



Redback SmartEdge R5 Training Programs

Catalog of Course Descriptions



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INTRODUCTION.....	4
SMARTEDGE R5 FOUNDATION.....	5
SMARTEDGE R5 LEVEL 1 AND LEVEL 2 FIELD MAINTENANCE	7
SMARTEDGE R5 SYSTEM TROUBLE SHOOTING.....	9
SMARTEDGE R5 ADD-ON PTA CONFIGURATION AND MONITORING	12
SMARTEDGE R5 ADD-ON L2TP CONFIGURATION AND MONITORING.....	14
SMARTEDGE R5 ADD-ON IP QOS CONFIGURATION AND MONITORING	16
SMARTEDGE R5 ADD-ON DHCP/CLIPS CONFIGURATION AND MONITORING.....	19
SMARTEDGE R5 ADD-ON OSPF CONFIGURATION AND MONITORING.....	21
SMARTEDGE R5 ADD-ON ISIS CONFIGURATION AND MONITORING.....	24
SMARTEDGE R5 ADD-ON BGP USING IS-IS INFRASTRUCTURE CONFIGURATION AND MONITORING	27
SMARTEDGE R5 ADD-ON BGP USING OSPF INFRASTRUCTURE CONFIGURATION AND MONITORING	30
SMARTEDGE R5 ADD-ON MPLS L3 USING IS-IS INFRASTRUCTURE CONFIGURATION AND MONITORING	33
SMARTEDGE R5 ADD-ON MPLS L3 USING OSPF INFRASTRUCTURE CONFIGURATION AND MONITORING	35
SMARTEDGE R5 ADD-ON VPLS USING IS-IS INFRASTRUCTURE CONFIGURATION AND MONITORING	37















**SMARTEDGE R5 ADD-ON VPLS USING OSPF INFRASTRUCTURE CONFIGURATION
AND MONITORING39**

Introduction

Ericsson has developed a comprehensive Training Programs service to satisfy the competence needs of our customers, from exploring new business opportunities to expertise required for operating a network. The Training Programs service is delineated into packages that have been developed to offer clearly defined, yet flexible training to target system and technology areas. Each package is divided into flows, to target specific functional areas within your organization for optimal benefits.

Service delivery is supported using various delivery methods including:

Icon	Delivery Method
	Instructor Led Training (ILT)
	Seminar (SEM)
	Workshop (WS)
	Virtual Classroom Training (VCT)
	Web Based Learning (WBL)
	Short Article (SA)
	Streaming Video (SV)
	CD-ROM (CD)
	Structured Knowledge Transfer (SKT)
Delivery Enablers	
	Remote Training Lab (RTL)
	Web Portal (WP)
Ericsson Education E-Learning	
	EEOnline @ http://learning.ericsson.net/eeonline/

SmartEdge R5 Foundation



LZU1086938 R1A

Description

SmartEdge R5 Foundation, a 1-day lecture combined with basic lab course targeted at Network Operation Center staff and other technical staff who primarily need to configure and troubleshoot the Redback SmartEdge.

Starting with a common foundation covering hardware, software and Redback Networks unique Context and Binding architecture this course module is an excellent as well required preparation for other SmartEdge add-on technology courses.

Learning objectives

On completion of this course the participants will be able to:

1. Describe Redback SmartEdge hardware and software architecture
2. Describe Redback Context & binding architecture
3. Handle the Command Line Interface & File Management
4. Perform Basic and Management & Traffic Card Configuration

Target audience

The target audience for this course is: Network Deployment Engineer, System Technician, System Engineer, Field Technician, Fundamentals

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Minimum knowledge requirement for students attending this course:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.



Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1	Company Introduction Introduction to SmartEdge architecture Redback Context & Bindings architecture Lab environment Command Line Interface & File management Practical Training	

SmartEdge R5 Level 1 and Level 2 Field Maintenance



LZU1086937 R1A

Description

People responsible for hardware installation and maintenance will appreciate the Field Maintenance 1-day course module. Using to the point information combined with field installation and maintenance experience, this course will create a good foundation for maintenance of Redback SmartEdge systems.

Safety procedures as applicable on co-locations depend on local regulations and procedures and will therefore not be covered in this course.

