on a first-come, first-served basis. Confirmations are emailed within 24 hours of registration. The confirmation email serves as authorization to attend the class. If you don't receive a confirmation email from Fujitsu at least 7 days prior to the class start date, then email the Fujitsu training department at ed.svcs@fnc.fujitsu.com to verify your enrollment. If you are a customer training coordinator and register students from your company, you may request that e-mails be sent to you instead of to the individual students.

Dress Code for Classes at the Richardson, Texas Training Center

Casual business attire is appropriate for class attendance. For safety reasons, shorts and open-toe shoes are not permitted in the classrooms or labs. ESD damage prevention precautions are observed in the classroom.

Prerequisite Tutorials

Students must complete the prerequisites as stated in the course descriptions to receive a certificate of completion. Fujitsu offers four tutorials:

- SONET
- Ethernet
- DWDM
- TCP/IP

These basic technology tutorials are designed for all audiences in the telecommunications field. If you are a beginning student, the tutorials raise your level of understanding quickly. Even if you are already familiar with the protocols, the tutorials will enhance and reinforce your existing knowledge base. These self-study tutorials are available for download at:

<http://us.fujitsu.com/telecom/training>

Note: SONET knowledge is a prerequisite for all Fujitsu courses.

Enroll now at <http://partners.fnc.fujitsu.com/training>

Contracts, Prices and Payment

An agreement with Fujitsu must be in place prior to accepting a purchase order or payment for training. Please contact either your FNC sales representative or email Fujitsu Training at Ed.svcs@fnc.fujitsu.com for additional information.

Payment Methods

There are four methods of payment:

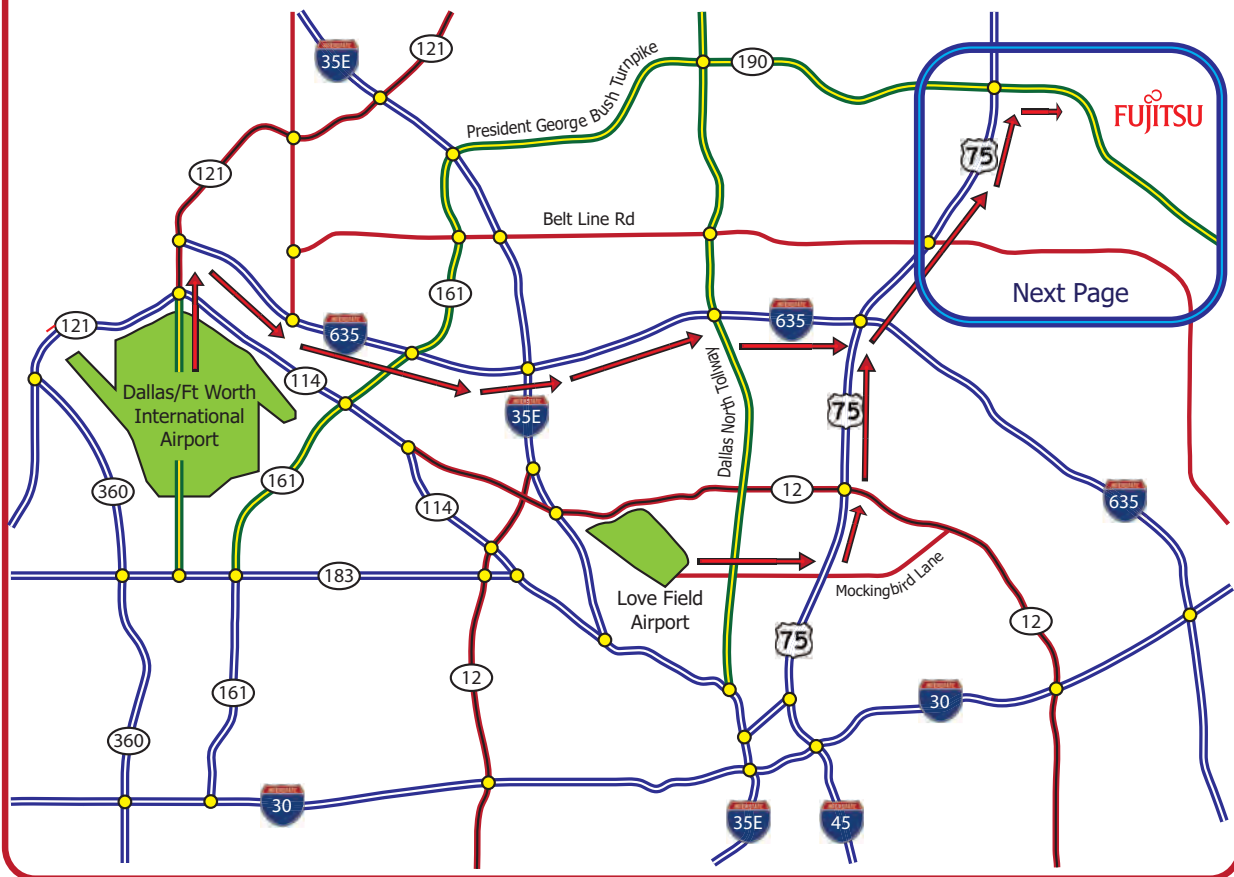
- Course registration number for prepaid seats (The course registration number is a multi-digit number provided to you by your Fujitsu sales representative.)
- Company check
- Credit card (We accept Visa, MasterCard, or American Express.)
- Purchase order
- FNC Employee internal cost center

Price Changes

Note: Prices listed on the Fujitsu Educational Services Website and in this catalog are subject to change without prior notice. Standard prices for regular Richardson classes are quoted on a per-student basis. Prices for suitcase, custom, and specially scheduled (in- house) classes at the Richardson Training Center are quoted on a per-class basis.

Map to Fujitsu Network Communications

Driving Directions to Fujitsu Network Communications



Directions From DFW

Take the NORTH EXIT from DFW onto **SH121** for approximately a half mile.

Merge RIGHT and take **I-635 EAST** approximately 15 miles to Exit 19A **US-75 North** (McKinney).

Go NORTH on **US-75** for approximately 6 miles, and take Exit 27A **RENNER RD.**

Go EAST (right) on **RENNER RD** approximately 2.5 miles to **SHILOH RD.**

Go SOUTH (right) on **SHILOH RD** .5 mile and turn LEFT on **RESEARCH DR.**

Turn LEFT on **TELECOM PKWY.** Go 1 block, turn LEFT into **Fujitsu Network Communications.**

Directions From Love Field

Exit LOVE FIELD and turn EAST (left) onto **MOCKINGBIRD LANE.**

Go EAST approximately 3.5 miles to **US-75** (Central Expressway).

Go NORTH on **US-75** for approximately 12 miles, and take Exit 27A **RENNER RD.**

Go EAST (right) on **RENNER RD** approximately 2.5 miles to **SHILOH RD.**

Go SOUTH (right) on **SHILOH RD** .5 mile and turn LEFT on **RESEARCH DR.**

Turn LEFT on **TELECOM PKWY.** Go 1 block, turn LEFT into **Fujitsu Network Communications.**

Map to Hotel Accommodations and Fujitsu Campus



Hotel Contact Information

- 1 Renaissance Hotel – Dallas/Richardson (972) 367-2000
- 2 Courtyard Dallas/Richardson at Campbell (972) 994-9933
- 3 Hyatt Summerfield Suites – Dallas/Richardson (972) 671-8080
- 4 Residence Inn – Dallas/Richardson (972) 669-5888
- 5 Homewood Suites by Hilton – Richardson/Plano (972) 881-3339
- 6 Best Western Park Suites – Plano (972) 578-2243
- 7 Comfort Suites – Plano (469) 429-0700
- 8 Candlewood Suites Extended Stay – Plano (214) 474-2770
- 9 Hyatt Place Dallas – Garland (972) 414-3600
- 10 Holiday Inn – Garland (972) 495-1144
- 11 Springhill Suites by Marriott – Richardson (972) 479-0300
- Offers Student Discounts

FNC Information

Fujitsu Main Number:
 (972) 479-6000
 (800) 777-FAST

Address:
 2801 Telecom Pkwy
 Richardson, TX 75082
 Mapco: 9K

Website:
us.fujitsu.com/telecom/training




Hotel Address Information

Hotel Information:


The hotels listed below correspond to the map on the preceding page.

1	Renaissance Dallas Richardson Hotel 900 E. Lookout Drive, Richardson, Texas 75082 Phone: 1-972-367-2000 * Fujitsu Discount
2	Courtyard Dallas Richardson at Campbell 2191 N. Greenville Avenue, Richardson, Texas 75082 Phone: 1-972-994-9933
3	Hyatt Summerfield Suites - Dallas/Richardson 2301 North Central Expressway, Richardson, Texas 75080 Phone: 1-972-671-8080 * Fujitsu Discount
4	Homewood Suites by Hilton Richardson - Plano 2601 East George Bush Turnpike, Plano, Texas 75074 Phone: 1-972-881-3339 * Fujitsu Discount
5	Residence Inn Dallas - Richardson 1040 Waterwood Drive, Richardson, TX 75082 Phone: 1-972-669-5888
6	Best Western Park Suites 640 East Park Boulevard, Plano, Texas 75074 Phone: 972-578-2243 * Fujitsu Discount
7	Comfort Suites - Plano 2301 East George Bush Turnpike, Plano, Texas 75074 Phone: 469-429-0700
8	Hyatt Place Dallas - Garland 5101 North George Bush Turnpike, Garland, Texas 75040 Phone: 1-972-414-3600 * Fujitsu Discount
9	Candlewood Suites - Plano 2401 East George Bush Turnpike, Plano, TX 75074 Phone: 214-474-2770 * Fujitsu Discount
10	Holiday Inn - Garland 5110 N President George Bush Fwy, Garland, TX 75040 Phone: 972-495-1144 * Fujitsu Discount
11	Springhill Suites - Richardson 3251 E President George Bush Turnpike, Richardson, TX 75082 Phone: 972-479-0300


FLASHWAVE® 4000 Series System Engineering

Ordering Information	What You Will Learn	
<p>Course Code: 4000-E Duration: 4 Days Ordering Numbers: In-house: TRIH-4000E In-House Tuition: \$2800 Suitcase: TRSC-4000E* MSP Suitcase: TRSE-4000E*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>FLASHWAVE 4100 Large and Small Shelf Overview</p> <ul style="list-style-type: none"> • Ethernet Services • Network Configurations • Ethernet over SONET • Small Shelf Layout and Backplane • Network Management Interfaces • OAM&P <p>FLASHWAVE 4100 Large and Small Shelf Units</p> <ul style="list-style-type: none"> • OC-x Line Units • OC-x Service Units • DSx Units • 4-Port 10/100Base-T EOS • 4-Port 10/100Base-T Layer 2 Ethernet • 2-Port Gigabit Layer 2 Ethernet Unit • Ethernet Bandwidth Extension Unit 	
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial • ATM Tutorial 	<p>FLASHWAVE 4100 Packet ONP Shelf</p> <ul style="list-style-type: none"> • Management and Control Unit • I/O Processing • Application and Boot Flash Memory • Local Craft Interface • 2-Port OC-3 Line Unit • OC- x Line Units • OC-x Service Units • 3-Port DS3 Service Unit • 8-Port DS3 Service Unit • 28-Port DS1 Service Unit • 28-Port DS1 NIU Service Unit • Transmux Unit • Ethernet Service Unit 	<p>FLASHWAVE 4500 Overview</p> <ul style="list-style-type: none"> • Shelf Layout and Slots • Expansion Shelf • Backplane • Extension Panel • User Access Panel • High Density Optical Access Shelf • Ethernet over SONET Application • Network Management • Link Capacity Adjustment • FT-TD/T-TD Server Functions
<p>Course Contents</p> <p>FLASHWAVE 4100 Shelf Overview FLASHWAVE 4100 Shelf Units FLASHWAVE 4100 Packet ONP FLASHWAVE 4300 Overview FLASHWAVE 4300 Units FLASHWAVE 4500 Overview FLASHWAVE 4500 Units System Configurations and Design Components</p>	<p>FLASHWAVE 4300 Overview</p> <ul style="list-style-type: none"> • FLASHWAVE 4300 ATM Support • ATM Provisioning Hierarchy • SDCC Pass-Through • Hitless Manual Protection Switching • Additional Release 3.6 Features • System Software Majority Rule • NETSMART 500 Element Manager • In-Service Upgrades • Shelf Layout • Craft Interface and Network Management • Shelf Backplane Connector Layout • DS3 Extension Panel Cable Connections 	<p>FLASHWAVE 4500 Units</p> <ul style="list-style-type: none"> • Common and Microprocessor Units • xxx Gb/s STS Switch Fabric Units • Signal Flow • OC-x Units, Multiport Configuration • OC-x Short and Long Reach Units • Enhanced Fast Ethernet • 100Base-xx Ethernet Units • Gigabit Ethernet Units • Enhanced Gigabit Ethernet Units • 2-Port Gigabit Ethernet with LCAS • HO/LO TPORT Ethernet Units • VT Switch Fabric Units • 10/20 Gb/s VT Switch Fabric Unit • VF31 VT Switch Fabric Extension <ul style="list-style-type: none"> - Features - Compatibility
<p>Scheduled Dates</p> <p>1/8/13 3/5/13 5/7/13 6/25/13 8/20/13</p>	<p>FLASHWAVE 4300 Units</p> <ul style="list-style-type: none"> • Microprocessor Units • DCC Unit • STS Switch Fabric Units • OC-x Units and Configurations • DS/EC-x Units and Configurations • M13 Transmux Unit • 10/100Base-T Ethernet Unit • Gigabit Ethernet Units • ATM Units <ul style="list-style-type: none"> - Processing and Control - Switch Fabric 	<p>System Configurations and Design Components</p> <ul style="list-style-type: none"> • Ethernet and ATM Services • Terminal Configurations • UPSR Configurations • Ethernet over SONET • BLSR Configurations • LCAS Configurations • Resilient Packet Ring • Shared vs. Unshared RPR • Optical Design Elements
<p>Course Description</p> <p>The FLASHWAVE 4000 System Engineering course enables students to plan and engineer networks and system applications using Fujitsu's FLASHWAVE 4100, 4300, 4500, 4010, and 4020 series equipment in various configurations. Case studies are used extensively to develop examples of operational networks.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using Fujitsu FLASHWAVE 4000 series equipment will benefit from attending this course, including network planners and engineers, supervisors, and managers with budget responsibility.</p>		


