# How to use DS-Lite in NetScaler?

Introduction

For successful migration to the IPv6 network, service providers need to deploy IPv6 without impact in their network. DS-Lite is one of such transition mechanism which allows the service provider to deploy an IPv6-only infrastructure in their network, and IPv4 traffic goes through the IPv6 infrastructure through the use of tunneling.

Key elements involved in DS-Lite are B4 – Basic Bridging Broad Band element (CPE) and AFTR – Address Family Transition Router(resides in service provider's network). An IPv4 over IPv6 tunnel is created between B4 and AFTR for enabling IPv4 traffic to go through the IPv6-only infrastructure. B4 encapsulates the IPv4 traffic with IPv6 and sends it over the IPv6 tunnel created which terminates in AFTR at service provider network. AFTR removes the encapsulation and performs NAT44 (stateful) before sending it to the internet.
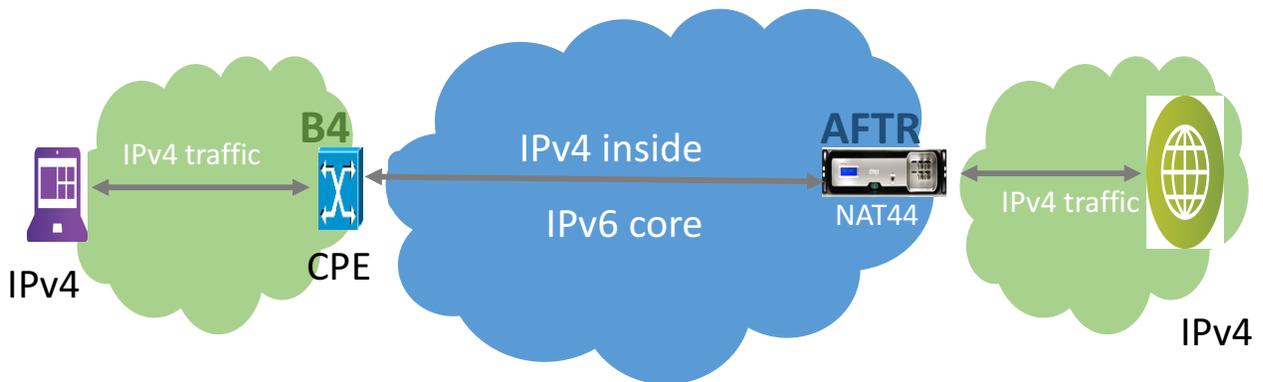
How DS-Lite works?

In DS-Lite deployment, CPE (or B4 device) is provided with an IPv6 address and the AFTR addresses is provisioned on the B4 through DHCP or any other means. When an IPv4 packet is generated from the host connected to B4, the B4 device encapsulates this IPv4 packet inside an IPv6 packet. This encapsulated packet is delivered to the AFTR device. On the AFTR, the IPv6 packet is de-capsulated, NAT is performed on the inside IPv4 packet, and the translated IPv4 packet is routed to the Internet. The LSN mapping is maintained as private IPv4 address, port, B4's IPv6 address, public NAT IPv4 address and NAT port. There can be dual-stack/IPv6 hosts connected to B4. When an IPv6 packet is received by B4, the B4 will consult its IPv6 routing table and take appropriate action.

NetScaler is intended to play the role of AFTR in the DS-Lite network.

How to configure DS-Lite in NetScaler?

Using Configuration Utility

Please note that you should have LSN pool and client configured as shown below with LSN memory initialized and LSN feature enabled in NetScaler.

To configure LSN Pool,

Navigate to **System > Large Scale NAT > Pools**

To configure LSN client,

Navigate to **System > Large Scale NAT > Clients** and click "**Add**"

Enter the LSN client details as shown below.

To configure DS-Lite profile,

Navigate to **Systems > Large Scale NAT > Profiles > IP6**

Click "Add" and provide name for DSLite profile and provide the AFTR information as shown below

Create LSN IP6 Profile

Name*

dslite1

Type*

DS-Lite ▾

AFTR Address*

▾ +

Create   Close

Create IPV6

IPv6 Address*

2001:470::189/16

Mapped IP

Scope*

global ▼

IP Type*

SNIP ▼

Virtual Router ID

▼ + ✎

Host Route*

DISABLED ▼

VIP RHI Controls*

ONE_VSERVER ▼

OSPF6 Route Adv Type*

EXTERNAL ▼

Host Route Gateway

Metric

OSPF Area ID

Traffic Domain

▼ + ✎

VLAN

▼

☑ Enable   ☐ Enable dynamic routing

Options

☑ ICMP   ☑ Virtual Server   ☑ ND Responses

Application Access Controls

☐ Enable Management Access control to support the below listed applications.

Create   Close

To bind the client, pool and DS-Lite IPv6 profile to a group,

Navigate to **System > Large Scale NAT > Groups**

Enter the client , pool and DS-Lite profile in the LSN group parameters as shown below.

LSN Group

Create LSN Group

Group Name*

group1

Client Name*

clt1 ▾ [+] [✎]

IP6 Profile Name

dslite1 ▾ [+]

NAT Type*

DYNAMIC ▾

Port Block Size

Logging

▾

Session Logging

▾

Session Synchronization*

ENABLED ▾

SNMP Trap Limit

100

FTP-ALG*

ENABLED ▾

PPTP*

DISABLED ▾

SIP ALG*

DISABLED ▾

RTSP ALG*

DISABLED ▾

OK   Cancel

Using Command Line Prompt

DS-Lite can be configured in NetScaler using the below commands

> add lsn pool pool1

> bind lsn pool pool1 <pool range for eg. 50.0.0.1-50.0.0.10>

The above commands are used for configuring NAT pool that is used to perform NAT44 at AFTR(NetScaler)

> add lsn client <client name for eg. clt1>

> bind lsn client clt1 -network6 < client network for eg. 2001:470::190/16>

The above commands are used for configuring the client network(encapsulated packets from B4) to AFTR

> add lsn ip6profile <profile name for eg. dslite1> -type DS-Lite -network6 <DS-Lite v6 network for eg. 2001:470::189>

The above commands are used for configuring AFTR address(DS-Lite v6 network)

> add lsn group group1 -clientname clt1 -logging ENABLED -sessionLogging ENABLED -ip6profile dslite1

> bind lsn group group1 -poolname pool1

The above commands are for binding the profile, client to a group

If "**ERROR: LSN not initialized. Please check memory allocated to LSN**" error is thrown while configuring LSN parameters please follow the steps below.

1) show extendedmemoryparam

Extended Memory Global Configuration. This memory is utilized by LSN and Subscriber Session Store Modules:

Active Memory Usage: 0 MBytes

Configured Memory Limit: 0 MBytes

Minimum Memory Required: 1798 Mbytes *>> Indicates the amount of memory for initiating LSN*

Maximum Memory Usage Limit: 3738 MBytes

Done

2) set extendedmemoryparam -memLimit **2000** *>>should be greater than minimum memory required*

Done

Now that, memory is allocated for initiating LSN, the error "LSN not initialized" will not be shown while configuring LSN parameters.