John Huntington's *Introduction to Show Networking* Workshop Overview

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Workshop Description

This introductory hands-on workshop, based on John Huntington's book *Introduction to Show Networking*, explores the basics of networks and how they work in show systems such as lighting, sound, video, and even stage machinery. Basic networking concepts, IP addresses and assignment methods, subnet masks, low-level network operations and physical topologies will be introduced through lectures and then explored through hands-on labs done on participants' PC or macOS laptops. Network device control will be explored, and other topics like VLANs, multicast, simple routing and broadcast storms will be demonstrated in group exercises. This class counts for ETCP-recognized training.

Hosting Needs

Hosting needs can be found in a separate document here.

Student Computer Requirements

Participants must provide a Windows or macOS computer for the hands-on labs with a hard-wired ethernet jack and installed (no cost) Packet Sender software. Full details here.

Workshop Details

In this two-day fully in-person workshop, the material is introduced and explained through lectures and then explored through hands-on labs and group demonstrations. Ideally, participants will read Chapters 1-4 of the *Introduction to Show Networking* book in advance, but this is not required. Here's details of the class (subject to change):

Day 1

- Introductions
    - Introduction
    - Agenda Review
    - Housekeeping
- Lecture Chapter 1: Introduction
    - What Is a Network?
    - How are Networks Used on Shows?
    - Network Types
    - Networking Concepts
    - Networking Using Electricity
    - Networking Using Light
    - Layering
    - Here's Everything You Need to Know About Show Networking!
- Lecture Chapter 2: Ethernet
    - Logical Link Control (LLC)
    - Media Access Control (MAC)
    - Ethernet Implementations
    - Ethernet Hardware
    - Power over Ethernet (PoE)
    - IEEE 8021 "Wi-Fi"
- Lecture Chapter 3: Network Operations
    - Transmission Control Protocol (TCP)
    - User Datagram Protocol (UDP)
    - Internet Protocol (IP)
    - Setting IP Addresses
    - Useful Commands Working with IP Addresses
- Lunch Break (t.b.d.)
- Lab 1: Basic IP Address Setting by DHCP, Link Local, and Testing Connections
- Lab 2: Setting IP Addresses Manually and Communicating using Packet Sender
- Lecture Chapter 3 continued
    - Subnets
    - Address Resolution Protocol (ARP)
    - Ports
    - IPv6
    - Why IP Networking is Good For Our Industry
- Lab 3: Subnets, Transport Protocols, and ARP

Day 2

- Connection Test
- Review of Chapters 1-3 Material

- Lecture Chapter 4: More Network Operations
    - Visualizing Traffic Flow
    - Resolving Layer 2 and 3 Addresses
    - Network Topology Issues
- Lab 5: Introduction to a Managed Switch and Basic VLANs (Group Exercise)
- Lab 6: Sending Control Data over the Network (Group Exercises)
- Lunch Break (t.b.d.)
- Lab 7: Experimenting with Multicast (Group Exercise)
- Lecture Chapter 4: Continued
    - Routing
    - Other Network System Protocols
- Lab 8: Inter-VLAN Routing (Group Exercise)
- Lab 9: Broadcast Storm (Group Exercise)
- Lecture Chapter 4: Continued
    - Show Networking Best Practices
    - A Mature Solution
- Lecture Chapter 5: Network Design/Implementation Process
- Lab 10: Building and Configuring a Network (Group Exercise)
- Restore your computer!
- Final Wrap Up

Note: Optional One Day Class Version

I also teach this same information in a one-day class version with several hours of required pre-work. Details on that class version here.