FLASHWAVE® 4000 Series System Installation

Ordering Information	What You Will Learn	
<p>Course Code: 4000-INST Duration: 2 Days Ordering Numbers: In-house: TRIH-4000INST In-House Tuition: \$1400 Suitcase: TRSC-4000INST* MSP Suitcase: TRSE-4000INST*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • FLASHWAVE 4010 <ul style="list-style-type: none"> - Configurations • FLASHWAVE 4100 Shelf Overview • FLASHWAVE 4300 Shelf Overview • FLASHWAVE 4500 Shelf Overview • Overall FLASHWAVE 4000 System Configurations 	
<p>Prerequisites</p>		
<ul style="list-style-type: none"> • Previous mechanical, electrical and fiber-optic cable installation training and experience. 	<p>Circuit Breaker Panels</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • FLASHWAVE 4100 System Fuse Panel • Office Power and Ground Cabling • Small Shelf DC Power Terminals • FLASHWAVE 4300 System Circuit Breaker Panel 	
<p>Course Contents</p>		
<p>Overview Circuit Breaker Panels FLASHWAVE 4100 System Cabling FLASHWAVE 4300 System Cabling FLASHWAVE 4500 System Cabling Fiber and LAN Cables</p>	<p>FLASHWAVE 4100 System Cabling</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • FLASHWAVE 4100 Shelf Installation <ul style="list-style-type: none"> - Engineering Specifications • FLASHWAVE 4100 Large Shelf Layout • Large Shelf Cabling <ul style="list-style-type: none"> - DS1 Cables - DS3 Cables - External Clock Cable - Office Alarm Cable • FLASHWAVE 4100 Small Shelf Layout • Small Shelf Cabling <ul style="list-style-type: none"> - DS1 and DS3 Cables - External Clock Cable - Housekeeping Cable - Office Alarm Cable • Inventory Records 	<p>FLASHWAVE 4500 System Cabling</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • FLASHWAVE 4500 Shelf Overview • FLASHWAVE 4500 Shelf Layout <ul style="list-style-type: none"> - FLASHWAVE 4500 Backplanes • DS3 Extension Panel • Cable Routing <ul style="list-style-type: none"> - DS1 Cables - DS3/EC-1 Cables - External Clock Cables - Housekeeping Cables - Office Alarm Cables • Inventory Records
<p>Scheduled Dates</p>		
<p>Special Order Only Call for details: 1-800-777-3278 Ext. 4961</p>		
<p>Course Description Installation courses train students to plan and install Fujitsu networking equipment and system applications using Fujitsu equipment in various configurations. Case studies are used extensively to develop examples of installed networks.</p>	<p>FLASHWAVE 4300 System Cabling</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • FLASHWAVE 4300 System Cabling <ul style="list-style-type: none"> - Engineering Specifications • FLASHWAVE 4300 Shelf Layout <ul style="list-style-type: none"> - FLASHWAVE 4300 Backplane • Cable Routing <ul style="list-style-type: none"> - DS1 Cables - DS3/EC-1/Transmux Cables - External Clock Cables - Housekeeping Alarm Cables - Office Alarm Cables • DS3 Extension Panel Cables 	<p>Fiber and LAN Cables</p> <ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> - Objectives - Reference Documents • NE Access • Optical and LAN Cables <ul style="list-style-type: none"> - OSS1 X.25 Cable - Modem Cable • Running Fiber • Craft Interface and Managment • FLASHWAVE 4100 System Fiber Ducts • FLASHWAVE 4300 System Fiber Ducts • FLASHWAVE 4300 System LAN Cables <ul style="list-style-type: none"> - OSS2 LAN Cable - OSS1 X.25 Cable - Modem Cable • FLASHWAVE 4500 System LAN Cables <ul style="list-style-type: none"> - OSS2 LAN Cable - OSS1 X.25 Cable • FLASHWAVE 4500 System Fiber Ducts • Access to FLASHWAVE 4500 <ul style="list-style-type: none"> - Internet Protocol Address Options
<p>Who Should Attend This course is recommended for installers, supervisors, and managers with equipment installation responsible</p>		

FLASHWAVE® 4100 ES System Maintenance, Operations & Trouble Clearing

Ordering Information	What You Will Learn	
<p>Course Code: 4100-ESM Duration: 4 Days Ordering Numbers: In-house: TRIH-4100ESM In-House Tuition: \$2800 Suitcase: TRSC-4100ESM* MSP Suitcase: TRSE-4100ESM*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 4100 ES Packet ONP System Overview Features Applications Backplane Network Management Interfaces <p>Plug-In Units</p> <ul style="list-style-type: none"> Management and Control Units Small Form-Factor Pluggable Units Line Units OC-3 OC-12 OC-48 <p>Service Units</p> <ul style="list-style-type: none"> OC-3 OC-12 DS3 & DS3/EC1 DS1 & DS1 NIU Transmux Unit Ethernet Unit 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial 	<p>Connection-oriented Ethernet Overview</p> <ul style="list-style-type: none"> Layer 2 Ethernet C-Tags and S-Tags Ethernet Services Color and Drop Eligibility Flows and Flow Points Logical Interfaces Bandwidth Profiles Policing and Shaping Class & Quality of Service Service OAM Ethernet on the FLASHWAVE 4100 ES FOSPORT Protection Y-Cable <p>Configurations</p> <ul style="list-style-type: none"> FLASHWAVE 4100 ES System Configurations Terminal (Point-to-Point) UPSR Private Rings EOS Interoperability Point-to-Point VT-Mapped EOS Ethernet Enhancements Link Capacity Adjustment Scheme <p>Management Systems</p> <ul style="list-style-type: none"> NETSMART 500 Element Manager TL1 NETSMART 1500 Management System <p>Upgrades and Migrations</p> <ul style="list-style-type: none"> Software Downloads Remote Memory Backup Software Upgrades Migrations FLASHWAVE 4100 ES Packet ONP System Release Compatibility 	<p>System Performance</p> <ul style="list-style-type: none"> Performance Monitoring Equipment Configurations <p>Synchronization</p> <ul style="list-style-type: none"> External, Line, Internal, Mixed Timing Timing Paths Synchronous Status Messaging Sync Lists Derived DS1 Clock Features Stratum Levels Timing Distribution Timing Problems <p>Network Interfaces</p> <ul style="list-style-type: none"> Access to the FLASHWAVE 4100 ES Packet ONP System OSS Interface Operations Computer Equipment and Cabling <p>Alarms and Conditions</p> <ul style="list-style-type: none"> Alarms Alarm and Condition Reports Common Alarms Error Codes Equipment Problems Network Problems
<p>Course Contents</p> <ul style="list-style-type: none"> Overview Plug-In Units Service Units Configurations Management Systems Upgrades and Migrations System Performance Synchronization Network Interfaces Alarms and Conditions <p>Scheduled Dates</p> <ul style="list-style-type: none"> 11/6/12 12/4/12 1/29/13 2/26/13 3/26/13 4/23/13 5/21/13 6/18/13 7/16/13 8/13/13 9/10/13 		
<p>Course Description</p> <p>The Fujitsu FLASHWAVE 4100 ES System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation and trouble clearing, upgrades and migrations, and an introductory overview of element management software.</p> <p>Who Should Attend</p> <p>This course is recommended for Central Office, Field Repair, Network Operations Center (NOC), and Technical Assistance Center (TAC) personnel, and engineers, supervisors and managers.</p>		


FLASHWAVE® 4100 ES System Turn-Up & Test

Ordering Information	What You Will Learn	
<p>Course Code: 4100-EST Duration: 4 Days Ordering Numbers: In-house: TRIH-4100EST In-House Tuition: \$2800 Suitcase: TRSC-4100EST* MSP Suitcase: TRSE-4100EST*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • Network Configurations • Ethernet over SONET Services • FLASHWAVE 4100 ES System Overview • ES Backplane • Input/Output Panels • FLASHWAVE 4100 ES System Shelf Layout • Network Management Interfaces <ul style="list-style-type: none"> - Craft Interface - Telnet - OSS Interface - SDCC - Protocols • Inventory Records 	
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial 		
<p>Course Contents</p>		
<p>Overview Plug-In Units Configurations Management Systems Provisioning Acceptance</p>	<p>Plug-In Units</p> <ul style="list-style-type: none"> • Management and Control Unit • Dual OC-3 Line Unit • OC-12 Line Unit • OC-12 Line Unit with BITS-out • OC-48 Line Unit • OC-48 Line Unit with BITS-out • OC-12/Dual OC-3 Service Unit • Dual OC-3 Service Unit • DS3 3-port Service Unit • DS3/EC1 8-port Service Unit • DS1 Service Unit • DS1 NIU Service Unit • Ethernet over SONET Service Unit • Native Ethernet Service Unit • M13 Transmux Service Unit • Small Form-factor Pluggable (SFP) Units 	<ul style="list-style-type: none"> • EOS Interoperability • Point-to-Point for VT-Mapped EOS • Ethernet Enhancement • Generic Frame Procedure • Jumbo Frames • Ethernet Alarm Propagation and Escalation <ul style="list-style-type: none"> - Link Capacity Adjustment Scheme
<p>Scheduled Dates</p>		
<p>10/30/12 1/22/13 2/19/13 3/19/13 4/16/13 5/14/13 6/11/13 7/9/13 8/6/13</p>	<p>Connection-oriented Ethernet Overview</p> <ul style="list-style-type: none"> • Layer 2 Ethernet • C-Tags and S-Tags • Ethernet Services • Color and Drop Eligibility • Flows and Flow Points • Logical Interfaces • Bandwidth Profiles • Policing and Shaping • Class & Quality of Service • Service OAM • Ethernet on the FLASHWAVE 4100 ES • FOSPORT Protection • Y-Cable 	<p>Management Systems</p> <ul style="list-style-type: none"> • NETSMART 500 <ul style="list-style-type: none"> - Wizards • TL1 Commands <ul style="list-style-type: none"> - Acknowledgement - Response Messages - Autonomous Messages
<p>Course Description This course begins with a system overview, including descriptions of plug-in units. Students learn how to provision various configurations and hardware features through extensive hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic. Through acceptance testing, students verify that the transport functions and protection features are fully functional. The course introduces students to support resources, such as the Technical Assistance Center (TAC) and Partners Website.</p> <p>Who Should Attend These courses are recommended for CO, field repair, NOC, TAC technicians, engineers, supervisors, and managers.</p> <p>NOTE: This course does not include the instruction on the large and small shelf FLASHWAVE 4100 MSPP systems.</p>	<p>Provisioning</p> <ul style="list-style-type: none"> • SONET Provisioning • Ethernet Provisioning • 100Base-T Ports • Gigabit EOS <p>Acceptance</p> <ul style="list-style-type: none"> • Alarms • Service States • OSS Interface Operations <ul style="list-style-type: none"> - OSI - SDCC Maintenance • Timing Modes • Timing Paths - Three Ring Node • Synchronization Status Messaging <ul style="list-style-type: none"> - Quality-Level Reporting - Default Provisioning - Derived DS1 Clock Functions • Stratum Levels 	

FLASHWAVE® 4100 System Maintenance, Operations & Trouble Clearing (Large & Small Shelf Only)

Ordering Information	What You Will Learn	
<p>Course Code: 4100-M Duration: 4 Days Ordering Numbers: In-house: TRIH-4100M In-House Tuition: \$2800 Suitcase: TRSC-4100M* MSP Suitcase: TRSE-4100M*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 4100 System Overview Features Applications Backplanes Network Management Interfaces <p>Plug-In Units</p> <ul style="list-style-type: none"> Management and Control Unit Line Units <ul style="list-style-type: none"> OC-3 OC-12 OC-48 Small Form-Factor Pluggable Modules Service Units <ul style="list-style-type: none"> OC-3 OC-12 DS3/EC-1 DS1 VT-Mapped M13 Transmux Unit Ethernet Units <ul style="list-style-type: none"> 10/100Base-T Gigabit Layer 2 Ethernet Bandwidth Extension Unit Access Identifiers 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial 	<p>Configurations</p> <ul style="list-style-type: none"> FLASHWAVE 4100 Configurations <ul style="list-style-type: none"> Terminal (Point-to-Point) UPSR Private Rings EOS Interoperability EPORT Resilient Packet Ring Aggregation Port Provisioning <ul style="list-style-type: none"> SONET EOS Ethernet Enhancements 	<p>Alarms and Conditions</p> <ul style="list-style-type: none"> Alarms Alarm and Condition Reports Housekeeping Alarms Error Codes Equipment and Network Problems <p>Synchronization</p> <ul style="list-style-type: none"> Stratum Levels Synchronous Status Messaging Sync Lists Stratum Levels Timing Distribution and Problems
<p>Course Contents</p> <ul style="list-style-type: none"> Overview Plug-In Units Configurations Network Interfaces Management Systems Upgrades and Migrations Alarms and Conditions Synchronization System Performance Packet ONP Shelf Hands-On Exercises <p>Scheduled Dates</p> <p>10/23/12 4/9/13 9/24/13</p>	<p>Configurations</p> <ul style="list-style-type: none"> FLASHWAVE 4100 Configurations <ul style="list-style-type: none"> Terminal (Point-to-Point) UPSR Private Rings EOS Interoperability EPORT Resilient Packet Ring Aggregation Port Provisioning <ul style="list-style-type: none"> SONET EOS Ethernet Enhancements <p>Network Interfaces</p> <ul style="list-style-type: none"> FLASHWAVE 4100 System Access OSS Interface Operation Computer Equipment and Cabling <p>Management systems</p> <ul style="list-style-type: none"> NETSMART 500 Element Manager TL1 NETSMART 1500 Management System <p>Upgrades and Migrations</p> <ul style="list-style-type: none"> Software Downloads Remote Memory Backup/Restore Software Upgrades Migrations FLASHWAVE 4100 System Release Compatibility 	<p>System Performance</p> <ul style="list-style-type: none"> Performance Monitoring Equipment Configurations Terminal APS UPSR EOS <p>Packet ONP Shelf</p> <ul style="list-style-type: none"> Network Configurations Features Packet ONP Shelf <ul style="list-style-type: none"> Slots Backplane I/O Panels Network Management Interfaces Packet ONP Shelf Units <ul style="list-style-type: none"> Management and Control Unit OC-3/OC-12/OC-48 Line Units DS3 Service Unit DS1 Service Units M13 Transmux Service Unit EPORT Service Unit
<p>Course Description</p> <p>The Fujitsu FLASHWAVE 4100 System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation and trouble clearing, upgrades and migrations, and an introductory overview of element management software.</p> <p>Who Should Attend</p> <p>This course is recommended for CO, Field Repair, Network Operations Center (NOC), and Technical Assistance Center (TAC) technicians, as well as engineers, supervisors, and managers.</p> <p>NOTE: Does not include the FLASHWAVE 4100-ES Packet ONP system.</p>		

FLASHWAVE® 4100 System Turn-Up and Test (Large & Small Shelf Only)

Ordering Information	What You Will Learn	
<p>Course Code: 4100-T Duration: 4 Days Ordering Numbers: In-house: TRIH-4100T In-House Tuition: \$2800 Suitcase: TRSC-4100T* MSP Suitcase: TRSE-4100T*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 4100 System Overview Features Applications Backplanes Network Management Interfaces <p>Plug-In Units</p> <ul style="list-style-type: none"> Management and Control Unit Line Units <ul style="list-style-type: none"> OC-3 OC-12 OC-48 Small Form-Factor Pluggable Modules Service Units <ul style="list-style-type: none"> OC-3 OC-12 DS3/EC-1 DS1 VT-mapped M13 Transmux Unit Ethernet Units <ul style="list-style-type: none"> 10/100Base-T Ethernet Gigabit Ethernet Layer 2 (RPR and APORT) Ethernet Bandwidth Extension Unit Access Identifiers 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial 		
<p>Course Contents</p> <p>Overview Plug-In Units Configurations Management Systems Provisioning Acceptance Packet ONP Shelf Hands-On Exercises</p>		
<p>Scheduled Dates</p> <p>6/4/13 9/24/13</p>	<p>Configurations</p> <ul style="list-style-type: none"> FLASHWAVE 4100 System Configurations <ul style="list-style-type: none"> Terminal (Point-to-Point) UPSR Private Rings Ethernet over SONET (EOS) Interoperability EPORT Resilient Packet Ring Aggregation Port Provisioning <ul style="list-style-type: none"> SONET EOS Ethernet Enhancements 	<p>Acceptance</p> <ul style="list-style-type: none"> Alarms Service States FLASHWAVE 4100 System Access OSS Interface Operations Synchronization Timing Modes Synchronous Status Messaging Sync List Derived DS1 Clock Stratum Levels Timing Distribution Performance Monitoring Loopback Testing Test Access
<p>Course Description</p> <p>This course begins with a system overview, including descriptions of plug-in units. Students learn how to provision various configurations and hardware features through extensive hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic. Through acceptance testing, students verify that the transport functions and protection features are fully functional. The course introduces students to support resources, such as the Technical Assistance Center (TAC) and Partners Website.</p> <p>Who Should Attend</p> <p>These courses are recommended for CO, field repair, NOC, and TAC technicians, as well as engineers, supervisors, and managers.</p> <p>NOTE: Does not include the FLASHWAVE 4100-ES Packet ONP system.</p>	<p>Management Systems</p> <ul style="list-style-type: none"> NETSMART 500 Element Manager NETSMART 1500 Management System TL1 <p>Provisioning</p> <ul style="list-style-type: none"> FLASHWAVE 4100 System Turn-Up SONET Provisioning Hierarchy Provisioning Ethernet Service STS Cross-Connect Provisioning RPR Provisioning APORT Provisioning Storage Area Network Provisioning 	<p>Packet ONP Shelf</p> <ul style="list-style-type: none"> Network Configurations Features Packet ONP Shelf Slots <ul style="list-style-type: none"> Backplane I/O Panels Network Management Interfaces Packet ONP Shelf Units <ul style="list-style-type: none"> Management Control Unit OC-3/OC-12/OC-48 Line Units DSS Service Unit DS1 M13 Transmux EPORT

