Contents

Introduction

This document describes how to troubleshoot suspended VLANs due to Light Distribution Box (

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these sofware and hardware versions:

- Cisco NX-OS Version 6.2(x)
- Cisco Nexus 7000 Series switch
- Cisco Nexus 2000 Series fabric extender

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Background Information

LDB is a hardware table that stores properties for frames received by the forwarding engine, including trunk to vlan mapping for FEX portchannels. Failed LDB allocation indicates that this databse has been exhausted.

When a FEX module is connected to a

Total LDB entries are the sum of VLAN ranges defined on each FEX HIF (difference between highest and lowest VLAN defined on a HIF).

For example:

switchport trunk allowed vlan 1-4 = 4 LDB entries

switchport trunk allowed vlan 1-4, 70-80, 800 = 800 LDB entries

switchport trunk allowed vlan 200-800 = 600 LDB entries

switchport trunk allowed vlan 200, 800 = 600 LDB entries

If ports 101/1/1 to 101/1/10 are configured with switchport trunk allowed vlan 200, 800 the total number of LDB entries consumed would be 6000 (10x600).

Access ports consumes 1 LDB entry (the access VLAN defined on the HIF).

Check LDB entries for each module by using this command:

```
N7K-A# attach mod 1
Attaching to module 1 ...
To exit type 'exit', to abort type '$.'
module-1#
module-1# show system internal eltmc info ldb summary
LDB allocation summary:
  Max dynamic ldb entries:      203776
  Total number of entries:      199680
  Number of free entries:       197
  Number of free regions:       2
  Number of allocated entries:  199483
  Number of allocated regions:  280
  Number of fail allocations:   21
```

In this example there have been 21 failed LDB allocations. Due to the hashing mechanism used to hash particular entries to particular parts of the database, it is not necessary for the total number of entries to reach the maximum dynamic LDB entries in order to see failed allocations.

This output displays the number of LDB entries (in hexadecimal) used by each port-channel or interface:

```
module-1# show system internal eltmc info ldb all
 LDB allocation maps :
  base          size          allocation
  0xd400        0x1000           Shared
  0xe400        0x1000           Shared
  0xf400        0x1000           Shared
  0x10400       0x1000            Ethernet1/4
  0x11400       0x1000            Ethernet1/7
  0x12400       0x1           Ethernet179/1/30
  0x12401       0x1           port-channel1093
  0x12402       0x1           port-channel1564
  0x12403       0x1           port-channel1550
  0x12404       0x1           port-channel1527
  0x12405       0x1           port-channel1546
  0x12426       0x1           Ethernet169/1/47
  0x12427       0x1           Ethernet169/1/48
  0x12428       0x1           Ethernet181/1/33
  0x12429       0x1           Ethernet181/1/34
  0x1242a       0x1           Ethernet163/1/4
  0x1242b       0x1           Ethernet163/1/5
  0x1242c       0x506            Ethernet183/1/7
  0x12932       0x1           port-channel1096
  0x12933       0x1           port-channel1095
  0x12934       0x1           port-channel1092
  0x12935       0x2c8            port-channel1084
  0x12bfd       0x506            Ethernet183/1/8
  0x13103       0x2c8            port-channel1086
  0x133cb       0x1           port-channel1589
  0x133cc       0x1           port-channel1063
```

```
0x133cd      0x1        port-channel1654
0x133ce      0x1        port-channel1652
0x133d4      0x1        port-channel1520
0x133d5      0x1        port-channel1560
0x133d6      0x1        port-channel1561
0x133d7      0x506         Ethernet167/1/4
0x138dd      0x506         Ethernet167/1/2
0x13de3      0x403         Ethernet165/1/2
0x141e6      0x403         Ethernet151/1/1
<snip>
```

Note: The two above commands provide incorrect LDB values for N7K-M132XP-12 (non XL) in NX-OS 6.0.3 and 5.2.4.
NX-OS 5.2.5 and 6.1 will correct this.

Problem: VLAN goes into suspended state due to LDB allocation fail on a Nexus 7000 with connected Nexus 2000 fabric extenders.

Symptoms:

1. Error message in logs indicate LDB Allocation Failed

```
2015 Feb  3 00:01:27.260 N7k1 %ETHPORT-5-IF_SEQ_ERROR: Error ("LDB Allocation Failed")
communicating with MTS_SAP_ELTM for opcode MTS_OPC_ETHPM_PORT_LOGICAL_BRINGUP (RID_PORT: port-
channel1001)
2015 Feb  3 00:01:27.261 N7k1 %ETHPORT-3-IF_ERROR_VLANS_SUSPENDED: VLANs 268,1261-1262,1268 on
Interface port-channel1001 are being suspended. (Reason: LDB Allocation Failed)
```

2. Connectivity lost to multiple hosts connected to FEX

3. Output of show interface status err-vlans shows VLAN's suspended due to LDB Failed Allocation

```
N7kA# show interface status err-vlans

--------------------------------------------------------------------------------
Port          Name            Err-Vlans                  Status
--------------------------------------------------------------------------------
Po1001        ***dcn2pclx01a**  268,1261-1262,1268         LDB Allocation
              *LOG                                         Failed
```

Solution

This is a hardware limitation associated with the linecard, as such this issue is not addressed by software upgrades.

The recommendation is to prune VLAN's from HIF or reduce the VLAN ranges on FEX HIF to reduce the total number of LDB entries.

Each VLAN instance on each interface will consume LDB entries (eg if portchannel 1 has 100 VLAN's defined and four physical ports in the portchannel, the total number of LDB entries consumed will be 400, 100 instances per port).