Top 10 Things Network Managers Need to Know About Wireless LAN Virtualization

1. Wireless LAN Virtualization is just like switched Ethernet, but ports are portable

As far as applications and users are concerned, the Virtual Port has all the same characteristics as an Ethernet port: consistent, reliable connectivity. The big difference is that whereas Ethernet is tethered to a wire, the Virtual Port travels with a client device throughout the network. It is also more flexible than Ethernet in other respects, letting network managers reallocate bandwidth and resources on demand.

2. WLAN Virtualization offers the lowest cost per user and per square foot

Meru's Virtual Cell architecture lets all access points transmit at full power, reducing the number of APs needed to cover a given area by 30% when compared to legacy microcell architectures. This leads to lower hardware costs, not just for APs themselves but for the back-end Ethernet infrastructure that links them together. Alternatively, a given expenditure on APs and related infrastructure will result in a higher bandwidth density when using Virtual Cells, able to support higher data rates or more users. WLAN Virtualization's simple management and high reliability also reduce ongoing costs by eliminating the need for RF tuning and making it easy for the network to scale.

3. WLAN Virtualization can partition the network among different devices, keeping each one's traffic completely isolated

The Virtual Port means that every client device effectively gets its own private pipe to the network, reaching only those resources that match the device's functionality or its user's role. Like switched Ethernet, this link is dedicated to one particular device, ensuring reliable quality-of-service and eliminating contention for shared bandwidth. From the client's perspective, it remains connected to the same virtual access point no matter where it moves within the network, never needing to change radio channel or BSSID. And that constant, consistent network only ever has one user.

4. WLAN Virtualization makes the network manager's life easier by avoiding channel planning

Because every radio in a Virtual Cell uses the same channel, there is no need for complex and time-consuming channel planning either before the network is built or when a change needs to be made. Access points are truly plug-and-play: Simply add one and it automatically downloads all configuration information from the controller. This simplifies deployment and management as well as making the network more reliable.

5. WLAN Virtualization works equally well with data, voice, video or all three

The Virtual Port architecture is designed for any kind of application. Because each private network link is customized for a particular device, it is agile enough to support voice, data, video or any combination of the three as well as future applications. To handle converged devices like the iPhone or laptops running softphones, a single Virtual Port can carry multiple traffic types simultaneously. The network automatically recognizes each application and applies the appropriate quality-of-service or security rules, using both deep packet inspection and flow signatures that are able to recognize and classify even encrypted data.

6. WLAN Virtualization secures the network by giving each device a private, protected link

Meru's switched architecture that ensures reliability and consistency also aids network security. There is no risk of clients overhearing each other or even knowing that each other exist. The Virtual Cell is coupled with Air Firewall, an industry-leading security architecture that can scan for rogues and intruders even in the presence of real-time traffic then block them before they reach an access point. But if an attacker does join a network, perhaps by stealing a device, the intruder will be confined to a specific, limited set of resources.

7. WLAN Virtualization ensures ubiquitous network coverage and seamless roaming by eliminating client-initiated handoffs

The Virtual Port moves with the client device, ensuring that it sees the same virtual access point at all times. This means that the client never initiates a handoff, the process in which clients search for new APs in a legacy microcell network. Instead, the network itself automatically load balances connections across the most appropriate physical access points. Users get seamless roaming without interruption and a longer battery life since the devices are always connected to the AP with the strongest signal and no longer need to scan every channel. The network gets a higher overall capacity, as no airtime is wasted on roaming or on connecting to clients that have slowed down to compensate for a fainter signal.

8. WLAN Virtualization reduces energy costs by reducing the number of APs needed

Because the Virtual Cell uses 30% fewer APs than a microcell system, it consumes 30% less power. That leads to 30% less expenditure on UPS and related infrastructure, or alternatively to increased uptime in the event of a power failure.

9. WLAN Virtualization ensures simple, secure and scalable networks

Each Virtual Cell uses a single radio channel, with all access point radios within the Virtual Cell indistinguishable from one another. New access points can be added at any time to augment coverage and turned on like lightbulbs, with none of the channel planning and reconfiguration needed in microcell architectures. Consuming only one channel is also very spectrally efficient, leaving other channels free to be used for additional Virtual Cells that can be activated to accommodate future growth in user numbers or bandwidth density. Network capacity scales linearly with the number of radios, allowing support for very high user densities or data rates.

10. WLAN Virtualization ensures redundancy through channel stacking

Like Ethernet switches, Virtual Cells can be stacked together for extra reliability. This is possible because of the same spectral efficiency that enables network scalability: Several Virtual Cells can coexist in each band. If one channel is temporarily blocked by interference, clients have another option with no retuning of APs needed. True "N+1" redundancy is possible in dense networks that use multiple Virtual Cells.

