



Advanced Wireless and Mobile Technologies

Interop, Las Vegas
April 29, 2008

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Fanny Mlinarsky



- ❑ President of octoScope, consulting company focusing on
 - RF and wireless design
 - Network or device architecture
 - Performance verification
 - Product or architecture advocacy
- ❑ Founder and Chief Technology Officer, Azimuth Systems, leading wireless test platform for Wi-Fi and WiMAX test (10/01 – 10/06)
- ❑ R&D Manager, General Manager, Agilent Technologies for the WireScope handheld network certification and monitoring products (10/98 – 10/01)
- ❑ Founder of TGT, 802.11 committee defining test methods and metrics

Azimuth Wireless Test



Agilent WireScope

Panelists and Topics



- **Jeff Gilbert**, CTO, SiBEAM
 - 60 GHz and WirelessHD – uncompressed HD video

- **Darwin Engwer**, WLAN Strategic Technology Architect, Nortel
 - Very High Throughput WLAN – 802.11 VHT

- **Byron Henderson**, VP of Marketing, Mesh Dynamics
 - Wireless mesh technology

Advances in Wireless



- ❑ Higher throughput
- ❑ Longer reach



Radio Infrastructure

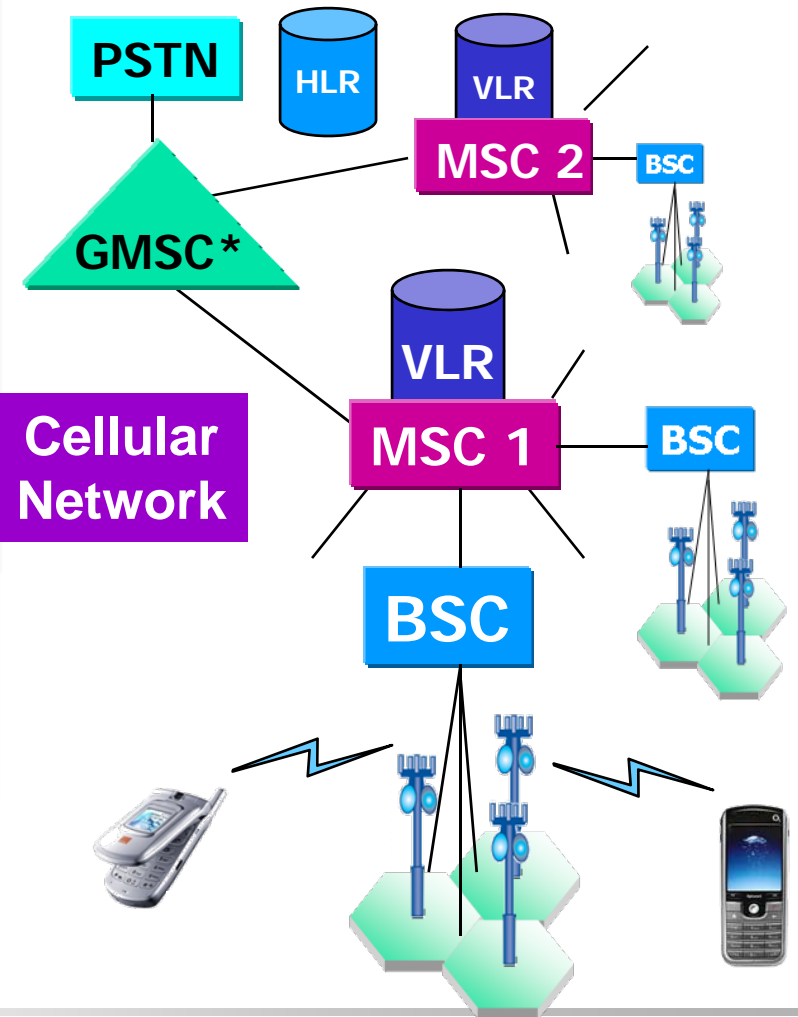
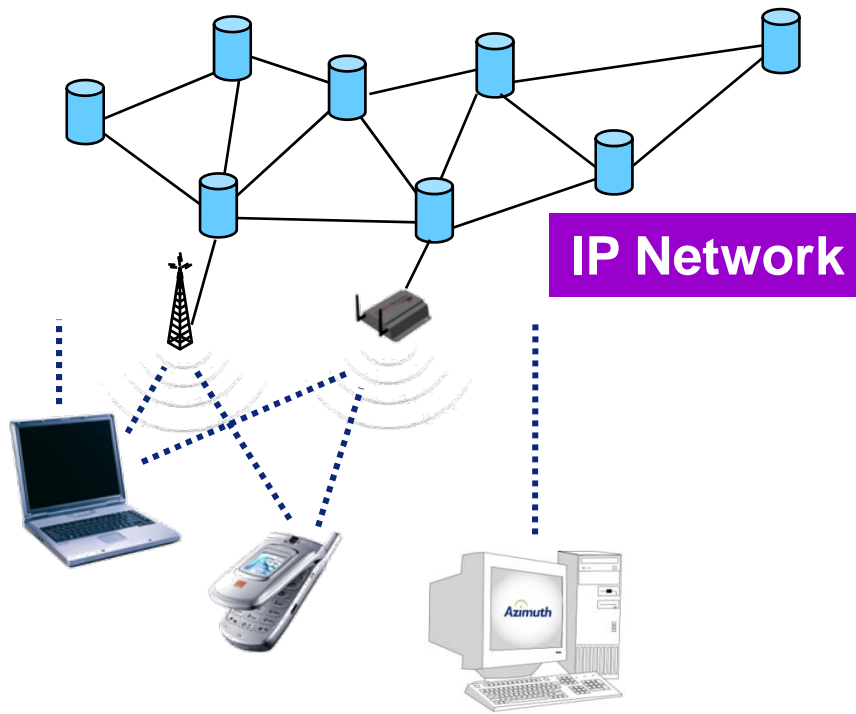
- ❑ Wider area coverage
- ❑ More users



