Cisco 3 Project

Network is a one building sales office, containing 2 production vlans one for the sales force (10) and one for the admins (20), a mobile vlan (30) a voice vlan (80) with a management vlan (99) that is also the native vlan for purposes of trunking.

The internal network is based on 192.168.0.0/24 allowing for up to 254 hosts on each vlan. The gateway router is a Cisco 1941 with 2 GigabitEthernet ports that connect to the core layer switches. It also has a fiber line to the file server which is for web-based traffic. We currently using serial 0/0/0 to connect to the ISP at a clockrate of 128000 with the static IP address of 24.24.24.20. This connection is managed with border gateway protocol. The gateway router handles both NAT for the file server and PAT for the local network. An ACL is placed on the fiber line interface to prohibit local wireless traffic from accessing the fileserver.

Our core layer is designed with two 3560-24PS multilayer switches that allow for routering as well as switching. Each switch is designed to handle the workload should the other fail. This has been arranged with HSRP for the lines heading to the server room. Each switch would be configured with a four-line ether channel into the server room to allow for increased bandwidth and fault tolerance. This allows for the large amount of bandwidth required should either of them fail. All routing upto the border gateway and downstream is handled with OSPF routing.

The server room contains a 2811 router that handles both any DHCP traffic and functions as the local call manager. The server room also contains a TFTP server that contains backup configurations off all router and switches. The Log server is the central location for any logging traffic. The final server is a DNS server containing name records for the company vendors and the local web-traffic. A second rack holds a back up DHCP server in case of rack failure

The distribution layer has two 3560-24PS switches, each one capable of handling all traffic. They are configured with HSRP to be the default gateway for all end-user traffic across all vlans. Each switch handles a portion of the spanning-tree protocol with the first floor switch(Dist1) being root for vlans 10, 30, 50, 99.

The Access layer is designed with two 2960-24TT switches, each on its own floor contained in the same rack as the distribution switch for the floor. These have had port security enabled with a MAC-address limit of one on all hard lined ports. Each switch is connected to two wireless access points with a range of 50 meters, this provides a wireless mesh architecture.

All LAN devices are secured with an enable password and a console password. The configurations are saved to local flash as well as the tftp server.

The physical tab shows the rough layout of the network condensed into a single floor building. The wireless access points are arranged to provide a view of wireless mesh understanding.

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