FLASHWAVE® 4300 SYSTEM MAINTENANCE, OPERATIONS & TROUBLE CLEARING

Ordering Information	What You Will Learn	
<p>Course Code: 4300-M Duration: 4 Days Ordering Numbers: In-house: TRIH-4300M In-House Tuition: \$2800 Suitcase: TRSC-4300M* MSP Suitcase: TRSE-4300M*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 4300 System Overview Features In-Service Upgrades Shelf Layout Craft Interface and Network Mgmt Inventory Records Shelf Backplane Connector Layout <p>Plug-In Units</p> <ul style="list-style-type: none"> Common Plug-In Units <ul style="list-style-type: none"> Microprocessor DCC High-Speed Switch Timing Control STS Switch Fabric VT Switch Fabric Interface Plug-In Units <ul style="list-style-type: none"> OC-3 OC-12 OC-48 2-Port OC-3 DS3/EC-1 M13 Transmux DS1 10/100Base-T Ethernet Gigabit Ethernet ATM Plug-In Units <ul style="list-style-type: none"> ATM Processing and Control ATM Switch Fabric Fan Units Filler Panels 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial ATM Tutorial 		
<p>Course Contents</p>		
<p>Overview Plug-In Units Configurations Management Systems ATM Turn-Up Network Interfaces Upgrades and Migrations Alarms and Conditions Synchronization System Performance Hands-On Exercises</p>		<p>Network Interfaces</p> <ul style="list-style-type: none"> Access to FLASHWAVE 4300 System OSS Interface Operations Computer Equipment and Cabling <p>Upgrades and Migrations</p> <ul style="list-style-type: none"> SWDL RMBU System Software Upgrades Migrations FLASHWAVE 4300 System Release Compatibility <p>Alarms and Conditions</p> <ul style="list-style-type: none"> Alarm and Condition Reports Equipment Problems Terminating Equipment Remote Alarm Indication Bit Error Rate Alarms Unequipped Codes Data Communications Channel Failure Payload Label Mismatch Housekeeping Alarms Error Codes <p>Synchronization</p> <ul style="list-style-type: none"> Synchronization Stratum Levels SSM Sync List Derived DS1 Clock Timing Distribution Timing Problems <p>System Performance</p> <ul style="list-style-type: none"> System Overview PM Equipment Configuration EoS ATM Virtual Path UPSR
<p>Scheduled Dates</p>		
<p>Special Order Only Call for details: 1-800-777-3278 Ext. 4961</p>		
<p>Course Description The FLASHWAVE 4300 System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation and trouble clearing, upgrades and migrations, and an introductory overview of element management software.</p> <p>Who Should Attend The FLASHWAVE 4300 System Maintenance course will benefit all personnel responsible for monitoring, maintaining, and troubleshooting networks, and for upgrading Fujitsu network elements. This course is recommended for Central Office (CO), Network Operations Center (NOC), field repair technicians as well as engineers, supervisors and managers.</p>	<p>Configurations</p> <ul style="list-style-type: none"> Switch Fabric Routing Configuration Types <ul style="list-style-type: none"> Linear Terminal Dual-Node Access UPSR UPSR Hub OC-48 BLSR Autoprovisioning SONET Provisioning Hierarchy Ethernet Provisioning Hierarchy <p>Management Systems</p> <ul style="list-style-type: none"> FLEXR GT Craft Interface NETSMART 500 Element Manager NETSMART 1500 Management System TL1 <p>ATM Turn-Up</p> <ul style="list-style-type: none"> Application Setup Provision Equipment Provision DS3 UNI Provision STS Cross-Connects Provision ATM Interface Set ATM Interface Parameters ATM Applications Virtual Links and Connections Virtual Cross-Connects 	

FLASHWAVE® 4300 SYSTEM TURN-UP AND TEST

Ordering Information	What You Will Learn	
<p>Course Code: 4300-T Duration: 4 Days Ordering Numbers: In-house: TRIH-4300T In-House Tuition: \$2800 Suitcase: TRSC-4300T* MSP Suitcase: TRSE-4300T*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 4300 System Overview Features In-Service Upgrades Shelf Layout Craft Interface Inventory Records Shelf Backplane Connector Layout <p>Plug-In Units</p> <ul style="list-style-type: none"> Common Plug-In Units <ul style="list-style-type: none"> Microprocessor Data Communication Channel High-Speed Switch Timing Control STS Switch Fabric VT Switch Fabric Interface Plug-In Units <ul style="list-style-type: none"> OC-3 OC-12 OC-48 2-Port OC-3 DS3/EC-1 M13 Transmux DS1 10/100Base-T Ethernet Gigabit Ethernet ATM Plug-In Units <ul style="list-style-type: none"> ATM Processing and Control ATM Switch Fabric Fan Units Filler Panels 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial ATM Tutorial 	<p>Configurations</p> <ul style="list-style-type: none"> Switch Fabric Routing Configuration Types <ul style="list-style-type: none"> Linear Terminal Dual-Node Access UPSR UPSR Hub OC-48 BLSR Autoprovisioning SONET Provisioning Hierarchy Ethernet Provisioning Hierarchy <p>Management Systems</p> <ul style="list-style-type: none"> FLEXR GT Craft Interface NETSMART 500 Element Manager TL1 NETSMART 1500 Management System <p>Provisioning</p> <ul style="list-style-type: none"> Autoprovisioning SONET Provisioning Hierarchy System Turn-Up Ethernet Provisioning Hierarchy Point-to-Point Ethernet Provisioning Bridging 	<p>ATM Turn-Up</p> <ul style="list-style-type: none"> Application Setup Provision Equipment Provision DS3 UNI Provision STS Cross-Connects Provision ATM Interface Set ATM Interface Parameters ATM Applications Virtual Links Virtual Cross-Connects Virtual Connections <p>Acceptance</p> <ul style="list-style-type: none"> Alarms Equipment Service States Facility Service States Synchronization Timing Modes <ul style="list-style-type: none"> Externally Timed NE Line-Timed NE Timing Paths in a 3-Node Ring <ul style="list-style-type: none"> Synchronization Lists Revertive Switching Nonrevertive Switching Derived DS1 Clock Functions <ul style="list-style-type: none"> Default Provisioning Control of Timing Reference Synchronization Status Messaging Network Monitoring Interfaces Performance Monitoring Loopback Testing Test Access
<p>Course Contents</p> <p>Overview Plug-In Units Configurations Management Systems Provisioning ATM Turn-Up Acceptance Hands-On Exercises</p>		
<p>Scheduled Dates</p> <p>Special Order Only Call for details: 1-800-777-3278 Ext. 4961</p>		
<p>Course Description</p> <p>This course begins with a system overview, including descriptions of plug-in units. Students learn how to provision various configurations and hardware features through extensive hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic. Through acceptance testing, students verify that the transport functions and protection features are fully functional. The course introduces students to support resources, such as the Technical Assistance Center (TAC) and Partners Website.</p> <p>Who Should Attend</p> <p>These courses are recommended for CO, field repair, NOC and TAC technicians, engineers, supervisors, and managers.</p>		

FLASHWAVE® 4500 SYSTEM MAINTENANCE, OPERATIONS & TROUBLE CLEARING

Ordering Information

Course Code: 4500-M
Duration: 4 Days
Ordering Numbers:
In-house: TRIH-4500M
In-House Tuition: \$2800
Suitcase: TRSC-4500M*
MSP Suitcase: TRSE-4500M*
 * For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.

Prerequisites

- SONET Tutorial
- Ethernet Tutorial

Course Contents

- Overview
- Plug-In Units
- Configurations
- Management Systems
- Auxilliary Equipment
- Network Interfaces
- Upgrades and Migrations
- Alarms and Conditions
- Synchronization
- System Performance

Scheduled Dates

- 10/9/12
- 11/6/12
- 12/4/12
- 12/18/12
- 1/15/13
- 1/29/13
- 2/26/13
- 3/26/13
- 4/23/13
- 5/21/13
- 6/18/13
- 7/16/13
- 8/13/13
- 9/10/13

Course Description

The FLASHWAVE 4500 System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation, trouble clearing, upgrades and migrations, and an introductory overview of element management software.

Who Should Attend

The course benefits all personnel responsible for monitoring, maintaining/troubleshooting networks and upgrading Fujitsu network elements.

What You Will Learn

Overview

- FLASHWAVE 4500 System Overview
- FLASHWAVE 4500 Shelf Layout
- FLASHWAVE 4500 System Units
- Multishelf Interconnection
- Multishelf Port Densities
- Management Architecture
- Pass-Through SDCC
- Control Plane Phase 1
- Link Capacity Adjustment Scheme

Plug-In Units

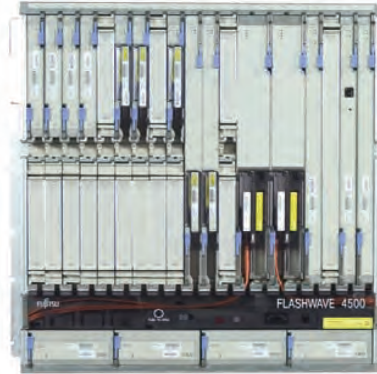
- Common Units
 - Microprocessor
 - Alarm and Status
 - Data Communications
 - 40/70/140
 - 300G STS Switch Fabric
 - Expansion Shelf STS Switch Fabric
 - 140 Gb/s Switch Fabric
 - Optical Amplifier
 - Timing Control and Access
 - Extension Shelf
- Interface Units
 - DS1
 - DS3/EC-1
 - M13 LC Unit
 - 2/4/8-Port OC-3
 - 2/4/8-Port OC-12
 - 1/2-Port OC-48
 - OC-48 FBTL
 - 12-Port Multirate SFP Base
 - OC-192 Wideband
 - OC-192 Narrowband
 - Tunable 10.7 Gb/s OC-192
 - Fast Ethernet
 - 10/100 Ethernet w/LCAS
 - Gigabit Ethernet
 - VT Switch Fabric
 - 10/20 Gb/s VT Switch Fabric
- Filler Panels
- Fan Units
- Dispersion Compensation Module
- Access Identifiers

Configurations

- FLASHWAVE 4500 System Configuration
- STS Switch Fabric Routing
- 300G Switching Architecture
- Terminal Configuration
- Linear ADM Configuration
- Hub Configurations
- BLSR Configurations
- Resilient Packet Ring
- Auto concatenation

Management Systems

- NETSMART 500 Element Manager
- TL1
- NETSMART 1500 Management Systems



Auxiliary Equipment

- FLASHWAVE 4010 System
- FLASHWAVE 4020 System
- FLASHWAVE 7120 System

Network Interfaces

- Access to FLASHWAVE 4500 System
- OSS Interface Operations
- Computer Equipment and Cabling

Upgrades and Migrations

- SWDL
- RMBU
- Upgrades
- Migrations
- FLASHWAVE 4500 Release Compatibility

Alarms and Conditions

- Alarms
- Alarm and Condition Reports
- Housekeeping Alarms
- Error Codes

Synchronization

- Synchronization
- Stratum Levels
- Multishelf Synchronization
- Timing Paths in a 3-Node Ring
- Synchronous Status Messaging
- Sync Lists
- Derived DS1 Clock
- Timing Distribution
- Timing Problems

System Performance

- Performance Monitoring
- Equipment Configurations
- Switched Rings
- EoS

FLASHWAVE® 4500 SYSTEM TURN-UP AND TEST

Ordering Information

Course Code: 4500-T
Duration: 4 Days
Ordering Numbers:
In-house: TRIH-4500T
In-House Tuition: \$2800
Suitcase: TRSC-4500T*
MSP Suitcase: TRSE-4500T*
 * For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.

Prerequisites

- SONET Tutorial
- Ethernet Tutorial

Course Contents

- Overview**
- Plug-In Units**
- Configurations**
- Management Systems**
- Provisioning**
- Acceptance**
- Hands-On Exercises**

Scheduled Dates

- 10/30/12
- 1/22/13
- 2/19/13
- 3/19/13
- 4/16/13
- 5/14/13
- 6/11/13
- 7/9/13
- 8/6/13

Course Description
 The course begins with system overview, including descriptions of plug-in units. Students learn to provision various configurations and hardware features through extensive hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and apply test traffic. Through acceptance testing, they verify transport functions and protection features are fully functional. The course introduces students to support resources, such as the Technical Assistance Center (TAC) and Partners Website.

Who Should Attend
 These courses are recommended for CO, field repair, NOC and TAC technicians as well as engineers, supervisors, and managers.

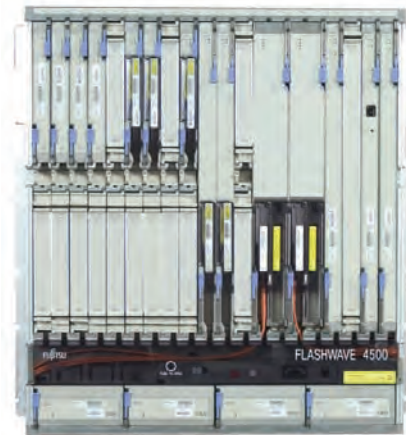
What You Will Learn

- Overview**
- FLASHWAVE 4500 System Overview
 - FLASHWAVE 4500 Shelf Layout
 - FLASHWAVE 4500 System Units
 - Multishelf Interconnection
 - DS3 Extension Panel
 - Management Interfaces
 - Pass-Through SDCC
 - Control Plane Phase 1
 - Link Capacity Adjustment Scheme

- Plug-In Units**
- Common Units
 - Microprocessor
 - Alarm and Status
 - Data Communications
 - 40/70/140
 - 300G STS Switch Fabric
 - Expansion Shelf STS Switch Fabric
 - 140 Gb/s Switch Fabric
 - Optical Amplifier
 - Timing Control and Access
 - Extension Shelf TCA
 - Interface Units
 - DS1
 - DS3/EC-1
 - M13 Transmux Unit
 - 2/4/8-Port OC-3 and OC-12
 - 1/2-Port OC-48
 - OC-48 FBTL
 - 12-Port Multirate SFP Base
 - OC-192 Wideband and Narrowband
 - Tunable 10.7 Gb/s OC-192
 - Fast Ethernet
 - 10/100 Ethernet w/LCAS
 - Gigabit Ethernet
 - VT Switch Fabric
 - 10/20 Gb/s VT Switch Fabric
 - Filler Panels
 - Fan Units
 - Dispersion Compensation Module
 - Access Identifiers

- Configurations**
- FLASHWAVE 4500 System Configuration
 - STS Switch Fabric Routing
 - 300G Switching Architecture
 - Terminal Configuration
 - Linear ADM Configuration
 - Hub Configurations
 - BLSR Configurations
 - Resilient Packet Ring
 - Auto Provisioning
 - REM Overview

- Management Systems**
- NETSMART 500 Element Manager
 - TL1
 - NETSMART 1500 Management Systems
 - Alarms



- Provisioning**
- Autoprovisioning
 - FLASHWAVE 4500 Turn-Up
 - SONET Provisioning Hierarchy
 - Adding DS1 Service
 - Adding DS3 Service
 - Adding a New Optical Interface
 - Provisioning Transmux Service
 - Provisioning Ethernet Service
 - Resilient Packet Ring
 - Trunking Port Provisioning
 - LCAS Provisioning
 - Control Plane Provisioning

- Acceptance**
- FLASHWAVE 4500 System Test
 - Alarms
 - Equipment Service States
 - Service State Changes
 - Facility Service States
 - Single Shelf Synchronization
 - Timing Modes
 - Timing Paths in a 3-Node Ring
 - Synchronization Lists
 - Revertive Switching
 - Nonrevertive Switching
 - Derived DS1 Clock Functions
 - Control of Timing Reference Switch
 - Synchronization Status Messaging
 - Stratum Levels
 - Network Monitoring Interfaces
 - Performance Monitoring
 - Loopback Testing
 - Test Access