Learning objectives

On completion of this course the participants will be able to:

1. Review installation prior commissioning of SmartEdge hardware
2. Identify the role of SmartEdge in broadband networks
3. Describe high level system architecture
4. Identify different alarm status
5. Handle hardware replacement/maintenance

Target audience

The target audience for this course is: Field Technician

Prerequisites

The participants should be familiar with installation procedures as applicable on co-locations and capable of handling common installation hardware tools.

This course assumes that attending students have practical experience with IP networks as well as a solid understanding of general networking technologies.

Minimum knowledge requirement for students attending this course module:

- Philips screwdrivers #1, #3 and associated tools
- Torque wrench and associated tools for rack & power mounting
- Power and cooling calculations
- Fiber Optic Optical Budget and cable/connector types
- Ethernet cable types both copper and optical and associated items like GBIC's
- Cable mounting



- Co-location safety procedures
- ESD procedures

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

The course consist of instructor based theoretical and practical lessons

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1	Company Introduction Safety & ESD Role of SmartEdge in broadband networks Introduction to SmartEdge XCRP and Traffic Card Replacements and Repairs	



SmartEdge R5 System Trouble Shooting



LZU 108 7076 R1A

Description

SmartEdge R5 Trouble Shooting, available for students who did or will participate in a course package containing SmartEdge Foundation course as well have acquired operational experience managing the SmartEdge platform.

A 2-day hands-on lab course targeted at second level network Operation Center staff and other staff who primarily need to troubleshoot the Redback SmartEdge within an operational environment.

Learning objectives

On completion of this course the participants will be able to:

1. Confirm operational health of SmartEdge system
2. Enhance command line interface environment using available functions
3. Run fault tracing hardware diagnostics routines
4. Investigate system redundancy
5. Understand high level connectivity troubleshooting
6. System software upgrade and modular software upgrade
7. Password recovery procedure

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should have operational experience managing the SmartEdge platform.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6038 (1-day)

Minimum knowledge requirement for students attending this course module:



- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- (Gigabit) Ethernet (Intergap time, General framing)

Recommended but not required to take the appropriate SmartEdge Add-on technology courses before attending System Trouble shooting course to have accrued operational experience

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Command Line Interface	
	System health	
	Verify chassis components	
	System hardware diagnostics	
	XCRP redundancy	
	Quick process verification	
	Process Architecture	
	Root cause analysis active XCRP	
	Root cause analysis standby XCRP	
	System logging	
	Traffic card	
	Monitor port counters	
	General connectivity troubleshooting	
	Debugging on the SmartEdge	
	Maintenance	
	Software Upgrade	
	In-Service Patch Upgrade	
	Core dumps	
	Password Recovery	

SmartEdge R5 Add-on PTA Configuration and Monitoring



LZU 108 6939 R1A

Description

SmartEdge R5 Add-on PTA Configuration and, available for students who attended or will participate in a course package containing the 1-day SmartEdge R5 Foundation course.

A 2-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within PPP Termination Architecture environment.

Learning objectives

On completion of this course the participants will be able to:

1. Describe PPP technology, Dynamic bindings and PTA using Ethernet, Ethernet dot1q and ATM access technology
2. Perform Verification and debugging of PTA environment
3. Define Authentication parameters.
4. Handle CLI enhancements and automation using GREP, alias and macro's

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms,
- ATM AAL-5 (Bridged versus routed encapsulation, Cell header and payload)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.



Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Introduction PPP Technology Dynamic Bindings PTA lab with Ethernet Debugging and Verification Process for PPPoX PTA lab with Ethernet Dot1Q PTA lab with ATM Authentication parameters Class assignment using different authentication methods. Global Regular Expression Parser (GREP) Aliases and Macros PTA lab with RADIUS	

SmartEdge R5 Add-on L2TP Configuration and Monitoring



LZU 108 6940 R1A

Description

SmartEdge Add-on L2TP Configuration and Monitoring, available for students attended or will participate in a course package containing the 1-day SmartEdge R5 Foundation course. Due to the similarity with PPP environment we recommend students to attend the SmartEdge R5 Add-on PTA Configuration and Monitoring prior to this add-on course.

A 2-day lecture/lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within L2TP environment.

