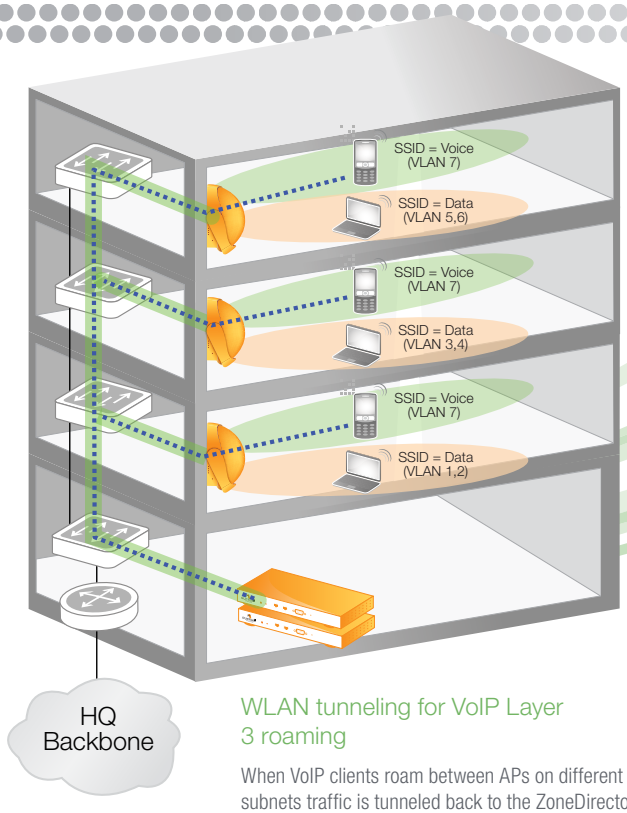


WLAN tunneling for VoIP Layer 3 roaming

When VoIP clients roam between APs on different IP subnets traffic is tunneled back to the ZoneDirector ensuring crystal-clear VoIP calls.

Ruckus
Simply Better Wireless.

feature sheet

Seamless Voice Mobility

MOBILE VOIP AND FASTER ROAMING

Faster and more secure roaming for voice and data clients

Ruckus delivers faster and more secure Wi-Fi roaming for Voice over IP (VoIP) as well as data applications. Ruckus adds key capabilities to the ZoneFlex line of Smart Wireless controllers with wireless LAN tunneling for voice over Wi-Fi applications and 802.1X fast roaming.

Voice devices, like Wi-Fi phones and PDAs, are extremely sensitive to delay and jitter. When these VoIP clients roam between buildings and floors they can experience disruptions and dropped calls. Meanwhile standard PC clients may experience slower data transfers while Web browsing may be disrupted when roaming.

Ruckus minimizes this erratic Wi-Fi behavior by enabling uninterrupted voice calls through the use of Layer 3 tunneling and using key caching techniques when roaming across ZoneFlex access points (AP) to minimize roaming delays.

WLAN tunneling Provides Seamless VoIP Mobility

Typical enterprise networks are designed so that different physical areas of the network, such as a specific floor or functional organization (e.g., Finance), correspond to different subnets. Layer 2 connectivity meanwhile provides traffic isolation through the use of a single broadcast domain. Layer 3 routers allow communication between these Layer 2 networks through the use of IP routing.

When roaming between APs on different subnets, users must typically re-associate, re-authenticate and obtain a new IP address. This process is unacceptable to enterprises because it causes interruptions and latencies that can ruin delay-sensitive applications such as a VoIP calls.

FEATURES/BENEFITS

Uninterrupted voice over Wi-Fi calls

Eliminates the need to reauthenticate with a remote authentication servers when roaming across managed AP

Fast, seamless roaming

Faster 802.1X EAP roaming using PMK caching and opportunistic PMK caching

Save time and money

Ultra-simple configuration saves administrators time and money

Flexible deployment options

Tunnels can be enabled on a per WLAN (SSID) basis

Seamless
Voice Mobility
MOBILE VOIP AND FASTER ROAMING

Wi-Fi-enabled phones are extremely sensitive to traffic delays as well as IP address changes that are required when roaming between subnets. While excessive delay causes voice quality degradation, an IP address change often results in a dropped call. To solve this problem it is practical to place all voice clients on the same WLAN regardless of physical location.