FLASHWAVE® 7120 System Planning and Engineering

Ordering Information	What You Will Learn
<p>Course Code: 7120-E Duration: 2 Days Ordering Numbers: In-house: TRIH-7120E In-House Tuition: \$1400 Suitcase: TRSC-7120E* MSP Suitcase: TRSE-7120E*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Rep. or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 7120 Shelves <ul style="list-style-type: none"> - Large - Expansion - Passive - Shelf Slots <p>FLASHWAVE 7120 Units</p> <ul style="list-style-type: none"> Main Shelf Interface Cooling Units Processor Units Optical Units Pre-amplifier and Amplifier Units CWDM Units DWDM Units Conversion Units Power Monitor Units DCM Small Form-Factor Pluggable Modules
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial DWDM Tutorial Recent experience with DWDM equipment 	
<p>Course Contents</p> <p>Overview</p> <p>Units</p> <p>Connection Oriented Ethernet</p> <p>Configurations</p> <p>Management Systems</p> <p>Optical Network Fundamentals</p> <p>proNX Overview</p> <p>Hands-On Exercises</p>	<p>Connection Oriented Ethernet</p> <ul style="list-style-type: none"> Bridging Layer 2 Ethernet VLANs Ethernet Services Scheduling & Shaping CoS QoS Aggregation SOAM Protection Specifications <p>Configurations</p> <ul style="list-style-type: none"> Reach Extension Capacity Extension Wavelength Conversion Wavelength Regeneration Supported Configurations <p>Management Systems</p> <ul style="list-style-type: none"> NETSMART 500 Craft Tool NETSMART 712 Element Manager System and Unit Provisioning TL1 NETSMART 1500 Management System
<p>Scheduled Dates</p> <p>4/30/13 8/20/13</p>	
<p>Course Description</p> <p>The FLASHWAVE 7120 System Planning and Engineering course enables students to plan and engineer networks and system applications using the FLASHWAVE 7120 Packet ONP equipment in various configurations. Case studies are used to develop examples of operational networks.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using FLASHWAVE 7120 equipment will benefit from attending this course, including network planners and engineers, supervisors and managers with budgetary responsibility.</p> <p>NOTE: This course does not include DWDM basics of network engineering.</p>	



- Optical Network Fundamentals**
- Multiplexing
 - Fiber-Optic Transmission
 - Signal Format
 - DWDM Transmission Impairments
 - FEC
 - Optical Transmitters & Receivers
 - Amplifiers, Transponders & Regenerators
 - Fiber Optic Cables & Issues
 - Metro ROADM
- proNX® Overview**
- Designing Network Using proNX 9010
 - Defining Services & Traffic
 - Layout Strategy
 - BOM
 - Network Schematic

FLASHWAVE® 7120 Turn-Up, Test & Maintenance

Ordering Information	What You Will Learn	
<p>Course Code: 7120-TM Duration: 4 Days Ordering Numbers: In-house: TRIH-7120TM In-House Tuition: \$2800 Suitcase: TRSC-7120TM* MSP Suitcase: TRSE-7120TM*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • Shelves and Capabilities <ul style="list-style-type: none"> - Large Shelf - Expansion Shelf - Passive Shelf • Filter and Channel Plan • Management Communication Channel <p>Units</p> <ul style="list-style-type: none"> • Main Shelf Units • Expansion Shelf Units • OSC Units • Transponder Units • Muxponder Units • Processor Unit • Amplifier Units • CWDM Units • DWDM Units • Power Monitor • Noise Filter Unit • DCM • Form-Factor Pluggable Units <p>Carrier Ethernet</p> <ul style="list-style-type: none"> • Layer 2 Ethernet • VLAN Support • Bridging • UNI, INNI and ENNI • Services • CoS • QoS • SOAM • Protection • ERPS • Specifications <p>Configurations</p> <ul style="list-style-type: none"> • Reach Extension • Capacity Expansion • Wavelength Conversion • Wavelength Regeneration • Supported Configurations <p>Management Systems</p> <ul style="list-style-type: none"> • Access using Ethernet • NETSMART 712 Element Manager • TL1 • NETSMART 1500 Management System <p>Provisioning</p> <ul style="list-style-type: none"> • Autoprovisioning • System Provisioning • Expansion Shelf Provisioning • Equipment Provisioning • Removing Equipment from Service • Restoring Database to Service • Retrieving Equipment Attributes • Retrieving Equipment Inventory • Deleting Equipment • Optical Amplifier Provisioning • Wavelength Conversion Provisioning • Port Provisioning 	
<p>Prerequisites</p>		
<ul style="list-style-type: none"> • SONET Tutorial • DWDM Tutorial • Recent DWDM experience 		
<p>Course Contents</p>		
<p>Overview</p> <p>Units</p> <p>Configurations</p> <p>Connection Oriented Ethernet Management Systems Provisioning</p> <p>Acceptance Testing</p> <p>Maintenance</p> <p>Hands-On Exercises</p>		<p>Acceptance Testing</p> <ul style="list-style-type: none"> • Features • Alarms • Network Performance Monitoring • Loopbacks <p>Maintenance</p> <ul style="list-style-type: none"> • OAM&P • Backup & Restore • Alarm Thresholds • Alarm Severity Codes • Clearing Alarms • Events • Conditions
<p>Scheduled Dates</p>		
<p>10/16/12, 11/27/12, 12/11/12, 2/5/13, 4/2/13, 6/4/13, 7/23/13, 9/17/13</p>		
<p>Course Description</p> <p>The FLASHWAVE 7120 Turn-Up, Test & Maintenance course teaches how to turn-up, test, provision, maintain, operate, isolate faults and clear trouble for various configurations and hardware features through extensive hands-on exercises. The course also introduces support resources, such as the Fujitsu Technical Assistance Center (TAC) & Partners Technical Documentation.</p> <p>Who Should Attend</p> <p>This course is recommended for central office and field personnel who perform turn-up, test local provisioning and who perform maintenance, fault isolation and trouble-clearing. Engineers, NOC personnel and supervisors also benefit from this course.</p>		


FLASHWAVE® 7420 Turn-Up, Test & Maintenance

Ordering Information	What You Will Learn	
<p>Course Code: 7420-TM Duration: 4 Days Ordering Numbers: In-house: TRIH-7420TM In-House Tuition: \$2800 Suitcase: TRSC-7420TM* MSP Suitcase: TRSE-7420TM*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE7420 System Description <ul style="list-style-type: none"> Topologies Protection FLASHWAVE 7420 Shelves <ul style="list-style-type: none"> 7U Common Shelf 1U High-Power Shelf 1U Passive Shelf Management Software Transport Networks User Traffic Types <ul style="list-style-type: none"> SONET Fast Ethernet Gigabit Ethernet 10 Gigabit Ethernet Wavelength Plan <ul style="list-style-type: none"> DWDM CWDM DWDM/CWDM Hybrid 32-Channel Banded Architecture 80-Channel Unbanded Architecture Performance Monitoring 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial DWDM Tutorial Recent DWDM experience 		
<p>Course Contents</p> <p>Overview Modules System Applications Alarms & Conditions NE Management Provisioning Acceptance Testing Hands-On Exercises</p>	<p>Modules</p> <ul style="list-style-type: none"> Power Supply Units Fan Assembly Unit Management & Switch Modules <ul style="list-style-type: none"> Network Control Unit Shelf Control Unit Optical Supervisory Channel Models Utility Module 4-Port Optical Power Control Module ROADM Application Units <ul style="list-style-type: none"> ROADM Optical Power Modules 40-Channel Splitter Modules Optical Interleaver/De-Interleavers Passive Shelf Control Unit Passive Optical Modules 2-Port Protection Modules Optical Amplifiers Channel Modules <ul style="list-style-type: none"> Core Channel Modules Access Channel Modules Small Form-Factor Pluggable Modules Filler Panels <p>System Applications</p> <ul style="list-style-type: none"> Point-to-Point Applications Linear Add/Drop Application Ring Application 	<p>Alarms & Conditions</p> <ul style="list-style-type: none"> Alarms Alarm & Condition Reports Monitoring Alarms & Events <ul style="list-style-type: none"> Standing Condition Codes Transient Condition Codes Error Codes <p>NE Management</p> <ul style="list-style-type: none"> Accessing the FLASHWAVE 7420 NE Connecting to an External PC FLASHWAVE7420 Web GUI <ul style="list-style-type: none"> Web GUI Menus Web GUI Tabs NE Management using TL1 NETSMART1500 Management System <p>Provisioning</p> <ul style="list-style-type: none"> System Turn-Up <ul style="list-style-type: none"> Automatic Provisioning Manual Provisioning Access Identifiers Provisioning Dependencies Provisioning the NCU Provisioning the OSC <p>Acceptance Testing</p> <ul style="list-style-type: none"> Loopback Testing <ul style="list-style-type: none"> Facility Loopback on Client/Network Interface - Terminal Loopback on Client/Network Interfact Channel Module Client/Network Port Loopback
<p>Scheduled Dates</p> <p>10/23/12, 12/18/12, 2/12/12, 3/12/13, 4/9/13, 6/4/13, 7/30/13, 8/27/13</p> <p>Course Description This course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation trouble clearing, and upgrades and migrations, as well as an introductory overview of element management software. The course also introduces support resources, such as the Fujitsu Technical Assistance Center (TAC) & Partners Technical Documentation.</p> <p>Who Should Attend This course is recommended for central office and field personnel Engineers, NOC personnel and supervisors and managers also benefit from this course.</p>		


FLASHWAVE® 7420 SYSTEM PLANNING AND ENGINEERING

Ordering Information	What You Will Learn	
<p>Course Code: 7420-E Duration: 2 Days Ordering Numbers: In-house: TRIH-7420E In-House Tuition: \$1400 Suitcase: TRSC-7420E* MSP Suitcase: TRSE-7420E*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 7420 System Description FLASHWAVE 7420 Shelves <ul style="list-style-type: none"> 7HU Shelf 9HU Shelf 1HU High-Power Shelf 1HU Passive Shelf Management Software Transport Networks <ul style="list-style-type: none"> Metro Core Metro Access Enterprise User Traffic Types <ul style="list-style-type: none"> SONET Fast Ethernet Gigabit Ethernet 10 Gigabit Ethernet Fiber Connectivity Fibre Channel Wavelength Plan <ul style="list-style-type: none"> DWDM CWDM DWDM/CWDM Hybrid 32-Channel Banded Architecture 40-Channel Unbanded Architecture 80-Channel Unbanded Architecture Performance Monitoring <p>Modules</p> <ul style="list-style-type: none"> Power Supply Modules Fan Assembly Unit for 7HU Shelf Management and Switch Modules <ul style="list-style-type: none"> Network Control Units Shelf Control Unit Optical Supervisory Channel Modules Utility Module 4-Port Optical Power Control Module Common Equipment Module for 9HU Shelf FAN/9HU Unit for 9HU Shelf ROADM Application Units <ul style="list-style-type: none"> 2-Degree and 8-Degree ROADM Optical Power Modules 40-Channel Splitter Modules 50 GHz/100 GHz Optical Interleaver/De-Interleaver Module Passive Shelf Control Unit Passive Optical Modules Dispersion Compensation Modules 2-Port Protection Modules Optical Amplifiers Channel Modules <ul style="list-style-type: none"> Core Channel Modules Access Channel Modules Enterprise Channel Modules Small Form-Factor Pluggable Modules Filler Panels 	<div data-bbox="1036 247 1386 562" data-label="Image"> </div> <p>System Applications</p> <ul style="list-style-type: none"> Point-to-Point Linear Add/Drop Ring ROADM
<p>Prerequisites</p>		
<ul style="list-style-type: none"> SONET Tutorial DWDM Tutorial Students should have extensive training and experience on the fundamentals of DWDM network design prior to attending this course. 		
<p>Course Contents</p>		
<p>Overview Modules System Applications Case Studies</p>		
<p>Scheduled Dates</p>		
<p>4/2/13 9/17/13</p>		
<p>Course Description</p> <p>The FLASHWAVE 7420 System Planning and Engineering course enables students to plan and engineer networks and system applications. Extensive case studies of operational networks in various configurations are used for examples.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using FLASHWAVE 7420 systems benefit from attending this course, including network planners and engineers, supervisors, and managers with budget responsibility.</p> <p>NOTE: This course does not include the basics of DWDM network engineering.</p>		


FLASHWAVE® 7500 SYSTEM PLANNING AND ENGINEERING

Ordering Information	What You Will Learn	
<p>Course Code: 7500-E Duration: 2 Days Ordering Numbers: In-house: TRIH-7500E In-House Tuition: \$1400 Suitcase: TRSC-7500E* MSP Suitcase: TRSE-7500E*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • General Features • Core and Small System Configurations • Core and Small System Applications • Extension System Configuration • Management Options • Security Features <p>Interoperability</p> <ul style="list-style-type: none"> • FLASHWAVE 7500 System interoperability with: <ul style="list-style-type: none"> - FLASHWAVE 9500 System - FLASHWAVE CDS System - FLASHWAVE 7120 System 	
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • DWDM Tutorial • Recent experience with DWDM equipment (recommended) 	<p>Applications</p> <ul style="list-style-type: none"> • Core and Small System Applications <ul style="list-style-type: none"> - Linear and Ring - In-Line Amplifier and Express Node - HUB - Broadcast - Stacked Muxponder - Regenerator • Extension Configuration Applications 	
<p>Course Contents</p> <p>Overview Interoperability Applications System Components Functional Description Optical Network Fundamentals NETSMART 2000 Design and Planning Tool Engineering Case Studies</p>	<p>System Components</p> <ul style="list-style-type: none"> • Core Configuration Optical and Tributary Shelves and Backplane • Small Configuration Optical and Tributary Shelves and Backplane • Extension Shelf and Backplane • Plug-In Unit Descriptions <ul style="list-style-type: none"> - Shelf Processor Units - OSC Units - Amplifier Units - Multiplexer/Demultiplexer Units - Switch Units - HUB Units - Flexponder™ Synchronization Unit - Transponder Units - Muxponder Units - Flexponder Units - FLASHWAVE LIGHTGUARD Unit - Regeneration Units - SFP and XFP Modules • Lambda Access Shelves and Modules • DCM Shelves and Modules • High-Density Optical Access Shelf • Circuit Breaker Panel 	<p>Optical Network Fundamentals</p> <ul style="list-style-type: none"> • Optical Networks • Fiber-Optic Transmission • Signal Format • Impairments to DWDM Transmission • Forward Error Correction • Optical Transmitters and Receivers • Amplifiers and Regenerators • Fiber-Optic Cable • Fiber Issues
<p>Scheduled Dates</p> <p>10/2/12 2/12/13 4/30/13 7/30/13 10/1/13</p>		<p>NETSMART 2000 Design/Planning Tool</p> <ul style="list-style-type: none"> • New Features and Enhancements • Architecture • Design Browser & Editor • Design Preferences • Wavelength Recoloring • Design Templates • Using Design Icons to Create Designs • Adding Demands • Adding Subnetworks • Moving a Span to Another Subnetwork • Reachability Matrix • Manual Selection of Amplifiers/DCMs • Rack and Shelf View • Design Reports • BOM Parts Mapping Manager • Custom Profile Features • Asymmetric HUB • Multi-TID HUB • FLASHWAVE CDS Sites • Small Configuration 32-Channel • Adding FLASHWAVE 9500 TRIB Shelf • Flexponder Cross-Shelf Grooming • Brownfield Design • Security Management • Audits & Activity Log • Save or Open Design • Import and Export Design • Price List Support
<p>Course Description</p> <p>The FLASHWAVE 7500 System Planning and Engineering course enables students to plan and engineer networks and system applications using the FLASHWAVE 7500 product family. Extensive case studies of operational networks in various configurations are developed using the NETSMART 2000 design and planning tool.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using FLASHWAVE 7500 equipment will benefit from attending this course, including network planners and engineers, supervisors, and managers with budget responsibility.</p>	<p>Functional Description</p> <ul style="list-style-type: none"> • 40-Channel Applications <ul style="list-style-type: none"> - 2D-ROADM - WSS-ROADM and WSS-ROADM HUB - ILA Node and Express Node • 32-Channel ROADM/FOADM Applications • Client Interfaces <ul style="list-style-type: none"> - 10G and 40G Transponders - Muxponders and Flexponders - Direct Connect - 10G and 40G Regenerators - FLASHWAVE LIGHTGUARD 	<p>Engineering Case Studies</p>