Learning objectives

On completion of this course the participants will be able to:

1. Identify PTA termination Architecture
2. Describe L2TP technology
3. Perform L2TP related monitoring and troubleshooting tasks
4. Perform Radius for L2TP related monitoring and troubleshooting tasks

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should be familiar with and have extensive practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)
- SmartEdge R5 Add-on PTA Configuration and Monitoring LZU 108 6939 (2-days)

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- PPP technology (LCP, Chap and/or pap authentication, NCP, PPPoE versus PPPoA, PTA deployment scenario's)
- RADIUS (Authentication and authorization, Accounting, Reliability mechanism)
- ATM AAL-5 (Bridged versus routed encapsulation, Cell header and payload)

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- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	L2TP introduction L2TP Waiting and Negotiation room Definitions Practical Training (L2TP LAC and LNS) Practical Training (Investigating LAC and LNS environment) Practical Training (Create second tunnel) Practical Training (RADIUS for L2TP LAC) Practical Training (Tunnel Switching)	

SmartEdge R5 Add-on IP QoS Configuration and Monitoring



LZU 108 6943 R1A

Description

SmartEdge R5 Add-on IP QoS Configuration and Monitoring, available for students who attended or will participate in a course package containing the 1-day SmartEdge R5 Foundation course.

A 2-day lecture/lab add-on course targeted at second level Network Operation Center staff and other technical staff who need to configure and troubleshoot IP Quality of Services on the Redback SmartEdge.

The course starts with an IP QoS foundation module, covering the principles of QoS including token bucket, classification, marking, queuing and scheduling. The foundation is an excellent start for students recently introduced to the subject of QoS as well great refresher for the experienced engineer.

Followed by the IP QoS technology modules, the course allows close to customized education and targets the actual operational deployment.

Learning objectives

On completion of this course the participants will be able to:

1. Describe Redback SmartEdge IP QoS
2. Identify IP QoS basic technology
3. Describe and practice QoS Metering and Policing
4. Describe and practice QoS Class based Metering
5. Describe and practice QoS Queuing
6. Describe and practice QoS Priority Queuing
7. Describe and practice QoS Weighted Random Early Detect
8. Describe and practice QoS Enhanced Deficit Round Robin
9. Describe and practice QoS Modified Deficit Round Robin
10. Describe and practice QoS Priority Weighted Fair Queuing
11. Describe and practice QoS PWFQ multidrop precedence

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer



Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Configuring management connectivity Introduction to Quality of Service (QoS) QoS Policy Metering / Policing QoS Policy Metering exercises Introduction to Queuing Scheduling: Priority Queuing (PQ) Congestion avoidance Scheduling: Enhanced Deficit Round-Robin (EDRR) Scheduling: Modified Deficit Round-Robin (MDRR) Scheduling: Priority Weighted Fair Queuing (PWFQ) Congestion avoidance QoS and control packets	



SmartEdge R5 Add-on DHCP/CLIPS Configuration and Monitoring



LZU 108 6944 R1A

Description

SmartEdge R5 Configuration and Monitoring for DHCP & CLIPS environment add-on module, available for students who attended or will participate in a course package containing the 1-day SmartEdge R5 Foundation course.

A 1-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within DHCP & CLIPS environment.

Learning objectives

On completion of this course the participants will be able to:

1. Describe DHCP Architecture (DHCP Relay & Proxy, GREP, alias and Macro)
2. Describe CLIPS Architecture (Dynamic CLIPS lab for Ethernet, Dynamic CLIPS lab for Dot1q Ethernet)
3. Describe RADIUS for CLIPS (Context specific authentication, Global Authentication)

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge Foundation LZU 108 6938 (1 day)

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- Basic understanding of DHCP
- (Gigabit) Ethernet (General framing)



Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

Educational modules include hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1	GREP Global Regular Expression Parser Practical training for DHCP Practical training for Dynamic CLIPS Practical training Radius for CLIPS	

SmartEdge R5 Add-on OSPF Configuration and Monitoring



LZU 108 6942 R1A

Description

SmartEdge R5 Add-on OSPF Configuration and Monitoring is available for students who attended or will participate in a course package containing the 1-day SmartEdge Foundation course.

This 2-day lecture and lab add-on course is targeted for second level Network Operation Center staff and other technical staff who need to configure and troubleshoot OSPF on the Redback SmartEdge.

The course starts with a review of the main routing elements such as IPv4 network address and subnet masks, route tables and topology, Interior Gateway Protocol (IGP), Exterior Gateway Protocol (EGP) and common terminologies in routing. This is a quick summary to establish a foundation for discussion for routing on the network.

The course reviews the OSPF protocol and related common terminologies.

The main focus of the course will be to understand how to configure and monitor OSPF on the SmartEdge system with its unique context and bindings architecture.

