

Technical Whitepaper

Distributed Trunking

Configuration Guide

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INTRODUCTION

Distributed Trunking uses a proprietary protocol that allows two or more port trunk links distributed across two switches to create a trunk group. The grouped links appear to the downstream device as if they are from a single device. This allows third party devices such as switches, servers, or any other networking device that supports trunking to interoperate with the distributed trunking switches seamlessly. Distributed trunking provides device-level redundancy in addition to link failure protection.

Each distributed trunk (DT) switch in a DT pair must be configured with a separate ISC link and peer-keepalive link. The peer-keepalive link is used to transmit keepalive messages when the ISC link is down to determine if the failure is a link-level failure or the complete failure of the remote peer.

Note: A distributed trunk can span a maximum of two switches.

ACRONYMS AND ABBREVIATIONS

Table 1. Acronyms and Abbreviations

DT	Distributed Trunk
ISC	Inter-switch connection
VID	VLAN ID
LACP	Link Aggregation Control Protocol
IGMP	Internet Group Management Protocol
PIM	Protocol-Independent Multicast protocol
OSPF	Open Shortest-Path First routing protocol
VLAN	Virtual LAN

DISTRIBUTED TRUNKING SOFTWARE UPGRADE PROCEDURE

Note:

With this approach there will be packet loss until the DT switch boots up, this is the safest approach. Today, Distributed Trunking does not support ISSU but if the DT switch is upgraded one by one, the amount of traffic lost can be reduced.

Recommended Process to upgrade the DT pair

The recommendation is to perform the following steps to upgrade the DT pair:

- 1) Disable all DT links and ISC link.
- 2) Upgrade the software on both the DT switches (both switches should have same software build version).
- 3) Configure the keep-alive VLAN and IP address.
- 4) Configure bpdu-filter on keep-alive links if MSTP is enabled.
- 5) Re-enable the DT and ISC links.

Steps 3-4 is applicable only if current switch software does not support keep-alive feature and upgrading to software which has keep-alive support.

EXAMPLE 1: BASIC DISTRIBUTED TRUNKING

Requirements for this example:

2 - Aruba 5406Rzl2 switches

1 - Aruba 2530 switch

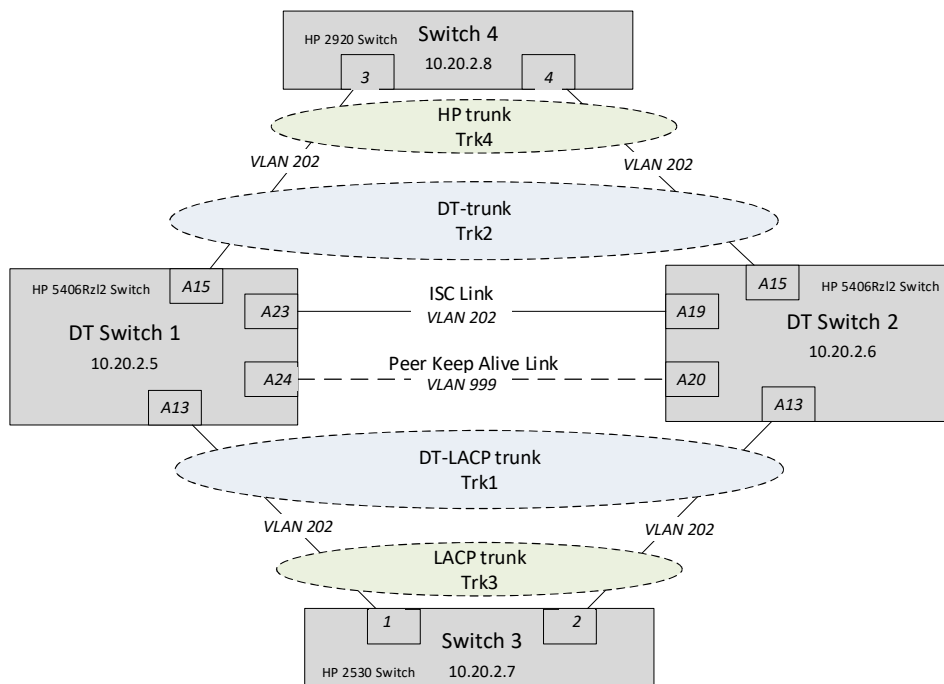
1 - Aruba 2920 switch

Switch firmware version KB/YA/WB.15.18.xxxx or greater

Network Diagram

The Basic Distributed Trunking topology consists of two Aruba 5400R zl2 switches, one Aruba 2530 switch and one Aruba 2920 switch. All switch links in this example, with the exception of the Peer Keep Alive link, are members of the same VLAN (for example VID 202). The Peer Keep Alive link is a member of a different, designated VLAN specifically for DT peer-keepalive messages, and is manually created by the user (for example VID 999).