FLASHWAVE® 7500 SYSTEM MAINTENANCE, OPERATIONS & TROUBLE CLEARING

Ordering Information	What You Will Learn	
<p>Course Code: 7500-M Duration: 4 Days Ordering Numbers: In-house: TRIH-7500M In-House Tuition: \$2800 Suitcase: TRSC-7500M* MSP Suitcase: TRSE-7500M*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • General Features • Core and Small System Configurations • Core and Small System Applications • Extension System Configuration • Management Options • Security Features <p>Interoperability</p> <ul style="list-style-type: none"> • FLASHWAVE 7500 System interoperability with: <ul style="list-style-type: none"> - FLASHWAVE 9500 System - FLASHWAVE CDS System - FLASHWAVE 7120 System 	
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • DWDM Tutorial • Recent experience with DWDM equipment (recommended) 	<p>Applications</p> <ul style="list-style-type: none"> • Core and Small System Applications <ul style="list-style-type: none"> - Linear and Ring - In-Line Amplifier and Express Node - HUB - Broadcast - Stacked Muxponder - Regenerator • Extension Configuration Applications 	
<p>Course Contents</p> <p>Overview Interoperability Applications System Components Functional Description Cross-Connects and Connections NE Management Alarms and Conditions Upgrades and Migrations Hands-On Exercises</p> <p>Scheduled Dates</p> <p>12/11/12 2/5/13 4/2/13 7/23/13 9/17/13</p>	<p>System Components</p> <ul style="list-style-type: none"> • Core Configuration Optical and Tributary Shelves and Backplane • Small Configuration Optical and Tributary Shelves and Backplane • Extension Shelf and Backplane • Plug-In Unit Descriptions <ul style="list-style-type: none"> - Shelf Processor Units - OSC Units - Amplifier Units - Multiplexer/Demultiplexer Units - Switch Units - HUB Units - Flexponder™ Synchronization Unit - Transponder Units - Muxponder Units - Flexponder Units - FLASHWAVE LIGHTGUARD Unit - Regeneration Units - SFP and XFP Modules • Lambda Access Shelves and Modules • DCM Shelves and Modules • High-Density Optical Access Shelf • Circuit Breaker Panel 	<p>Cross-Connects and Connections</p> <ul style="list-style-type: none"> • Cross-Connect Mapping and Rules • Core Configuration Applications <ul style="list-style-type: none"> - Transponder or Muxponder Conn - Flexponder Connections - FW LIGHTGUARD-Protected OLC - MPO Cable Connections - Intrashelf Connections • Small Configuration Applications <ul style="list-style-type: none"> - 40-Channel Connections - 32-Channel Connections (ROADM) - 32-Channel Connections (FOADM) • DCM Connections • Shelf Hierarchy <p>NE Management</p> <ul style="list-style-type: none"> • Connecting to the FLASHWAVE 7500 NE <ul style="list-style-type: none"> - Serial Interface - Local Management Port Interface - LCN & Modern Interface • NE Management Using TL1 • NETSMART 500 NE GUI <ul style="list-style-type: none"> - NETSMART 500 Dashboard Window - NETSMART 500 Graphical Shelf View - NETSMART 500 Service Associations - NETSMART 500 Wizards • NETSMART 1500 Management System
<p>Course Description</p> <p>The FLASHWAVE 7500 System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation and trouble clearing, upgrades and migrations, as well as an introductory overview of element management software.</p> <p>Who Should Attend</p> <p>The FLASHWAVE 7500 System Maintenance course will benefit all personnel responsible for monitoring, maintaining, and troubleshooting networks and for upgrading Fujitsu network elements. This course is recommended for CO, Network Operations Center (NOC), field repair, and Technical Assistance Center (TAC) technicians, as well as engineers, supervisors and managers.</p>	<p>Functional Description</p> <ul style="list-style-type: none"> • 40-Channel Applications <ul style="list-style-type: none"> - 2D-ROADM - WSS-ROADM and WSS-ROADM HUB - ILA Node and Express Node • 32-Channel ROADM/FOADM Aps • Client Interfaces <ul style="list-style-type: none"> - 10G and 40G Transponders - Muxponders and Flexponders - Direct Connect - 10G and 40G Regenerators - FLASHWAVE LIGHTGUARD 	<p>Alarms and Conditions</p> <ul style="list-style-type: none"> • Optical Traffic Detection Points • Alarm and Status Message Reporting • Error Codes • Alarm and Condition Reports • Equipment and Facility Service States • Handling and Cleaning Connectors • Performance Monitoring <p>Upgrades and Migrations</p> <ul style="list-style-type: none"> • Backup and Restore • Software Upgrades • Changes to an In-Service Network • Changes to In-Service NEs • Firmware and Software Compatibility

FLASHWAVE® 7500 SYSTEM TURN-UP AND TEST

Ordering Information	What You Will Learn	
<p>Course Code: 7500-T Duration: 4 Days Ordering Numbers: In-house: TRIH-7500T In-House Tuition: \$2800 Suitcase: TRSC-7500T* MSP Suitcase: TRSE-7500T*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • General Features • Core and Small System Configurations • Core and Small System Applications • Extension System Configuration • Management Options • Security Features <p>Interoperability</p> <ul style="list-style-type: none"> • FLASHWAVE 7500 System interoperability with: <ul style="list-style-type: none"> - FLASHWAVE 9500 System - FLASHWAVE CDS System - FLASHWAVE 7120 System 	
<p>Prerequisites</p>		
<ul style="list-style-type: none"> • SONET Tutorial • DWDM Tutorial • Recent experience with DWDM equipment (recommended) 		
<p>Course Contents</p>		
<ul style="list-style-type: none"> Overview Interoperability Applications System Components Functional Description Cross-Connects and Connections Provisioning NE Management Testing Hands-On Exercises 	<p>Applications</p> <ul style="list-style-type: none"> • Core and Small System Applications <ul style="list-style-type: none"> - Linear and Ring - In-Line Amplifier and Express Node - HUB - Broadcast - Stacked Muxponder - Regenerator • Extension Configuration Applications <p>System Components</p> <ul style="list-style-type: none"> • Core Configuration Optical and Tributary Shelves and Backplane • Small Configuration Optical and Tributary Shelves and Backplane • Extension Shelf and Backplane • Plug-In Unit Descriptions <ul style="list-style-type: none"> - Shelf Processor Units - OSC Units - Amplifier Units - Multiplexer/Demultiplexer Units - Switch Units - HUB Units - Flexponder™ Synchronization Unit - Transponder Units - Muxponder Units - Flexponder Units - FLASHWAVE LIGHTGUARD Unit - Regeneration Units - SFP and XFP Modules • Lambda Access Shelves and Modules • DCM Shelves and Modules • High-Density Optical Access Shelf • Circuit Breaker Panel 	<p>Cross-Connects and Connections</p> <ul style="list-style-type: none"> • Cross-Connect Mapping and Rules • Core Configuration Applications <ul style="list-style-type: none"> - Transponder/Muxponder Connection - Flexponder Connections - FLASHWAVE LIGHTGUARD-Protected OLC Connections - MPO Cable Connections - Intrashelf Connections • Small Configuration Applications <ul style="list-style-type: none"> - 40-Channel Connections - 32-Channel Connections (ROADM) • DCM Connections • Shelf Hierarchy
<p>Scheduled Dates</p>		
<p>1/15/13 3/12/13 5/7/13 6/25/13 8/27/13 9/24/13</p>		
<p>Course Description</p> <p>The FLASHWAVE 7500 Turn-Up and Test course provides the necessary training for technicians to turn up, test, and perform basic maintenance on the FLASHWAVE 7500 system. Hands-on portions of the course permit the student to turn up, provision, and perform basic trouble clearing with a three-node configuration.</p>	<p>Functional Description</p> <ul style="list-style-type: none"> • 40-Channel Applications <ul style="list-style-type: none"> - 2D-ROADM - WSS-ROADM and WSS-ROADM HUB - ILA Node and Express Node • 32-Channel ROADM/FOADM Applications • Client Interfaces <ul style="list-style-type: none"> - 10G and 40G Transponders - Muxponders and Flexponders - Direct Connect - 10G and 40G Regenerators - FLASHWAVE LIGHTGUARD 	<p>Provisioning</p> <ul style="list-style-type: none"> • Core and Small Configuration <ul style="list-style-type: none"> - Node Turn-Up Flowcharts - Provisioning Hierarchy Diagrams - Service Provisioning Flowcharts - Service Provisioning Wizards • Extension Configuration <ul style="list-style-type: none"> - Node Turn-Up Flowchart - Provisioning Hierarchy Diagram - Service Provisioning Flowchart <p>NE Management</p> <ul style="list-style-type: none"> • Serial Interface • LMP and LCN Interfaces • Modem Interface • Methods of Management • NE Management Using TL1 • NETSMART 500 NE GUI <ul style="list-style-type: none"> - NETSMART 500 Dashboard Window - NETSMART 500 Graphical Shelf View - NETSMART 500 Service Associations - NETSMART 500 Wizards • NETSMART 1500 Management System
<p>Who Should Attend</p> <p>This course is recommended for CO, field installation and NOC technicians, and engineers, supervisors and managers.</p>		
<p>Enroll now at http://partners.fnc.fujitsu.com/training</p>		<p>Testing</p> <ul style="list-style-type: none"> • Plug-In Unit Front Panel Indicators • Alarm, Status & Condition Reports • Equipment and Facility Service States • Acceptance Testing • Measuring Optical Power

FLASHWAVE® 9500 System Installation

Ordering Information	What You Will Learn	
<p>Course Code: 9500-INST Duration: 2 Days Ordering Numbers: In-house: TRIH-9500INST In-House Tuition: \$1400 Suitcase: TRSC-9500INST* MSP Suitcase: TRSE-9500INST*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> FLASHWAVE 9500 System Features FLASHWAVE 9500 System Components HDS/SDS Shelf Functional Diagram HDS/SDS Shelf and PS Functional Diagram ROADM Functionality Channel Assignments Applications NE Management NE Logon Security Features <p>Equipment Installation</p> <ul style="list-style-type: none"> Equipment Installation Prerequisites Storing, Unpacking and Inspecting Installing Circuit Breaker Panel HDS/SDS Shelves Rack Configurations HDS/SDS Shelf Lifting Surfaces Fan Units and Filters Installing Photonic Shelf Installing DCMs in Photonic Shelf Installing Heat Baffle HDS/SDS Front Cover 	
<p>Prerequisites</p> <ul style="list-style-type: none"> SONET Tutorial Ethernet Tutorial DWDM Tutorial 	<p>Cable Installation</p> <ul style="list-style-type: none"> Shelf Cable Connectors <ul style="list-style-type: none"> Cable Installation Prerequisites Cable Routing Preconditions and Restrictions Connecting Clock Cables <ul style="list-style-type: none"> Clock Cables Housekeeping Alarm Control Cables Shelf Alarm Cables Craft Interface Cable TERM 2 Cable OSS Cable 	<p>Final Installation</p> <ul style="list-style-type: none"> Final Installation Prerequisites Overall Visual Inspection Defective Equipment Installing/Removing HDS/SDS Plug-In Units Installing/Removing SFP/XFP/CFP Modules Installing/Removing HDS/SDS Filler Panels Installing/Removing Photonic Shelf Plug-In Units Installing/Removing Photonic Shelf Filler Panels
<p>Course Contents</p> <p>Overview Equipment Installation Cable Installation HDS Shelf Power Installation SDS Shelf Power Installation Final Installation</p> <p>Scheduled Dates</p> <p>Special Order Only Call for details: 1-800-777-3278 ext. 4961</p>	<p>HDS Shelf Power Installation</p> <ul style="list-style-type: none"> Power Installation Prerequisites Connecting HDS Shelf Frame Ground Connecting Shelf Power to HDS Shelf CBP Connecting Power to HDS Shelf Checking HDS Shelf Power Checking HDS Shelf Grounding <p>SDS Shelf Power Installation</p> <ul style="list-style-type: none"> Power Installation Prerequisites Connecting SDS Shelf Frame Ground Connecting Power/Ground to SDS Shelf Checking SDS Shelf Power Checking SDS Shelf Grounding 	
<p>Course Description The FLASHWAVE 9500 System Installation course covers physical installation requirements. Actual equipment is used to familiarize the student with the equipment. Hands-on exercises are not included in this course.</p> <p>Who Should Attend This course is recommended for installers, engineers, supervisors, and managers with installation responsibility.</p>		

FLASHWAVE® 9500 System Planning and Engineering

Ordering Information	What You Will Learn
<p>Course Code: 9500-E Duration: 2 Days Ordering Numbers: In-house: TRIH-9500E In-House Tuition: \$1400 Suitcase: TRSC-9500E* MSP Suitcase: TRSE-9500E*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • System Features • System Components • Functional Description • Channel Assignments • Applications • NE Management • NE Security
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • DWDM Tutorial • Ethernet Tutorial 	<p>Applications</p> <ul style="list-style-type: none"> • Applications <ul style="list-style-type: none"> - Terminal/Linear - UPSR/SNCP - 2F-BLSR/MS-SPRING - Ethernet over SONET (EOS)/SDH - Ethernet - ROADM - ILA Node - HUB - Broadcast and Channel Regeneration
<p>Course Contents</p> <p>Overview</p> <p>Applications</p> <p>System Components</p> <p>Optical Network Fundamentals</p> <p>Engineering Guidelines</p> <p>NETSMART 2000 Design and Planning Tool</p> <p>Case Studies</p>	<p>System Components</p> <ul style="list-style-type: none"> • High-Density Shelves/Backplane • Standard-Density Shelves/Connectors <ul style="list-style-type: none"> - Management Units - 8D-ROADM Switch Units - Amplifier Units - Switch Fabric Units - Multirate/Multiservice (MRMS) Units - 1-Port OC-192NB Unit - 2-Port OC-192 Unit - 10 Gigabit Universal Transponder Unit - 40 Gigabit Transponder Unit - 100 Gigabit Transponder Unit - 8+1 Muxponder Units - 100 Gigabit Muxponder Unit - 20-Port Gigabit Ethernet Packet Unit - 2-Port 10 Gigabit Ethernet Packet Unit - 10 Gigabit Ethernet NBO Packet Unit - EoX Mapper Units - VT/TU Switch Fabric Unit - OCh-DPRING Service Protection Unit - Pluggable SFP/XFP/CFP Modules - Filler Panels - Fan Units - Communication Panel • Photonic Shelves <ul style="list-style-type: none"> - Physical Inventory Unit - 44-Channel Mux/Demux Units - Dispersion Compensation Modules • FLASHWAVE 9500 Circuit Breaker Panel
<p>Scheduled Date</p> <p>1/8/13 3/19/13 5/14/13 7/23/13 8/27/13</p>	<p>Optical Network Fundamentals</p> <ul style="list-style-type: none"> • Optical Networks • Fiber-Optic Transmission • Signal Format • Impairments to DWDM Transmission • Forward Error Correction • Optical Transmitters and Receivers • Amplifiers and Regenerators • Fiber-Optic Cable and Fiber Issues • Network Design <p>Engineering Guidelines</p> <ul style="list-style-type: none"> • HDS/SDS Shelf Equipped with Only SONET/SDH Units • HDS/SDS Shelf Equipped with Wideband Ethernet Units • HDS/SDS ROADM Equipage • HDS/SDS Split HUB Equipage • Photonic Shelf Equipage • HDS/SDS Main Shelf Equipped with Only ROADM Units • HDS/SDS Main Shelf Equipped with ROADM/Non-ROADM Units <p>NETSMART 2000 Design/Planning Tool</p> <ul style="list-style-type: none"> • New Features and Enhancements • Architecture • Design Browser & Editor • Design Preferences • Design Templates • Degree Mapping and Reservation • Using Design Icons to Create Designs <ul style="list-style-type: none"> - Adding Demands and Subnetworks - Broadcast Demands/Mixed Demands - Moving a Span to Another Network • Rack and Shelf View • Design Reports • Brownfield Designs • Custom Profile Feature • Security Management and Activity Log • Save or Open Design • Import/Export Design • Audits
<p>Course Description</p> <p>The FLASHWAVE 9500 System Planning and Engineering course enables students to plan and engineer networks and system applications using the FLASHWAVE 9500 product family. Extensive case studies of operational networks in various configurations are developed using the NETSMART 2000 design and planning tool.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using FLASHWAVE 9500 systems benefit from attending this course, including network planners and engineers, supervisors, and managers with budget responsibility.</p>	



FLASHWAVE® 9500 System Maintenance, Operations & Trouble Clearing

Ordering Information	What You Will Learn
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Course Code: 9500-M
Duration: 4 Days
Ordering Numbers:
In-house: TRIH-9500M
In-House Tuition: \$2800
Suitcase: TRSC-9500M*
MSP Suitcase: TRSE-9500M*
 * For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.