Learning objectives

On completion of this course the participants will be able to:

1. Identify main IP routing elements
2. Build an IP infrastructure on the SmartEdge system
3. Describe OSPF protocol and common terminologies
4. Build OSPF area 0
5. Build OSPF Area Border Router.
6. Build OSPF stubby area
7. Implement OSPF redistribute
8. Implement OSPF summary
9. Implement OSPF originate-default

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks based on OSPF routing protocols as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6038 (1-day)

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- OSPF routing protocol (General design and operations)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Routing language 101 Building IP Infrastructure Introduction to OSPF Building OSPF backbone area 0 Building OSPF spoke within area 0 Building OSPF Area Border Router connecting to spoke in area 2 Building OSPF stubby area connecting to spoke in area 3 Implementing OSPF redistribute Implementing OSPF summary Implementing OSPF originate-default	

SmartEdge R5 Add-on ISIS Configuration and Monitoring



LZU 108 6941 R1A

Description

SmartEdge Configuration and Monitoring for Intermediate System to Intermediate System (IS-IS) routing environment add-on module is available for students who attended or will participate in a course package containing the 1-day SmartEdge R5 Foundation course.

This 2-day lecture and lab add-on course is targeted for second level Network Operation Center staff and other technical staff who need to configure and troubleshoot IS-IS on the Redback SmartEdge.

The course starts with a review of the main routing elements such as IPv4 network address and subnet masks, route tables and topology, Interior Gateway Protocol (IGP), Exterior Gateway Protocol (EGP) and common terminologies in routing. This is a quick summary to establish a foundation for discussion for routing on the network.

The course reviews the IS-IS protocol and related common terminologies.

The main focus of the course will be to understand how to configure and monitor IS-IS on the SmartEdge system with its unique context and bindings architecture.

Learning objectives

On completion of this course the participants will be able to:

1. Identify main routing element with TCP/IP
2. Describe how to build an IP infrastructure on the SmartEdge
3. Describe IS-IS protocol and common terminology
4. Practice building IS-IS Level 1 routing area
5. Practice building a Multi area network
6. Practice building Level 2 – backbone area
7. Implement Attached bit – a way out of Level 1 area
8. Implement IS-IS summary
9. Control router's Level 2 participation with overload bit
10. Implement IS-IS redistribute

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer



Prerequisites

The participants should be familiar with and have practical experience with IP networks based on IS-IS routing protocols as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)

Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- IS-IS routing protocol (General design and operations)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Routing language Building IP Infrastructure Introduction to Integrated IS-IS Building IS-IS level 1 routing area Multi area network Level 2 – backbone area Attached bit – a way out of L1 area Implementing IS-IS summary Controlling router's L2 participation with overload bit Implementing IS-IS redistribute	

SmartEdge R5 add-on BGP using IS-IS infrastructure Configuration and Monitoring



LZU108 7075 R1A

Description

SmartEdge R5 Add-on BGP using IS-IS infrastructure Configuration and Monitoring is available for Redback Networks Certified Engineers or students who will participate in a course package containing the 1-day SmartEdge R5 Foundation course module as well one of the other routing course modules covering IS-IS.

This 1-day lecture and lab add-on course is targeted for second level Network Operation Center staff and other technical staff who need to configure and troubleshoot BGP on the Redback SmartEdge.

The main focus of the course will be to understand how to configure and monitor BGP on the SmartEdge system with its unique context and bindings architecture.

Learning objectives

On completion of this course the participants will be able to:

1. Understand differences between IGP and BGP routing protocols
2. Create and understand multiple autonomous systems
3. Connect multiple autonomous systems using E-BGP
4. Control IGP prefix sharing over BGP
5. Create and understand I-BGP environment to transfer prefixes through autonomous systems

Target audience

The target audience for this course is: Network Deployment Engineer, System Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks based on IS-IS as well BGP routing protocols as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)
- SmartEdge R5 Add-on IS-IS Configuration and Monitoring LZU 108 6941 (2 days) or



Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- IS-IS routing protocol (General design and operations)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1	<ul style="list-style-type: none">• Routing language• BGP language• E-BGP topology and configuration flow• Building two ISIS based IGP networks• Creating customer prefixes within the IGP networks• Establish E-BGP neighbor• Sharing customer prefixes between the two IGP networks• Internal Border Gateway Protocol	

SmartEdge R5 add-on BGP using OSPF infrastructure Configuration and Monitoring



LZU 108 7074 R1A

Description

SmartEdge R5 Add-on BGP using OSPF infrastructure Configuration and Monitoring is available for Redback Networks Certified Engineers or students who will participate in a course package containing the 1-day SmartEdge R5 Foundation course module as well one of the other routing course modules covering OSPF.

