UNLEASH THE POWER OF LIMITLESS CONNECTIVITY
Wireless Access Network

Optimizing Value from Service Provider Wi-Fi in a Converged World

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Service Provider Wi-Fi | Network

Over 900k Access Points
Consisting of indoor and outdoor service provider APs as well as secondary SSIDs from business and consumer Wi-Fi APs

Wide Availability
Available, free of charge to broadband subscribers, wireless subscribers and to the public for the duration of the COVID-19 pandemic

Unlimited Data
Wi-Fi data is not limited, speed caps are 30/5Mbps for broadband subscribers and 100/10Mbps for wireless subscribers
Subscribers want access to their broadband applications at home, on the go and at their destinations

- Wireline at home
- Wireless on the go
- Service provider Wi-Fi at your destination

What is the user experience?
Anecdotal accounts pointed towards some subscribers connecting to the network and not being able to connect to their applications

Is the network used as intended?
The network was meant to extend subscriber’s services, but were they replacing them? Was the network being accessed in unintended ways?
Service Provider Wi-Fi | Time of Day

Wireline network peaks in the late evening when subscribers are at home.

Wireless network peaks in the late afternoon when subscribers are on the go.

Wi-Fi behaves like the wireless network with a delayed start to the day.
Service Provider Wi-Fi | General Stats

### Devices per Account

- 2 devices per account on average

### Days of Use per Month

- Days of use is evenly spread

### Monthly Consumption per Device

- Monthly consumption is approximately 1GB, low compared to wireline, on the same scale as wireless

- Wireless Subscriber
- Wireline Subscriber

- Comparison graph showing usage from Aug-19 to Feb-20.
Cumulative Distribution Functions
Wireline and Wi-Fi consumption are both highly weighted toward a small percentage of users, Wi-Fi slightly more so. 20% of wireline subscribers account for 75% of consumption, while 20% of Wi-Fi subscribers account for 85% of consumption.

Application Use
Both wireline and Wi-Fi network traffic is dominated by video. YouTube accounts for the most Wi-Fi consumption with shorter content designed for smaller screens, while Netflix dominates wireline consumption due to longer content and larger screens.
• Subscribers with heavy Wi-Fi consumption tend to also have heavy wireline/wireless consumption

• Wi-Fi consumption is similar between wireline and wireless subscribers, but wireline accounts have two devices on average per account
• Wi-Fi APs were installed at many types of venues
• Transportation, Hotels and Wi-Fi Zones had higher consumption per AP than other venues
• One Wi-Fi Zone in particular was thought to be causing customer experience issues and was investigated

• The venue coverage was provided by outdoor strand mounted APs
• The variation between APs in terms of unique devices and monthly consumption was large
• The AP in the top right was further investigated
Service Provider Wi-Fi | Venue Analysis

Popular Intersection

13k Devices/mo

Popular Intersection

Professional Corporation

Calgary Gold

Impark (Parking)

Trans-Canada Hwy

16 Ave NW

Carls Jr

Starbucks

Earls Kitchen + Bar

Phoenix Complex

Tribal Expression

Highest Consumption (DS+US) by Device

Protocol Mix – Social and Web dominate

SSL v3

iTunes Store

Instagram

Facebook

iCloud

Apple Software Update

Google

Spotify

Android Market

YouTube

Max Speed by Device – Majority well below 10Mbps peak

Based on 5 min data samples
Optimizations prevented users with very low signal levels from connecting.

As expected, device connections on 2.4GHz decreased.

Overall traffic increased as connectivity quality increased.
• A methodology was required to decide the priority in upgrading APs to Wi-Fi 6

• The decision was made to use the number of subscribers that consumed more than 50MB per month at the AP

• 50MB was chosen as it provides tangible offload as opposed to low consumption tasks such as checking email

• Goal is to focus investments where customers get the most value
Small cells are similar to Wi-Fi APs

When it comes to capacity and coverage, small cells, especially when using mmWave spectrum, look more like Wi-Fi APs than macro cells.

Requirement for placement

Small cells will be deployed where people gather to augment the capacity of the macro network, just like service provider Wi-Fi APs.
• Both service provider Wi-Fi and small cells were deployed to a venue

• RF coverage planning was done separately, but resulted in similar placement

• Wireless subscribers, who had access to both networks, had 4.4X more consumption on the Wi-Fi network than the small cell network
Service Provider Wi-Fi | COVID-19 Update

Service Provider Wi-Fi

Home Hotspot

Wi-Fi Consumption dropped 50%

Home hotspot consumption grew slightly

Application use stayed mostly constant, with less Instagram and more Facebook use

Daily Consumption

Jan-20 Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20 Aug-20

Percent of Consumption

0% 2% 4% 6% 8% 10% 12% 14% 16% 18%

YouTube Netflix Instagram Facebook SSL v3 Apple Software Update iTunes Store Facebook video Google

Jan-20 Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20 Aug-20

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Thank You!

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