Prerequisites

- SONET Tutorial
- Ethernet Tutorial
- DWDM Tutorial

Course Contents

- Overview**
- Applications**
- System Components**
- NE Management**
- Synchronization**
- Alarms and Conditions**
- Maintenance and Testing**
- Upgrades and Migrations**
- Hands-On Exercises**

Scheduled Dates

- 11/27/12
- 12/18/12
- 1/15/13
- 2/12/13
- 3/12/13
- 4/9/13
- 5/7/13
- 6/4/13
- 7/30/13
- 8/27/13
- 10/1/13

Course Description

The FLASHWAVE 9500 System Maintenance course covers operations, performance monitoring, interpretation of alarms and condition reports, fault isolation and trouble clearing, database backup and restore, and an introductory overview of element management software.

Who Should Attend

These courses are recommended for Central Office (CO), Field Repair, Network Operations Center (NOC), and Technical Assistance Center (TAC) technicians, as well as engineers, supervisors, and managers.

Overview

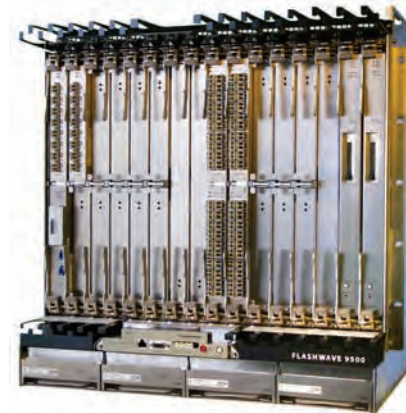
- System Features
- System Components
- Functional Description
- Channel Assignments
- Applications
- NE Management
- NE Security

Applications

- Applications
 - Terminal/Linear
 - UPSR/SNCP
 - 2F-BLSR/MS-SPRING
 - Ethernet over SONET (EOS)/SDH
 - Ethernet
 - ROADM
 - ILA Node
 - HUB
 - Broadcast and Channel Regeneration

System Components

- High-Density Shelves/Backplane
- Standard-Density Shelves/Connectors
 - Management Units
 - 8D-ROADM Switch Units
 - Amplifier Units
 - Switch Fabric Units
 - Multirate/Multiservice (MRMS) Units
 - 1-Port OC-192NB Unit
 - 2-Port OC-192 Unit
 - 10 Gigabit Universal Transponder Unit
 - 40 Gigabit Transponder Unit
 - 100 Gigabit Transponder Unit
 - 8+1 Muxponder Units
 - 100 Gigabit Muxponder Unit
 - 20-Port Gigabit Ethernet Packet Unit
 - 2-Port 10 Gigabit Ethernet Packet Unit
 - 10 Gigabit Ethernet NBO Packet Unit
 - EoX Mapper Units
 - VT/TU Switch Fabric Unit
 - OCh-DPRING Service Protection Unit
 - Pluggable SFP/XFP/CFP Modules
 - Filler Panels
 - Fan Units
 - Communication Panel
- Photonic Shelves
 - Physical Inventory Unit
 - 44-Channel Mux/Demux Units
 - Dispersion Compensation Modules
- FLASHWAVE 9500 Circuit Breaker Panel



NE Management

- Connecting to the HDS/SDS Shelf
- NE Management Using TL1
- NETSMART 500 Element Manager Functions
 - Dashboard Window
 - Graphical Shelf View
 - Cross-Connect View
 - Wizards
- NETSMART 1500 Management System

Synchronization

- Stratum Levels
- Timing Modes and Distribution
- Synchronous Status Messaging
- Synchronization Lists

Alarms and Conditions

- Plug-In Unit Front Panel Indicators
- Optical Traffic Detection Points
- Alarm and Status Message Reporting
- Condition Codes and Error Codes
- Alarm and Condition Reports

Maintenance and Testing

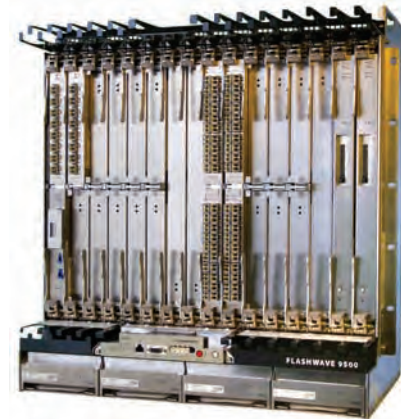
- Fan Units
- Frame Units
- Plug-In Unit Installation/Removal
- SFP/XFP/CFP Module Installation/Removal
- Optical Power Measurements
- Handling Fiber Connectors
- Measuring Optical Power
- Loopback Testing
- PRBS Test Signal Injection Test
- Equipment and Facility Service States
- Performance Monitoring
- Backup and Restore

Upgrades and Migrations

- Software Upgrades
- Firmware Download
- Adding/Deleting Nodes
- Changes to an In-Service NE
- Software and Plug-In Unit Compatibility

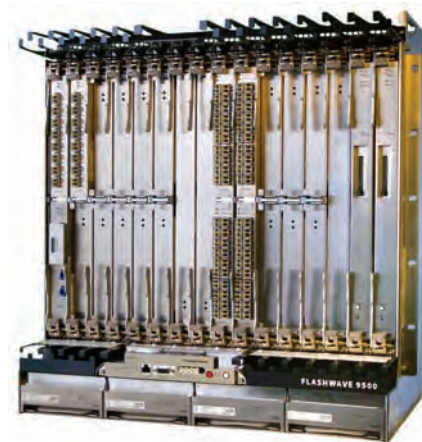
FLASHWAVE® 9500 System Turn-Up and Test

Ordering Information	What You Will Learn
<p>Course Code: 9500-T Duration: 4 Days Ordering Numbers: In-house: TRIH-9500T In-House Tuition: \$2800 Suitcase: TRSC-9500T* MSP Suitcase: TRSE-9500T*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • System Features • System Components • Functional Description • Channel Assignments • Applications • NE Management • NE Security
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial • DWDM Tutorial 	<p>Applications</p> <ul style="list-style-type: none"> • Applications <ul style="list-style-type: none"> - Terminal/Linear - UPSR/SNCP - 2F-BLSR/MS-SPRING - Ethernet over SONET (EOS)/SDH - Ethernet - ROADM - ILA Node - HUB - Broadcast and Channel Regeneration
<p>Course Contents</p> <p>Overview Applications System Components Provisioning NE Management Synchronization and Testing Hands-On Exercises</p>	<p>System Components</p> <ul style="list-style-type: none"> • High-Density Shelves/Backplane • Standard-Density Shelves/Connectors <ul style="list-style-type: none"> - Management Units - 8D-ROADM Switch Units - Amplifier Units - Switch Fabric Units - Multirate/Multiservice (MRMS) Units - 1-Port OC-192NB Unit - 2-Port OC-192 Unit - 10 Gigabit Universal Transponder Unit - 40 Gigabit Transponder Unit - 100 Gigabit Transponder Unit - 8+1 Muxponder Units - 20-Port Gigabit Ethernet Packet Unit - 2-Port 10 Gigabit Ethernet Packet Unit - 10 Gigabit Ethernet NBO Packet Unit - EoX Mapper Units - VT/TU Switch Fabric Unit - OCh-DPRING Service Protection Unit - Pluggable SFP/XFP/CFP Modules - Filler Panels - Fan Units - Communication Panel • Photonic Shelves <ul style="list-style-type: none"> - Physical Inventory Unit - 44-Channel Mux/Demux Units - Dispersion Compensation Modules • FLASHWAVE 9500 Circuit Breaker Panel
<p>Scheduled Dates</p> <p>11/13/12 12/11/12 1/8/13 2/5/13 3/5/13 4/2/13 4/30/13 6/25/13 7/23/13 8/20/13 9/17/13 9/24/13</p>	<p>Provisioning</p> <ul style="list-style-type: none"> • System Turn-Up <ul style="list-style-type: none"> - Prerequisites - System Turn-Up Flowchart - Wideband SONET Equipment/Facilities Flowchart - ILA Node Turn-Up Flowchart - Core ROADM Node Turn-Up Flowchart - Provisioning Hierarchy <p>NE Management</p> <ul style="list-style-type: none"> • Connecting to the HDS/SDS Shelf <ul style="list-style-type: none"> - Craft Interface - Local Management Port - Local Communication Network Interface • Methods of Management • NE Management Using TL1 • NETSMART 500 Element Manager Functions <ul style="list-style-type: none"> - Dashboard Window - Logging on an NE - Graphical Shelf View - Cross-Connect View - FLASHWAVE 9500 ROADM DWDM Cabling - Wizards - Online Help • NETSMART 1500 Management System <p>Synchronization and Testing</p> <ul style="list-style-type: none"> • Synchronization • Synchronization Status Messaging • Synchronization Lists • Plug-In Unit Front-Panel Indicators • Alarm and Status Message Reporting • Alarm and Condition Reports • Equipment and Facility Service States • Loopback Testing • PRBS Test Signal Injection Test • Acceptance Testing • Measuring Optical Power
<p>Course Description</p> <p>The course begins with system overview and descriptions of plug-in units. Students learn to provision various configurations and hardware features through hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic.</p> <p>Who Should Attend</p> <p>This course is recommended for CO, field repair, NOC, and TAC technicians, as well as engineers, supervisors and managers.</p>	



FLASHWAVE® 9500 System COE Turn-Up and Test

Ordering Information	What You Will Learn
<p>Course Code: 9500-COET Duration: 4 Days Ordering Numbers: In-house: TRIH-9500COET In-House Tuition: \$2800 Suitcase: TRSC-9500COET* MSP Suitcase: TRSE-9500COET*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • System Features • System Components • Functional Description • Channel Assignments • Applications • NE Management • NE Security
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial • DWDM Tutorial 	<p>Applications</p> <ul style="list-style-type: none"> • Applications <ul style="list-style-type: none"> - Ethernet over SONET (EOS)/SDH - Ethernet - EoX Mapper - ROADM
<p>Course Contents</p> <p>Overview Applications System Components Ethernet Provisioning NE Management Synchronization and Testing Hands-On Exercises MSP Suitcase:</p> <p>Scheduled Dates</p> <p>11/6/12 1/29/13 2/26/13 3/26/13 4/23/13 5/21/13 6/18/13 7/16/13 8/13/13 9/10/13</p>	<p>System Components</p> <ul style="list-style-type: none"> • High-Density Shelves/Backplane • Standard-Density Shelves/Connectors <ul style="list-style-type: none"> - Management Units - Switch Fabric Units - Multirate/Multiservice (MRMS) Units - 1-Port OC-192NB Unit - 2-Port OC-192 Unit - 8+1 Muxponder Units - 100 Gigabit Muxponder Unit - 20-Port Gigabit Ethernet Packet Unit - 2-Port 10 Gigabit Ethernet Packet Unit - 10 Gigabit Ethernet NBO Packet Unit - EoX Mapper Units - VT/TU Switch Fabric Unit - Pluggable SFP/XFP Modules - Filler Panels - Fan Units - Communication Panel • FLASHWAVE 9500 Circuit Breaker Panel <p>Ethernet</p> <ul style="list-style-type: none"> • Ethernet Service • Data Services Architecture • Ethernet Provisioning Architecture • Ethernet Provisioning <ul style="list-style-type: none"> - Ethernet Facilities/Logical Interface - Transport Service Groups/Flow Points - Link Aggregation Groups - Quality of Service Bandwidth Profiles - Class of Service Profiles • EoX Mapper Unit <ul style="list-style-type: none"> - Flow Mode and Class Mode • Service OAM • Ethernet Service Protection
<p>Course Description</p> <p>The Connection-Oriented Ethernet (COE) Turn-Up and Test course begins with system overview and descriptions of plug-in units. Students learn to provision various configurations and hardware features through hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply Ethernet test traffic.</p> <p>Who Should Attend</p> <p>These courses are recommended for CO, field repair, NOC, and TAC technicians, as well as engineers, supervisors and managers.</p>	<p>Provisioning</p> <ul style="list-style-type: none"> • System Turn-Up <ul style="list-style-type: none"> - Prerequisites - System Turn-Up Flowchart - Ethernet Provisioning - ILA Node Turn-Up Flowchart - Core ROADM Node Turn-Up Flowchart - Provisioning Hierarchy <p>NE Management</p> <ul style="list-style-type: none"> • Connecting to the HDS/SDS Shelf <ul style="list-style-type: none"> - Craft Interface - Local Management Port - Local Communication Network Interface • Methods of Management • NE Management Using TL1 • NETSMART 500 Element Manager Functions <ul style="list-style-type: none"> - Dashboard Window - Logging on an NE - Shelf Graphical View - Cross-Connect View - FLASHWAVE 9500 ROADM DWDM Cabling - Wizards - Online Help • NETSMART 1500 Management System <p>Synchronization and Testing</p> <ul style="list-style-type: none"> • Synchronization • Synchronization Status Messaging • Synchronization Lists • Plug-In Unit Front-Panel Indicators • Alarm and Status Message Reporting • Alarm and Condition Reports • Equipment and Facility Service States • Loopback Testing • PRBS Test Signal Injection Test • Acceptance Testing • Measuring Optical Power



FLASHWAVE® 9500 System COE Planning and Engineering

Ordering Information	What You Will Learn
<p>Course Code: 9500-COEE Duration: 3 Days Ordering Numbers: In-house: TRIH-9500COEE In-House Tuition: \$2100 Suitcase: TRSC-9500COEE* MSP Suitcase: TRSE-9500COEE*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Overview</p> <ul style="list-style-type: none"> • System Features • System Components • Functional Description • Channel Assignments • Applications • NE Management • NE Security <p>Applications</p> <ul style="list-style-type: none"> • Applications <ul style="list-style-type: none"> - Ethernet over SONET (EOS)/SDH - Ethernet - EoX Mapper - ROADM
<p>Prerequisites</p> <ul style="list-style-type: none"> • FLASHWAVE 9500 Engineering • SONET Tutorial • Ethernet Tutorial • DWDM Tutorial 	<p>System Components</p> <ul style="list-style-type: none"> • High-Density Shelves/Backplane • Standard-Density Shelves/Connectors <ul style="list-style-type: none"> - Management Units - Switch Fabric Units - Multirate/Multiservice (MRMS) Units - 1-Port OC-192NB Unit - 2-Port OC-192 Unit - 8+1 Muxponder Units - 100 Gigabit Muxponder Unit - 20-Port Gigabit Ethernet Packet Unit - 2-Port 10 Gigabit Ethernet Packet Unit - 10 Gigabit Ethernet NBO Packet Unit - EoX Mapper Units - VT/TU Switch Fabric Unit - Pluggable SFP/XFP Modules - Filler Panels - Fan Units - Communication Panel • FLASHWAVE 9500 Circuit Breaker Panel
<p>Course Contents</p> <p>Overview Applications System Components COE Overview COE Policing And Shaping Ethernet OAM Engineering Guidelines Case Studies</p>	<p>COE Ethernet Overview</p> <ul style="list-style-type: none"> • FLASHWAVE Packet ONP Product Family • FLASHWAVE 9500 Interface Units • MEF Service Terminology • FLASHWAVE 9500 COE <ul style="list-style-type: none"> - FLASHWAVE 9500 COE Building Blocks - COE Hardware - Connection-Based Traffic Management Features <ul style="list-style-type: none"> - Ingress Traffic Management - Egress Traffic Management - Egress Packet Processing - Single VLAN Tag Operations - Dual VLAN Tag Operations
<p>Scheduled Dates</p> <p>11/13/12 1/8/13 3/5/13 4/30/13 6/25/13 8/20/13</p>	<p>COE Policing And Shaping</p> <ul style="list-style-type: none"> • Mapping and Classification • Detailed Packet Traffic Flow • Data Service Model • Ingress Traffic Management (Policing and No Policing) • Ingress Bandwidth Profile • Egress Shaping • Egress Traffic Management • HDTD and WRED Queue Management • Egress Class of Service • Connection Admission Control
<p>Course Description</p> <p>The Connection-Oriented Ethernet (COE) Planning and Engineering course enables students to plan and engineer connection-oriented Ethernet applications using the FLASHWAVE 9500 Packet Optical Networking Platform. Case studies are provided for various COE applications.</p> <p>Who Should Attend</p> <p>All personnel responsible for planning and engineering networks using FLASHWAVE 9500 systems benefit from attending this course, including network planners and engineers, supervisors, and managers with budget responsibility.</p>	<p>Ethernet OAM</p> <ul style="list-style-type: none"> • Ethernet Tunnels • Link and Service OAM • Ethernet Protection Domain • Automatic Protection Switching (APS) <ul style="list-style-type: none"> - Ethernet Flows and Protection - APS Using SMEPs with Representative Flow • Link Aggregation (LAG) <ul style="list-style-type: none"> - LAG Commands - LAG Data Service Model • Network Design