Data vs. Cellular Networks



Ad Hoc | Hierarchical

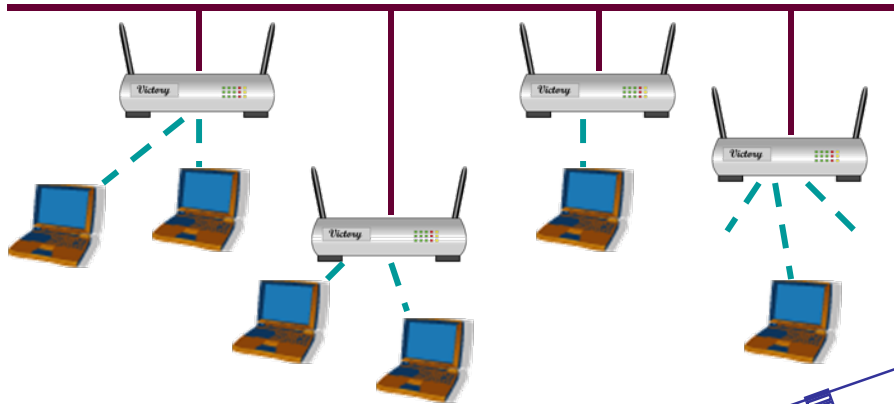


802.11s Wi-Fi Mesh

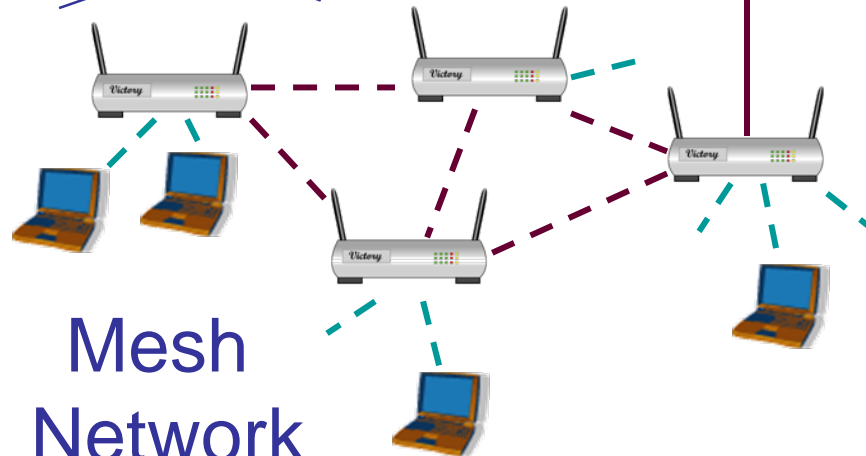


Wired connection to each AP

Traditional
WLAN



Mesh Portal



Wired links

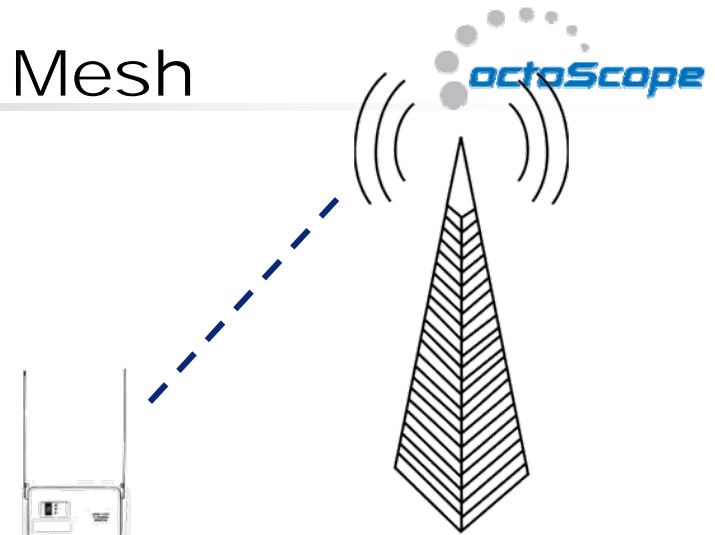
Mesh links

Client links

