

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

WIRELESS TRANSPORT LLC,

Plaintiff,

v.

JUNIPER NETWORKS, INC.,

Defendant.

C.A. NO. 6:19-cv-353

JURY TRIAL DEMANDED

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

1. This is an action for patent infringement in which Wireless Transport LLC makes the following allegations against Juniper Networks, Inc.

PARTIES

2. Plaintiff Wireless Transport LLC (“Plaintiff” or “Wireless Transport”) is a Delaware limited liability company with its principal place of business at 16192 Coastal Highway, Lewes, DE 19959.

3. Juniper Networks, Inc (“Defendant” or “Juniper Networks”) is a corporation organized and existing under the laws of the State of Delaware, having an established place of business in this District at 5830 Granite Parkway, Suite 850, Plano, Texas 75024.

JURISDICTION AND VENUE

4. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. Venue is proper in this district under 28 U.S.C. §§ 1391(c) and 1400(b) because Defendant has a regular and established place of business in the district (5830 Granite Parkway, Suite 850, Plano, TX 75024), transacted business in this District, and has committed and/or induced acts of patent infringement in this district.

6. On information and belief, Defendant is subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to its substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this Judicial District.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 6,563,813

7. Plaintiff is the owner of United States Patent No. 6,563,813 ("the '813 patent") entitled "Wireless Transport Protocol." The '813 Patent issued on May 13, 2003. A true and correct copy of the '813 Patent is attached as Exhibit A.

8. Defendant owns, uses, operates, advertises, controls, sells, and otherwise provides products and/or services that infringe the '813 patent. The '813 patent provides, among other things, "A communication system comprising: a wireless client; a wireless network; a land-line client; a land-line network; and a network backbone interfacing said land-line network and said wireless network to allow data packets to be exchanged between said wireless client and said land-line client, said communication system using a wireless transport layer protocol for data frame transmission over said land-line and wireless networks, each data frame including connection handling information specifying at least one data transport connection to be used to transmit data between said wireless client and said land-line client over said wireless and land-line networks; connection addressing information; a user data field including a data packet to be transmitted from one client to another client; and at least one sequencing field identifying the last packet received by the client that is transmitting a current data packet."

9. Defendant directly and/or through intermediaries, made, has made, used, imported, provided, supplied, distributed, sold, and/or offered for sale products and/or services that infringed one or more claims of the '813 patent, including at least Claim 6, in this district and elsewhere in the United States. For example, but without limitation, the Mist Wireless Local Area Network platform forms a communication system within the meaning of the '813 Patent. By making, using, importing, offering for sale, and/or selling such products and services, and all

like products and services, Defendant has injured Plaintiff and is thus liable for infringement of the '813 patent pursuant to 35 U.S.C. § 271.

10. Juniper Networks makes, uses, sells, and/or offers for sale a communication system. For example, Juniper Networks provides a Mist Wireless Local Area Network (WLAN) platform (“communication system”).

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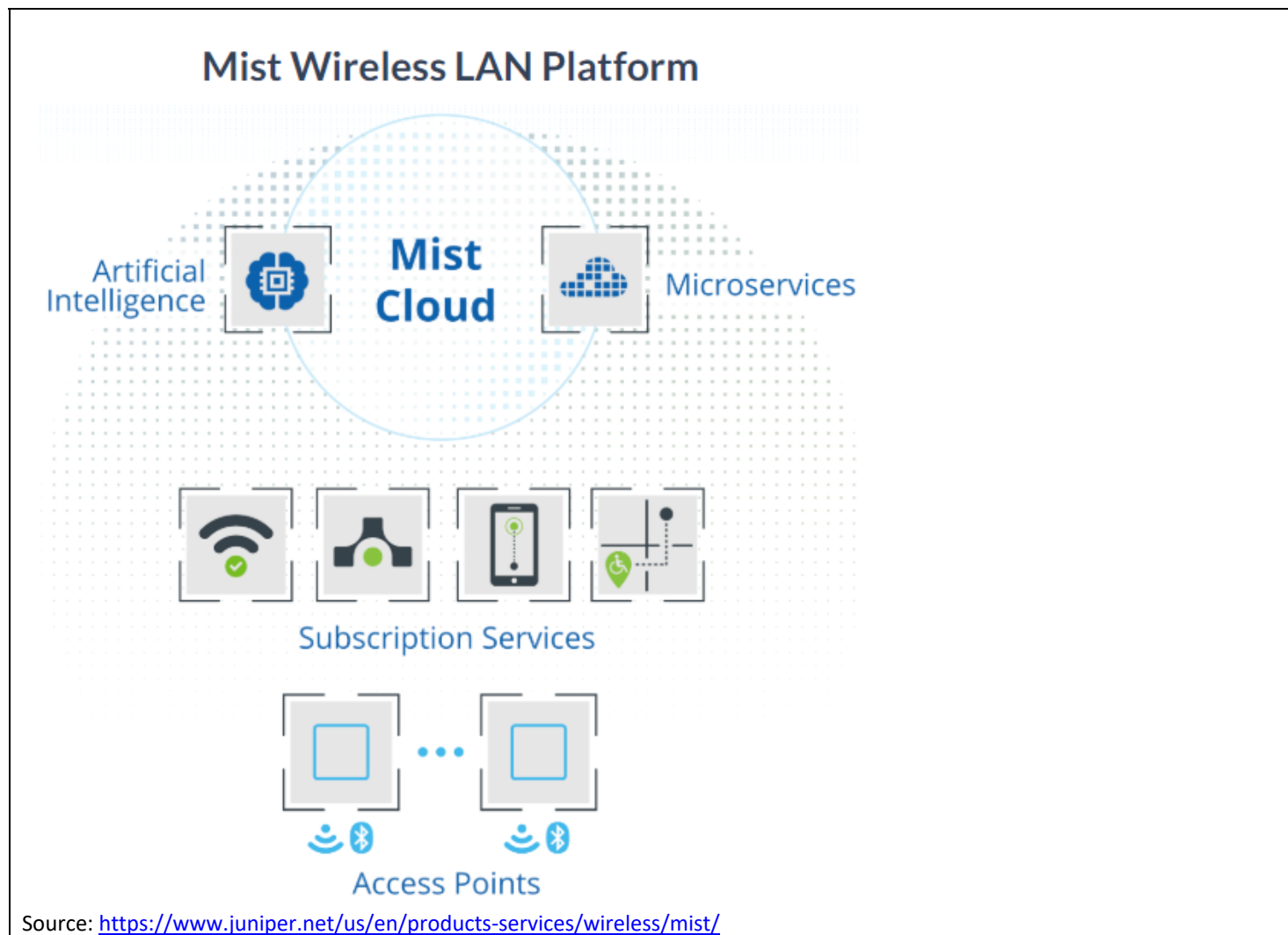
[Mist Website](#) [Demo](#)

[Mist Wireless LAN Platform](#) [Mist Cloud](#) [Mist Subscription Services](#) [Mist Access Points](#) [Mist Access Points Comparison](#)

Wireless networks have never been more critical to business. Yet, most WLAN solutions were built before smartphones, the modern cloud, artificial intelligence (AI), and the latest wireless technologies even existed.

To give modern businesses a Wi-Fi solution that's in sync with the digital era, Mist built the first AI-driven WLAN platform: the [Mist Wireless LAN](#).


Source: <https://www.juniper.net/us/en/products-services/wireless/mist/>



Products & Solutions > Wireless >
Mist Website Demo


Mist Subscription Services

Mist offers [cloud-based services](#) to meet various wireless networking needs.




Wi-Fi Assurance

- Automates operations to save time and money.
- Delivers unprecedented visibility into the Wi-Fi user experience.
- Gives you the ability to set, monitor, and enforce service levels for time to connect, capacity, throughput, and more.
- Provides simple root cause analysis and remediation across wireless, wired, and device domains.
- Tackles major network anomalies with automatic network rewind and dynamic packet capture.




Marvis AI-Driven Virtual Network Assistant

- Simplifies network operations and help-desk functions with natural language queries.
- Employs elastic search, feature ranking, data mining, and other tools for detailed insight into client, site, and network behavior.
- Detects anomalies proactively, correlates events, assigns confidence levels, and automatically notifies IT for rapid problem resolution.



User Engagement


- Uses Bluetooth LE to deploy high-value wireless services, such as indoor navigation and proximity messages.
- Requires no battery beacons.
- Shares location information with colleagues, family, and friends.



Asset Location

- Finds key assets and people easily.
- Collects detailed analytics on traffic patterns.
- Eliminates proprietary RTLS solutions and expensive overlay systems.