FLASHWAVE® 9410/9420 Turn-Up and Maintenance



Ordering Information	What You Will Learn
<p>Course Code: 94x0-TM Duration: 2 Days Ordering Numbers: In-house: TRIH-94x0TM In-House Tuition: \$1400 Suitcase: TRSC-94x0TM* MSP Suitcase: TRSE-94x0TM*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>FLASHWAVE 9410 System</p> <ul style="list-style-type: none"> • System Overview • Features • Shelf LEDs • Power Supply Units • Placement/Mounting • Applications <ul style="list-style-type: none"> - Point-to-Point Deployment - Single-Ended Deployment • Service Applications <ul style="list-style-type: none"> - Network Ethernet Virtual Connections - EPL and EVPL Using E-LINE Service Type - QoS and Traffic Management - Bandwidth Profile Attributes • Network Management <ul style="list-style-type: none"> - FLASHWAVE 9410 Web GUI - SNMP-Based Management - Command Line Interface • Customer-to-Carrier Demarcation • Service Assurance • Ethernet Connectivity Fault Management <ul style="list-style-type: none"> - Maintenance Points - Continuity Check Messages - Link Trace Messages - Loopback Messages • Loopback
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial 	<p>FLASHWAVE 9420 System</p> <ul style="list-style-type: none"> • System Overview • Features • Shelf LEDs • Placement/Mounting • Applications <ul style="list-style-type: none"> - Back-to-Back Deployment - Single-Ended Deployment • Service Applications <ul style="list-style-type: none"> - Network Ethernet Virtual Circuits • Etherjack Technology <ul style="list-style-type: none"> - Etherjack QoS and Traffic Management - Etherjack Cable Integrity - Port-Level Loopback - VLAN-Level Loopback • Network Management <ul style="list-style-type: none"> - FLASHWAVE 9420 Web GUI - SNMP-Based Management - Command Line Interface
<p>Course Contents</p> <p>FLASHWAVE 9410 System FLASHWAVE 9420 System Hands-on Exercises</p>	
<p>Scheduled Dates</p> <p>Special Order Only Call for details: 1-800-777-3278 Ext. 4961</p>	
<p>Course Description This course covers both the FLASHWAVE 9410 and the FLASHWAVE 9420 systems. Students learn provisioning, testing, and maintenance through hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic.</p> <p>Who Should Attend This course is recommended for CO, field repair, NOC and TAC technicians, as well as engineers, supervisors, and managers.</p>	



FLASHWAVE® CDS-TM Turn-Up and Maintenance

Ordering Information	What You Will Learn	
<p>Course Code: CDS-TM Ordering Numbers: In-house: TRIH-CDSTM Suitcase: TRSC-CDSTM SSP Suitcase: TRSE-CDSTM Duration: 4 Days Student Price: \$2800</p>	<p>Overview</p> <ul style="list-style-type: none"> • System Features • System Components • NE Management • NE Logon • Security Features <p>System Components</p> <ul style="list-style-type: none"> • FLASHWAVE CDS Shelf <ul style="list-style-type: none"> - Rear Panel - Low-Density Transponder Unit and Functions - Low-Density Ethernet Aggregation Unit and Functions - High-Density Ethernet Aggregation Unit and Functions - High-Density 10G Ethernet Aggregation Unit and Functions - Pluggable SFP/XFP Modules - Filler Panels - User Panel/Fan Unit and Functions • Optional Power Converters <ul style="list-style-type: none"> - FLASHWAVE CDS +24 V DC Power Converter - FLASHWAVE CDS AC Power Shelf 	
Prerequisites		
<ul style="list-style-type: none"> • SONET Tutorial • Ethernet Tutorial 		
Course Contents		
<p>Overview System Components Native Ethernet Provisioning NE Management Alarms and Conditions Maintenance and Testing Hands-on Exercises</p>		<ul style="list-style-type: none"> • Logging into NS1500 Management System • NETSMART 1500 Management System Functions <ul style="list-style-type: none"> - Dashboard Window - Graphical Shelf View - Topology View - Configuration View - Wizards - Online Help • Provisioning Network and MVLAN using NETSMART 500 Element Manager • Provision Network ETHs and LIFs for MVLAN • Provisioning MVLAN • Provisioning Ethernet Services using NETSMART 1500 Management System • Provision Traffic Management Profiles • Provision an Unprotected Flow across a CDS ring. • Add SOAM to an Unprotected Flow • Provision a G.8031 Protected Flow
Scheduled Dates		
<p>1/24/2012 2/21/2012 3/20/2012 5/8/2012 5/22/2012 5/30/2012 7/17/2012 9/5/2012 9/18/2012</p>	<p>Connection-oriented Ethernet Overview</p> <ul style="list-style-type: none"> • Layer 2 Ethernet • C-Tags and S-Tags • Ethernet Services • Color and Drop Eligibility • Flows and Flow Points • Logical Interfaces • Bandwidth Profiles • Policing and Shaping • Class of Service • Quality of Service • Service OAM • G.8031 Protection • Ethernet on the FLASHWAVE CDS 	<ul style="list-style-type: none"> • NETSMART 500 Element Manager Overview • Connecting to the FLASHWAVE CDS NE <ul style="list-style-type: none"> - Craft Interface - Local Communication Network Interface • NETSMART 500 Element Manager Functions • Logging on to a FLASHWAVE CDS NE • NETSMART 1500 Management System Overview
<p>Course Description The course begins with a system overview, which includes a description of the plug-in units and their functions. Students learn provisioning, testing, and maintenance through hands-on lab exercises. Students learn to use product-specific technical documentation and procedures to place equipment online and then apply test traffic.</p> <p>Who Should Attend This course is recommended for CO, field repair, NOC and TAC technicians, as well as engineers, supervisors, and managers.</p>		<ul style="list-style-type: none"> • Alarms and Conditions • Plug-In Unit Front Panel Indicators • Alarm and Status Message Reporting • Condition Codes • Error Codes • Alarm and Condition Reports • Maintenance and Testing • Front Cover Installation and Removal • Clean/Replace Fan Filter • Plug-In Unit Installation and Removal • SFP/XFP Module Installation and Removal • Optical Power Measurements • Handling Fiber Connectors • Test Equipment • Loopback Testing • Equipment and Facility Service States • Synchronization • Performance Monitoring

FLM 150/600/2400 ADM System Maintenance

Ordering Information	What You Will Learn	
<p>Course Code: FLM-MNT Duration: 5 Days Ordering Numbers: In-house: TRIH-FLMMNT In-House Tuition: \$3500 Suitcase: TRSC-FLMMNT* MSP Suitcase: TRSE-FLMMNT*</p> <p>* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.</p>	<p>Protocols Overview</p> <ul style="list-style-type: none"> • SONET Layers • STS-1 Signal Format • SONET Overhead • Concatenation <p>FLM 150 Shelf and Units</p> <ul style="list-style-type: none"> • FLM 150 ADM Shelf • Shelf Backplane • Plug-In Units <p>FLM 600 Shelf and Units</p> <ul style="list-style-type: none"> • FLM 600 ADM Shelf • Shelf Backplane • Plug-In Units <p>FLM 2400 Shelf and Units</p> <ul style="list-style-type: none"> • High-Speed Shelf and Plug-In Units • Fan Shelf • High-Density Tributary Shelf and Plug-In Units • FLM 600 Tributary Shelf and Plug-In Units • Intershelf Cabling • RDI Terminal Connector 	
<p>Prerequisites</p> <ul style="list-style-type: none"> • SONET Tutorial 	<p>Network Interfaces</p> <ul style="list-style-type: none"> • Craft Interface • OSS Interface • SDCC • Computer Equipment and Cabling <p>Management Systems</p> <ul style="list-style-type: none"> • FLEXR Introduction • Installing FLEXR • Connecting to an NE • Log On an NE Using FLEXR • FLEXR Windows • TL1 <ul style="list-style-type: none"> - Commands - Acknowledgement - Response Messages - Autonomous Messages • NETSMART 1500 <ul style="list-style-type: none"> - Features - Supported NEs - Hardware Requirements <p>Maintenance Techniques</p> <ul style="list-style-type: none"> • Handling Fiber • Cleaning Fibers • Removing FLM Plug-In Units • Installing FLM Plug-In Units • Fan Unit • Orderwire • Inventory Reports <p>Alarms and Conditions</p> <ul style="list-style-type: none"> • Alarms • Terminating Equipment • Error Codes 	<p>Fault Isolation and Resolution</p> <ul style="list-style-type: none"> • Overview • Alarm and Condition Reports • Equipment Problems • Network Problems
<p>Course Contents</p>	<p>Protocols Overview</p> <p>FLM 150 Shelf and Units</p> <p>FLM 600 Shelf and Units</p> <p>FLM 2400 Shelf and Units</p> <p>Network Interfaces</p> <p>Management Systems</p> <p>Maintenance Techniques</p> <p>Alarms and Conditions</p>	<p>System Performance</p> <ul style="list-style-type: none"> • FLM Overview <ul style="list-style-type: none"> - FLM 150 ADM - FLM 600 ADM - FLM 2400 ADM • Equipment Configurations <ul style="list-style-type: none"> - Terminal - Linear - UPSR - BLSR (FLM 2400 ADM only) • Performance Monitoring
<p>Scheduled Dates</p>	<p>Special Order Only Call for details: 1-800-777-3278 Ext. 4961</p>	<p>Synchronization</p> <ul style="list-style-type: none"> • FLM Synchronization <ul style="list-style-type: none"> - Timing Sources - Clock Source Protection • Stratum Levels • Sync List • Synchronous Status Messaging • Timing Distribution • Timing Problems <p>Upgrades and Migrations</p> <ul style="list-style-type: none"> • Software Download • Remote NE Memory Backup and Restore • Network Growth • Upgrades and Migrations • Firmware and Software Compatibility <p>Dual-Node Access Ring</p> <ul style="list-style-type: none"> • Features • STS-1 path Through Dual-Node Access Ring • SDCC in a Dual-Node Access Ring • Cross-Connections

NETSMART® 1500 Management System Administration



Ordering Information	What You Will Learn
<p>Course Code: NS1500-ADMIN Duration: 4 Days Ordering Numbers: In-house: TRIH-NS1500ADMIN In-House Tuition: \$2800 Suitcase: TRSC-NS1500ADMIN* MSP Suitcase: TRSE-NS1500ADMIN* Suitcase: * For suitcase pricing, contact your Fujitsu Sales Rep. or email our Training Coordinator ed.svcs@fnc.fujitsu.com.</p>	<p>NETSMART 1500 Introduction</p> <ul style="list-style-type: none"> • Logging On and Off • Dashboard Window • User Preference • NETSMART 1500 Home Page • High Availability <p>Topology Management</p> <ul style="list-style-type: none"> • Graphical and Tabular Views • Common Legend • Logging the NETSMART Server On and Off an NE
<p>Prerequisites</p> <p>We strongly recommend students first attend Fujitsu products training they intend to monitor w NETSMART 1500 Mgmt System (FLASHWAVE 4xxx, FLASHWAVE 7xxx, & FLASHWAVE 9500 systems). All students need basic understanding of concepts & terminology used with SONET, DWDM, Ethernet, OSI, & TCP/IP technologies. Fujitsu provides tutorials for SONET, Ethernet, & DWDM in downloadable PDF format for students to prior to attending NETSMART 1500 Mgmt. System Classes.</p>	<ul style="list-style-type: none"> • TL1 Console • Find NE, Group, or Subnetwork • Customer Attributes • NE Details • NE System Configuration Information Report • Sort and Filter Reports • Display Link Information • Capacity Management Reports • Bandwidth Management Reports • GNE Report • G-0144 Compliance Report • Create and Manage Groups • Topology Discovery <ul style="list-style-type: none"> - Add Discovered NEs - Add a Ring - Resolve Conflict Links • Add and Remove an NE • Add and Remove an NE Copy • Add or Delete a Link • Add Layer 2 Links • Add or Change the Background Map for a Group • Product Change Notices <ul style="list-style-type: none"> - PCN Downloads - PCN Reports - Fujitsu Partner Products
<p>Course Contents</p> <p>NETSMART 1500 Introduction Topology Management NE DataComm and Security Management TL1 Editor NE List and Task Management NE User Management NE Software Management Log Management Remote Notification Management Hands-On Exercises</p>	<p>NE DataComm & Security Mgmt.</p> <ul style="list-style-type: none"> • Administration Management <ul style="list-style-type: none"> - System Administration - NEU Management • DataComm Management <ul style="list-style-type: none"> - Address View - Update IP Address - GNE List View - NE Communication Switch-Over • NETSMART Security Management <ul style="list-style-type: none"> - Add User - Select User Roles - Activate or Deactivate a User - Clone, Modify, or Delete a User - User Sessions - NETSMART 1500 EMS Roles • Domain Management <ul style="list-style-type: none"> - Domain Management Functions - Domain Management Reports
<p>Scheduled Dates</p> <p>10/9/12, 1/29/13, 2/26/13, 3/26/13, 4/23/13, 5/21/13, 6/18/13, 7/16/13, 8/13/13, 9/10/13</p> <p>Course Description</p> <p>Network Management Administration courses train students to perform basic administration-level functions within the NETSMART 1500 application. Hands-on exercises provide opportunities for creating and managing Topology databases, Domain Management, Remote Notification Management, Security Management, and Task Management for scheduled remote memory backup and software download.</p> <p>Who Should Attend</p> <p>Network & system administrators, managers & those with NOC, NCC, or TAC responsibility.</p>	<p>TL1 Editor</p> <ul style="list-style-type: none"> • Command Mode Operations <ul style="list-style-type: none"> - Command Builder • ACL Management <ul style="list-style-type: none"> - ACL Management Operations <p>NE List and Task Management</p> <ul style="list-style-type: none"> • NE List Management <ul style="list-style-type: none"> - Add NE List • Task Management <ul style="list-style-type: none"> - Create a New Task - Set and Select Schedule Preferences - Modify or Clone a Task • Task Log Management <p>NE User Management</p> <ul style="list-style-type: none"> • Retrieve Accounts • Create Security Area • Create Account Group • Add Account <p>NE User Management Log</p> <p>NE Software Management</p> <ul style="list-style-type: none"> • Software Repository Management <ul style="list-style-type: none"> - Install or Delete a Software Generic • Service Database <ul style="list-style-type: none"> - Install or Delete a Service Database • NE Software Management <ul style="list-style-type: none"> - Initiate Software Generic Download • Remote Memory Backup <ul style="list-style-type: none"> - Initiate Backup and Restore • Firmware Upgrade Operations <p>Log Management</p> <ul style="list-style-type: none"> • Activity Log • System Log • Fault History Log • Transient Event Log • TL1 Log <p>Remote Notification Management</p> <ul style="list-style-type: none"> • Add Remote Notification User • Create Associations • Add Schedule • Audit Log Tab

NETSMART® 1500 Management System User Operations



Ordering Information

Course Code: NS1500-USER
Duration: 4 Days
Ordering Numbers:
In-house: TRIH-NS1500USER
In-House Tuition: \$2800
Suitcase: TRSC-NS1500USER*
SSP Suitcase: TRSE-NS1500USER*

Prerequisites

We strongly recommend that students first attend training on the Fujitsu products that the students intend to monitor using the NETSMART Management System (for example, FLASHWAVE® 4xxx, FLASHWAVE 7xxx, and FLASHWAVE 9500 systems). All students need a basic understanding of the concepts of and terminology used with SONET, DWDM, Ethernet, OSI, and TCP/IP technologies. Fujitsu provides tutorials for SONET, Ethernet, and DWDM on -line in downloadable PDF format for students to study prior to attending a NETSMART 1500 Management System class

Course Contents

NETSMART 1500 Introduction
Topology Management
TL1 Editor
Configuration Management
Wavelength Management
Cross-Connect Management
Connection Management
Fault Management
Data Services Management
NE Performance Management
NE Software Management
NE List and Task Management
Hands-On Exercises

Scheduled Start Dates

10/30/12, 12/18/12, 1/22/13, 2/19/13, 3/19/13, 4/16/13, 5/14/13, 6/11/13, 7/9/13, 8/6/13

Course Description

Network Management User Operations course trains students to provision, monitor, and perform trouble analysis of Fujitsu NEs in network configurations using the NETSMART 1500 software. Hands-on exercises provide students real-life strategies using NETSMART 1500 software to focus on their area of network management job responsibility.