Figure 1: Basic Distributed Trunking topology diagram



Code Versions:
 HP 5406Rzl2 Switch: KB.15.18.xxxx.swi
 HP 2530 Switch: YA.15.18.xxxx.swi
 HP 2920 Switch: WB.15.18.xxxx.swi

VLANs FOR EXAMPLE 1

Table 1. VLANs used in Example 1

VLAN 202	This is the main VLAN for all switch links (except the Peer Keep-alive link) in the example, including the ISC link.
VLAN 999	This is a special, designated VLAN manually created by the user for the Peer Keep-alive link. The Peer Keep Alive link is created specifically for DT Peer keep-alive messages.

SWITCH CONFIGURATON – EXAMPLE 1

CAUTION: To avoid broadcast storms or loops in your network while configuring a trunk, first disable or disconnect all ports you want to add to or remove from the trunk. After you finish configuring the trunk, enable or re-connect the ports.

DT SWITCH 1 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.20.2.1
(config)#vlan 202
(vlan_202)#ip address 10.20.2.5/24
(config)#exit
```

Configure ISC link

```
(config)#vlan202
(vlan_202)#tag a23
(config)#switch-interconnect a23
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag a24
(vlan_999)#ip address 9.9.9.8/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.9
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#trunk a15 Trk2 dt-trunk
(config)#vlan 202
(vlan_202)#tag Trk1
(vlan_202)#tag Trk2
(config)#write memory
```

DT SWITCH 2 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.20.2.1
(config)#vlan 202
(vlan_202)#ip address 10.20.2.6/24
```

Configure ISC link

```
(config)#vlan 202
(vlan_202)# tag a19
(config)#switch-interconnect a19
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag a20
(vlan_999)#ip address 9.9.9.9/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.8
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#trunk a15 Trk2 dt-trunk
(config)#vlan 202
(vlan_202)#tag Trk1
(vlan_202)#tag Trk2
(config)#write memory
```

SWITCH 3 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.20.2.1
(config)#vlan 202
(vlan_202)#ip address 10.20.2.7/24
```

Configure LACP Trunk

```
(config)#trunk 1-2 Trk3 LACP
(config)#vlan 202
(vlan_202)#tag Trk3
(config)#write memory
```

SWITCH 4 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.20.2.1
(config)#vlan 202
(vlan_202)#ip address 10.20.2.8/24
```

Configure LACP Trunk

```
(config)#trunk 3-4 Trk4 LACP
(config)#vlan 202
(vlan_202)#tag Trk4
(config)#write memory
```

CONNECT PHYSICAL LINKS AND VALIDATE CONNECTIVITY

Connect ISC and Peer Keep-Alive links on the Aruba 5400Rzl2 switches and validate that connectivity and trunking operation is working properly.

Next, connect Switch 3 and Switch 4 to complete the topology and validate connectivity.

Optional: Simulate a link down scenario for one of the trunk links between Switch 3 or Switch 4 and either DT Switch 1 or DT Switch 2. Validate that IP connectivity is still maintained with a link down scenario.

VIEWING STATUS INFORMATION

To view the status of trunks and Distributed Trunking on the switches, use the following commands:

`show running configuration` - view the running configuration on the switch

TRUNKING INFORMATION:

`show trunks` - view the status of trunks on the switch

`show lacp` - lists data for only the LACP-configured ports

`show lacp distributed` - view the status of LACP trunks for both the Local and Peer switches

`show lacp` - displays the LACP peer port information

`show distributed-trunking status` - view the status of Distributed Trunking on the switch

`show distributed-trunking config` - view the status of the configuration of Distributed Trunking on the switch

`show distributed-trunking consistency-parameters global` - view Distributed Trunking consistency parameters on the Local and Peer switch

`show distributed-trunking peer-keepalive` - view the peer-keepalive link parameters for Distributed Trunking on the switch

`show log DT` - view the log events specifically for Distributed Trunking on the switch

