# Decoding IP terminology: Part 2

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A thorough understanding of acronyms is important to job performance.

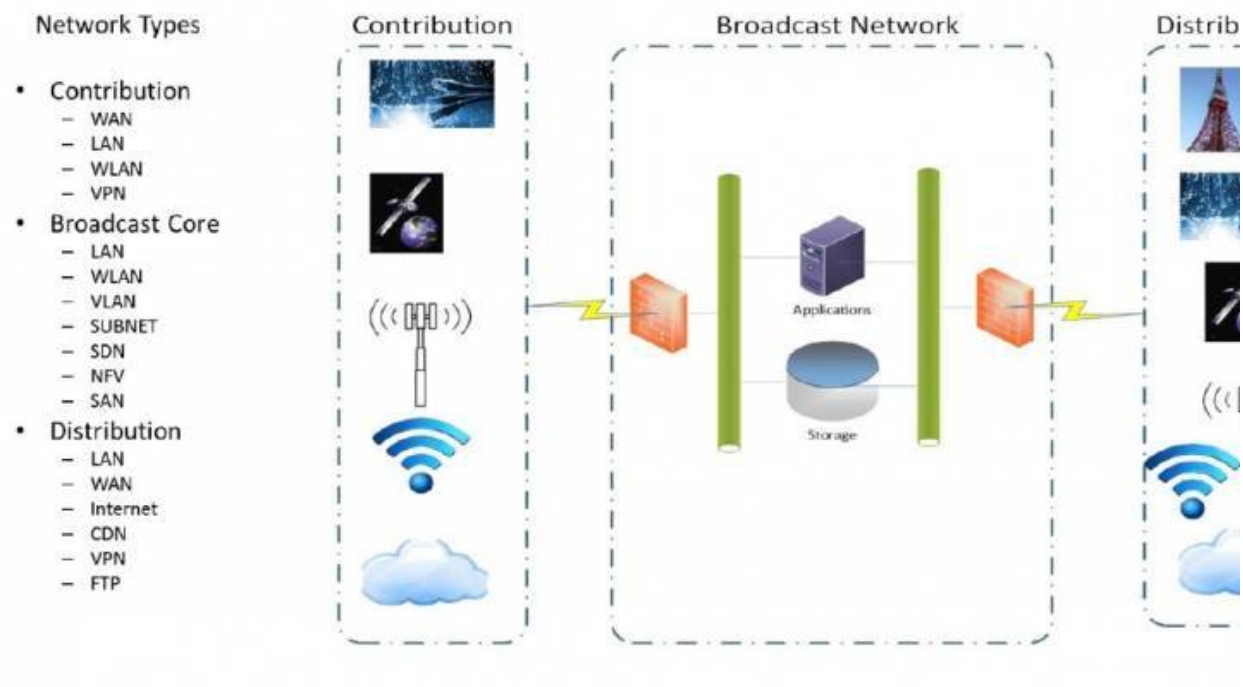
This article is Part 2 of Gary Olson's series on digital terminology. As promised, this article continues the explanation of the next series of terms that engineers, technicians and technical managers need to understand.

The need for acronyms has gotten so pervasive that we now have acronyms for the acronyms. **TLA** for "Three Letter Acronym" or "**FLA** for Four Letter Acronyms". A colleague of mine just coined the term ***"Acronictionary".***

**As promised, this article continues the explanation of the next series of terms that are used loosely and often.**

The IP network has lots of new acronyms and words. First we will do the different network topologies. Networks

all fall within the 802.x family of the OSI Model on Datalink Layer 2 and Network Layer 3. See my Anatomy of a Network Series. Before we get to the network topology stuff let's start with the basics. Networks are communications systems created by interconnecting devices using routers and switches.




**Router-** This is the Layer 3 device that interconnects networks, maps and routes data to it destination and assigns IP addresses within the private ranges to devices on the network so they can communicate with each other. An IP router is a full duplex device differing from SDI/AES/422 routers which are technically XY Matrix switches. The IP router play a critical role in the network and manages the communications between networks. One way to look at the router is as the brains of the network. The router establishes the rules and connections to switches, WLAN and WAN's. The router is where network optimization is configured.

**Switch –** This is the Layer 2 device that actually connects all the devices to the network. This is a fully duplex device where all the ports communicate in both directions. There are NO inputs or outputs. Switches can be configured by the individual ports allowing great flexibility and agility in setting up the network.

**LAN – Local Area Network - T**his is the most familiar and just what it says LOCAL. This means all the computers and IP devices in the same location are connected to the same switch topology. Notice I did not say the same switch. Glad you were paying attention! There can be many switches, some in the core, some closer to work spaces ie edit rooms or in densely populated equipment locations reducing the need for long cable or fiber runs.

