November 23, 2016

VIA ELECTRONIC FILING

R. S. Sharma
Chairman
Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan
Jawahar Lal Nehru Marg
New Delhi 110002
India

> Re: *Consultation Note on Model for Nation-wide Interoperable and Scalable Public Wi-Fi Networks*

Dear Chairman Sharma:

Wi-Fi Alliance®[1] applauds the Authority's continued efforts to examine how to encourage a sustainable and scalable system of public Wi-Fi networks – one of the same missions of Wi-Fi Alliance. W-Fi Alliance responded to the Consultation Paper[2] the Authority issued earlier this year, noting the importance of Wi-Fi and identifying frequency bands that could be used to create additional Wi-Fi capacity. [3]

The Authority's recent Consultation Note[4] seeks to address in more detail one of the issues originally raised in the Consultation Paper – authentication and interoperability. Wi-Fi Alliance addressed this issue in its response to the Consultation Paper, noting that the Wi-Fi CERTIFIED Passpoint program is perfectly suited to ensuring that all of the

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[1]   Wi-Fi®, the Wi-Fi logo, the Wi-Fi CERTIFIED logo, Wi-Fi Protected Access® (WPA), WiGig®, the Wi-Fi ZONE logo, the Wi-Fi Protected Setup logo, Wi-Fi Direct®, Wi-Fi Alliance®, WMM®, and Miracast® are registered trademarks of Wi-Fi Alliance. Wi-Fi CERTIFIED™, Wi-Fi Protected Setup™, Wi-Fi Multimedia™, WPA2™, Wi-Fi CERTIFIED Passpoint™, Passpoint™, Wi-Fi CERTIFIED Miracast™, Wi-Fi ZONE™, WiGig CERTIFIED™, Wi-Fi Aware™, Wi-Fi HaLow™, the Wi-Fi Alliance logo and the WiGig CERTIFIED logo are trademarks of Wi-Fi Alliance.

[2]   *See* C*onsultation Paper on Proliferation of Broadband Through Wi-Fi Networks* (2016), available at http://www.trai.gov.in/Content/ConDis/20782_11.aspx ("Consultation Paper").

[3]   *See Response of Wi-Fi Alliance to Consultation Paper on Proliferation of Broadband Through Public Wi-Fi Networks*, August 24, 2016.

[4]   *See Consultation Note Model for Nation-wide Interoperable and Scalable Public Wi-Fi Networks* (2016), *available at* http://www.trai.gov.in/Content/ConDis/20801_0.aspx ("Consultation Note").

Authority's goals relating to interoperability, security, and convenience for users are met. [5/] The program's standard allows user devices and participating networks to automatically and seamlessly authenticate one another and connect, either using new user accounts or existing ones (such as cellular network credentials), all while delivering the highest WPA2™ security.

The Consultation Note now proposes an architecture for interconnection and authentication. However, it is unnecessary to develop and attempt to implement such a system. The Passpoint program, an already-existing and operating technical standard, can provide all the benefits of the Authority's model at a fraction of the cost and with dramatically less logistical work on the part of the Authority, Wi-Fi network operators, and users.

Therefore, Wi-Fi Alliance respectfully submits the following in response to questions posed in the Consultation Note:

Is the architecture suggested in the consultation note for creating unified authentication and payment infrastructure will enable nationwide standard for authentication and payment interoperability? [And] Would you like to suggest any alternate model?

Wi-Fi Alliance has taken the lead to address this precise issue, making it unnecessary for the Authority to create and implement its own standard. As discussed in the attached excerpt of a presentation given at a Wi-Fi Alliance Symposium in Bengaluru in January, 2016, the Passpoint program is ideally suited to serve all of the needs discussed in the Consultation Note without requiring the entirely new and complex architecture proposed. Wi-Fi Alliance has extensive technical materials available which can assist the Authority in further analyzing the Passpoint program. [6/] Other materials which may assist the Authority are available as well. Wi-Fi Alliance will also make its engineering expertise available at the Authority's request.

As Wi-Fi Alliance pointed out in its response to the Consultation Paper, and as the technical materials cited above detail, Passpoint automates that entire process of connecting a user with a Wi-Fi network, from signing-up and authorizing users to selecting the right network and getting the user online, enabling a seamless connection between hotspot networks and mobile devices without sacrificing security. Passpoint provides a streamlined method to use existing user accounts and establish new user accounts, facilitating connectivity for

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[5/]   *See Response of Wi-Fi Alliance to Consultation Paper on Proliferation of Broadband Through Public Wi-Fi Networks*, August 24, 2016.

[6/]   *See*, *e.g. Passpoint Operator Best Practices for AAA Interface Deployment,* available at http://www.wi-fi.org/downloads-registered-guest/Passpoint_R2_Operator_Best_Practices_for_AAA_Interface_Deployment_v3.0.pdf; *Passpoint Technical Specification Package*, available at http://www.wi-fi.org/downloads-registered-guest/Hotspot_2-0_%2528R2%2529_Technical_Specification_Package_v1-1-0_0_0.zip; and *Passpoint Deployment Guidelines*, available at http://www.wi-fi.org/downloads-public/Passpoint_R2_Deployment_Guidelines-v1%2B0.pdf/13481.

both Wi-Fi/cellular devices and Wi-Fi-only devices such as tablets and notebooks, enabling a more cellular-like experience when connecting to Wi-Fi networks.