Ruckus solves this problem using a simple tunnel mode option. This enables the creation of a separate and dedicated Layer 2 WLAN that directs VoIP clients back to the ZoneDirector WLAN controller using an LWAPP-based (LightWeight Access Point Protocol) tunnel.

Creating WLAN-specific tunnels eliminates inter-subnet roaming altogether. Roaming clients now maintain their IP address when associating with any AP. VoIP clients experience uninterrupted voice calls while roaming across APs on Layer 3 boundaries. With the Ruckus ZoneDirector Smart WLAN controller, administrators can easily create secure tunnels and enable those tunnels on a per WLAN basis.

Fast 802.1X roaming with advanced PMK caching and opportunistic PMK caching techniques

As clients using 802.1X EAP authentication roam, wireless service can be disrupted as the connection is handed off between APs even within the same subnet. VoIP clients that are especially latency-sensitive often experience dropped calls when roaming.

When WLAN clients roam, they must associate with the new AP and perform the full 802.1X authentication handshake. Typically this authentication is performed by a remote RADIUS server, which results in lengthy delays that impact application performance.

ZoneDirector caches Pairwise Master Keys (PMK) and provides opportunistic PMK caching to reduce or eliminate the delay caused by performing full 802.1X re-authentication.

A PMK is a cryptographic key used within a wireless network to derive lower level encryption keys. This feature requires client support for WPA2, PMK caching and Opportunistic PMK caching.

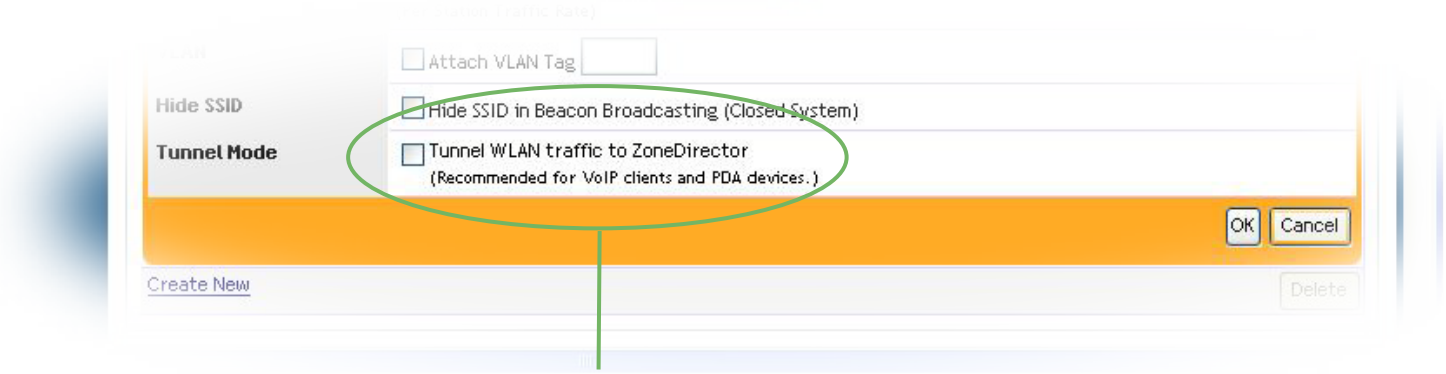
With 802.1X PMK caching, the client performs the first 802.1X authentication with a remote RADIUS server in the usual way.

Both the client and ZoneDirector cache the PMK for future use. If the client roams away from and back to the same AP, the client sends the previously used PMK ID and performs a 4-way handshake with the ZoneDirector.

The PMK ID is a hash including the AP MAC address. This uniquely identifies the PMK of the client and allows access to the WLAN thereby eliminating authentication delays from having to re-authenticate all the way back to the remote RADIUS server.

With opportunistic PMK caching, the ZoneDirector receives the PMK from the first 802.1X authentication of the client and makes the cached PMK available to neighboring APs.

When the client roams to a neighboring AP, it generates and sends a new PMK ID including the new AP MAC address to the ZoneDirector. Since the PMK ID corresponds to a valid PMK and new AP MAC address, the client just performs a 4-way handshake and is allowed quick access to the WLAN. Roaming clients experience no disruptions to their applications and the user experiences seamless roaming.