This 1-day lecture and lab add-on course is targeted for second level Network Operation Center staff and other technical staff who need to configure and troubleshoot BGP on the Redback SmartEdge.

The main focus of the course will be to understand how to configure and monitor BGP on the SmartEdge system with its unique context and bindings architecture.

Learning objectives

On completion of this course the participants will be able to:

6. Understand differences between IGP and BGP routing protocols
7. Create and understand multiple autonomous systems
8. Connect multiple autonomous systems using E-BGP
9. Control IGP prefix sharing over BGP
10. Create and understand I-BGP environment to transfer prefixes through autonomous systems

Target audience

The target audience for this course is: Network Deployment Engineer, System Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks based on OSPF as well BGP routing protocols as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)
- SmartEdge R5 Add-on OSPF Configuration and Monitoring LZU 108 6942 (2 days)



Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- OSPF routing protocol (General design and operations)
- (Gigabit) Ethernet (Intergap time, General framing)

Duration and class size

The length of the course is 1 day and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1	Routing language BGP language E-BGP topology and configuration flow Building two OSPF based IGP networks Creating customer prefixes within the IGP networks Establish E-BGP neighbor Sharing customer prefixes between the two IGP networks Internal Border Gateway Protocol	

SmartEdge R5 add-on MPLS L3 using IS-IS infrastructure Configuration and Monitoring



LZU 108 7073 R1A

Description

SmartEdge R5 Add-on MPLS L3 using IS-IS infrastructure Configuration and Monitoring, available for students who did or will participate in a course package containing SmartEdge Foundation course as well SmartEdge IS-IS and BGP add-on modules.

A 2-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within MPLS L3 VPN environment.

Learning objectives

On completion of this course the participants will be able to:

4. Understand relation between MPLS Layer 3 VPN and routing
5. Enable MPLS Layer 3 VPN
6. Build and verify MPLS Layer 3 sites
7. Understand packet flow end to end walk-through

Target audience

The target audience for this course is: Network Deployment Engineer, System Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)
- SmartEdge R5 Add-on IS-IS Configuration and Monitoring LZU 108 6941 (2 days) or have similar knowledge
- SmartEdge R5 Add-on BGP Configuration and Monitoring LZU 108 6973 (1-day) or have similar knowledge



Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- IS-IS design (Configuration and verification of infrastructure)
- BGP design (Configuration and verification of BGP)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Introduction MPLS 101 Put things in place within the SmartEdge MPLS L3 VPN lab topology Configuration flow diagram Configure IP backbone connectivity Configure ISIS backbone infrastructure Configure MPLS and LDP (outer label) Configure L3 VPN (inner label) Configure VPN context Configure CE Router connection End to end packet flow walk through verification LSP scalability CE to PE using OSPF exercise CE to PE using ISIS exercise	

SmartEdge R5 add-on MPLS L3 using OSPF infrastructure Configuration and Monitoring



LZU 108 7072 R1A

Description

SmartEdge R5 Add-on MPLS L3 using OSPF infrastructure Configuration and Monitoring, available for students who did or will participate in a course package containing SmartEdge Foundation course as well SmartEdge OSPF and BGP add-on modules.

A 2-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within MPLS L3 VPN environment.

Learning objectives

On completion of this course the participants will be able to:

8. Understand relation between MPLS Layer 3 VPN and routing
9. Enable MPLS Layer 3 VPN
10. Build and verify MPLS Layer 3 sites
11. Understanding packet flow end to end walk-through

Target audience

The target audience for this course is: Network Deployment Engineer, System Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge R5 Foundation LZU 108 6938 (1-day)
- SmartEdge R5 Add-on OSPF Configuration and Monitoring LZU 108 6942 (2 days) or have similar knowledge
- SmartEdge R5 Add-on BGP Configuration and Monitoring LZU 108 6973 (1-day) or or similar knowledge



Minimum knowledge requirement for students attending this course module:

- IP network design (IPv4 address planning, IPv4 general routing concepts, IPv4 address resolution mechanisms)
- OSPF design (Configuration and verification of infrastructure)
- BGP design (Configuration and verification of BGP)