Source: <https://www.juniper.net/us/en/products-services/wireless/mist/>



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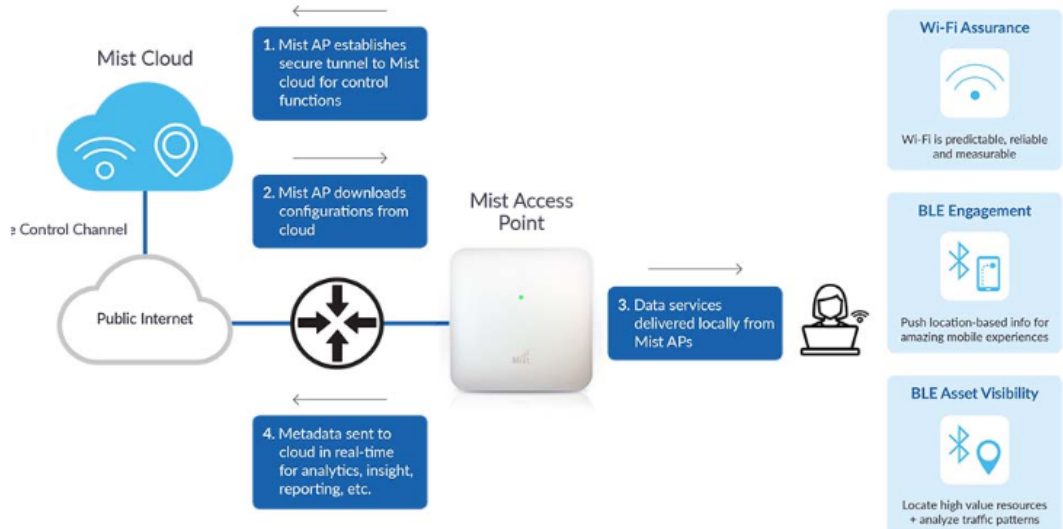
DEMO

Deep Dive into the Mist Cloud

Posted on February 1, 2018 by Osman Sarood

Key Components that Ensure High Performance, Scalability, Reliability, and Security

The Mist learning WLAN gives unprecedented visibility into the mobile user experience. To achieve this, Mist Access Points track over 100 pre- and post-connection states for every Wi-Fi client, which are sent to the Mist Cloud every few seconds where multiple machine learning algorithms use the data to provide actionable insights. In addition, machine learning in the Mist Cloud is used to calculate the location of mobile users with high accuracy and low latency (see figure 1 below for a network topology).



(figure 1)

Source: <https://www.mist.com/deep-dive-mist-cloud/>

11. Juniper Networks provides a communication system comprising a wireless client. For example, Mist WLAN platform comprises of a Mist Access Points (such as AP61, AP41, AP21 and/or BT11) which support IEEE 802.11 b/g/n standard.

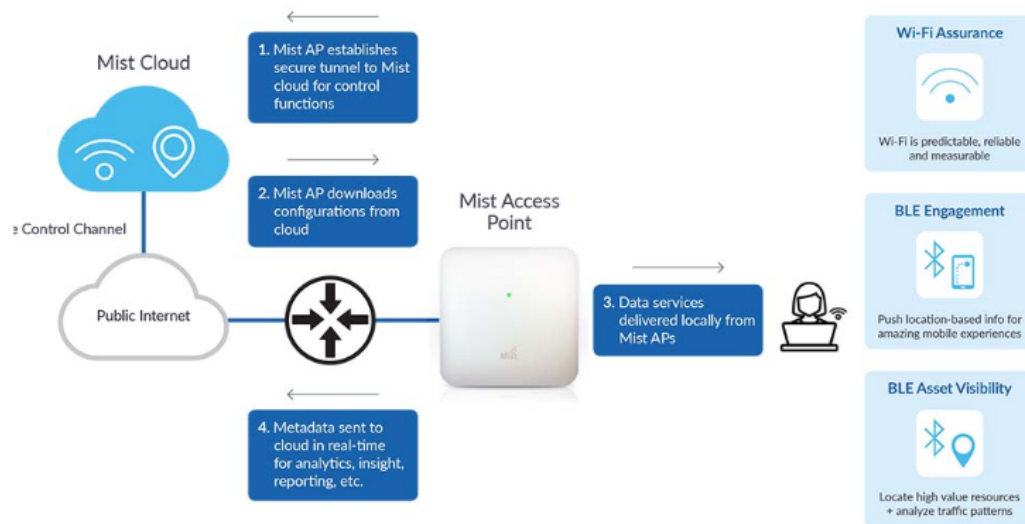


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(figure 1)

Source: <https://www.mist.com/deep-dive-mist-cloud/>

Mist Access Points Comparison



	AP61	AP41	AP21	BT11
Deployment	Outdoor	Indoor	Indoor	Indoor
Wi-Fi	802.11ac Wave2 4x4:4	802.11ac Wave2 4x4:4	802.11ac Wave2 2x2:2	-
Wi-Fi Tri-Radio	✓	✓	-	-
IoT Interface	-	✓	-	-
Antenna Options	Internal/External	Internal/External	Internal	Internal
Virtual Bluetooth® LE	✓	✓	✓	✓
Warranty	1 Year	Limited Lifetime	Limited Lifetime	Limited Lifetime

Source: <https://www.juniper.net/us/en/products-services/wireless/mist/>

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Deploying WLANs with AX411 Access Points

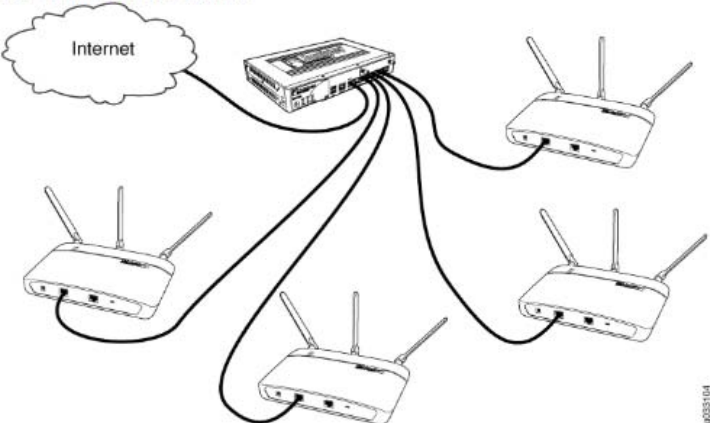
📅 13-Sep-17

To deploy a wireless network with AX411 Access Points, you install one or more access points throughout your site and connect them to Ethernet ports on the services gateway that manages the access points. You can provide power to the access points using Power over Ethernet (PoE) by connecting them to services gateway ports that have PoE capability. You can also provide power to the access points using either optional external power supplies or PoE adapters.

You can connect the access points either directly to the SRX Series device or to a Layer 2 switch that is connected to the SRX Series device.

[Figure 1](#) shows a typical WLAN deployment in which four AX411 Access Points are connected directly to an SRX210 Services Gateway.

Figure 1: Typical WLAN Deployment



[Figure 2](#) shows a WLAN deployment in which four AX411 Access Points are connected to an EX4200 Ethernet switch that is connected to an SRX210 Services Gateway.

Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

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AX411 Access Point Description
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The Juniper Networks AX411 Access Point provides network access for wireless clients such as laptop or desktop computers, personal digital assistants (PDAs), and any other device equipped with a Wi-Fi adapter. The AX411 Access Point supports the new IEEE 802.11n wireless networking standard with backward compatibility for the IEEE 802.11a/b/g standards.

Figure 1 shows the AX411 Access Point.

Figure 1: AX411 Access Point

The AX411 Access Point is managed by a services gateway in the SRX200 line (SRX210, SRX220, or SRX240) or an SRX650 Services Gateway. You manage and configure access points through the command-line interface (CLI) and J-Web interface of the services gateway.

Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-description.html



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 Mist Access Points

Mist Access Points

AP 41 – Flagship 4x4:4 AP with internal antenna

AP 41e – Same 4x4:4 AP but with 4 dual band external antenna ports

AP 21 – Entry level 2x2:2 AP

AP 61 – Outdoor AP 4x4:4 with internal antenna

AP 61e – Outdoor AP 4x4:4 with external antenna ports

BT 11 – Bluetooth BLE *only* internal antenna array


All APs have an internal 16 element Bluetooth antenna array with access via the vBLE or Asset software license(s)

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Source: <https://www.mist.com/documentation/mist-access-points/>

12. Juniper Networks provides a communication system comprising a wireless network. For example, Mist WLAN platform comprises a wireless network which works on wireless network standards (such as IEEE 802.11 a/b/g (WLAN) standard on 2.4 GHz and 5 GHz band frequencies).

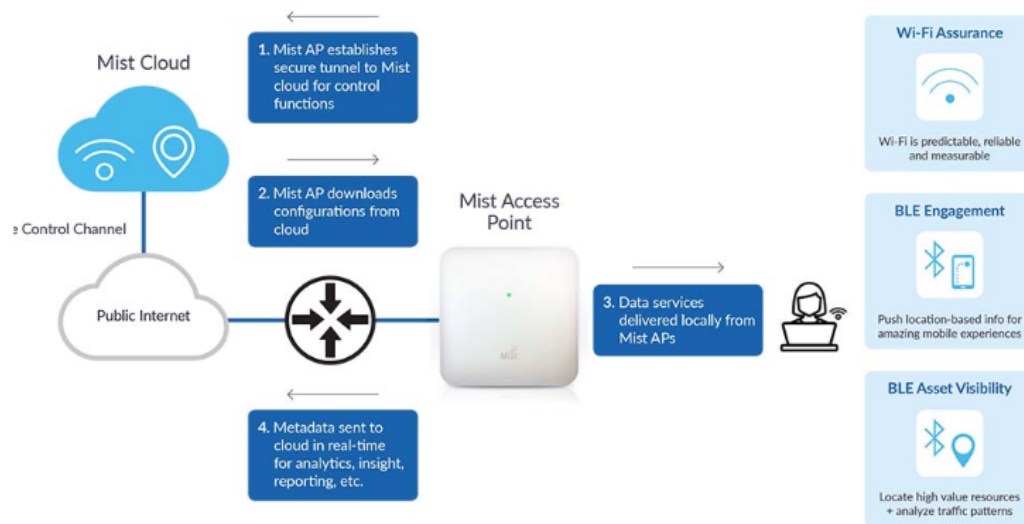


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IoT Interface	-	✓	-	-
Antenna Options	Internal/External	Internal/External	Internal	Internal
Virtual Bluetooth® LE	✓	✓	✓	✓
Warranty	1 Year	Limited Lifetime	Limited Lifetime	Limited Lifetime

