
Fair Share AF Load Share

draft-kvk-trill-fair-share-af-load-share-02



Kesava Vijaya Krupakaran

Janardhanan Pathangi Narasimhan

Introduction

- An Appointed Forwarder (AF) is responsible for encapsulating and decapsulating native traffic from/to a LAN
- The DRB on the shared access LAN can choose to be the AF for all VLANs or load share the AF responsibility among Rbridges on the LAN
- The load sharing algorithm is undefined in RFC 6325 / RFC 6439
- Round Robin AF scheduling among of VLANs has limits with respect to resource utilization
 - Volume of traffic is not equal on each VLAN
 - It is desirable to have more traffic handled by more capable systems

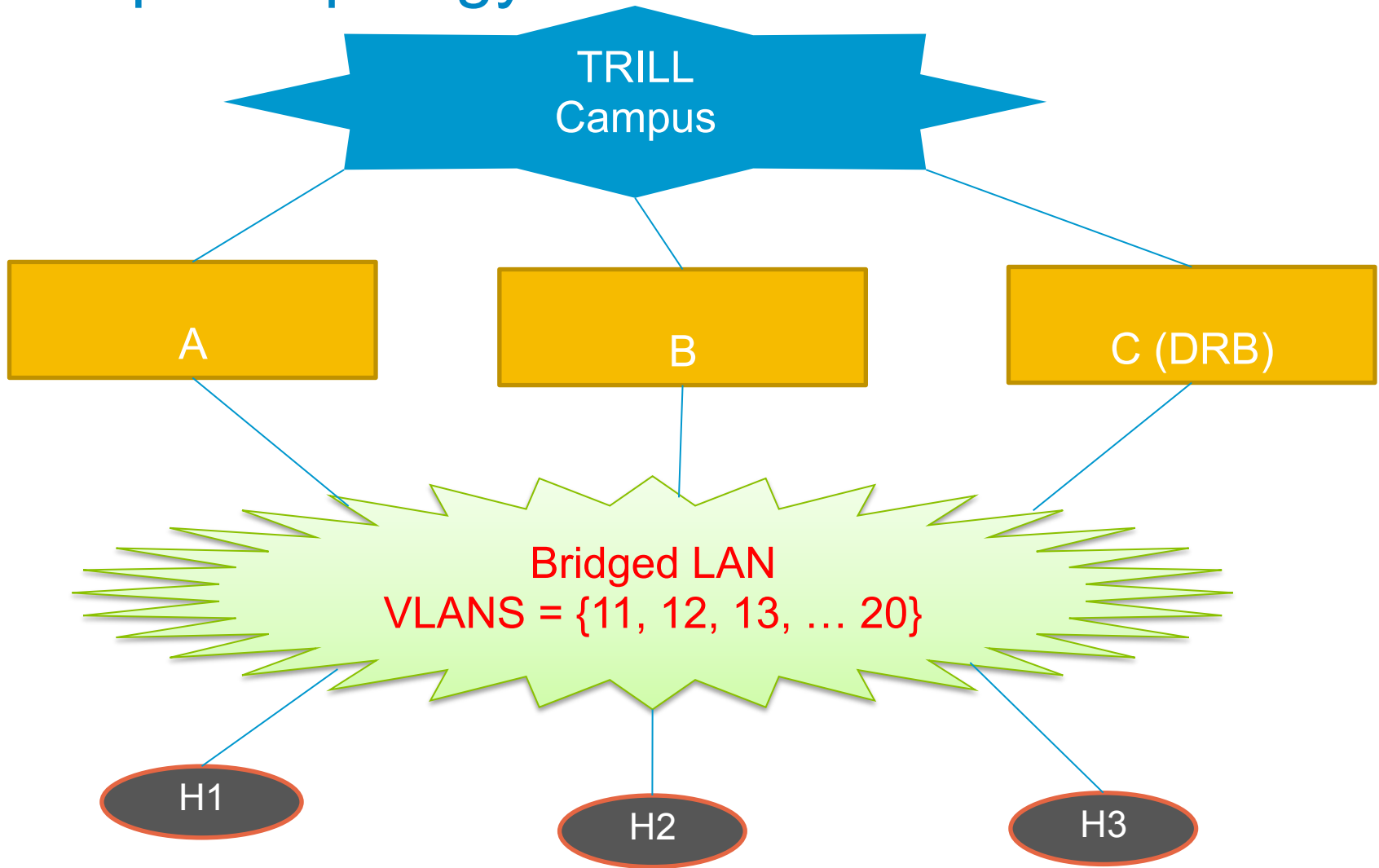


Shares

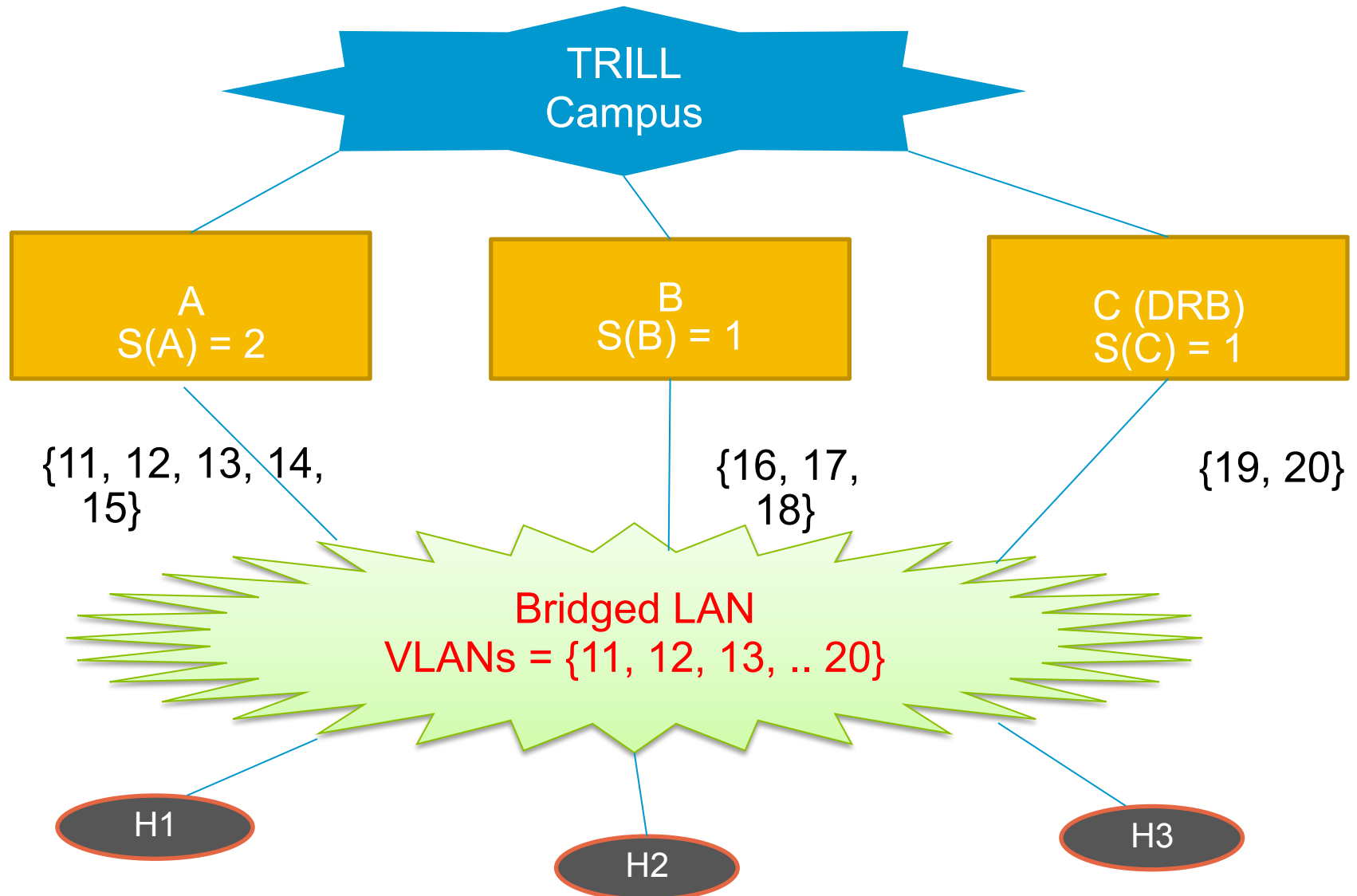
- Each Rbridge on the shared access LAN is configured with certain amount of 'shares'
- Indicates the relative number of VLANs for which that Rbridge would become the AF
- Allows for Rbridges with greater data-plane capability to become AF for majority of VLANs on LAN
- Shares are advertised in IS-IS Hellos using the Fair Share Sub-TLV in Multi-Topology-Aware Port Capability TLV



Sample Topology



Sample Scenario with Shares



AF Distribution Using Shares

- VLANs in the segment = {11, ..., 20}
- Rbridges = A, B and C, C is DRB
- A is allocated 2/4 (50%) of VLANs, B with 1/4 (25%) and C with 1/4 (25%) of VLANs
- Note that if VLANs {16, ..., 20} have a heavy traffic load, share based scheduling alone will be insufficient