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

This course is based on theoretical instructor-led lessons given in a classroom environment combined with Educational modules including hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Introduction MPLS 101 Put things in place within the SmartEdge MPLS L3 VPN lab topology Configuration flow diagram Configure IP backbone connectivity Configure OSPF backbone infrastructure Configure MPLS and LDP (outer label) Configure L3 VPN (inner label) Configure VPN context Configure CE Router connection End to end packet flow walk through verification LSP scalability CE using OSPF	



SmartEdge R5 Add-on VPLS using IS-IS infrastructure Configuration and Monitoring



LZU 108 7079 R1A

Description

SmartEdge R5 Add-on VPLS using IS-IS infrastructure Configuration and Monitoring, available for students who did or will participate in a course package containing SmartEdge R5 Foundation course and SmartEdge IS-IS add-on modules.

A 2-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within VPLS environment and running over on IS-IS infrastructure

Learning objectives

On completion of this course the participants will be able to:

12. Understand relation with MPLS and bridging
13. Enable VPLS services
14. Build and verify VPLS sites
15. Understand packet flow end to end walk-through
16. Enable corporate LAN over VPLS
17. Implement hierarchical VPLS

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge Foundation LZU 108 6938 (1 day)
- SmartEdge Add-on Configuration and Monitoring for IS-IS environment (2-days) or have similar knowledge

Minimum knowledge requirement for students attending this course module:

- Ethernet Layer 2 fundamentals (bridging, MAC addresses, spanning-tree)
- IP network design
 - IPv4 address planning
 - IPv4 general routing concepts
 - IPv4 address resolution mechanisms

**Duration and class size**

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

Educational modules include hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student.

Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Introduction MPLS 101 Bridging 101 VPLS lab topology Configuration flow diagram Configure IP backbone connectivity Configure ISIS backbone infrastructure Configure MPLS and LDP (outer label) Configure VPLS signaling (inner label) Configure customer facing context Configure CE Router connection End to end packet flow walk through verification LSP creation LSP scalability PPPoE over VPLS Corporate LAN over VPLS Hierarchical VPLS	



SmartEdge R5 Add-on VPLS using OSPF infrastructure Configuration and Monitoring



LZU 108 7078 R1A

Description

SmartEdge R5 Add-on VPLS using OSPF infrastructure Configuration and Monitoring, available for students who did or will participate in a course package containing SmartEdge R5 Foundation course and SmartEdge OSPF add-on modules.

A 2-day lecture and lab course targeted at second level Network Operation Center staff and other staff who primarily need to configure and troubleshoot the Redback SmartEdge within VPLS environment and running over on OSPF infrastructure

Learning objectives

On completion of this course the participants will be able to:

18. Understand relation with MPLS and bridging
19. Enable VPLS services
20. Build and verify VPLS sites
21. Understand packet flow end to end walk-through
22. Enable corporate LAN over VPLS
23. Implement hierarchical VPLS

Target audience

The target audience for this course is: System Engineer, Network Deployment Engineer

Prerequisites

The participants should be familiar with and have practical experience with IP networks as well as a solid understanding of general networking technologies.

Successful completion of the following courses:

- SmartEdge Foundation LZU 108 6938 (1 day)
- SmartEdge Add-on Configuration and Monitoring for OSPF environment (2-days) or have similar knowledge



Minimum knowledge requirement for students attending this course module:

- Ethernet Layer 2 fundamentals (bridging, MAC addresses, spanning-tree)
- IP network design
 - IPv4 address planning
 - IPv4 general routing concepts
 - IPv4 address resolution mechanisms

Duration and class size

The length of the course is 2 days and the maximum number of participants is 8.

Learning situation

Educational modules include hands-on labs and student test cases. Most modules finish with quiz sessions, stimulating a good interactive atmosphere during the training, as well validates the information exchange between Instructor and Student.



Time schedule

The time required always depends on the knowledge of the attending participants and the hours stated below can be used as estimate.

Day	Topics in the course	Estimated time
1&2	Introduction MPLS 101 Bridging 101 Put things in place within the SmartEdge VPLS lab topology Configuration flow diagram Configure IP backbone connectivity Configure OSPF backbone infrastructure Configure MPLS and LDP (outer label) Configure VPLS signaling (inner label) Configure customer facing context Configure CE Router connection End to end packet flow walk through verification LSP creation LSP scalability PPPoE over VPLS Corporate LAN over VPLS Hierarchical VPLS	