End to End : Getting It right

Last Mile

Solution

- **Reliability**

    Consistent experience for served user

    Environmentally Sensitive Access

- **Ubiquity**

    Mass market services need mass market consistent delivery

- **Geographical Restrictions**

    Geo-Physical

    Geo-Financial

- **Financial**

    Cost of acquisition

    Cost of support

- **Reliability**

    Copper in short term

    Wireless In-Fill

    Device capabilities

    Fibre

- **Ubiquity**

    Adopt progressive delivery device technology

    I-Frame Caching

- **Geographical Restrictions**

    Blended delivery

    Restrictions of wholesale model

- **Financial**

    Volume of mass market

    Simple consistent delivery model

Edge

Pixilation

Ghosting

Slice error

Challenges

■ Visibility of Service Quality

Monitoring at many distributed sites

Pro-active measures

■ Availability and Dependency

Customer Perceived SLA

■ Capacity Management

Full Bandwidth

By Class

■ Service Flexibility

Adapt to new models

Dynamic usage

Solution

■ Visibility of Service Quality

Network based quality measurement

Fast switching of suspect streams

■ Availability and Dependency

More intelligent edge

Distribution and resilience

■ Service Flexibility

Local insertion of broadcast

CDN

■ Capacity Management

Sophisticated traffic management

Enhanced tooling

Core

Challenges

■ **Capacity and Availability**

Traffic Polarisation

Large Link Dependency

Capacity Management

■ **Flash Events / Attacks**

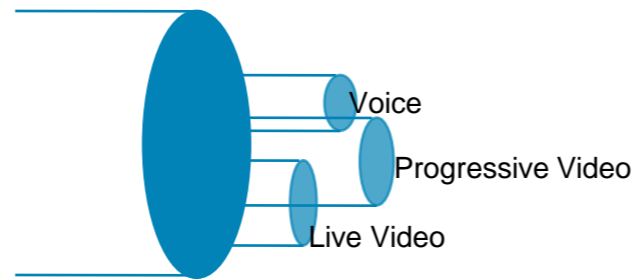Prevent Link Starvation

Class Management

■ **Multi-Service**

Multiple Service

Multiple Classes

■ **Peering**

Cost

Complexity

Voice

Progressive Video

Live Video

Solution

■ **Capacity and Availability**

Managed Traffic Distribution

Link Bundling

Improved Tooling

■ **Flash Events / Attacks**

Dynamic Bandwidth Management

Class Protection

■ **Multi-Service**

"Over Seeing" Bandwidth Manager

■ **Peering**

Private Peering

CDN

Home

Challenges

- **Cost Sensitive**

  Consistent experience for served user

  Environmentally Sensitive Access

- **Ubiquity**

  Mass market services need mass market consistent delivery

- **Simplicity**

  Complex functions

  Multiple fault sources

- **Support**

  Cost of inbound calls

  Impossible to set delineation

Solutions

- **Cost Sensitive**

  Acknowledge CPU capability

  Look at different financial models

- **Ubiquity**

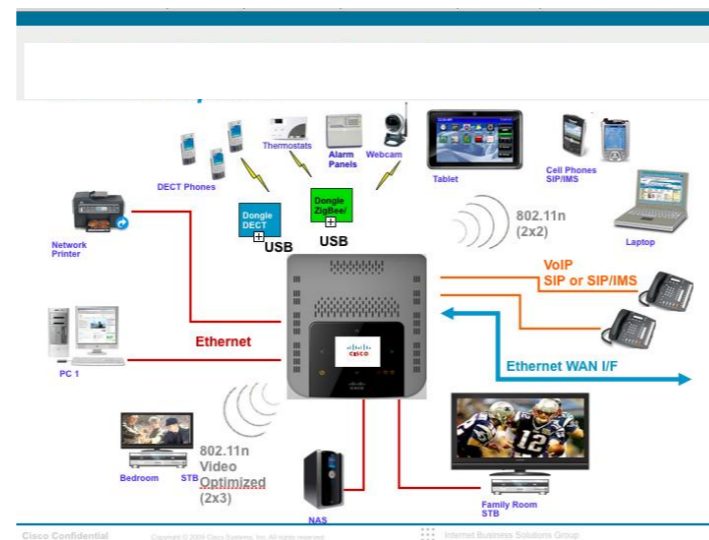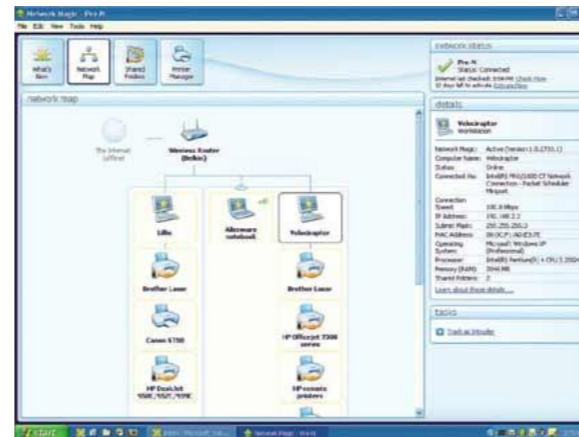 Simple in home assessment Combination of technologies

- **Simplicity**

  In home management

  "At source" config

- **Support**

  Improved consumer fault finding

  Better Visibility

Source Cariden

Summary

- **Challenges are all solvable**

  But costs are key component

- **Higher Speed Access Solves Part Of The Problem**

  Need to account for failure

- **Core Becomes More Intelligent**

  Cannot continue to throw bandwidth at the problem

- **In Home Challenges Growing**

  More Devices, More content

  Key to brand value

  Cannot Ignore