EXAMPLE 2: BASIC DISTRIBUTED TRUNKING WITH MULTICAST

REQUIREMENTS FOR THIS EXAMPLE

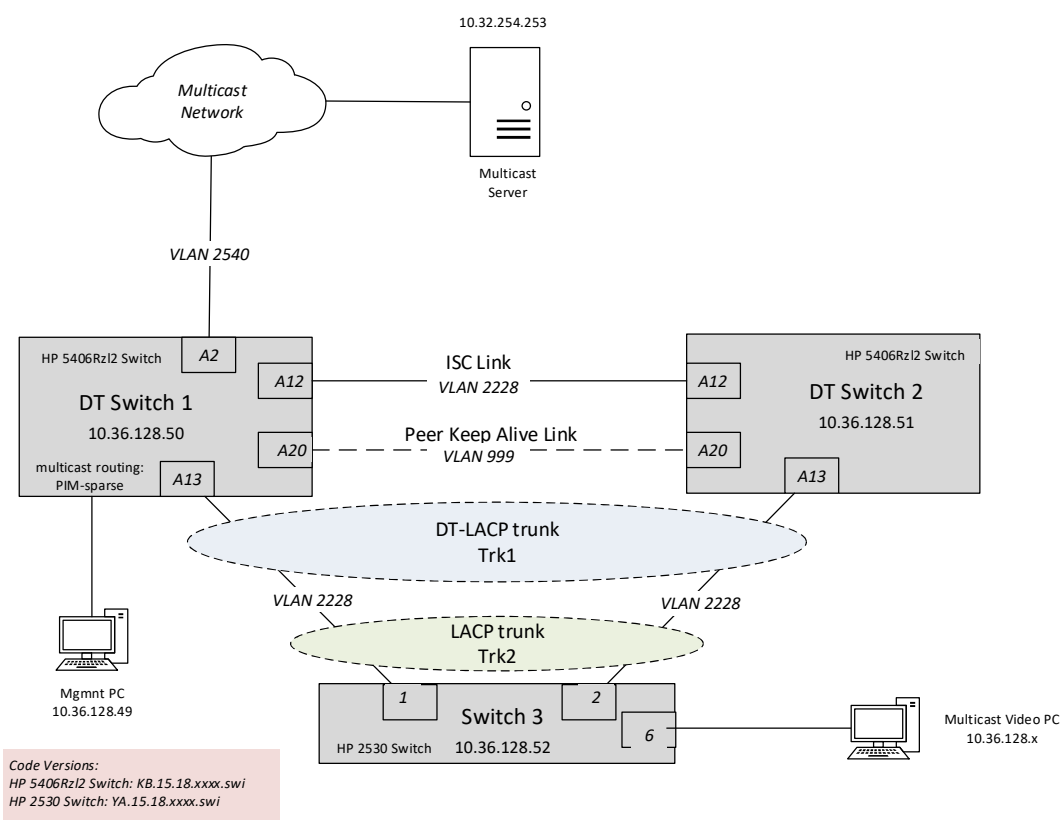
- 2 - Aruba 5406Rzl2 switches
- 1 - Aruba 2530 switch
- Switch firmware version KB/YA/WB.15.18.xxxx or greater
- Premium License Switch software - Multicast routing and OSPF
- Multicast Server source - vBrick DME
- Multicast Client - Microsoft Windows running VLC player

NETWORK DIAGRAM

The Basic Distributed Trunking with Multicast topology consists of two HP 5400R zl2 switches and one HP 2530 switch. All switch links in this example, with the exception of the Peer Keep Alive link, are members of the same VLAN (VID 2228). The Peer Keep Alive link is a member of a different, designated VLAN specifically for DT peer-keepalive messages, and is manually created by the user (for example VID 999).

At Layer 2, IGMP is configured on VLAN 2228 on all switches to manage Multicast traffic subscription for clients. At Layer 3, Multicast routing is enabled on DT Switch 1 to route multicast traffic between the Multicast VLAN (VLAN 2540) and the Distributed Trunking VLAN (2228).

Figure 2: Basic Distributed Trunking with Multicast topology diagram



VLANS FOR EXAMPLE 2

Table 2. VLANs used in Example 2

VLAN 2228	This is the main VLAN for all switch links (except the Peer Keep-alive link) in the example, including the ISC link. This is the VLAN where Multicast traffic streams will be accessed by the Multicast client.
VLAN 2540	This is the Multicast source VLAN for video streaming.
VLAN 999	This is a special, designated VLAN manually created by the user for the Peer Keep-alive link. The Peer Keep Alive link is created specifically for DT Peer keep-alive messages.

