Hardware infrastructure

Problem: Switches were not passing VLAN traffic correctly.

- **Cause**: HP “trunk” mode is not comparable to Cisco trunking.
- **Solution**: Configure each VLAN to pass tagged traffic through the trunk port. HP switches automatically handle tagging/untagging of traffic between trunk and non-trunk ports.

Problem: Port #3 on ps20 (ix1) reporting as disconnected even when all ports are physically connected to ethernet cables. Switching cable to switch does not help.

- **Cause**: Connection between pfSense OS and patch panel appears to be nonfunctional. Most likely a bad cable or possibly physical interface on host.
- **Workaround**: Use port #4 (ix0) instead; pfSense router only needs 3 ports to function. Should be investigated further after hardware baselining.

Incident: VLANs suddenly and unexpectedly started misbehaving; ps14 went offline.

- **Cause**: Switch #3 was unwittingly reset to factory defaults by another team.
- **Recovery**: Restore switch #3 configuration from previously saved copy. Re-create logins, SSH host keys and certificates. Set hostnames to be more clear to prevent future mishaps.

Routing, NAT, and firewall

Problem: VPN clients could not access devices on the Inside network reliably.

- **Cause**: VPN-sourced traffic was being blocked by firewall in certain corner cases.
- **Solution**: Add allow rules to firewall to allow these cases through.

Problem: Traffic between VPN and Branch network and between Branch and internet failed.

- **Cause**: Lack of routing protocol that could synchronize routes between pfSense and v-router.
- **Resolved**: No action needed; beyond the scope of project requirements.
- **Workaround**: If Branch network clients need internet access, reconfigure VM with an interface connected to inside network for the duration of needs.

Networking services

Problem: DHCP zones defined in hybrid router did not appear to be respected consistently.

- **Cause**: DHCP services were running from multiple source in the network, with overlapping scopes. These were accepted on a first-come first-serve basis, rather than means of network access.
- **Solution**: Disable DHCP server on hybrid router to allow service on forest 1 root DC.

Hypervisors

Problem: Installing Fedora on VM seemed to cause the VM to be nonresponsive.

- **Cause**: Anaconda installer struggles with less than 2GiB of RAM available.
- **Solution**: Allocate more RAM for Fedora VM.

Problem: Setting up Windows desktop clients is very time consuming.

- **Cause**: Windows desktop editions are badly designed OS.
- **Solution**: Prepare “basevm” images where feasible, with guest prepared to a usable state.

Incident: ps14 failed to reboot properly while away.

- **Cause**: Unknown. Most likely cause is interactive notification from the BIOS.
- **Resolved**: Unknown how. If there was a message waiting for boot, instructor may have pressed necessary key to resume boot normally.

Hosts and domains

Problem: Forest 1 computers appeared unable to join the domain.

- **Cause**: Windows clients must be Pro edition and set DNS to the DC.
- **Solution**: Reinstall with Windows Pro, set DNS to the DC. Once DHCP is running on DC, configure clients to use it as DNS.

Problem: Forest trust refused creation from failure to resolve domain.

- **Cause**: Forest trusts require either a shared parent DNS server, or conditional forwarding.
- **Solution**: Add DNS conditional forwarding between DCs (“SCRYING” and “ARCANEEYE”) before adding forest trusts.

File sharing (DFS)

Problem: DFS namespace creation refused to connect to the domain, when server was already joined to domain. *(Could not be reproduced on separate hardware.)*

- **Cause**: DFS namespace configuration seems to require domain admin membership at login.
- **Solution**: Re-login as domain admin and retry.

Problem: DFS replication group fails to access destination server in child domain.

- **Cause**: Domain admin in parent domain does not have local admin permissions on server in child domain.
- **Solution**: Add parent domain’s “Domains Admins” group membership in local “Administrators” group on second server in child domain.

Problem: DFS share was not granting write permissions to regular domain users.

- **Cause**: DFS shares use NTFS folder permissions for remote access, rather than SMB share permissions.
- **Solution**: Grant write and modify permissions to “Domain Users” group in parent domain, to the local directory of the share on primary DFS server.

Group Policy

Problem: On computers logged in from members of two different department OUs, both pseudo-printers are visible.

- **Cause**: Preferred printers set to “Update” in GPO are applied once and left in place after user switch.
- **Solution**: Specify printer as “Replace” in GPO, and check “Remove this item when it is no longer applied”.

Problem: Windows Server 2022 does not contain policy definitions for Edge

- **Solution**: Download ADMX and ADML files from Microsoft and install to DC.