X	S(X)	AF(X)
A	2	{11, 12, 13, 14, 15}
B	1	{16, 17, 18}
C	1	{19, 20}

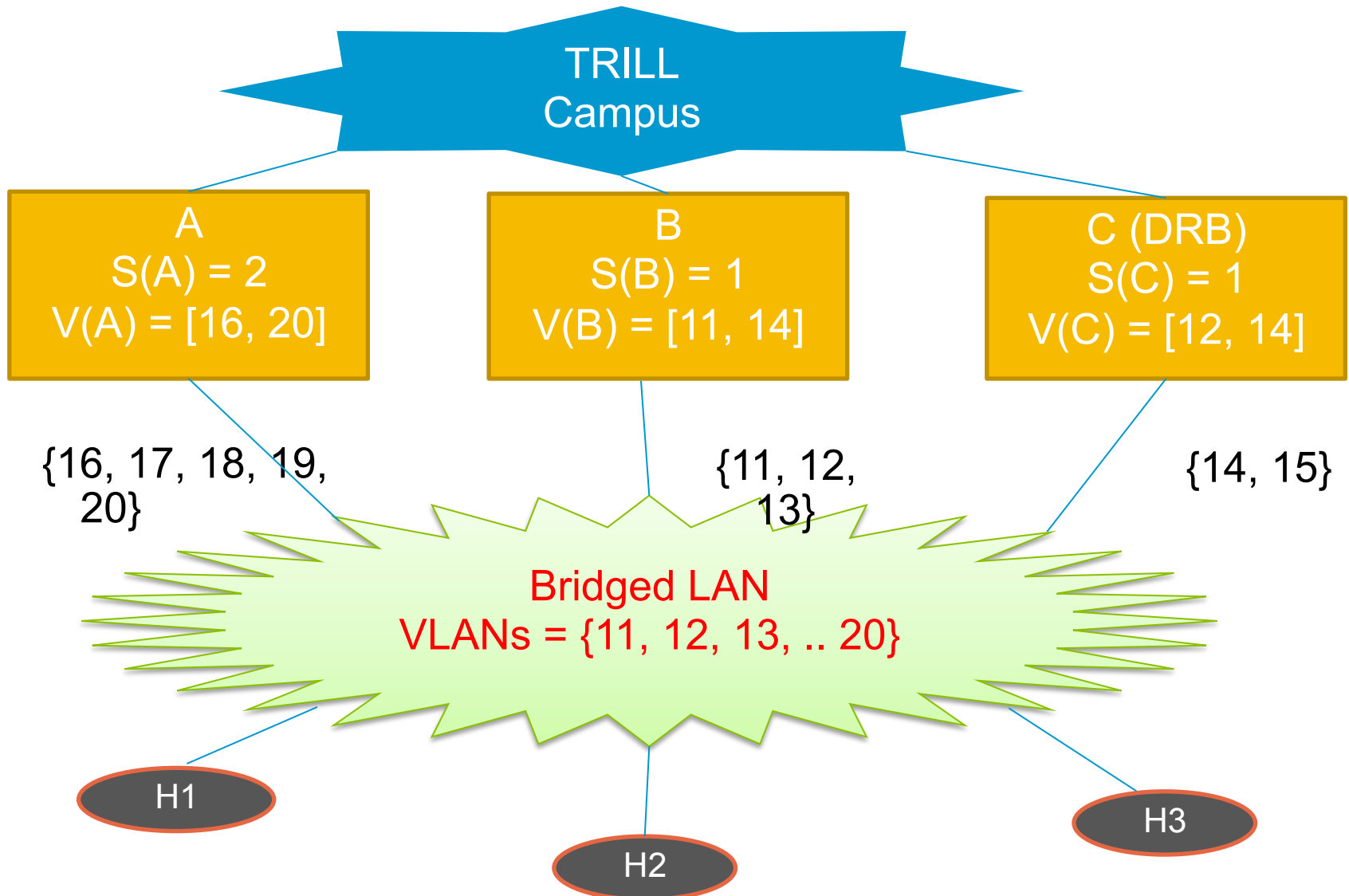


AF Affinity VLAN Set

- Share based distribution of AF among Rbridges distributes relative amount of VLANs based on shares configured
- Works well if native traffic load is equally distributed among all VLANs
- If certain VLANs are loaded with heavy traffic compared to others, share based scheduling does not allow more capable Rbridges to become the AF for those VLANs
- AF Affinity VLAN set is a set of VLANs configured in an Rbridge for which that Rbridge has AF affinity
- AF Affinity VLAN set is advertised in IS-IS Hellos using AF Affinity VLAN Set Sub-TLV in the Multi-Topology-Aware Port Capability TLV.



Shares and AF Affinity VLAN Set



AF Distribution using AF Affinity VLAN set and Shares

- VLANs in the segment = {11, ..., 20}
- Heavily loaded VLANs = {16, ..., 20}
- Rbridges = A, B and C, C is DRB
- A is allocated 2/4 (50%) of VLANs, B with 1/4 (25%) and C with 1/4 (25%) of VLANs
- A is configured to have greater AF affinity to the heavily loaded VLANs {16, ..., 20}

X	S(X)	V(X)	AF(X)
A	2	{16, 17, 18, 19, 20}	{16, 17, 18, 19, 20}
B	1	{11, 12, 13, 14}	{11, 12, 13}
C	1	{12, 13, 14}	{14, 15}



Thank You