The cited technical materials demonstrate that the Passpoint program has built-in functionality to satisfy all the requirements of the Authority's proposal. The Passpoint program includes online sign-up and immediate account provisioning, secure registration, and distribution of operator policies. This allows streamlined connectivity and enables in-pocket connection across a service provider's network of hotspots, all with secure exchange of credentials and new account establishment. For service providers the ability to distribute subscriber policies -- such as the identity of networks to join and the order of preference -- enables them to deliver the best user experience on Wi-Fi, while still easily maintaining the business requirements of Wi-Fi roaming agreements.

In addition to providing a reliable, secure, connection experience in, Passpoint is delivering value to service providers by:

- Supporting data offload with instant network detection, selection, and authentication
- Enabling new value streams through inter-carrier Wi-Fi roaming, reaching new devices and new venues for the existing subscriber base
- Increasing customer satisfaction and reducing churn
- Offering best-in-class security for SIM and non-SIM devices alike

Passpoint is a foundational ingredient to Wi-Fi roaming standards currently taking shape across the world. Several cities, including San Francisco, San Jose, and New York City, are incorporating Passpoint into their public Wi-Fi systems. Multi-operator trials on Passpoint-certified equipment are taking place now, and several service providers in the United States, including Time Warner Cable, T-Mobile, AT&T, Boingo and Sprint, have already begun offering Passpoint-enabled access to their subscribers. These companies can offer customers Wi-Fi access away from home without requiring them to log-in, and allow the wireless networks to relieve network congestion by off-loading traffic. Alongside these commercial deployments, Wi-Fi Alliance is collaborating with various industry groups to ensure the building blocks are in place to create a truly global Wi-Fi roaming experience.

While the Passpoint program is voluntary, the Authority recognizes the value in a top-down implementation of a common standard to ensure interoperability and simplify the process for providers and users. Wi-Fi Alliance therefore encourages the Authority to utilize all mechanisms available to encourage or mandate Passpoint functionality in its growing web of public Wi-Fi networks.

Should you have any questions, please contact the undersigned.

Respectfully submitted,

WI-FI ALLIANCE

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Wi-Fi Alliance Regional Symposium

19 January 2016
Bengaluru, India

Wi-Fi CERTIFIED Passpoint™

Passpoint is simplifying hotspot connectivity worldwide

- Wi-Fi CERTIFIED Passpoint is the industry-agreed approach to streamlined authentication in Wi-Fi hotspots and is a key foundation for Wi-Fi roaming
  - 1550+ Passpoint-certified devices - some notable products here
  - Specified by GSMA Terminal Steering Group and WBA for Next Generation Hotspot roaming
  - Rollouts in EU, APAC, Americas

- Passpoint features include
  - Seamless automated connection
  - Registration and provisioning
  - Secure access
  - Policy provisioning

- Passpoint is a key element for carrier Wi-Fi networks

- Passpoint is for all types operators: Additional features enable operators of retail, hospitality, enterprise and other Wi-Fi networks, to easily deploy Passpoint and attract users

Passpoint at a glance

- Wi-Fi Alliance certification program introduced in 2012, based upon the Wi-Fi Alliance Hotspot 2.0 Technical Specification and industry-standard protocols

- Users have confidence they are connecting to their chosen provider's network and their credentials are exchanged privately
  - Seamless authentication and enterprise-grade WPA2™ security
  - User device "sees behind the SSID" and connects to the service provider, not the hotspot

- Service Providers can deliver the best user experience on Wi-Fi
  - Simplifies account creation and usage
  - Enables easy addition of devices
  - Supports subscriber-specific policies
  - Standards-based offload
  - Foundational technology for Wi-Fi roaming and a range of new monetization opportunities

What Passpoint means for the ecosystem: Traditional service providers

Mobile operators:

- Offload traffic to Wi-Fi
- Enable Wi-Fi roaming agreements
- Reach subscriber's non-SIM devices
- Address density and coverage challenges
- Attract and retain data-hungry subscribers

Fixed and Wi-Fi only operators:

- Deliver a cellular-like experience in hotspots
- Wholesale excess capacity
- Participate in Wi-Fi roaming agreements
- Deliver value-added services such as video and voice

What Passpoint means for the ecosystem: Opportunities for new service providers

Retailers:

- Deliver a brand-building customer amenity
- Engage customers at point of sale
- Deliver opt-in loyalty perks and coupons
- Collect customer data trends
- Leverage Wi-Fi location for data collection and customer engagement
- WPA2 security eases consumer security concerns

Hospitality:

- Deliver a differentiated Wi-Fi experience
- Deliver additional services: in-room entertainment, room service, checkout, etc.
- Enhance loyalty program offerings
- Support meeting/convention connectivity requirements

Innovative entrants:

- Municipal Wi-Fi initiatives
- Wi-Fi-first mobile data
- Wi-Fi voice services
- Enterprise communications and guest access