SWITCH CONFIGURATION – EXAMPLE 2

CAUTION: To avoid broadcast storms or loops in your network while configuring a trunk, first disable or disconnect all ports you want to add to or remove from the trunk. After you finish configuring the trunk, enable or re-connect the ports.

DT SWITCH 1 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip routing
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.50/24
(config)#vlan 2540
(vlan_2540)#untag a2
```

Configure ISC link

```
(config)#vlan 2228
(vlan_2228)#tag a12
(config)#switch-interconnect a12
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag a20
(vlan_999)#ip address 9.9.9.8/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.9
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#vlan 2228
(vlan_2228)#tag Trk1
```

Configure IGMP per VLAN

```
(config)#vlan 2228
(vlan_2228)#ip igmp
(vlan_2540)#ip igmp
```

Configure PIM-sparse mode

```
(config)#ip multicast routing
(config)#router pim
(pim)#enable
(config)#vlan 2228
(vlan_2228)# ip pim-sparse
(config)#vlan 2540
(vlan_2540)# ip pim-sparse
(config)# write memory
```

DT SWITCH 2 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.36.128.50
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.51/24
```

Configure ISC link

```
(config)#vlan 2228
(vlan_2228)#tag a12
(config)#switch-interconnect a12
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag a20
(vlan_999)#ip address 9.9.9.9/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.8
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#vlan 2228
(vlan_2228)#tag Trk1
```

Configure IGMP per VLAN

```
(config)#vlan 2228
(vlan_2228)#ip igmp
(config)#write memory
```

SWITCH 3 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip default-gateway 10.36.128.50
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.52/24
(vlan_2228)#untag 6
```

Configure LACP Trunks

