

# **Network Overview**

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# Company Overview

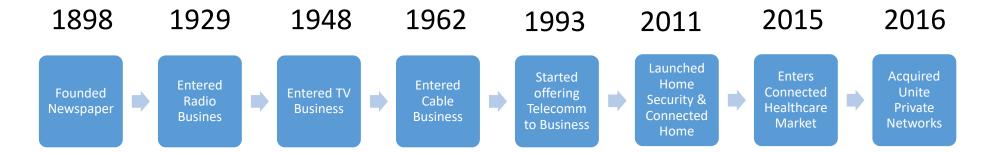


- Company Started as a newspaper company in 1898
- Cable Division Formed in 1962
- ➤ Third largest Cable Provider
- ➤ Serves ≈ \$6.2M Subs
- History of adopting new technology

## **Notable Milestones**







- ☐ Strategy: Leverage the capacity and capability of Nationwide IP Network to deliver array of services and create multiple revenue streams:
  - ☐ Connected Home gaining market share
  - ☐ Entered Connected Medical Market via Trapollo acquisition
  - ☐ Focused on growing commercial customer base



### **SERVICE AREA MAP**

Cox National IP Backbone - Pre Unite Private Networks Acquisition

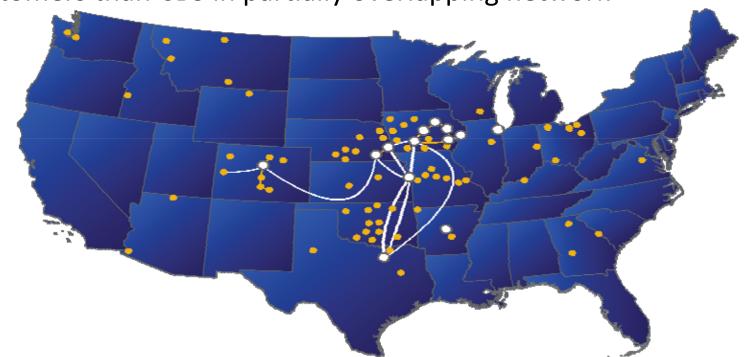


- Serves approx. 20 Markets in 12 States
- Approximately 20% of Revenues from Commercial Customers

## Unite Private Network's Service Area Map

- Acquired 10/31/16
- 6,200 Route Mile Fiber Network
- Located in 20 states

 Complimentary Fiber Network that serves larger commercial customers than CBS in partially overlapping network



### **BIGGEST INFRASTRUCTURE CHALLENGE:**





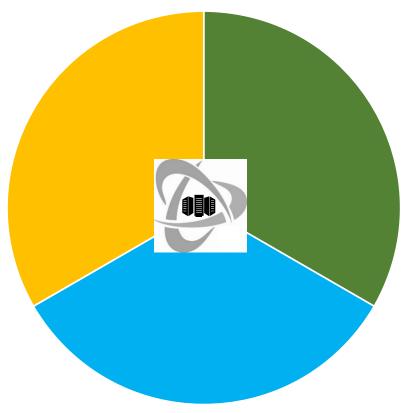
### Support Bandwidth Demand

- Demand is doubling every 18 months. Primary driver?
- Streaming Video Streaming video accounts for approximately 70% percent of peak period downstream traffic on North American fixed networks
- Every night for us is busy season as demand as usage takes up most of available bandwidth

## Strategies to Increase Bandwidth

#### Fiber Deeper Architecture

Driving fiber deeper architectures to enable delivery of higher bandwidth services & enable transition to future access technologies



#### Fiber to the Home

Maximize Bandwidth by pushing fiber all the way to the home

#### **DOCSIS 3.1 Implementation**

Enable additional upstream capacity through spectrum expansion (10 GHz downstream & 1 GHz upstream)

## BANDWIDTH MAXIMIZATION STRATEGIES

#### **All Digital**

- Removed analog channels from line-up in 2014-2016
- This freed-up approximately 35% of existing spectrum

#### Switched digital

- Only push programming to a customers home when program requested
- Migration occurred in 2016
- Allows bandwidth to be shared among channels with low viewership

#### Now What?



## **DOCSIS 3.1 IMPLEMENTATION**



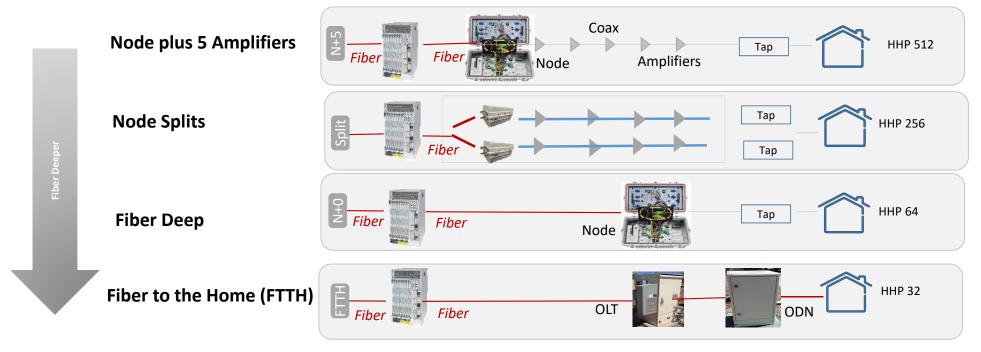
#### **Background**

- DOCSIS is The international standard used for transferring data over cable TV systems
- DOCSIS 3.1 is latest version of this standard
- Starting market trials in Q1 2017

#### Why is 3.1 significant?

- D3.1 deploys a new modulation method that allows for higher bandwidth availability and faster speeds (10G downstream & 1G upstream)
- Deployment results in Cox doubling available bandwidth in market

## FIBER DEEPER & FIBER TO THE HOME ARCHITECTURE



- Currently one node covers approx. 500 homes
- Node Splits reduces homes passed to 256/Fiber Deep reduces to 64
- Running Fiber all the way to homes reduces homes passed to 32

Expensive to run FTTH Push fiber deeper increases current bandwidth availability, and makes it easier to continue extending fiber at a later date

## IMPLEMENTATION PLAN

#### **New Projects:**

 Build all greenfield projects using FTTH

#### **In Competitive Markets:**

- Start migrating to fiber deep
- Extend fiber, but continue to leverage HFC network. Transition to DOCSIS 3.1

#### All other Markets:

 Continue with node splits with a focus on Fiber Deep end state

