Some VLAN Requirements & Considerations

Henry Yang & Anil Rijsinghani
Digital Equipment Corporation

IEEE 802.1, MAUI, July 11, 1995

Some proposed VLAN requirements for discussions at 802.1.

1. It supports logical grouping of stations that can communicate as if they were on the same LAN, even though they are physically spread out on different LANs or segments within the physical boundary of a Bridged LAN.

   Note: Communications on a given LAN is a broader term to cover unicast and multicast (or broadcast domain) services.

2. It allows networked devices (e.g., stations, bridges, & switches) to be logically connected (some what) independent of their physical connectivity and constraints.

3. It supports all 802 LAN technologies. Note: Should have liaison to ATM Forum for LAN Emul.

4. Inter-VLANs communications shall be provided by layer 3 or higher.

5. Standard 802 LANs provide ease of moves, adds and changes. VLAN shall maintain the same level of moves, adds and changes while allowing additional logical grouping.

   There shall be a defined set of rules and guidelines for end systems to join, leave, be added, and be removed from a VLAN.

6. VLAN shall provide traffic firewall between different instances (and type ?) of VLANs.

7. Once created, VLANs shall be auto-configurable and operate without dependence on network management interventions.

8. VLAN shall adapt automatically to topology changes (e.g., spanning tree changes).

9. Topology changes in a VLAN should not affect connectivity in other VLANs.

10. There shall be a method to ensure coherency of VLAN configuration data base.

11. IS to IS links shall support point-to-point link as well as a shared LAN connection. For a shared LAN connection, there may be multiple end systems on the shared LAN.

12. For native LAN communication services, VLAN shall be transparent to end systems (e.g., PCs, workstations, servers), once it is correctly setup.

13. There may be support of enhanced LAN services such as multicast grouping, priority service class, etc.

14. VLAN shall interoperate with existing standard compliance stations.

15. Backward compatibility mode with existing 802.1D bridges

16. There shall be a network management method to create and delete VLAN, add, change and remove end systems and Intermediate Systems (ISs), and management of VLANs.

17. Network management shall have reachability to all VLANs for management functions.

18. Management observability, accounting, and monitoring.

19. VLAN configuration protocol, performance enhancement and scalability, robustness & availability. (for further study)