```
(config)#trunk 1-2 Trk3 LACP
```

```
(config)#vlan 2228
(vlan_2228)#tag Trk3
```

Configure IGMP per VLAN

```
(config)#vlan 2228
(vlan_2228)#ip igmp
(config)#write memory
```

CONNECT PHYSICAL LINKS AND VALIDATE CONNECTIVITY

- Connect ISC and Peer Keep Alive links on the HP 5400Rzl2 switches and validate connectivity and trunking operation is working properly.
- Next, connect Switch 3 to complete the topology and validate connectivity.
- Assumption: In this example, we assume there is a Multicast Video server (e.g. vBrick Distributed Media Engine) available on VLAN 2540 connected to DT Switch 1.
- Assumption: In this example, we assume there is a client on VLAN 2228 connected on Switch 3 that is capable of receiving and playing a multicast stream (e.g. VLC Player).
- Validate multicast video streaming on the client across the Distributed Trunk.
- Optional: simulate a link down scenario for one of the trunk links between Switch 3 and either DT Switch 1 or DT Switch 2. Validate that multicast traffic and video streaming is still maintained with a link down scenario.

VIEWING STATUS INFORMATION

To view the status of trunks and Distributed Trunking on the switches, use the following commands:

`show running configuration` - view the running configuration on the switch

Trunking Information:

`show trunks` - view the status of trunks on the switch

`show lacp` - lists data for only the LACP-configured ports

`show lacp distributed` - view the status of LACP trunks for both the Local and Peer Switches

`show lacp` - displays the LACP peer port information

`show distributed-trunking status` - view the status of Distributed Trunking on the switch

`show distributed-trunking config` - view the status of the configuration of Distributed Trunking on the switch

`show distributed-trunking consistency-parameters global` - view Distributed Trunking consistency parameters on the Local and Peer switch

`show distributed-trunking peer-keepalive` - view the peer-keepalive link parameters for Distributed Trunking on the switch

`show log DT` - view the log events specifically for Distributed Trunking on the switch

IGMP INFORMATION:

`show trunks` - view the status of trunks on the switch

`show ip igmp [vlan vid]` - Displays IGMP configuration for a specified VLAN or for all VLANs on the switch.

`show ip igmp config` - Displays IGMP configuration for all VLANs on the switch.

`show ip igmp statistics` - Displays IGMP high level statistics for all VLANs on the switch.

`show ip igmp vlan vid counters` - Displays IGMP historical counters for a VLAN.

`show ip igmp groups` - Displays IGMP group address information.

`show ip igmp vlan vid group ip-addr` - Displays IGMP group information for a VLAN with a filtered address.

`show ip igmp vlan vid config` - Displays IGMP configuration for a specific VLAN on the switch, including per-port data.

MULTICAST ROUTING INFORMATION:

`show ip mroute` - Lists VLANs actively forwarding routed multicast traffic

`show ip mroute [interface vid]` - Lists VLAN, protocol identity, and TTL settings

`show ip mroute [multicast-ip-addr source-ip-addr]` - Lists data for the specified flow (multicast group.)

`show ip pim` - Displays PIM status and global parameters.

`show ip pim [interface]` - Lists the PIM interfaces (VLANs) currently configured in the routing switch.

`show ip pim [interface [vid]]` - Displays the current configuration for the specified VLAN (PIM interface)

`show ip pim [mroute]` - Shows PIM-specific information from the IP MRT

`show ip pim [mroute[multicast-group-address multicast-source-address]]` - Displays the PIM route entry information for the specified multicast group (flow.)

`show ip pim [neighbor]` - Lists PIM neighbor information for all PIM neighbors connected to the routing switch.

EXAMPLE 3: BASIC DISTRIBUTED TRUNKING WITH OSPF ROUTING

REQUIREMENTS FOR THIS EXAMPLE:

- 2 – Aruba 5406Rzl2 switches
- 1 – Aruba 3800 switch

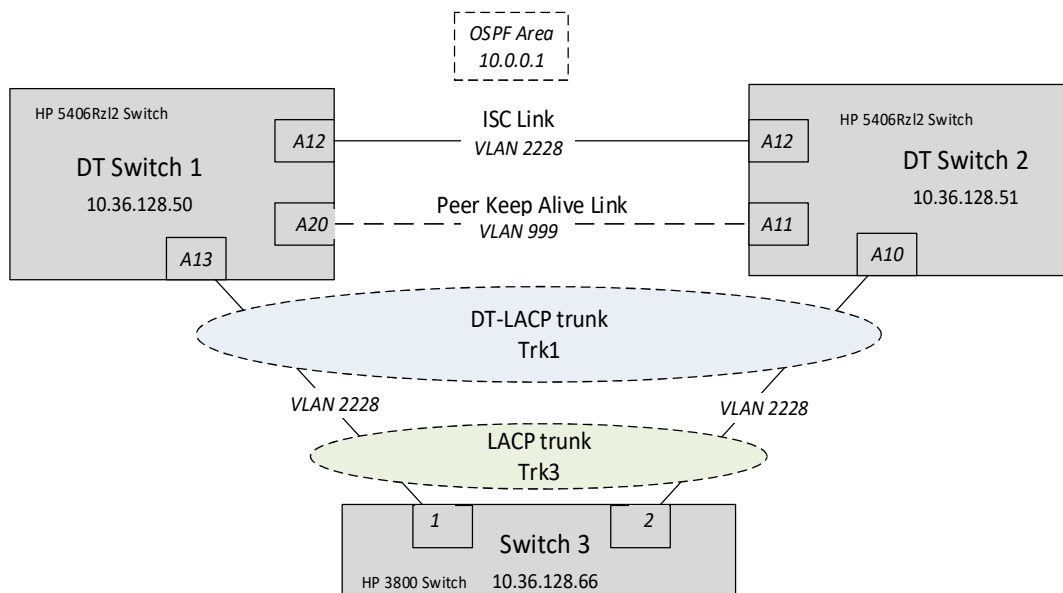
- Switch firmware version KB/KA.15.18.xxxx or greater
- Premium License Switch software – OSPF Routing

NETWORK DIAGRAM

The Basic Distributed Trunking with OSPF topology consists of two HP 5400R zL2 switches and one HP 2530 switch. All switch links in this example, with the exception of the Peer Keep Alive link, are members of the same VLAN (VID 2228). The Peer Keep Alive link is a member of a different, designated VLAN specifically for DT peer-keepalive messages, and is manually created by the user (for example VID 999).

At Layer 2, IGMP is configured on VLAN 2228 on all switches to manage Multicast traffic subscription for clients. At Layer 3, Multicast routing is enabled on DT Switch 1 to route multicast traffic between the Multicast VLAN (VLAN 2540) and the DT VLAN (2228).

Figure 3: Basic Distributed Trunking Topology with OSPF



VLANS IN EXAMPLE 3

Table 1. VLANs in Example 3

VLAN 2228	This is the main VLAN for all switch links (except the Peer Keep-alive link) in the example, including the ISC link.
VLAN 999	This is a special, designated VLAN manually created by the user for the Peer Keep-alive link. The Peer Keep Alive link is created specifically for DT Peer keep-alive messages.

SWITCH CONFIGURATION – EXAMPLE 3

CAUTION: To avoid broadcast storms or loops in your network while configuring a trunk, first disable or disconnect all ports you want to add to or remove from the trunk. After you finish configuring the trunk, enable or re-connect the ports.

DT SWITCH 1 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip routing
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.50/24
```

