The missing piece to this puzzle are those cellular services that do not currently run over Wi-Fi, namely voice and SMS, but it will be easier to make these changes in the future than to perfect the other solutions in licensed spectrum.

Finally, Passpoint has applications in enterprise WLANs. Some are obvious, like providing guest access for authenticated service provider customers without the need to check in and get a special credential. Others may take longer to develop, but we see many opportunities to use Passpoint for guest or contractor access, multi-site or international roaming within the enterprise.

CONCLUSION

The Passpoint certification removes many of the obstacles to easy, silent, secure access to public Wi-Fi hotspots.

Rather than tying each reachable service provider to an SSID, Passpoint allows a single SSID to stand in front of many service providers, including cellular operators, MSOs and other providers with whom the consumer has an existing subscriber relationship. This allows the service providers to extend their services, while the consumer will be able to leverage existing commercial relationships at many more hotspots.

When a mobile device encounters a Passpoint hotspot, or a number of hotspots in one location, it can now learn about the service providers available via each hotspot, as well as other characteristics of the hotspot. The device can match available service providers against its preconfigured subscriptions, prioritize the hotspots and service providers and proceed to authenticate with the optimum choice. Because Passpoint discovery is pre-authentication, there is considerable savings of time and battery life compared with existing methods.

Passpoint makes mandatory a number of existing Wi-Fi and IEEE 802.11 security features, transforming the security posture of a device connected to a hotspot. For instance, mutual authentication and over-the-air encryption are guaranteed, as well as restricted peer-to-peer traffic.

How will Passpoint roll out? The initial Passpoint release 1 certification (known as Wi-Fi Alliance CERTIFIED Passpoint) is released in June 2012, and at that time most of the enterprise WLAN vendors will announce availability of software upgrades with compliance. Mobile devices, particularly cellphones and tablets, may take a little longer but we expect to see many certified devices for the buying season in late 2012, and it is possible that smartphone vendors will offer software upgrades to support Passpoint on existing models.

Meanwhile work continues on future releases of Passpoint. We expect to see a certification for release 2 soon, incorporating features such as on-line sign-up where a user can sign up for service at a hotspot using standard protocols, as well as new work on operator policy for public access.

But the Wi-Fi Alliance has already answered the question "Why can't Wi-Fi roaming be more like cellular roaming?" With Passpoint, it is.

APPENDIX – INFORMATION AVAILABLE FROM THE ACCESS POINT WITH PASSPOINT RELEASE 1

(This is a summary list, it includes only the important indications from the access point to the client)

INFORMATION AVAILABLE FROM THE ACCESS POINT WITH PASSPOINT RELEASE 1				
Field name	**Beacon/Probe response (802.11u)**	**ANQP (IEEE 802.11u)**	**ANQP (Wi-Fi Alliance)**	**Description**
Access Network Type	✓			6 options... 'private', 'private with guest access', chargeable public', 'free public' 'personal', 'emergency services only'
Internet bit	✓			Set if the hotspot provides access to the Internet
Venue Group	✓			One of 11 codes for 'assembly', 'business', educational', 'factory and industrial'...
Venue Type	✓			The International Building Code defines a number of venue types for each venue group above, so 'educational' group has types 'school, primary', school, secondary', 'university or college'...
HESSID	✓			Identifies a 'homogenous' SSID or zone of coverage, using a BSSID (MAC address) from one access point
Roaming Consortium OI	✓			The beacon has space for 3 OIs, of which one should be the hotspot operator's OI
P2P element	✓			P2P must be disabled
BSS load element	✓			An existing 802.11 function first added in the 802.11e amendment, provides an indication of how much traffic the access point is transmitting/receiving
RSN element	✓			An existing 802.11 function. Must indicate WPA2-enterprise for Passpoint
RSN AKM list	✓			An existing 802.11 function. Must indicate AES encryption for Passpoint
NAI Realm list		✓		A list of network address identifiers for reachable service providers, with optional EAP-type subfield
Venue Name		✓		A text field usually giving the owner/occupier and address of the venue
Network Authentication Type Information		✓		An additional step is required for authentication. The step tested in Passpoint is 'acceptance of terms and conditions is required' with a redirect URL
Roaming Consortium List	✓ (3 RCs)	✓ (Full list)		The RC OI is a value from a registration database maintained by the IEEE
IP Address Type Availability		✓		Reports support for IPv4, NAT, or IPv6
3GPP Cellular Network Information		✓		PLMN IDs are already established for cellular operators, consisting of MCC-MNC values
Domain Name List		✓		The domain name(s) of the hotspot's operator
Operator Friendly Name			✓	A variable-length string identifying the operator of the hotspot
Operating Class			✓	The list of channels an access point can operate on
WAN Metrics			✓	Includes status, whether symmetric, 'at capacity', up/dnlink speed, up/dnlink load
Connection Capability			✓	A list of protocols, ports and open/closed
NAI Home Realm Query			✓	A short-list of reachable NAI Realms that match a list in the client's query

This is a summary list, it includes only the important indications from the access point to the client

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Aruba, a Hewlett Packard Enterprise company, is a leading provider of next-generation networking solutions for enterprises of all sizes worldwide. The company delivers IT solutions that empower organizations to serve the latest generation of mobile-savvy users who rely on cloud-based business apps for every aspect of their work and personal lives. For more information visit www.arubanetworks.com.

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WP_PasspointWiFi_020416