Source: <https://www.juniper.net/us/en/products-services/wireless/mist/>

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Deploying WLANs with AX411 Access Points

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Figure 1: Typical WLAN Deployment

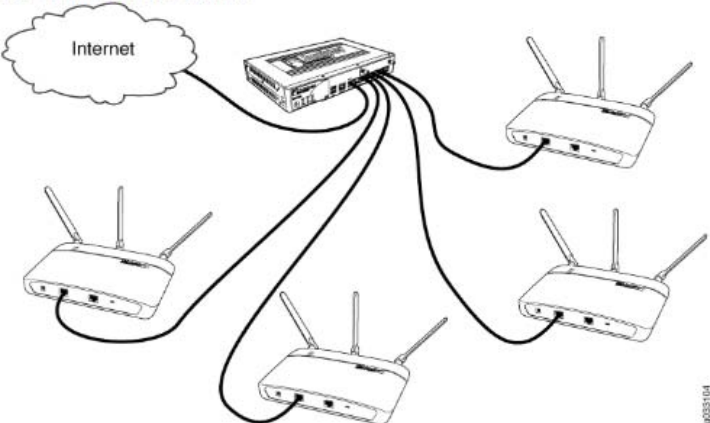
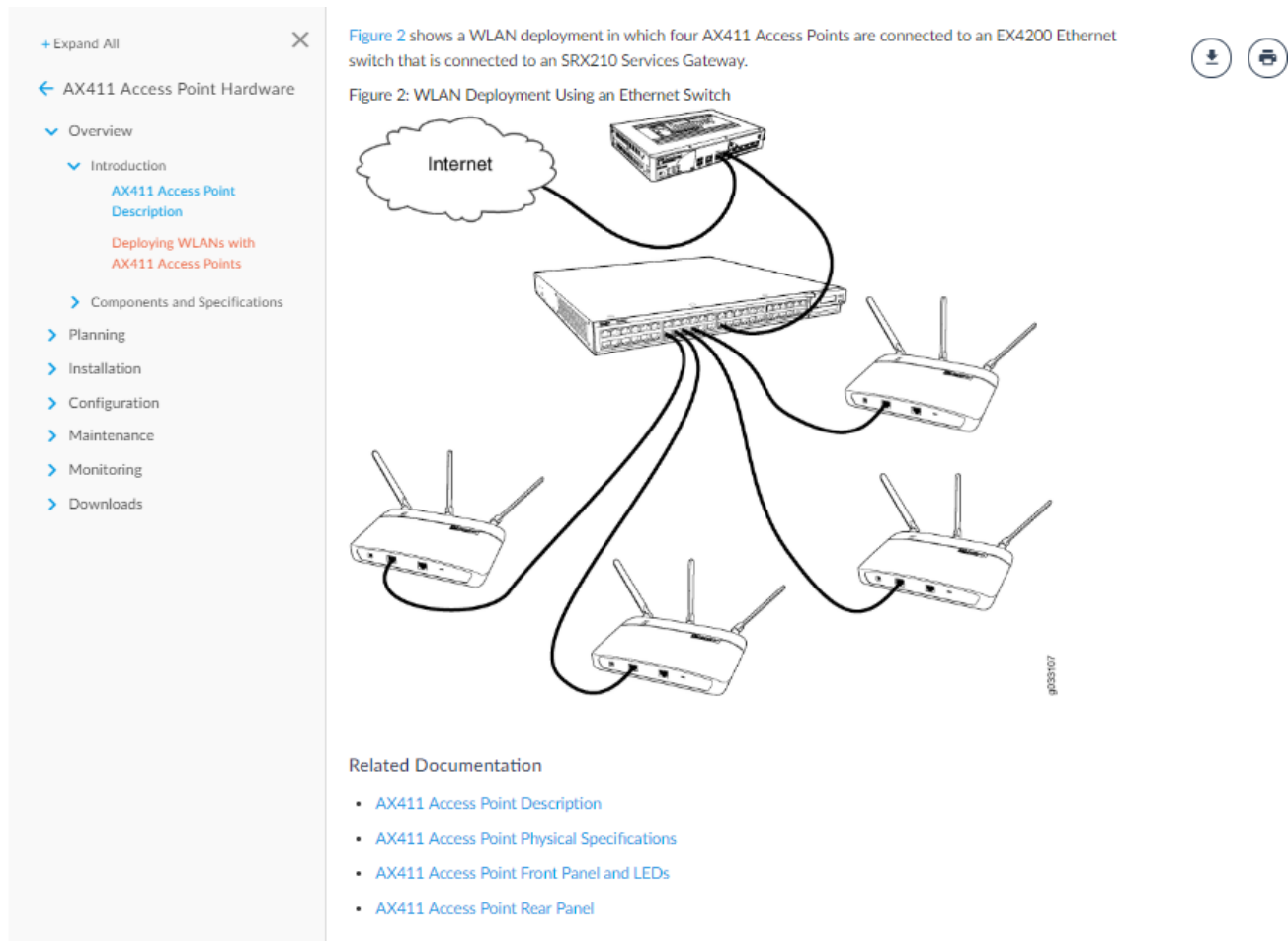


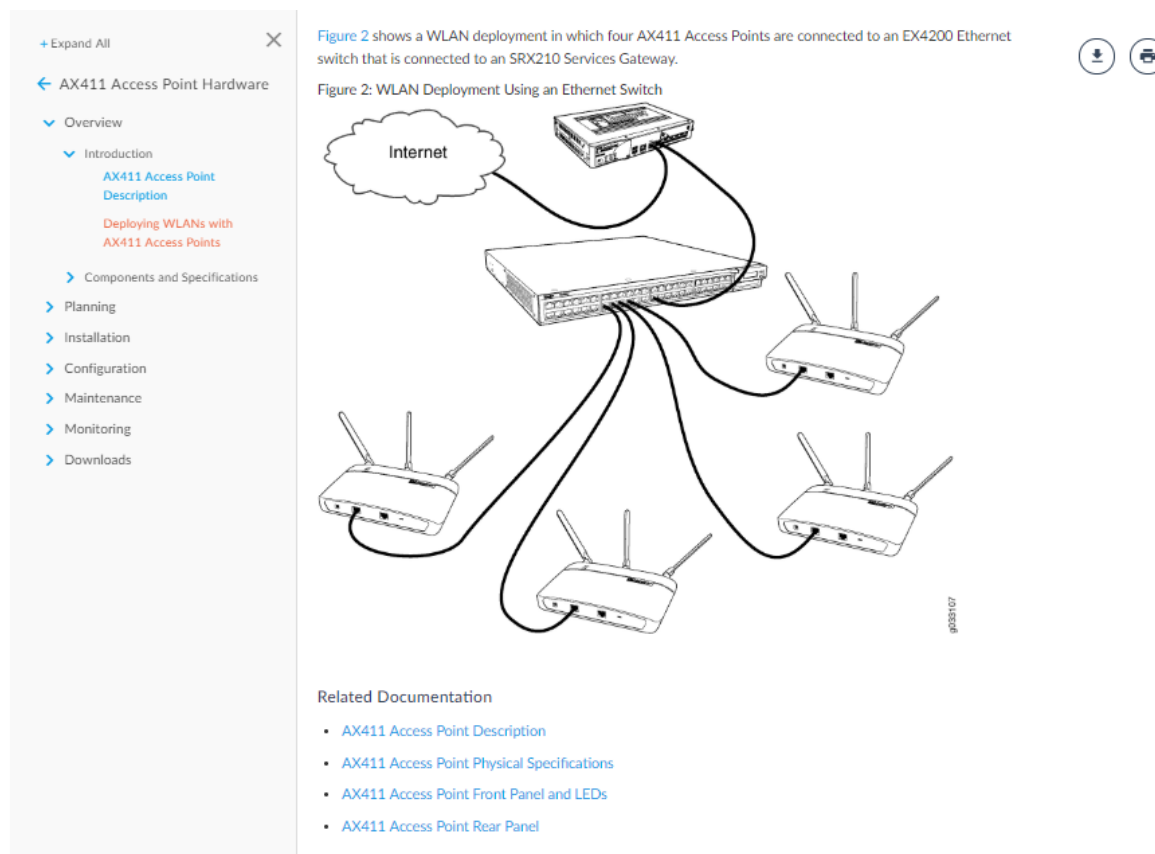
Figure 2 shows a WLAN deployment in which four AX411 Access Points are connected to an EX4200 Ethernet switch that is connected to an SRX210 Services Gateway.

Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html



Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

13. Juniper Networks provides a communication system comprising a land-line client. For example, Mist WLAN platform comprises of Ethernet Switches (such as EX2200, EX2200-C, EX-2300, EX2300-c etc.) which work together with wired and wireless devices.



Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

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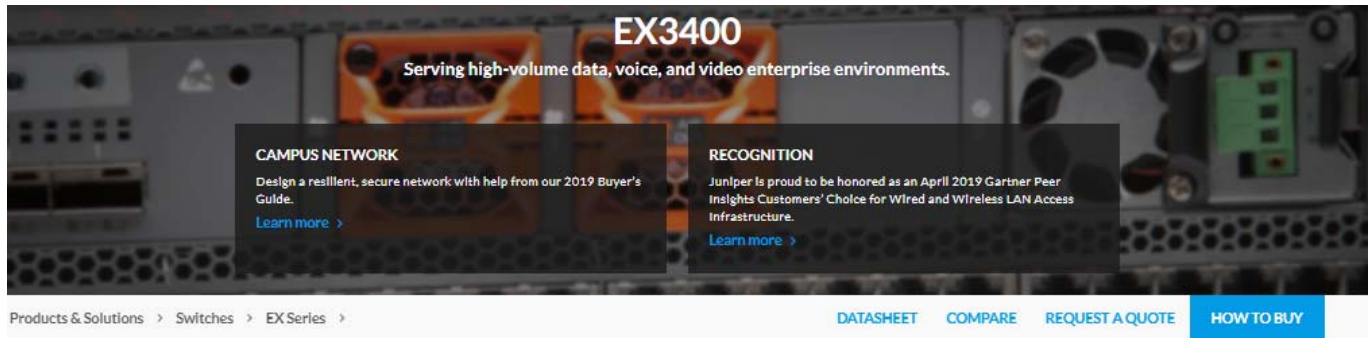
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	EX2300 Multigigabit Multigigabit, compact, high-density, cost-effective entry level switch for small to midsized network environments, where space and power are at a premium. Datasheet	EX2300-C Compact, power-efficient switch for low-density branch offices and enterprise workgroups with a fanless design ideal for open office deployments and commercial applications. Datasheet	EX3300 Compact switches for demanding converged enterprise access. Datasheet

Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/>



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EX3400 Overview

EX3400 Ethernet Switches are a cost-effective solution for today's most demanding converged data, voice, and video enterprise access networks. The compact, fixed-configuration 1U devices offer levels of performance and management previously available only with high-end access switches.

Featuring models offering either 24 or 48 10/100/1000BASE-T ports, the EX3400 switches also support IEEE 802.3af Power over Ethernet (PoE) or 802.3at PoE+ for powering networked telephones, video cameras, wireless LAN access points, and other IP devices. Four front-panel dual-mode (GbE/10GbE) small form-factor pluggable transceiver (SFP/SFP+) uplink ports and two 40GbE quad SFP+ (QSFP+) ports are also available for connecting the switches to upstream devices.

The EX3400 supports Juniper's unique Virtual Chassis technology for interconnecting up to 10 switches that can be managed as a single device. The EX3400 can also be configured as a satellite device in a Junos Fusion Enterprise deployment, which aggregates large numbers of access switches into a logical management platform.



High Availability	Virtual Chassis	Junos Fusion Enterprise	PoE/PoE+
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Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

EX3400 Features

Innovative Switch Design

Innovative switch design reduces cost and complexity, while unified management and automation tools consolidate system monitoring.

Virtual Chassis

With Virtual Chassis technology, multiple interconnected EX Series switches function as a single logical device, reducing operational expenses and simplifying management.

Centralized Management

When deployed as satellite devices in a Junos Fusion Enterprise environment, large numbers of EX3400 switches can be managed from a single interface.

Always-On Reliability

Based on a field-proven Juniper architecture and the Junos OS, EX Series switches deliver always-on reliability for every application.

Eight QoS Queues

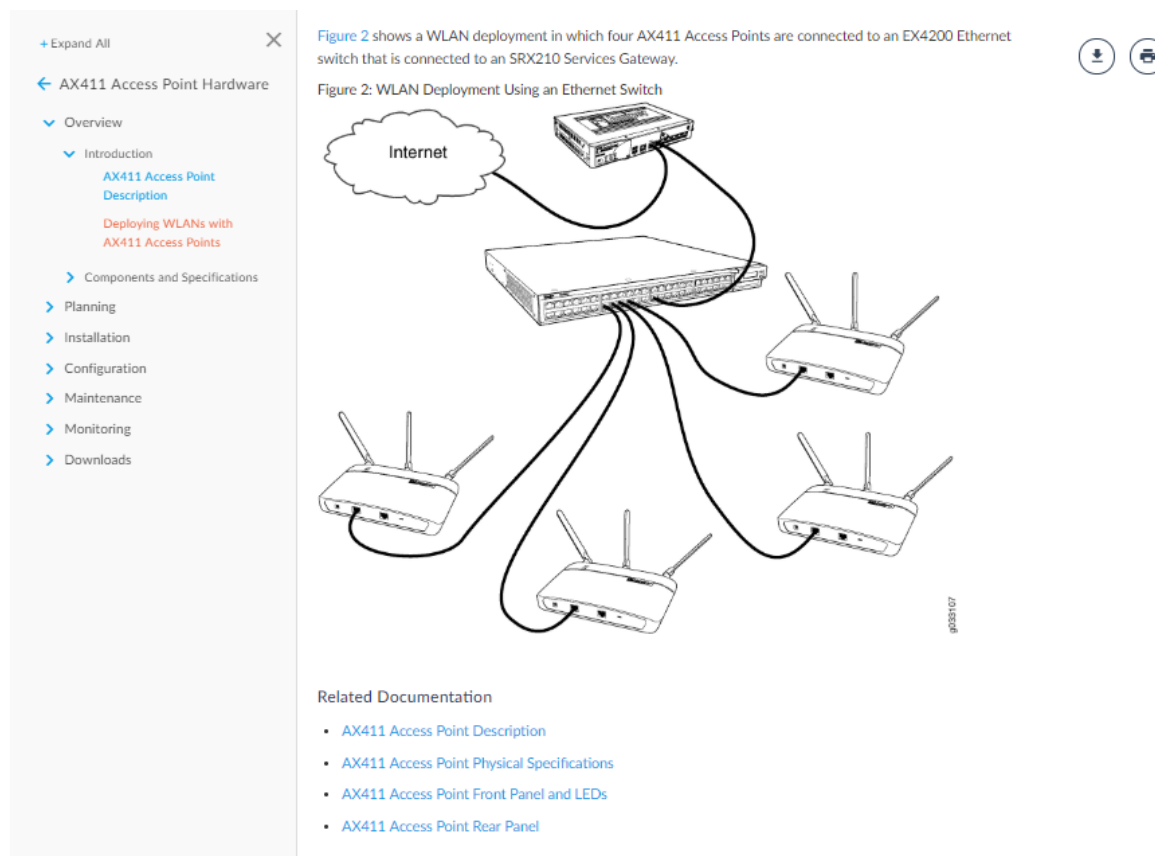
Eight QoS queues per switch port ensure proper prioritization of voice, video, and multiple levels of data traffic, with room to converge other networks, such as building automation and video security systems.

High Port Densities and Wire-Speed Performance

High 1GbE and 10GbE port densities and wire-speed performance provide flexibility in creating network topologies.

Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

14. Juniper Networks provides a communication system comprising a land-line network. For example, Mist WLAN platform comprises a land-line network which works with wired (land-line) network standards (such as IEEE 802.3 (Ethernet)).



Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

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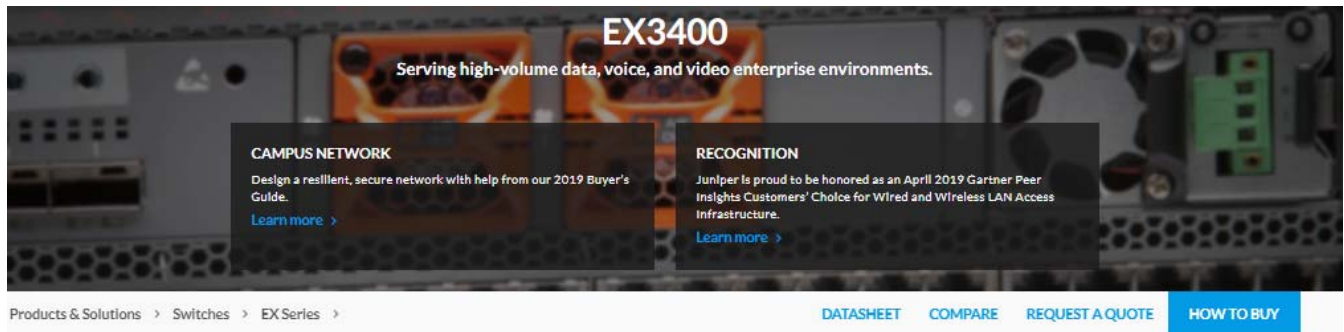
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Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

EX3400 Features

<p>Innovative Switch Design</p> <p>Innovative switch design reduces cost and complexity, while unified management and automation tools consolidate system monitoring.</p>	<p>Virtual Chassis</p> <p>With Virtual Chassis technology, multiple interconnected EX Series switches function as a single logical device, reducing operational expenses and simplifying management.</p>	<p>Centralized Management</p> <p>When deployed as satellite devices in a Junos Fusion Enterprise environment, large numbers of EX3400 switches can be managed from a single interface.</p>	<p>Always-On Reliability</p> <p>Based on a field-proven Juniper architecture and the Junos OS, EX Series switches deliver always-on reliability for every application.</p>
<p>Eight QoS Queues</p> <p>Eight QoS queues per switch port ensure proper prioritization of voice, video, and multiple levels of data traffic, with room to converge other networks, such as building automation and video security systems.</p>	<p>High Port Densities and Wire-Speed Performance</p> <p>High 1GbE and 10GbE port densities and wire-speed performance provide flexibility in creating network topologies.</p>		

Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

15. Juniper Networks provides a communication system comprising a network backbone interfacing said land-line network and said wireless network to allow data packets to be exchanged between said wireless client and said land-line client. For example, Mist WLAN platform supports wireless transport capable protocols such as TCP/IP (Transmission Control

Protocol/Internet Protocol) which acts as a network backbone interfacing land-line network and wireless network. TCP/IP network protocol allow data packets to be exchanged between wireless devices (such as Mist Access Points AP61, AP41, AP21 and/or BT11) and Ethernet Switches (such as EX2200, EX2200-C, EX-2300, EX2300-c etc.)