WLAN tunneling is enabled quickly and easily through a simple check box within the Ruckus ZoneFlex management user interface

Seamless
Voice Mobility
MOBILE VOIP AND FASTER ROAMING

HOW IT WORKS

- Client associates with AP, authenticates with remote RADIUS server, both client and ZoneDirector cache PMK (see figure 1a).
- Client roams away and back to same AP. Client sends previously used PMK and performs 4-way handshake (see figure 1b).
- ZoneDirector receives PMK from first authentication and makes available to neighboring APs. Client roams to different AP. Client sends previously used PMK with new AP MAC address and performs 4-way handshake (see figure 1c).

Figure 1a

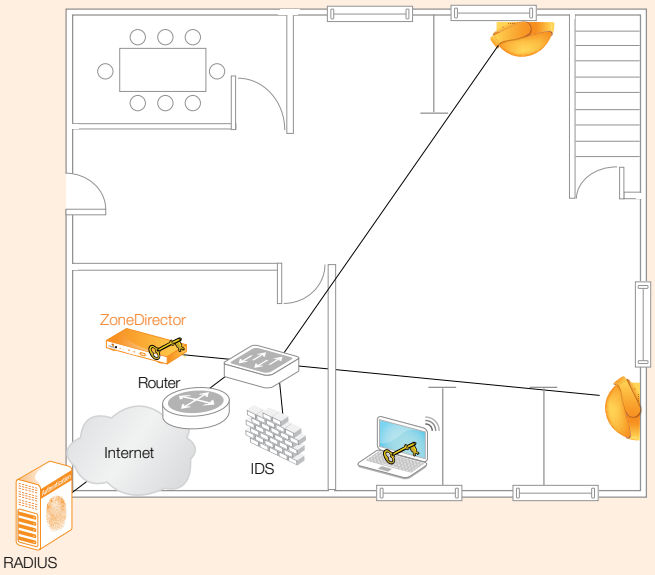


Figure 1b

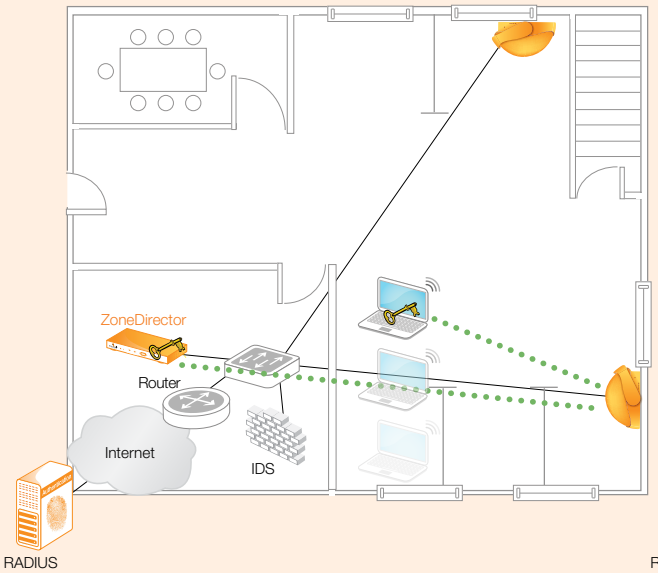
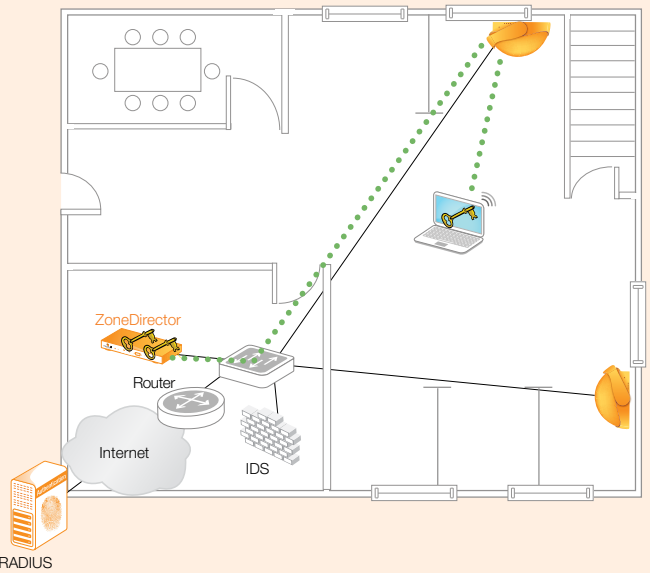


Figure 1c



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