Road Runner Deployment of SRP

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Outline

- Introduction

- Where Rings are Deployed

- Ring Statistics

- Why Rings are Deployed

- Operational Issues/Requests

Road Runner

- Offers high-speed cable-modem service to the home or business.

- Over 1.2 million customers today

- 1000 Cable Modem Termination System (CMTS) and 300 aggregation routers deployed in the network

- 9Gb/sec peak inbound traffic (Spring 2001)

Network Rings Deployed

51 Rings

- green — 1 ring
- yellow — 2 rings
- blue — 3 rings
- magenta — 4 or more rings
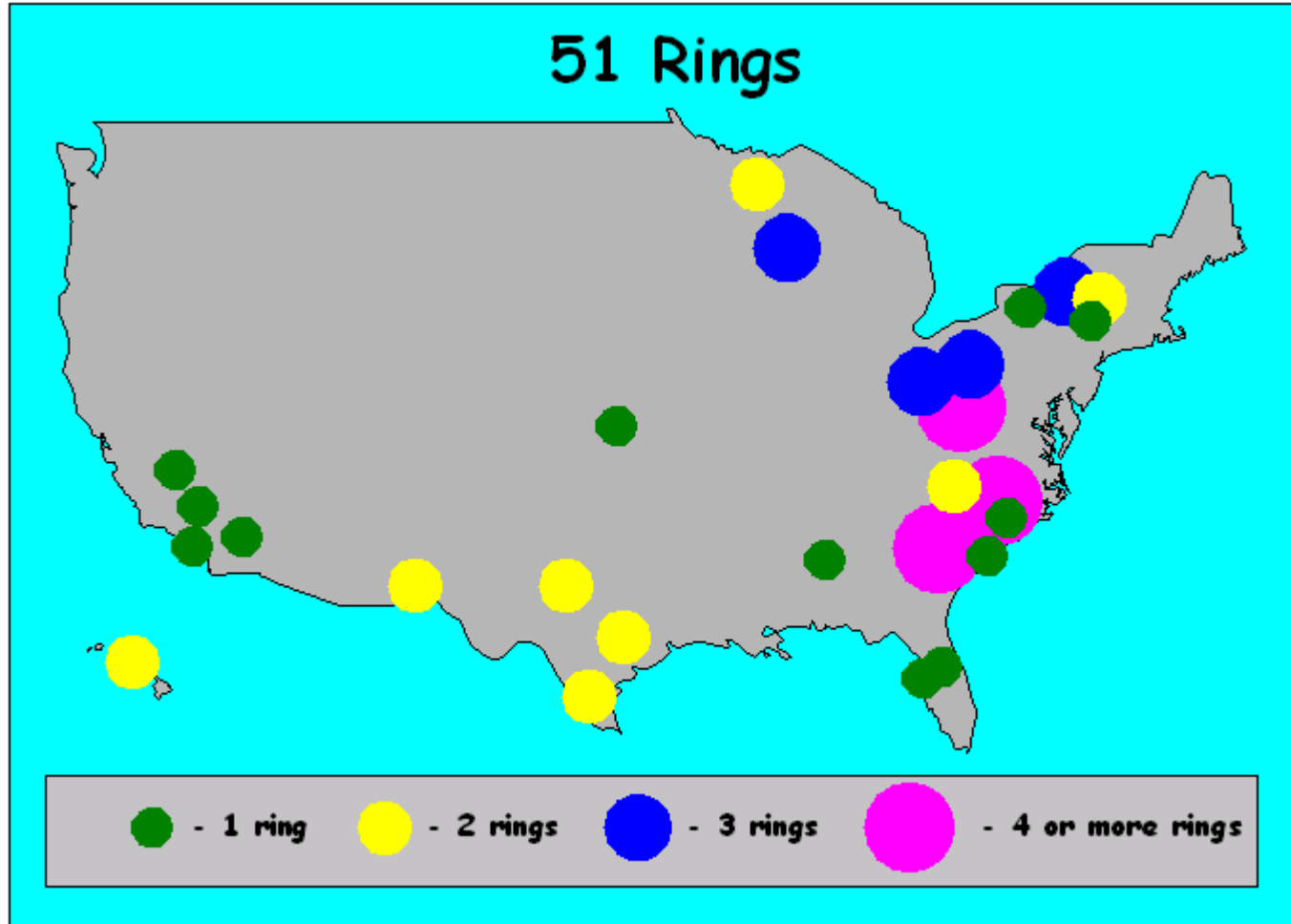
Ring Applications