Configure ISC link

```
(config)#vlan 2228
(vlan_2228)#tag a12
(config)#switch-interconnect a12
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag a20
(vlan_999)#ip address 9.9.9.8/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.9
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#vlan 2228
(vlan_2228)#tag Trk1
```

Configure OSPF Routing

```
(config)#router ospf
(ospf)#enable
(ospf)#area 10.0.0.1
(ospf)#redistribute connected
(ospf)#redistribute static
(config)#vlan 2228
(vlan_2228)#ip ospf
(vlan_2228)#ip ospf 10.36.128.50
(vlan_2228)#ip ospf area 10.0.0.1
```

DT SWITCH 2 CONFIGURATION

Configure VLAN and IP Address

```
(config)#ip routing
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.51/24
#exit
```

Configure ISC link

```
(config)#vlan 2228
(vlan_2228)#tag a12
(config)#switch-interconnect a12
```

Configure Peer Keep-Alive

```
(config)#vlan 999
(vlan_999)#untag all
(vlan_999)#ip address 9.9.9.9/24
(config)#distributed-trunking peer-keep alive vlan 999
(config)#distributed-trunking peer-keep alive destination 9.9.9.8
```

Configure LACP Trunks

```
(config)#trunk a13 Trk1 dt-LACP
(config)#vlan 2228
(vlan_2228)#tag Trk1
```

Configure OSPF Routing

```
(config)#router ospf
(ospf)#enable
(ospf)#area 10.0.0.1
(ospf)#redistribute connected
(ospf)#redistribute static
(config)#vlan 2228
(vlan_2228)#ip ospf
(vlan_2228)#ip ospf 10.36.128.51
(vlan_2228)#ip ospf area 10.0.0.1
```

SWITCH 3 CONFIGURATON

Configure VLAN and IP Address

```
(config)#ip routing
```

```
(config)#vlan 2228
(vlan_2228)#ip address 10.36.128.66/24
```

Configure LACP Trunk

```
(config)#trunk 1-2 Trk3 LACP
(config)#vlan 2228
(vlan_2228)#tag Trk3
```

Configure OSPF Routing

```
(config)#router ospf
(ospf)#enable
(ospf)#area 10.0.0.1
(ospf)#redistribute connected
(ospf)#redistribute static
(config)#vlan 2228
(vlan_2228)#ip ospf
(vlan_2228)#ip ospf 10.36.128.66
(vlan_2228)#ip ospf area 10.0.0.1
```

CONNECT PHYSICAL LINKS AND VALIDATED CONNECTIVITY

Connect ISC and Peer Keep Alive links on the HP 5400Rzl2 switches and validate connectivity and trunking operation is working properly.

Next, connect Switch 3 to complete the topology and validate connectivity.

Validate IP Route table population via OSPF is propagated across the Distributed Trunk using the the CLI command "*show ip route*".

VIEWING STATUS INFORMATION

To view the status of trunks and Distributed Trunking on the switches, use the following commands:

`show running configuration` - view the running configuration on the switch

TRUNKING INFORMATION:

`show trunks` - view the status of trunks on the switch

`show lacp` - lists data for only the LACP-configured ports

`show lacp distributed` - view the status of LACP trunks for both the Local and Peer Switches

`show lacp` - displays the LACP peer port information

`show distributed-trunking status` - view the status of Distributed Trunking on the switch

`show distributed-trunking config` - view the status of the configuration of Distributed Trunking on the switch

`show distributed-trunking consistency-parameters global` - view Distributed Trunking consistency parameters on the Local and Peer switch

`show distributed-trunking peer-keepalive` - view the peer-keepalive link parameters for Distributed Trunking on the switch

`show log DT` - view the log events specifically for Distributed Trunking on the switch

OSPF INFORMATION:

`show ip ospf general` - Displays general information about OSPF

`show ip ospf area [ospf-area-id]` - Shows information for the specified area

`show ip ospf external-link-stats` - Displays external-link state information

`show ip ospf external-link-state [status] [subset-options]` - Displays external-link state subset options