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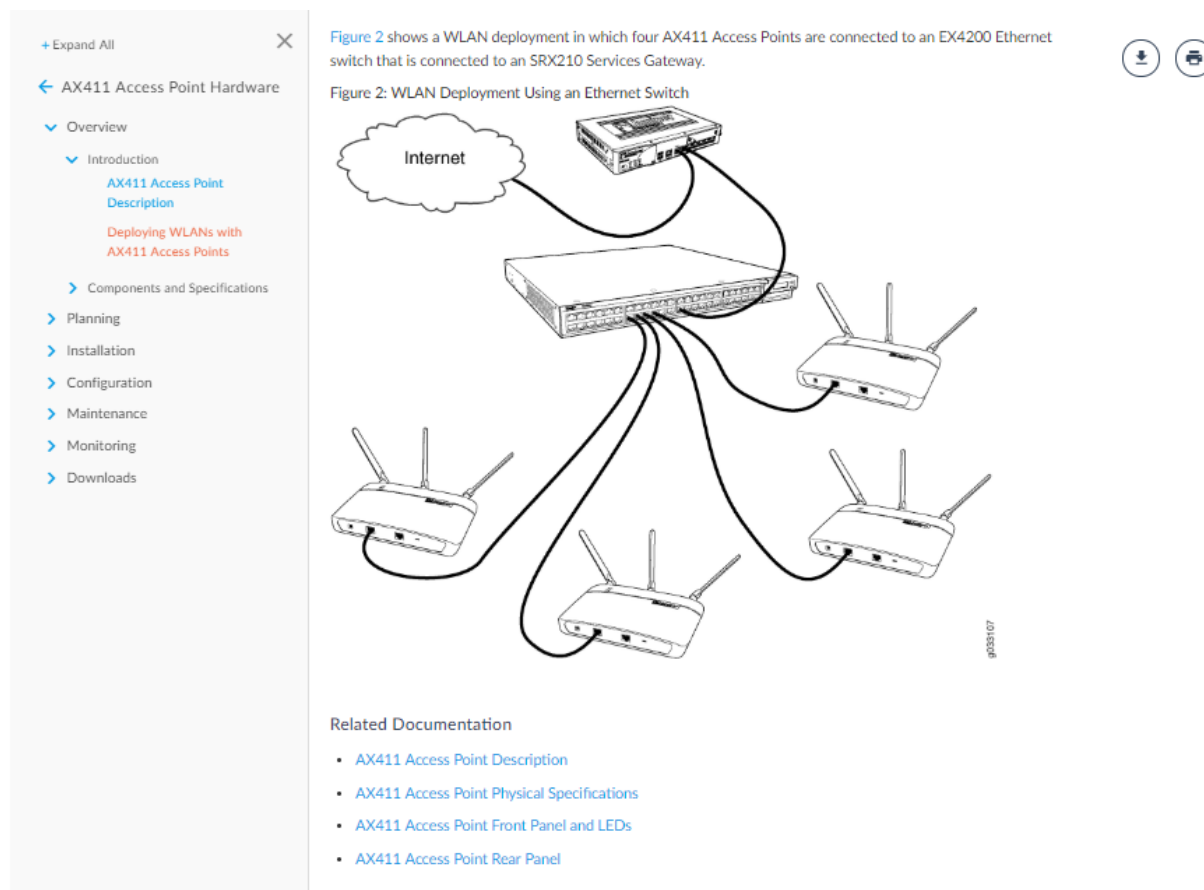
You can connect the access points either directly to the SRX Series device or to a Layer 2 switch that is connected to the SRX Series device.

Figure 1 shows a typical WLAN deployment in which four AX411 Access Points are connected directly to an SRX210 Services Gateway.

Figure 1: Typical WLAN Deployment

Figure 2 shows a WLAN deployment in which four AX411 Access Points are connected to an EX4200 Ethernet switch that is connected to an SRX210 Services Gateway.

Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html



Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

2. TCP/IP Overview

The generic term "TCP/IP" usually means anything and everything related to the specific protocols of TCP and IP. It can include other protocols, applications, and even the network medium. A sample of these protocols are: UDP, ARP, and ICMP. A sample of these applications are: TELNET, FTP, and rcp. A more accurate term is "internet technology". A network that uses internet technology is called an "internet".

2.1 Basic Structure

To understand this technology you must first understand the following logical structure:

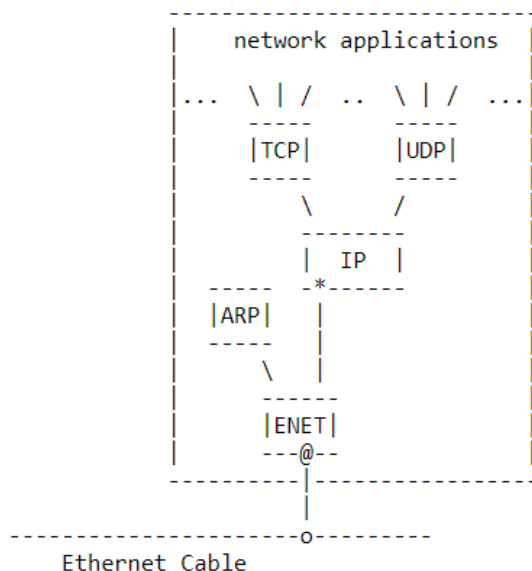


Figure 1. Basic TCP/IP Network Node

Source: <https://tools.ietf.org/html/rfc1180>, page 1

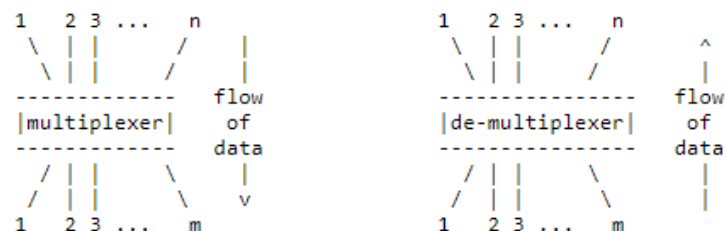


Figure 4. n-to-m multiplexer and m-to-n de-multiplexer

It performs this multiplexing in either direction to accommodate incoming and outgoing data. An IP module with more than 1 network interface is more complex than our original example in that it can forward data onto the next network. Data can arrive on any network interface and be sent out on any other.

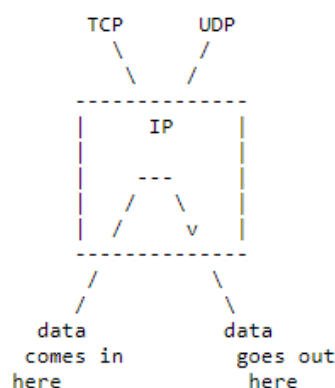


Figure 5. Example of IP Forwarding a IP Packet

The process of sending an IP packet out onto another network is called "forwarding" an IP packet. A computer that has been dedicated to the task of forwarding IP packets is called an "IP-router".

As you can see from the figure, the forwarded IP packet never touches the TCP and UDP modules on the IP-router. Some IP-router implementations do not have a TCP or UDP module.

Source: <https://tools.ietf.org/html/rfc1180>, page 5



EX3400
Serving high-volume data, voice, and video enterprise environments.

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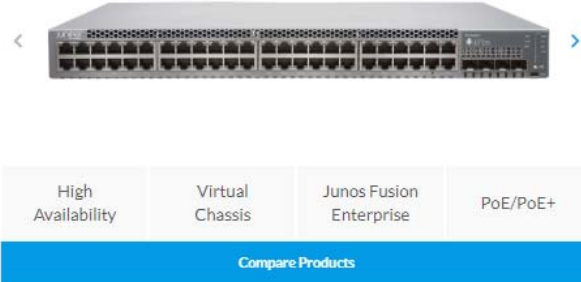
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EX3400 Overview

EX3400 Ethernet Switches are a cost-effective solution for today's most demanding converged data, voice, and video enterprise access networks. The compact, fixed-configuration 1U devices offer levels of performance and management previously available only with high-end access switches.

Featuring models offering either 24 or 48 10/100/1000BASE-T ports, the EX3400 switches also support IEEE 802.3af Power over Ethernet (PoE) or 802.3at PoE+ for powering networked telephones, video cameras, wireless LAN access points, and other IP devices. Four front-panel dual-mode (GbE/10GbE) small form-factor pluggable transceiver (SFP/SFP+) uplink ports and two 40GbE quad SFP+ (QSFP+) ports are also available for connecting the switches to upstream devices.

The EX3400 supports Juniper's unique Virtual Chassis technology for interconnecting up to 10 switches that can be managed as a single device. The EX3400 can also be configured as a satellite device in a Junos Fusion Enterprise deployment, which aggregates large numbers of access switches into a logical management platform.



Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

EX3400 Features

Innovative Switch Design

Innovative switch design reduces cost and complexity, while unified management and automation tools consolidate system monitoring.

Virtual Chassis

With Virtual Chassis technology, multiple interconnected EX Series switches function as a single logical device, reducing operational expenses and simplifying management.