Who Should Attend

Network operators, managers, and those with NOC, NCC, NDC, NPC or TAC responsibility.

What You Will Learn

NETSMART 1500 Introduction

- Logging On and Off
- Dashboard Window
- User Preference
- NETSMART 1500 Home Page

Topology Management

- Graphical and Tabular Reports
- Common Legend
- TL1 Console
- Find NE, Group or Subnetwork
- Customer Attributes
- NE Details
- NE System Configuration Report
- Sort and Filter Reports
- Display Link Information
- Capacity Management Reports
- Bandwidth Management Reports
- Product Change Notices
- Fujitsu Partner Products

TL1 Editor

- Command Mode Operations
- Command Builder
- Batch Mode Operations
- View TL1 Commands

Configuration Management

- Graphical and Tabular View
- Capacity Management Reports
- System Equipment Report
- Common Legend
- Fault Management
- Properties View
- Select Dialog Box
- System Information View
- Operations Dialog Box
 - Changing Component States
 - Modifying an NE Profile
 - Enter Equip/Facility/EPG/FFP/DCC
 - Operate/Release Protection Switch
 - Changing Facility/Port State
 - Operating/Release Sync Switch
 - Environmental Alarms & Controls
- Equipment Connectivity Report
- Lambda Service Inventory Report
- PM View
- BLSR Management

Wavelength Management

- Graphical and Tabular Views
- Optical Pwr End-to-End Monitoring

Cross Connect Management

- Common Legend
- Add/Delete SONET Cross-Connect
 - Redline a Cross-Connect
- OUPSR and DWDM Cross-Connects
- Display the Current Path Selected
- Cross-Connect Report

Connection Management

- Features and Reports
- Connection Wizard
 - Automatic Creation
 - Multiple Automatic Creation
 - Advanced Automatic Creation
 - Discovery

Fault Management

- System Fault Report
- Acknowledge Alarms
- Threshold Crossing Alert
- Affected Connections Report
- Resync Alarms
- Link Fault Report
- Fault History Log
- Transient Event Log

Data Services Management

- LIF Management
- Profile Management
- Flow Management
- Ethernet Tunnel Browser
- Protection Domain Browser
- Service OAM

NE Performance Management

- Get and Set Various PM Reports
- Polling Report
- Initialize Performance Registers
- Retrieve PM Data and History
- Real Time Monitoring
- PM Activity Report

NE Software Management

- Software Repository Management
- Initiate Software Generic Download
- Remote Memory Backup Unit (RMBU)
- Firmware Upgrade Options

NE List and Task Management

- NE List Management
 - Add NE List
- Task Management
 - Create a New Task
 - Set and Select Schedule Preferences
 - Modify or Clone a Task
- Task Log Management

* For suitcase pricing, contact your Fujitsu Sales Representative or email our Training Coordinator at ed.svcs@fnc.fujitsu.com.



Fujitsu Maintenance and Support Program

With a Fujitsu maintenance and support solution, you keep your network operating at peak performance, control your operations costs and protect your valuable equipment and software assets. We offer flexible, comprehensive maintenance and support and network operations solutions to fit your specific needs.

Protect Your Valuable Investment

Our Maintenance and Support Program enables you to streamline operations and increase network reliability. Choose the amount of support you need to supplement your in-house resources, so that you maintain optimum performance while controlling costs.

We offer 7 x 24 x 365 technical assistance, providing reliable support whenever you need it. Plus, you can get additional peace of mind by choosing Fujitsu management of spares for on-site technical support and advance hardware replacement (with either next business day or four-hour response times). With Fujitsu as your service and support partner, you dramatically increase operational efficiency and focus your resources on your core competencies and revenue-generating business activities.

Network Element Maintenance and Support Tiers				
Services	Select	Prime	Peak	Premier
24/7 remote technical assistance	x	x	x	x
Software maintenance and upgrade subscription for Network Element (NE) and Element Manager (craft)	x	x	x	x
Training		x	x	x
Repair and return		x		
Advance hardware replacement (Next business day)			x	
On-Site Maintenance (OSM) (Next business day)			x	
On-site maintenance (w/spare) (4-hour)				x
Routine preventative maintenance				x

October 2012 - September 2013

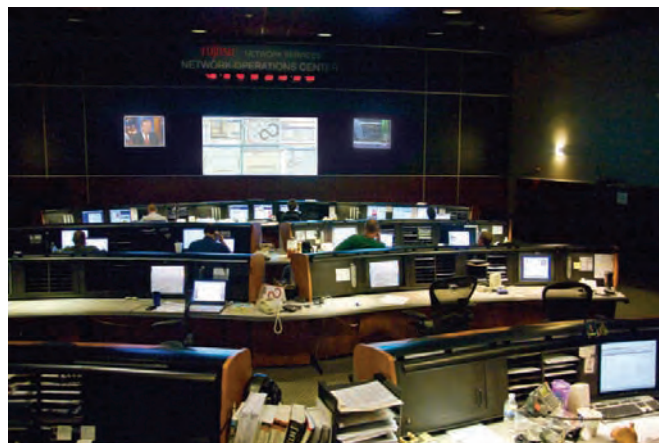


Optional Network Maintenance and Design Plans

Several optional plans are available to cover your network maintenance and design needs. Ask your Fujitsu sales representative for details about these plans:

- NETSMART® 1500 Maintenance and Support Plan – Benefit from the most current NETSMART 1500 Management System features and management capabilities with assurance that our extensive online documentation and technical support engineers are available 24x7.
- Fujitsu Hosted EMS – All the network management benefits of NETSMART 1500 Management System, without the need to purchase, administer and maintain your own EMS and server.
- NETSMART 2000 Maintenance and Support Plan – Software upgrades, technical support and exclusive content such as webinars and tutorials

Contact your Fujitsu sales representative for more information on how to order the support package that is right for you: 1-800-777-FAST (3278).





Managed Network Solutions

Meeting customer expectations is essential to business health, but optimal network performance and responsiveness can create costly overhead in the form of in-house network operations and management. Fujitsu Managed Network Solutions can meet your network operations requirements and deliver rapid, provable return on investment by reducing operational expenses. Outsourcing all or part of your network management to Fujitsu compares favorably with the cost of operating your own facility. A high standard of network management is essential – with Fujitsu Managed Network Solutions, it can also be economical.

Guaranteed System Protection – Around the Clock

Fujitsu Managed Network Solutions offer a full range of network fault and performance monitoring features with connection services for communication and data networks. Fujitsu technicians will work directly with your in-house staff or third party vendors, as needed. We can guarantee system protection around the clock, 365 days a year. With this level of assurance, you can achieve quicker time to revenue, simplified operations management, increased availability and operational cost efficiencies.

World-Class Facility

We operate Managed Network Solutions from our fully redundant, state-of-the-art Network Operations Center (NOC), located in Richardson, TX and Sunnyvale, CA. This access-controlled NOC maintains the highest level of security and protection for your network data, including federated domains, hot-swap redundancy, geographically dispersed backup operations and four-layer security.

The Fujitsu NOC supports many types of networks and multi-vendor equipment in addition to Fujitsu platforms. With 20-plus years in the business, we have the knowhow to prevent outages, protect your service levels, safeguard revenues, and enhance customer satisfaction.

Managed Network Solutions Packages

	Collaborative (Monitor & Notify)	Essential (Fault Management)	Essential Plus
Monitor & Log Events 24x7x365	X	X	X
Notify Customer	X	X	X
Root Cause Analysis		X	X
Prompt Traffic Restoration		X	X
Problem Resolution		X	X
Carrier Coordination		X	X
Multi-vendor Coordination		X	X
Customized Reports		X	X
Remote Adds/Moves/Changes			X
Configuration Management			X
Circuit Resource Management			X
Inventory Management			X

Benefits

- Increase availability and uptime
- Reduce time to revenue for new services
- Maintain SLA compliance and reporting
- Reduce capital outlay
- Reduce operating expenses
- Simplify operations management
- Correct problems before they affect customers
- Ensure business continuity

Core Managed Services

- **Collaborative (Monitor & Notify)** – Our network surveillance service enables you to focus on strategic initiative related to your core business while our management systems and technical experts monitor your network and promptly notify you of problems requiring your attention. With Network Surveillance, our monitoring systems constantly watch your network for alarms and alerts, correlate network events to identify the likely root cause, and notify you when action is required to resolve the problem.
- **Essential (Fault Management)** – Our Fault Management builds on Network Surveillance by assuming responsibility for resolution of issues causing network outages and service degradations. With Fault Management, our expert network engineers investigate network alerts, review device logs, and verify software configurations to identify solutions and return your network to operation with minimal impact to your users.
- **Essential Plus (Fault Management plus Supplemental Services)** – In addition to 24x7x365 network surveillance, event notification, traffic restoration and problem resolution, Essential Plus adds the following supporting services:
 - **Remote Move/Add/Change** – We perform remote provisioning actions such as configuration of new network elements, data circuits, and optical cross-connect provisioning.
 - **Configuration Management** – NOC technicians perform regular, remote memory backups on a per-NE basis. Our technicians also manage software updates and Product Change Notifications (PCN).
 - **Inventory Management** – NOC technicians maintain a database for part numbers on a per-NE basis, for the equipment in your network.
 - **Circuit Resource Management** – Our staff performs circuit bandwidth allocation and provisioning.

Supplemental Managed Services

Supporting Service	Business Hours	Non-Business Hours	Business Strategy
NOC Assistant	Monitor and Notify	Fault Management	Customer with limited NOC resources (tools or personnel)
NOC @ Night	Disaster Recovery	Fault Management	Customer with no NOC staff during non-business hours
NOC on Call	Disaster Recovery	Monitor & Notify	Customer with NOC staff on-call during non-business hours
NOC Redundancy	Disaster Recovery	Disaster Recovery	Business Continuity for Customer's NOC

Premium Maintenance Services

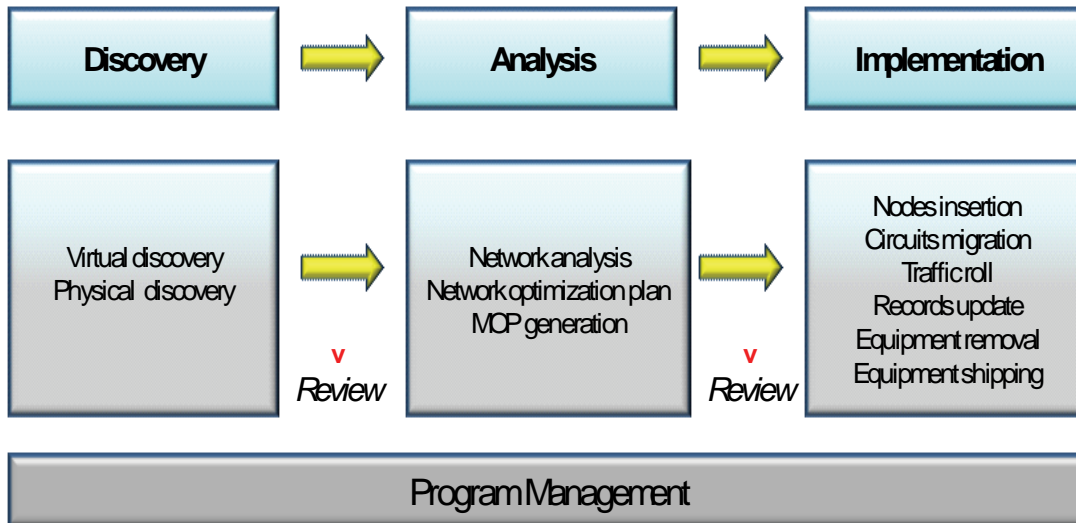
- **Preventive Maintenance** – Our scheduled, onsite checkups are a great way to proactively assess the health of your network using a checklist of items developed to suit your individual network.
- **Advance Hardware Replacement** – This optional extra provides management of spare parts and ensures availability of needed hardware. The AHR service guarantees availability of covered replacement parts and delivery nationwide within a specified time period.
- **Onsite Maintenance** – This optional extra eliminates the need for placement of personnel at all geographic points-of-presence of your network. We dispatch expert technicians to your site to work with remote NOC engineers to resolve network problems. Personnel can arrive within four hours or a specific scheduled time.

Please contact your Fujitsu Sales Representative for more information.

Central Office Modernization

Many service providers (SP) are currently upgrading the optical transport equipment in their Central Offices with next generation products from multiple vendors. This new equipment allows higher traffic density and more efficient use of matrix capacity. It can reduce electricity consumption as well as postpone or eliminate expansions to HVAC capacity. Fujitsu helps the SP migrate circuits and roll traffic from the old equipment to the new equipment using a proven CO Modernization process.

This service follows a 3-phase process:



Phase 1: Network Discovery – Audit network both electronically and via on-site physical audit

Phase 2: Network Analysis – Analyze existing state of the network and develop migration plan and Methods of Procedure (MOP) to optimize equipment and facilities usage based on audit results.

Phase 3: Network Implementation – Migrate circuits that reside on legacy equipment to the new platforms, as defined by the migration plan.

Benefits:

- Vendor independent solution. We can migrate circuits for products made by Fujitsu as well as others, such as Alcatel Lucent, Cisco and Tellabs
- Reclaim valuable CO floor space thereby postponing real-estate expansions or buildouts
- Reduce HVAC requirements
- Reduce power consumption
- Maximize circuit-per-rack density
- Free up old equipment to be re-deployed in other locations as needed

Rack and Cabinet Integration

Fujitsu Network Communication's Rack and Cabinet Integration (RCI) group offers high-quality rack and cabinet (indoor/outdoor) turnkey solutions for the wireline, wireless, FTTx, Cable, Utility and MSO markets. From a variety of standard racks and cabinets to a custom design specifically for your application, the RCI group responds to each customer requirement, combining an industry leading engineering approach for a complete indoor or outdoor solution.

Fujitsu RCI Advantages:

- Full NEBs, GR and UL compliance available
- High Value, cost effective solutions for each customer
- Flexibility to create the best overall solution
- Scalable applications for indoor and outdoor growth
- Highly reliable solutions that offer consistent quality
- Vendor Agnostic Solutions



Indoor Wall-Mount Cabinet

Integrating elements from various suppliers allows our RCI group to offer the best solution to cost effectively meet customer requirements.

Integration Elements:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Racks and Cabinets (Indoor and Outdoor) • Power Systems and Distribution • RF Protection and Distribution • Cross-Connect Panels • Thermal Management Systems | <ul style="list-style-type: none"> • Backup Power and Batteries • Fiber Management • Lightning Protection • DS1, DS3, and DSx Panels • Demarcation Panels |
|---|--|

Fujitsu RCI brings renowned Fujitsu quality to every cabinet, rack, and kit it designs. Our experienced professionals build and test our RCI products to the same exacting standards as our legendary Fujitsu optical transport equipment.

When you select Fujitsu RCI solutions, you benefit from our extensive telecommunications knowledge and experience, coupled with the industry's best technology, for a high-quality, cost-effective, solution.



Outside Plant (OSP) Cabinet Solution



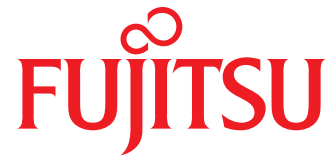
Preconfigured Rack Solution



Contact Information

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Web Page: <http://www.fujitsu.com/us/services/telecom/training>



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us.fujitsu.com/telecom/training

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Configuration requirements for certain uses are described in the product documentation.
Features and specifications subject to change without notice.