`show ip ospf external-link-state [status] advertise` - Displays the hexadecimal data in the specified LSA packet, the actual contents of the LSAs

`show ip ospf interface [ vlan vlan-id | ip-addr ]` - Displays OSPF interface information

`show ip ospf neighbor` - Retrieves detailed information for the specific neighbor only

`show ip ospf redistribute` - Displays the status of the OSPF redistribution

`show ip ospf restrict` - Displays the status of the OSPF redistribution filters

`show ip ospf virtual-link [ area area-id | ip-address ]` - Displays OSPF virtual link information

`show ip ospf spf-log` - Displays the log used to record SPF calculations on an OSPF-enabled routing switch

`show ip ospf` - Displays OSPF route information

`show ip ospf traps` - Lists the OSPF traps currently enabled on the routing switch

`debug ip ospf` - Turns on the tracing of OSPF packets

BEST PRACTICES AND CONFIGURATION NOTES

GENERAL DISTRIBUTED TRUNKING

- All DT linked switches must be running the same software version.
- To avoid broadcast storms or loops in your network while configuring a trunk, first disable or disconnect all ports you want to add to or remove from the trunk. After you finish configuring the trunk, enable or re-connect the ports.

- A distributed trunk can span a maximum of two switches.
- The ISC link must have a VLAN interface configured for the same VLAN on both DT switches.
- VLAN membership for all DT trunk ports should be the same on both DT switches in a DT pair. Generally, it is simplest to have all ports participating in Distributing Trunking be in the same VLAN.
- IGMP-snooping or DHCP-snooping configuration on a DT VLAN should be the same on both DT switches.
- Loop-protection configuration on a DT VLAN should be the same for both DT switches.
- Trunk labels among switches in the DT pair must be configured using the same name. Trunk labels for non-DT Trunks are not required to have the same label/name.
- DT Trunks in a DT pair can be configured as dt-LACP or dt-Trunk (HP Trunk), as long as the configuration is the same for both switches in the DT pair.
- The ISC link is used as both a data path and control path for the Distributed Trunking Protocol, so its bandwidth should always be equal or larger than the aggregate bandwidth of all DT-Trunks present on the switch.
- The DT Switch pair looks like a regular LACP or HP Trunk from the perspective of the downstream switches.
- DT switches have an operational role that depends on the system MAC address. The bridge with the lowest system MAC address acts as the DT primary device; the other device is the DT secondary device. These roles are used to determine which device forwards traffic when the ISC link is down.
- Beginning with software version K.15.07, the switch will not allow both Distributed Trunking and MAC-based mirroring to function simultaneously.
- The port trunk links should be configured manually (using manual LACP or manual trunks.) Dynamic linking across switches is not supported.
- There can be eight links in a distributed trunk grouped across two switches, with a limit of four links per distributed trunking switch.
- The limit of 144 manual trunks per switch includes distributed trunks as well.
- ARP protection is not supported on the distributed trunks.
- Dynamic IP Lockdown protection is not supported on the distributed trunks.
- QinQ in mixed VLAN mode and distributed trunking are mutually exclusive.

Features NOT supported with Distributed Trunking include:

- SVLANs in mixed mode on DT or ISC links
- Meshing
- CDP
- GVRP
- IPv6 routing
- MLD/MLD snooping on DT VLAN

PEER KEEP-ALIVE LINKS

- An IP address must be configured for a Peer-Keepalive VLAN interface and an IP address in the same subnet must be configured as a peer-keepalive destination on the peer DT switch.
- There must be logical Layer 3 connectivity between the two IP addresses configured for the Peer-Keepalive VLAN interface.
- It is recommended to limit the number of connected devices inbetween Peer Keep-alive links to minimize interruptions of Peer-Keepalive messages.
- Only Peer-Keepalive messages are sent over the Peer-Keepalive VLAN (Layer 3 link.). No data or synchronization traffic is sent over the Peer-Keepalive VLAN.
- Spanning Tree Protocol (STP) cannot run on peer-keepalive links. STP BPDU's are suppressed on DT Trunks.
- The peer-keepalive VLAN can have only one member port and a port cannot be a member of a regular VLAN and a peer-keepalive VLAN.

- The DEFAULT VLAN cannot be a peer-keepalive VLAN.
- Note: switch interconnect links are automatically members of all configured VLANs on the switch.