Centralized Management

When deployed as satellite devices in a Junos Fusion Enterprise environment, large numbers of EX3400 switches can be managed from a single interface.

Always-On Reliability

Based on a field-proven Juniper architecture and the Junos OS, EX Series switches deliver always-on reliability for every application.

Eight QoS Queues

Eight QoS queues per switch port ensure proper prioritization of voice, video, and multiple levels of data traffic, with room to converge other networks, such as building automation and video security systems.

High Port Densities and Wire-Speed Performance

High 1GbE and 10GbE port densities and wire-speed performance provide flexibility in creating network topologies.

Source: <https://www.juniper.net/us/en/products-services/switching/ex-series/ex3400/>

16. Juniper Networks provides a communication system which uses a wireless transport layer protocol for data frame transmission over said land-line and wireless networks, each data frame including connection handling information specifying at least one data transport connection to be used to transmit data between said wireless client and said land-line client over said wireless and land-line networks, connection addressing information. For example, Mist

WLAN platform uses wireless transport capable protocols such as TCP/IP (Transmission Control Protocol/Internet Protocol) for data frames (such as Ethernet frame, IP packet, UDP datagram, and TCP segment and/or application message). Further, data frame (such as Ethernet frame) contains connection handling information such as the destination address, source address ("connection addressing information"), type field and data.

2.2 Terminology

The name of a unit of data that flows through an internet is dependent upon where it exists in the protocol stack. In summary: if it is on an Ethernet it is called an Ethernet frame; if it is between the Ethernet driver and the IP module it is called a IP packet; if it is between the IP module and the UDP module it is called a UDP datagram; if it is between the IP module and the TCP module it is called a TCP segment (more generally, a transport message); and if it is in a network application it is called a application message.

These definitions are imperfect. Actual definitions vary from one publication to the next. More specific definitions can be found in [RFC 1122, section 1.3.3](#).

A driver is software that communicates directly with the network interface hardware. A module is software that communicates with a driver, with network applications, or with another module.

Source: <https://tools.ietf.org/html/rfc1180, page 2>

3. Ethernet

This section is a short review of Ethernet technology.

An Ethernet frame contains the destination address, source address, type field, and data.

An Ethernet address is 6 bytes. Every device has its own Ethernet address and listens for Ethernet frames with that destination address. All devices also listen for Ethernet frames with a wild-card destination address of "FF-FF-FF-FF-FF-FF" (in hexadecimal), called a "broadcast" address.

Ethernet uses CSMA/CD (Carrier Sense and Multiple Access with Collision Detection). CSMA/CD means that all devices communicate on a single medium, that only one can transmit at a time, and that they can all receive simultaneously. If 2 devices try to transmit at the same instant, the transmit collision is detected, and both devices wait a random (but short) period before trying to transmit again.

Source: <https://tools.ietf.org/html/rfc1180, page 7>

4. ARP

When sending out an IP packet, how is the destination Ethernet address determined?

ARP (Address Resolution Protocol) is used to translate IP addresses to Ethernet addresses. The translation is done only for outgoing IP packets, because this is when the IP header and the Ethernet header are created.

4.1 ARP Table for Address Translation

The translation is performed with a table look-up. The table, called the ARP table, is stored in memory and contains a row for each computer. There is a column for IP address and a column for Ethernet address. When translating an IP address to an Ethernet address, the table is searched for a matching IP address. The following is a simplified ARP table:

IP address	Ethernet address
223.1.2.1	08-00-39-00-2F-C3
223.1.2.3	08-00-5A-21-A7-22
223.1.2.4	08-00-10-99-AC-54

TABLE 1. Example ARP Table

The human convention when writing out the 4-byte IP address is each byte in decimal and separating bytes with a period. When writing out the 6-byte Ethernet address, the conventions are each byte in hexadecimal and separating bytes with either a minus sign or a colon.

The ARP table is necessary because the IP address and Ethernet address are selected independently; you can not use an algorithm to translate IP address to Ethernet address. The IP address is selected by the network manager based on the location of the computer on the internet. When the computer is moved to a different part of an internet, its IP address must be changed. The Ethernet address is selected by the manufacturer based on the Ethernet address space licensed by the manufacturer. When the Ethernet hardware interface board changes, the Ethernet address changes.

Source: <https://tools.ietf.org/html/rfc1180>, page 8

application, the TCP module, and the IP module. At this point the IP packet has been constructed and is ready to be given to the Ethernet driver, but first the destination Ethernet address must be determined.

The ARP table is used to look-up the destination Ethernet address.

4.3 ARP Request/Response Pair

But how does the ARP table get filled in the first place? The answer is that it is filled automatically by ARP on an "as-needed" basis.

Two things happen when the ARP table can not be used to translate an address:

1. An ARP request packet with a broadcast Ethernet address is sent out on the network to every computer.
2. The outgoing IP packet is queued.

Every computer's Ethernet interface receives the broadcast Ethernet frame. Each Ethernet driver examines the Type field in the Ethernet frame and passes the ARP packet to the ARP module. The ARP request packet says "If your IP address matches this target IP address, then please tell me your Ethernet address". An ARP request packet looks something like this:

```

-----
|Sender IP Address  223.1.2.1|
|Sender Enet Address 08-00-39-00-2F-C3|
-----
|Target IP Address  223.1.2.2|
|Target Enet Address <blank>|
-----

```

TABLE 2. Example ARP Request

Each ARP module examines the IP address and if the Target IP address matches its own IP address, it sends a response directly to the source Ethernet address. The ARP response packet says "Yes, that target IP address is mine, let me give you my Ethernet address". An ARP response packet has the sender/target field contents swapped as compared to the request. It looks something like this:

Source: <https://tools.ietf.org/html/rfc1180#page-2>, page 9

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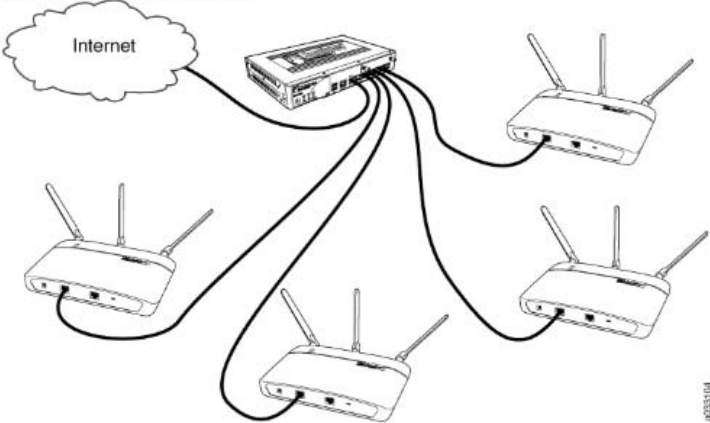
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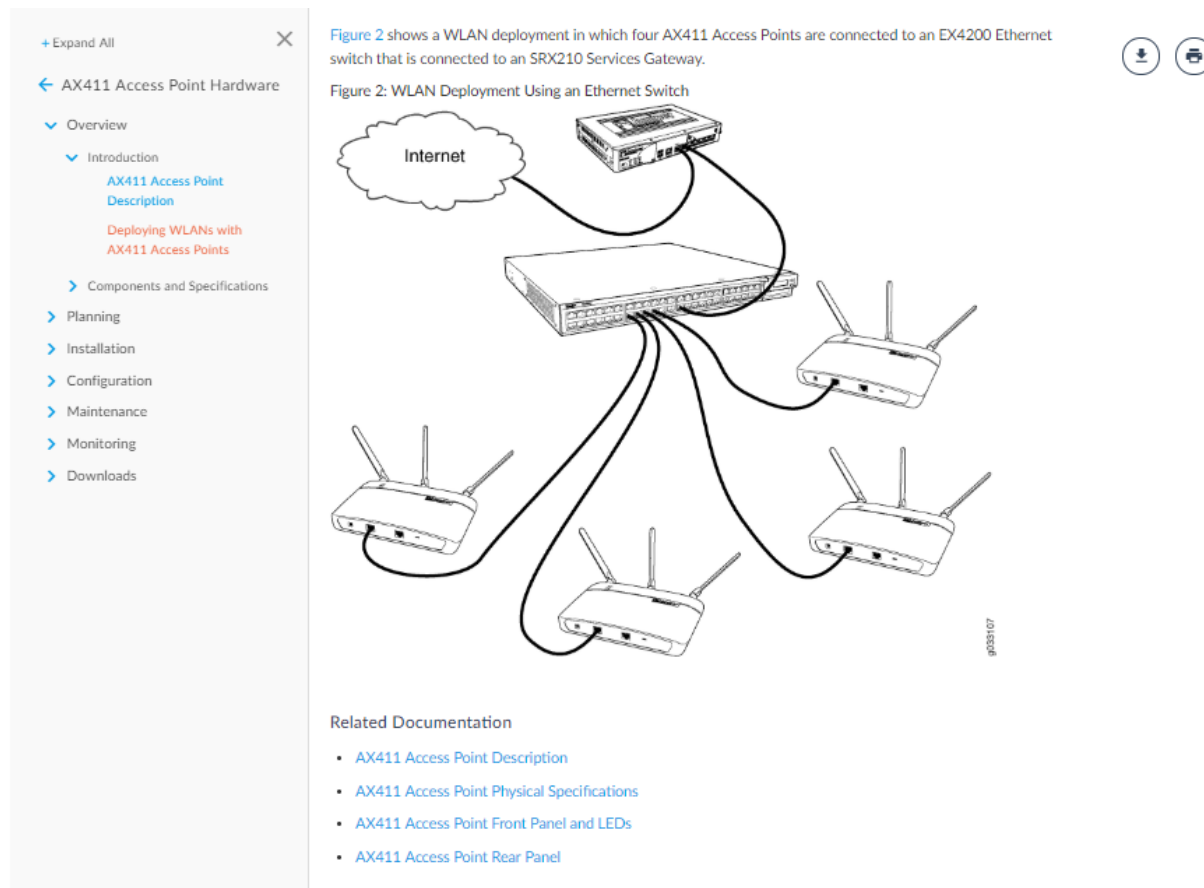
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Figure 1: Typical WLAN Deployment



[Figure 2](#) shows a WLAN deployment in which four AX411 Access Points are connected to an EX4200 Ethernet switch that is connected to an SRX210 Services Gateway.

Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html



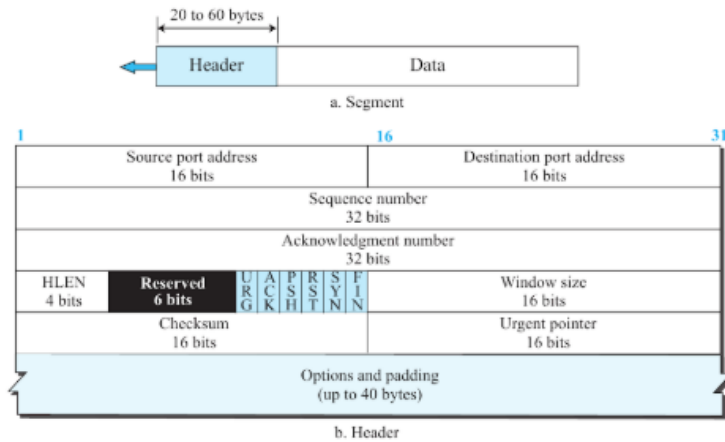
Source: https://www.juniper.net/documentation/en_US/release-independent/junos/topics/concept/access-point-ax411-deploying.html

17. Juniper Networks provides a communication system comprising a user data field including a data packet to be transmitted from one client to another client. For example, Mist WLAN platform uses protocols such as TCP/IP (Transmission Control Protocol/Internet Protocol) which packages user data into TCP segments (“data packets”). The data packets are transmitted between wired and wireless devices (“client”) using Mist WLAN platform.

CHAPTER 3 TRANSPORT LAYER

there are no options and up to 60 bytes if it contains options. We will discuss some of the header fields in this section. The meaning and purpose of these will become clearer as we proceed through the section.

Figure 3.44 TCP segment format



Source:

<https://books.google.co.in/books?id=o8CjAgAAQBAJ&printsec=frontcover&dq=forouzan+computer+networks&hl=en&sa=X&ved=0ahUKEwjV95WPruPhAhVFQo8KHWsUBTsQ6AEIKDAA#v=onepage&q=forouzan%20computer%20networks&f=false>, page 186

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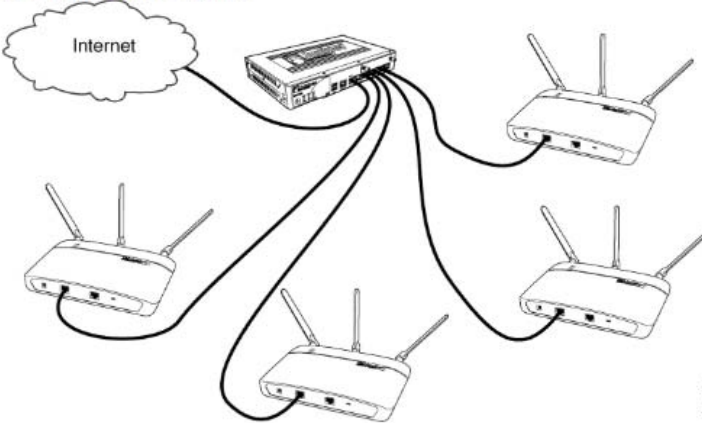
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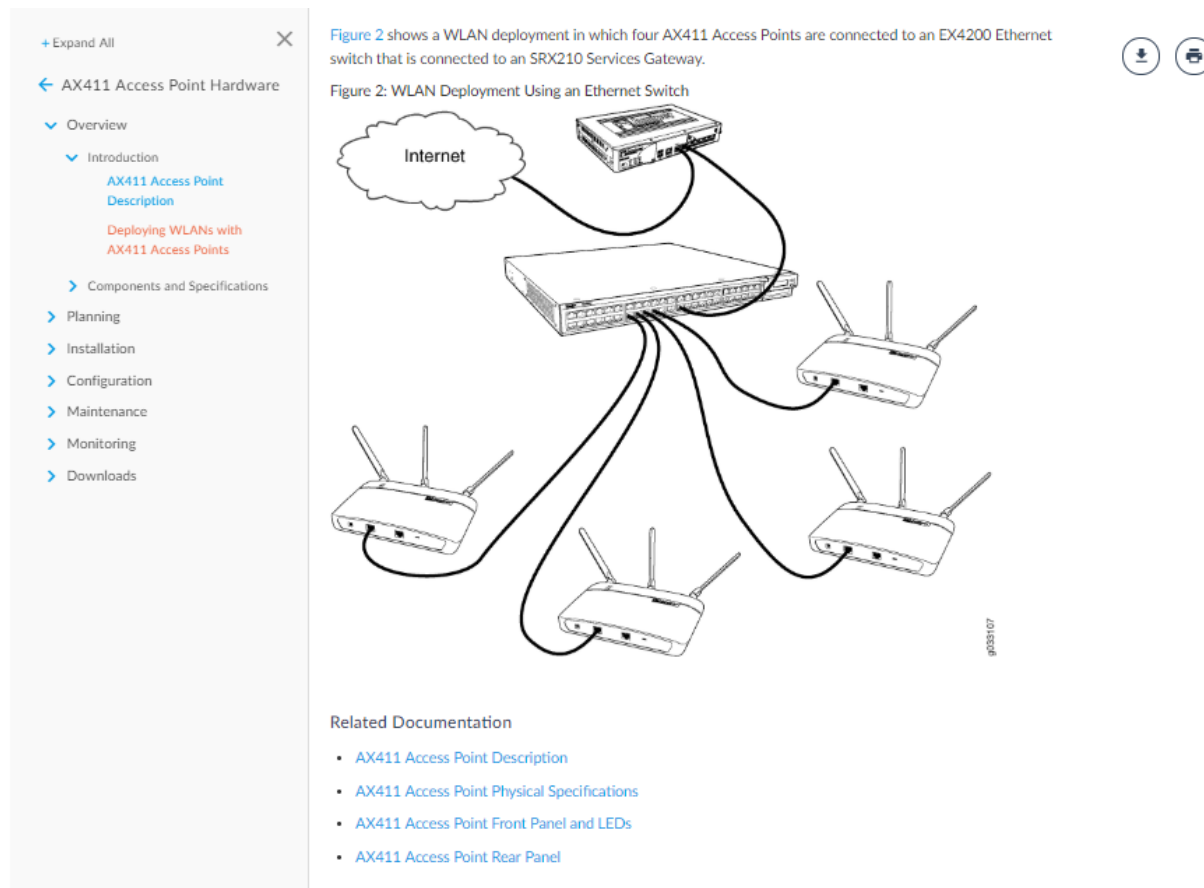
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18. Juniper Networks provides a communication system comprising at least one sequencing field identifying the last packet received by the client that is transmitting a current data packet. For example, Mist WLAN platform supports wireless transport capable protocols such as TCP/IP (Transmission Control Protocol/Internet Protocol) which uses sequence numbers and acknowledgement numbers for maintaining the sequence of the packets. Initial Sequence Number (ISN) is given to the first byte of the data to reassemble the bytes at the receiver end (wired and/or wireless devices). Acknowledgement number (“sequencing field”) is the next byte number that the receiver expects to receive which also provides acknowledgement for receiving the previous bytes/packets.

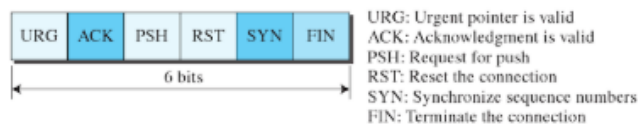
- ❑ **Source port address.** This is a 16-bit field that defines the port number of the application program in the host that is sending the segment.
- ❑ **Destination port address.** This is a 16-bit field that defines the port number of the application program in the host that is receiving the segment.
- ❑ **Sequence number.** This 32-bit field defines the number assigned to the first byte of data contained in this segment. As we said before, TCP is a stream transport protocol. To ensure connectivity, each byte to be transmitted is numbered. The sequence number tells the destination which byte in this sequence is the first byte in the segment. During connection establishment (discussed later) each party uses a random number generator to create an **initial sequence number** (ISN), which is usually different in each direction.
- ❑ **Acknowledgment number.** This 32-bit field defines the byte number that the receiver of the segment is expecting to receive from the other party. If the receiver of the segment has successfully received byte number x from the other party, it returns $x + 1$ as the acknowledgment number. Acknowledgment and data can be piggybacked together.
- ❑ **Header length.** This 4-bit field indicates the number of 4-byte words in the TCP header. The length of the header can be between 20 and 60 bytes. Therefore, the value of this field is always between 5 ($5 \times 4 = 20$) and 15 ($15 \times 4 = 60$).