Mesh
Network

IEEE 802.16 and 802.15 Mesh

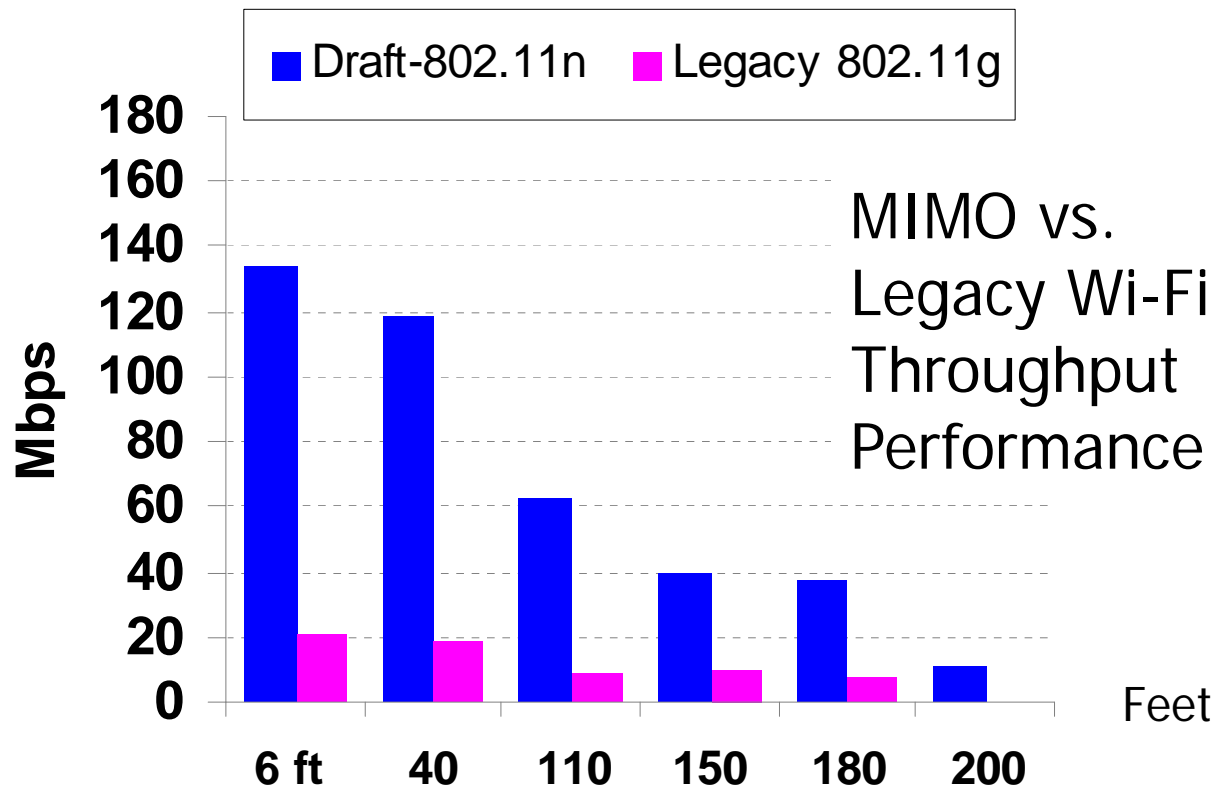
- ❑ 802.16j and 802.15.5 are also standardizing mesh topologies
- ❑ 802.16j is not an ad-hoc mesh, but a relay to extend the range between a CPE and a base station
- ❑ 802.16 links being planed in ad-hoc mesh networks