- Rings appear in all three RR network layers
  - ❖National – peering
  - ❖Regional – tie markets (cities) together over dark fiber
  - ❖Distribution – tie distribution hubs together over dark fiber (within a city or market)

Ring Node Counts

- 400 nodes
- 8 nodes average
- Smallest 2 nodes
- Largest 16 nodes

Ring Sizes

- Average span is 20km
- Longest span is 160km
- Largest ring is 600km
  - "Waveshifting" (12%)
  - Repeater Sites (8%)
- Breakdown of Ring Circumferences
  - 18% local
  - 31% < 50km
  - 39% > 50km, < 200km
  - 12% > 200km
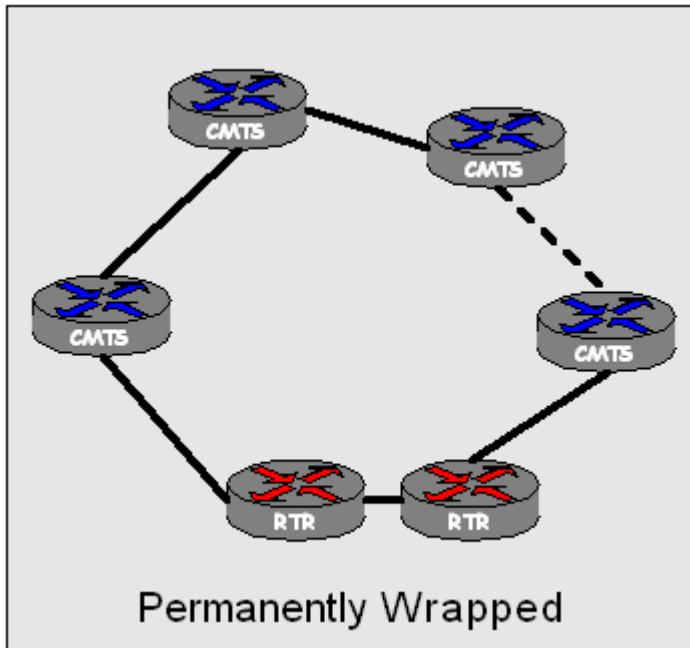
Ring Speeds/Node Types

- 10% OC-48

- 90% OC-12

- Type of Nodes
  - Cisco 12000 Series 25%
  - Cisco uBR7200 Series (CMTS) 70%
  - Cisco 7500 Series 5%
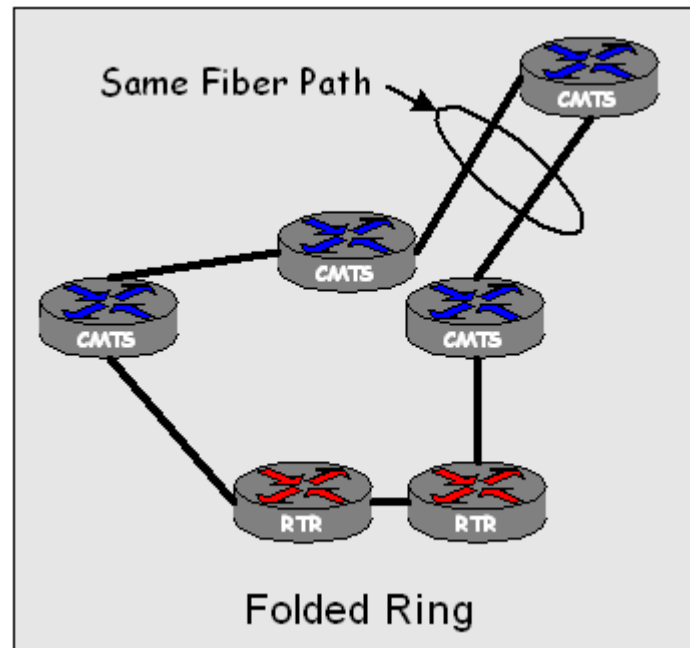
- All single-mode optics

Wrapped Rings

10% of rings are permanently wrapped

Permanently Wrapped

-waiting on fiber build
-never will be complete

Folded Rings

5 folded (collapsed) rings (10%)

Same Fiber Path

Folded Ring

Why?

- Eliminates router hops
- Increased bandwidth to the CMTS
- Fast recovery time from failure
- Mix types of traffic
- Almost brain-dead simple to install
- No bandwidth provisioning required

Why? (continued)

- Automatic discovery
- Automatic load balancing and healing
- Fairness algorithm
- Reduced router port counts
- Topology mapping is great

Issues/Requests

- Connecting A to B ports around the ring is annoying

- Support for mismatched link speeds

- Layer 3 routing hints based upon ring node information

- Support for overlapping rings