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- ❑ **Control.** This field defines 6 different control bits or flags, as shown in Figure 3.45. One or more of these bits can be set at a time. These bits enable flow control, connection establishment and termination, connection abortion, and the mode of data transfer in TCP. A brief description of each bit is shown in the figure. We will discuss them further when we study the detailed operation of TCP later in the chapter.

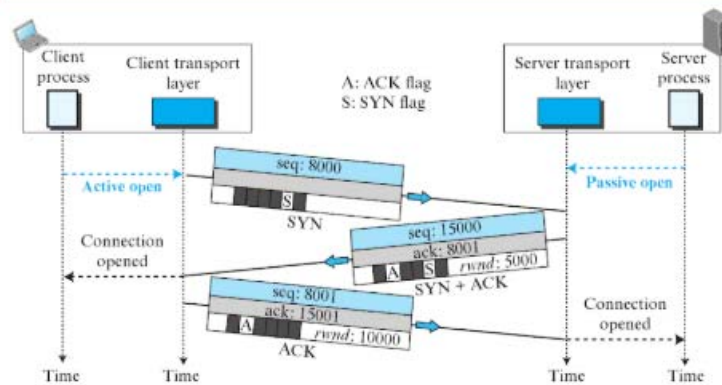
Figure 3.45 Control field



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Figure 3.47 Connection establishment using three-way handshaking



number, the control flags (only those that are set), and window size if relevant. The three steps in this phase are as follows.

1. The client sends the first segment, a SYN segment, in which only the SYN flag is set. This segment is for synchronization of sequence numbers. The client in our example chooses a random number as the first sequence number and sends this number to the server. This sequence number is called the initial sequence number (ISN). Note that this segment does not contain an acknowledgment number. It does not define the window size either; a window size definition makes sense only when a segment includes an acknowledgment. The segment can also include some options that we discuss later in the chapter. Note that the SYN segment is a control segment and carries no data. However, it consumes one sequence number because it needs to be acknowledged. We can say that the SYN segment carries one imaginary byte.

A SYN segment cannot carry data, but it consumes one sequence number.

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2. The server sends the second segment, a SYN + ACK segment with two flag bits set as: SYN and ACK. This segment has a dual purpose. First, it is a SYN segment for communication in the other direction. The server uses this segment to initialize a sequence number for numbering the bytes sent from the server to the client. The server also acknowledges the receipt of the SYN segment from the client by setting the ACK flag and displaying the next sequence number it expects to receive from the client. Because it contains an acknowledgment, it also needs to define the receive window size, *rwnd* (to be used by the client), as we will see in the flow control section. Since this segment is playing the role of a SYN segment, it needs to be acknowledged. It, therefore, consumes one sequence number.

**A SYN + ACK segment cannot carry data,
but it does consume one sequence number.**

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3. The client sends the third segment. This is just an ACK segment. It acknowledges the receipt of the second segment with the ACK flag and acknowledgment number field. Note that the ACK segment does not consume any sequence numbers if it does not carry data, but some implementations allow this third segment in the connection phase to carry the first chunk of data from the client. In this case, the segment consumes as many sequence numbers as the number of data bytes.

An ACK segment, if carrying no data, consumes no sequence number.

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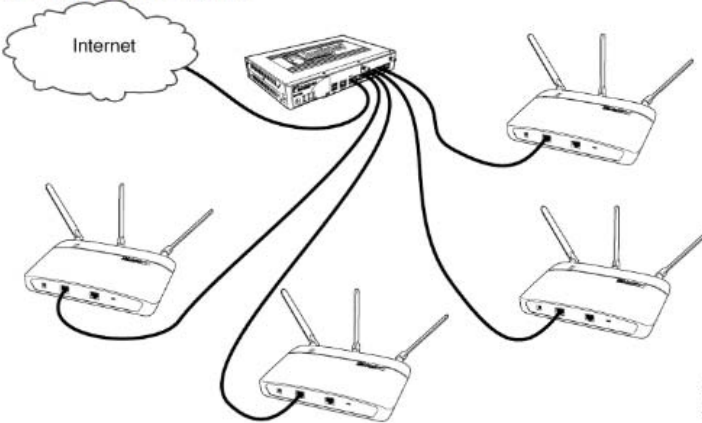
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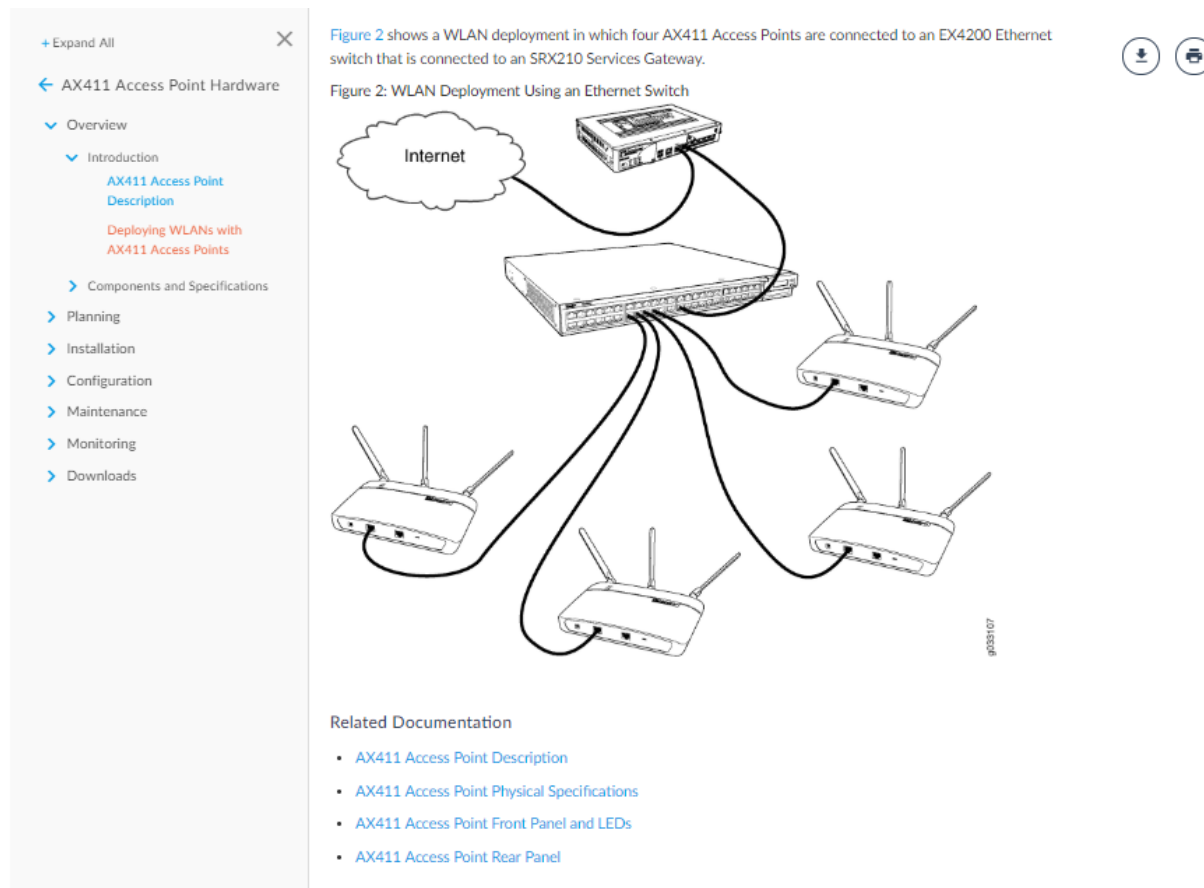
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19. In the alternative, because the manner of use by Defendant differs in no substantial way from language of the claims, if Defendant is not found to literally infringe, Defendant infringes under the doctrine of equivalents.

20. Defendant's aforesaid activities have been without authority and/or license from Plaintiff.

21. In addition to what is required for pleadings in patent cases, and to the extent any marking was required by 35 U.S.C. § 287, Plaintiff and all predecessors in interest to the '095 Patent complied with all marking requirements under 35 U.S.C. § 287.

22. Plaintiff is entitled to recover from Defendant the damages sustained by Plaintiff as a result of the Defendant's wrongful acts in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

1. A judgment in favor of Plaintiff that Defendant has infringed the '813 Patent;
2. A judgment and order requiring Defendant to pay Plaintiff its damages, costs, expenses, and prejudgment and post-judgment interest for Defendant's infringement of the '813 Patent as provided under 35 U.S.C. § 284;
3. An award to Plaintiff for enhanced damages resulting from the knowing, deliberate, and willful nature of Defendant's prohibited conduct with notice being made at least as early as the date of the filing of this Complaint, as provided under 35 U.S.C. § 284;
4. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys' fees; and
5. Any and all other relief to which Plaintiff may show itself to be entitled.

DEMAND FOR JURY TRIAL

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Respectfully Submitted,

WIRELESS TRANSPORT LLC

/s/Papool S. Chaudhari

Dated: July 30, 2019

By: _____

PAPOOL S. CHAUDHARI
Texas Bar No. 24076978
Sul Lee Law Firm PLLC
3030 LBJ Fwy, Suite 1130
Dallas, Texas 75234
pchaudhari@sulleelaw.com
Tel. (972) 241-9200
Fax. (214) 206-4068

**ATTORNEYS FOR PLAINTIFF
WIRELESS TRANSPORT LLC**