Wireless relay



Draft 802.11n vs. Legacy - Office

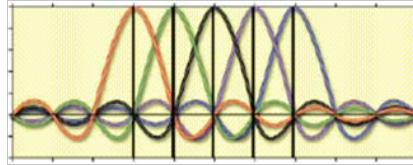


octoScope 802.11n test published by EE Times

Advances in Radio Technology



❑ MIMO



802.11 -> 52 sub-carriers

802.16d-2004 -> 256 sub-carriers

802.16e-2005 -> 2048 sub-carriers

❑ OFDM

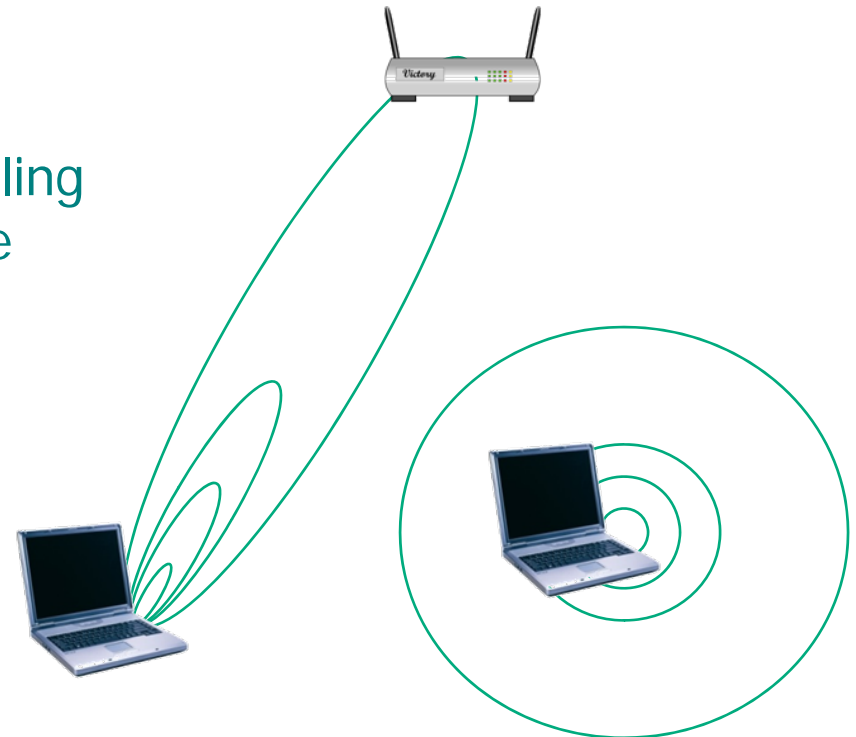
❑ Spatial multiplexing

❑ Beam forming

- Smaller antennas enabling phased arrays for more sophisticated beam steering

❑ Wider channels in the 60 GHz band

- 7 GHz of unlicensed spectrum



Thank You!