**WAN – Wide Area Network -** I mean **really** wide, not between floors or even between buildings across a compound like a university or Google. This is for real geographically (geo) diverse locations, across town, city, state or country and up to the clouds. Each location has its own **LAN** and the WAN connects them. Contribution and distribution networks are WAN's, the endpoints are remote from the core and use a few different communication networks for the connection, Ie. ATM, SONET and ISDN/PRI as an example. The WAN is

typically a layer 3 connection meaning there is a router and firewall at each end of the WAN. Fast Ethernet and MPLS technology are enabling the connection between "geo" diverse locations to appear as Layer 2 connections, essentially just another switch on the LAN. This essentially extends the core network to anywhere in the organization as one network.

**WLAN – Wireless Local Area Network aka Wi-Fi -** Simple and straightforward. OK, so maybe a little more explanation and not to be confused with Mobile. While mobile is wireless it is not Wi-Fi. Maybe the easiest way to understand is by the operative word **LOCAL**. Wi-Fi is the 802.11x family that extends the wired LAN by adding radio transceivers called Access Points. They are still within the core network topology. The WLAN should operate on its own subnet and VLAN, this allows it to be managed and controlled.

**MAN – Metro Area Network** - A new contestant in the name your network game. As Fast Ethernet and MPLS mesh networks are being deployed by carriers and service providers they are essentially creating their own network infrastructure in each city or metropolitan location and allowing users to connect and use their network as a virtual backbone between locations. A pay by the port model with fees based on bandwidth usage.

**SAN – Storage Area Network -** I would look at this as a storage cluster. So this is different than Network Attached Storage (NAS – See next TLA) or Desktop Attached Storage (USB, Firewire or Thunderbird). Storage area networks all greater speeds and file handling between disks. These systems use their own file system and require data directors or Hierarchical System Management (HSM) to manage the movement of files both internally and to enable access to the users on the LAN. There is usually a server acting as gateway for file movement in and out of the SAN. SAN's will use Fibre Channel, iSCSI and UltraWide SCSI as their connection between the disk arrays. These can provide higher bandwidth and throughput to the actual disks than Ethernet can.

**NAS – Network Attached Storage** - Pretty much what it says! The disk arrays have a direct Ethernet connection to a switch and appear on workstations and servers as a regular drive letter without the need for an HSM, Data Director or gateway. These disk arrays rely on Automation, Orchestration, Asset Managers and other applications to manage the files, file movement and monitoring.

**SDS – Software Defined Storage** - SAN and NAS need smarts to do their jobs. This is handled by onboard controllers in the disk stacks. Adding disks and managing them takes some intelligence and the controllers handle this. As the disk array gets larger, the controllers work harder and have limitations before there is need to add controllers. What about lifting the control out of the disk array and using a server based solution. Scaling is easier and non-disruptive, back up easier, updates and upgrades also.

**VLAN – Virtual Local Area Network** – This one of the ways to manage the network. VLAN's allow the network to be separated into "channels" that can be joined together or isolated. This enables bandwidth management, prioritization, security and optimization. VLAN's can be assigned to an individual port or group of ports. VLAN's allow different signals, file movement and data streams to share the same bandwidth and network topology without interfering with each other or causing latency (How COAX became a VLAN). VLAN's use different IP address groups and then in the router/switch assignments and groupings are made on a port by port basis. This allows the network to assign the appropriate configuration and support to each device.

**SDN – Software Defined Network** – Oh Boy! So, now networks have become so complex and need some serious intelligence to manage them and enable them to handle the traffic. The onboard controllers are overloaded and each time a device changes, is added, subtracted or the network needs to scale. These new devices need to be programmed individually, each having its own onboard controller. What if we outboard the controller to a server and the switches are basically dumb devices getting their smarts from a server on the network? Each time a change is made, only 1 server needs to be reconfigured. Servers have more horse power than any onboard controller, easily backed up and protected. Switches become more efficient and possibly less costly. The network becomes easier to manage. SDN technology is still developing but definitely becoming attractive.

**NFV – Network Function Virtualization –** Now that's a mouthful! The whole network is comprised of a lot of stuff (see Anatomy of a Network). Each of these are individual appliances (read server) or applications running on a generic server. Firewalls, Load Balancers and Border controllers to name a few. Using the same principal as SDN, what if they all become applications that run on a server so configuring the network becomes easy to deploy and manage. Updating and upgrading is easier, backing them up in a non-disruptive way is healthier.

OKAY, enough punishment for one article. Even I get a headache keeping this straight most of the time. We will pick this up again in Part 3, hopefully they won't be coming out with any new TLA's or FLA's in the meantime!

Follow my continuing adventures as I attempt to Smooth the Rocky Road to IP. My goal is to explain, debunk and educate. And sometimes just ramble on.

And coming soon my perspective on "IP Islands in the Stream" or was that a song?

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