APPENDIX A:

BASIC DISTRIBUTED TRUNKING WITH OSPF ROUTING – DT SWITCH 1 CONFIGURATION FILE

```
; J9850A Configuration Editor; Created on release #KB.15.18.xxxx
; Ver #08:02.ff.f7.fc.7f.ff.3f.ef:ae
hostname "5406_10_36_128_50"
module A type j9990a
module B type j9995a
trunk A13 trk1 dt-lacp
ip routing
switch-interconnect A12
interface B8
    speed-duplex auto-2500
    exit
interface Trk1
    unknown-vlans disable
    exit
snmp-server community "public" unrestricted
oobm
    ip address dhcp-bootp
    exit
router ospf
    area 10.0.0.1
    redistribute connected
    redistribute static
    enable
    exit
vlan 1
    name "DEFAULT_VLAN"
    no untagged A2-A4,A6,A20
    untagged A1,A5,A7-A12,A14-A19,A21-A24,B1-B8,Trk1
    ip address dhcp-bootp
    exit
vlan 999
    name "VLAN999"
    untagged A20
    ip address 9.9.9.8 255.255.255.0
    exit
vlan 2228
    name "VLAN2228"
    untagged A2-A4,A6
    tagged A1,A12,Trk1
    ip address 10.36.128.50 255.255.255.0
    ip igmp
    ip ospf 10.36.128.50 area 10.0.0.1
    exit
spanning-tree Trk1 priority 4 bpdu-filter
distributed-trunking peer-keepalive vlan 999
```

distributed-trunking peer-keepalive destination 9.9.9.9

APPENDIX B:

BASIC DISTRIBUTED TRUNKING WITH OSPF ROUTING - DT SWITCH 2 CONFIGURATION FILE

```
; J9850A Configuration Editor; Created on release #KB.15.18.xxxx
; Ver #08:02.ff.f7.fc.7f.ff.3f.ef:ae
hostname "5406_10_36_128_51"
module A type j9989a
module B type j9995a
module F type j9995a
trunk A10 trk1 dt-lacp
ip routing
switch-interconnect A12
interface Trk1
    unknown-vlans disable
    exit
snmp-server community "public" unrestricted
oobm
    ip address dhcp-bootp
    exit
router ospf
    area 10.0.0.1
    redistribute connected
    redistribute static
    enable
    exit
vlan 1
    name "DEFAULT_VLAN"
    no untagged A11
    untagged A1-A9,A12-A24,B1-B8,F1-F8,Trk1
    ip address dhcp-bootp
    exit
vlan 999
    name "VLAN999"
    untagged A11
    ip address 9.9.9.9 255.255.255.0
    exit
vlan 2228
    name "VLAN2228"
    tagged A12,Trk1
    ip address 10.36.128.51 255.255.255.0
    ip ospf 10.36.128.51 area 10.0.0.1
    exit
spanning-tree Trk1 priority 4 bpdu-filter
distributed-trunking peer-keepalive vlan 999
distributed-trunking peer-keepalive destination 9.9.9.8
```

APPENDIX C:

BASIC DISTRIBUTED TRUNKING WITH OSPF ROUTING – DT SWITCH 3 CONFIGURATION FILE

```
; J9574A Configuration Editor; Created on release #KA.15.18.xxxx  
; Ver #06:7c.fd.ff.ff.3f.ef:57
```

```
hostname "3800_10.36.128.66"  
module 1 type j9574y  
module 2 type j9574x  
trunk 1-2 trk3 lacp  
ip default-gateway 10.36.128.1  
ip routing  
snmp-server community "public" unrestricted  
oobm  
    ip address dhcp-bootp  
    exit  
router ospf  
    area 10.0.0.1  
    redistribute connected  
    redistribute static  
    enable  
    exit  
vlan 1  
    name "DEFAULT_VLAN"  
    no untagged 4  
    untagged 3,5-52,Trk3  
    no ip address  
    exit  
vlan 2228  
    name "VLAN2228"  
    untagged 4  
    tagged Trk3  
    ip address 10.36.128.66 255.255.255.0  
    ip ospf 10.36.128.66 area 10.0.0.1  
    exit  
spanning-tree Trk3 priority 4
```



1344 CROSSMAN AVE | SUNNYVALE, CA 94089

1.866.55.ARUBA | T: 1.408.227.4500 | FAX: 1.408.227.4550 | info@arubanetworks.com

www.arubanetworks.com