



AV VLAN Guide

Updated September 6, 2024

Networks

The Princeton Campus uses a couple of VLANs (Old L2 Networks) or Subnets (Next Generation L3 Networks).

All devices on PU networks must be registered with OIT with their MAC Addresses before installation. Before installation, any devices requiring PoE from a PU OIT switch must be coordinated with PU OIT. Similarly, any devices using the PU network or requiring wireless access need to be coordinated and tested with PU OIT before installation.

All devices registered on a PU network (AV LAN excepted) should be connected to using [hostname].princeton.edu instead of their IP Address, as the IP Address may change.

PU Networks are as follows:

- PU Wifi
 - Vlan 3563
 - Does not support MDNS or Multicast
 - Does not support IP address reservations (all IP addresses are from a lease pool).
 - Utilizes RFC1918 IP addresses (/15 address space).
 - NATs device access to the Internet at the campus border router.
 - Generally allows routing to all on-campus IP addresses (depending on required restrictions for specific networks).
- AV LAN
 - All devices have static IP's
 - Local AV Control network. Refer to the 2.11-X Default IP Address Config_V14 DSM Appendix for IP Scheme.
 - This network is local to the room.
 - VLAN Number
 - Use VLAN 1 if local to the switch
 - If multiple private VLANs are needed, use the private VLAN range 2840-2849
- ip4-avscrtl-xxxx
 - vlan 3582
 - Devices receive IP Addresses from DHCP Reservations
 - This subnet is used to monitor devices with GVE.
 - Extron controller LAN ports should be connected to this network.



- If there is a need to communicate with systems in different rooms, this network can also be used.
- ip4-avsndi-xxxx
 - vlan 3578
 - Devices receive IP Addresses from DHCP Reservations
 - This subnet is used for NDI traffic.
 - The Broadcast Center uses this network to run events from video production booths to the video production studios on campus.
- ip4-wiredprivate-xxxx
 - IP's via DHCP
 - Network for generic internet access.
 - Used for computers.
- ip4-avsdante-xxxx
 - vlan 3577
 - Devices receive IP Addresses from DHCP Reservations
 - It can be local to the room or part of the building Dante network.
 - Used to transport audio when the production booth is not attached to the room it supports.
 - This network cannot be used to transport AVB.
- ip4-avsnave-xxxx
 - vlan 3584
 - Devices receive IP Addresses from DHCP Reservations
 - If an Extron NAV system is part of the design, the building NAV subnet can route video between rooms.
- The NAVigator NIC connections
 - OOB - ipv4-avsctrl-xxxx
 - NAV/PoE - ip4-avsnave-xxxx
 - Switches for NAV must be Aruba switches, approved by PU OIT and Extron.
 - All NAV installations must be coordinated between PU OIT, AVS, and the AV Vendor.
 - Extron must sign off on all NAV system designs before the project goes out to bid.
 - PU OIT and AVS can provide guidelines on initial switch configuration with the AV Vendor.

Routing Considerations

Currently, all of the ip4-* networks listed above can route traffic to any of the other listed networks, both within a single building and between buildings.

- Unicast routing is available for all of the ip4-* wired networks.
- IGMPv3 is configured for all ip4-* wired networks.



- IGMP snooping is configured on all OIT wired NGN VLANs.
- PIM multicast routing is available between all of the listed ip4-avs* networks.
 - Dante PTPv1 devices and Extron PTPv2 devices will see each other's PTP frames.
- For multicast routing between buildings, OIT must configure the core routers (our multicast RPs) to allow group address registration from a particular ip4-avs* network for a particular destination group address.
- Group address registration permissions are already in place for Dante and Extron NAV.

Cable Colors

When wiring the AV rack, the different VLANs will be connected using different colored cables for ease of service.

- AV LAN - Blue
- DirectorNET/ip4-avsctrl-xxxx - Purple
- VideoNET/VideoNET2/ip4-avsndi-xxxx - Yellow
- CDN/ip4-wiredprivate-xxxx - Red
- DANTE/ip4-avsdante-xxxx - Green
- NAV/ip4-avsnav-xxxx - Orange

Other Notes

NTP Servers

- ntp1.princeton.edu
- ntp2.princeton.edu
- ntp3.princeton.edu

All AVB traffic should be isolated on AVB-approved switches and kept off of the PU network and PU Aruba switches.