Fast Lane: Where Code (Apple) Meets Network Infrastructure (Cisco)

Cisco DevNet Webinar Series

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Hostess: Kara Sullivan | Cisco Networking Academy
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Welcome to the 4th session of the Cisco DevNet webinar series

- Use the Q and A panel to ask questions.
- Use the Chat panel to communicate with attendees and panelists.
- A link to a recording of the session will be sent to all registered attendees.
- Please take the feedback survey at the end of the webinar.
Before We Get Started

Today’s Presentation:

• Difficulty Level: Medium
• Recommended Background: CCNA 1 with Coding
Cisco DevNet Series

1. Intro to Software & Programmability (Available On-Demand)
2. Intro to Coding (Available On-Demand)
3. Intent Networks (Available On-Demand)
5. APIs with Cisco Spark – 14 December, 9:00 a.m. PST


Where Code (Apple) Meets Network Infrastructure (Cisco)
Cisco DevNet Series: Fast Lane

Ashutosh Malegaonkar
Cisco DevNet
November 2017
Agenda

- Digital transformation driving programmable networks
- Fast lane technology overview
  - Quick overview of QoS
  - Fast lane Technology and demo
- DevNet Fast lane validation labs
- Summary and Opportunities
Personal Transformation
My Personal Transformation

Device Drivers - Embedded Systems

Voice and Video Stacks (Middleware)

Web and Cloud Applications

“Every next level of your life will demand a different version of you. Keep Re-Inventing Yourself”
Digital Transformation and Programmable Networks
Digital transformation needs an integrated approach

Network + Security

Apps

Devices

Clouds
Where modern apps meet programmable infrastructure

- Modern Applications
- APIs & Automated Processes
- Programmable Infrastructure
Modern Applications

- Network Performance
- Location Based Services
- Security
- NetDevOps
- Multi Cloud
How can one guarantee the quality of the modern app performance?
Quality Performance Use Cases

1. Stadiums
   - Live Updates
   - Smart Check-in

2. Healthcare
   - Doctor Staff communications
   - Reporting

3. Retail Augmented Reality
   - Smart shopping

4. Casinos
   - High touch gaming

5. Kiosks
   - Point of Sale Machines
   - Info Kiosks
Typical Healthcare Environment

Customer Example
- Hospitals provide Public Wi-Fi and need to operate business critical apps with top performance

Key Business Challenges
- Doctors, Nurses, Clinicians require to communicate with each other and the patient devices
- Little user intervention required to gain access
- Seamless and consistent experience on any device and any location
Retail Environment

Customer Example

- Retailer provide Public Wi-Fi and need to operate business critical apps with top performance

Key Business Challenges

- Retailers are looking to provide new experiences to shoppers who can do comparative shopping etc

- Seamless and consistent experience on any device and any location
What is Fast Lane?
What is Fast Lane

Fast lane enables business applications running on Apple iOS devices to prioritize their traffic [Quality of Service (QoS)] when used on Cisco Wi-Fi networks.
Quality of Service Refresher (QoS)
Quality of Service (QoS)

“QoS mechanisms are designed to provide specific applications with guaranteed or consistent service in the absence of optimal bandwidth conditions”

There are three key methodologies for implementing QoS:

- Best-Effort
- Integrated Services (IntServ)
- Differentiated Services (DiffServ)
QoS Refresher – Types

• **Best-Effort QoS** is essentially *no* QoS. Traffic is routed on a first-come, first-served basis. Sensitive traffic is treated no differently than normal traffic.

• **Integrated Services (IntServ) QoS** is also known as *end-to-end* or *hard* QoS. IntServ QoS requires an application to *signal* that it requires a specific level of service. *Every* device end-to-end must support the IntServ QoS protocol(s).

• **Differentiated Services (DiffServ) QoS** – Traffic types are organized into specific **classes**, and then **marked** to identify their classification. **Policies** are then created on a *per-hop basis* to provide a specific level of service, depending on the traffic’s classification.
Fast Lane Details

Fast Lane Enabled Device

Enable Fast Lane

Special Handshake

Cisco or Meraki Access Point (AP)

Apple iOS 10+ device
Fast Lane Details

Fast Lane Enabled Device

Enable Fast Lane

Special Handshake

Prioritized Traffic

Cisco or Meraki APs

Set Application Profile for the user type

Mobile Device Management - Admin

Apple iOS 10+ device
Developers work with DevNet to Fast lane enable to:

- Understand traffic types of their application
- Understand the required iOS code changes
- Test their application on Cisco Infrastructure – we help developers validate apps!
Let’s Fast Lane Enable the Cisco Spark App

The Cisco Spark App does the following –

• Real-time chat
• Real-time Voice calls
• Real-time Video calls
• Signaling
• Content upload
Understanding Traffic Types

- Real time Interactive Voice
- Real time Interactive Video
- Best Effort (Real time Data)
- Background (backups, media uploads etc)
You set the service type property by using the following networking APIs:

<table>
<thead>
<tr>
<th>CFStreamSocket</th>
<th>kCFStreamNetworkServiceType</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSStream</td>
<td>NSStreamNetworkServiceType</td>
</tr>
<tr>
<td>Stream</td>
<td>StreamNetworkServiceType</td>
</tr>
<tr>
<td>UDP sockets</td>
<td>SO_NETSERVICE_TYPE</td>
</tr>
</tbody>
</table>
Fast Lane Details

Fast Lane Enabled Device

Cisco or Meraki Access Point (AP)

Switches up-stream
Demo

https://www.youtube.com/watch?v=kTMWNKF-xuA
Bringing it home..

https://devnet.cisco.com/site/fast-lane/
DevNet Fast Lane Validation Labs
Fast Lane Validation Program

User

DevNet
developer.cisco.com

Fast Lane Validation Lab
- Capturing
- Processing
- Reporting

Feedback

Fast lane verified apps
Cisco Marketplace

YES
(Report)

NO
DevNet Fast Lane Validation Lab

The goal of this lab is to do the following:

• **Validate** if your app running on an iOS 10 device honors the Fast lane profile as well as checks with and without the application name being configured (apps in the list get QoS, apps outside the list are treated as Best Effort).

• Test for the validity of the traffic generated by the app to the actual tag that is marked on the traffic flow.

• Improve **user experience** (performance) of your app. Check for fewer drops and lower latency in a congested network.
Verifying QoS – Whitelist Traffic

Stations do mark upstream traffic, at Layer 2 and Layer 3.
Verifying Traffic – non Fast Lane Traffic

Stations do not mark upstream traffic, at Layer 2 or Layer 3.
Summary
Careers where Fast Lane technology is relevant

- **App Developer**
  - Marks Application Traffic based on iOS 10 API

- **Network Admin**
  - Upgrades network devices.
  - Enables Fast Lane of required SSIDs

- **Mobile Device Mgr.**
  - Creates and manages Enterprise App Profiles
  - Keeps Devices up-to-date

- **Informed End User**
  - Understands App functionality
  - Understands QoS
Summary

• Fast lane enables business applications running on Apple iOS devices to prioritize their traffic [Quality of Service (QoS)] when used on Cisco Wi-Fi networks

• Simple setup on Cisco networks, turned on by default in Meraki.

• DevNet has validation Labs where any App developer or company can validate their app for free.

• DevNet has experts who are willing to consult you to enable your iOS app
Next Steps

➤ Join DevNet Now!
https://developer.cisco.com

➤ Learn more about Fast Lane at
https://devnet.cisco.com/site/fast-lane/

➤ Coming Soon! NetAcad Emerging Technology Workshop
Using Spark REST APIs
https://netacad.com
Questions?