



Telecom Regulatory Authority of India



Public Open Wi-Fi Pilot

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Mahanagar Door Sanchar Bhawan, Jawahar Lal Nehru Marg,
New Delhi – 110002

INTRODUCTION

1. The Internet is the single most self-empowering infrastructure available for a citizen in the 21st century. The World Bank observed that a 10% increase in Internet penetration leads to a 1.4% increase in GDP. Access to the Internet is considered a basic human right by many countries globally, including Estonia, Finland and France. In India, access to data is still limited due to poor coverage of fiber/telecom and prohibitive pricing of cellular data.
2. Wi-Fi is a complementary, not competing technology to LTE. Public hotspots hold an important place in the last-mile delivery of broadband to users. Wi-Fi is much easier to scale than adding new LTE towers. It bolsters connectivity inside buildings, airports, etc. where LTE penetration is inherently limited. It allows for offloading from telecom networks to ease congestion, and will be crucial when the next billion IoT devices come online. Yet, there are only 31,000 public Wi-Fi hotspots in India, compared to 13 million in France, and 10 million in the United States of America.
3. It is not enough to only install more routers. TRAI aims to offer a seamless experience to end users, both residents and international travelers. To provide a simplified, consistent experience across hotspots from various providers means unbundling authentication, payment and accounting from hardware and software running on the Access Point. This will allow small entrepreneurs such as tea shops, to set up and maintain Access Points. Whereas, device manufacturers, payment companies, ISPs/Telcos and Consumer Internet companies can provide the remaining pieces to set up Public Data Offices (PDOs).
4. The unbundling is also important from the point of view of scale. PDOs will be akin to the PCOs that connected all of India, even when tele-density was less than 7 telephones per 100 people. It is also suggested that the Public Wi-Fi Hotspots store community interest data locally, and allow access to it through negligible costs. Overall, these suggestions encourage the PDOs to become bustling centers of economic activity, where consumption of data for the average Indian becomes as common as consuming a cup of hot chai.
5. Based on the recommendation of TRAI “Proliferation of Broadband through Public Wi-Fi Networks” issued on 9th March 2017, TRAI invites all interested entities to be a part of this Pilot to establish nation-wide, pay-as-you-go PDOs.

CONSULTATIONS ON PUBLIC Wi-Fi

6. Recognizing the importance of public Wi-Fi networks in Indian context, TRAI initiated a consultation process on this subject in July, 2016. The motivation behind the consultation process was to identify issues in proliferation of public Wi-Fi in the country. As part of this process, TRAI released the "**Consultation on Proliferation of Broadband through Public Wi-Fi Networks**". The consultation paper (CP) highlighted issues like interoperability between the Wi-Fi networks of different service providers, de-licensing of additional bands for public Wi-Fi deployment and challenges in authentication and payments procedure of public Wi-Fi networks. On the issue of authentication and payments, the CP sought inputs on a hub-based model along the lines suggested by the Wireless Broadband Alliance (WBA), where a central third party AAA (Authentication, Authorization and Accounting) hub facilitates interconnection, authentication and settlement of payments between different network providers.

7. TRAI also conducted a stakeholder workshop on this issue on 28th September 2016, in collaboration with IIIT, Bangalore. During the discussions, difficulties in authentication and payments were identified as some of the roadblocks in the uptake of public Wi-Fi services from the user's point of view. Following that, TRAI released another consultation note on this particular issue. Released in November 2016, the 'Consultation Note on Model for Nation-wide Interoperable and Scalable Public Wi-Fi Networks' proposed an authentication and payment architecture for public Wi-Fi networks and solicited the views of the stakeholders.

8. Subsequent to the processes mentioned above, TRAI issued a recommendation to the government entitled "**Proliferation of Broadband through Public Wi-Fi Networks**" on 09.03.2017.

MISSION & OBJECTIVES OF PILOT

Mission for WANI

9. The vision of this initiative is to establish an Open Architecture based **Wi-Fi Access Network Interface** (WANI), such that;

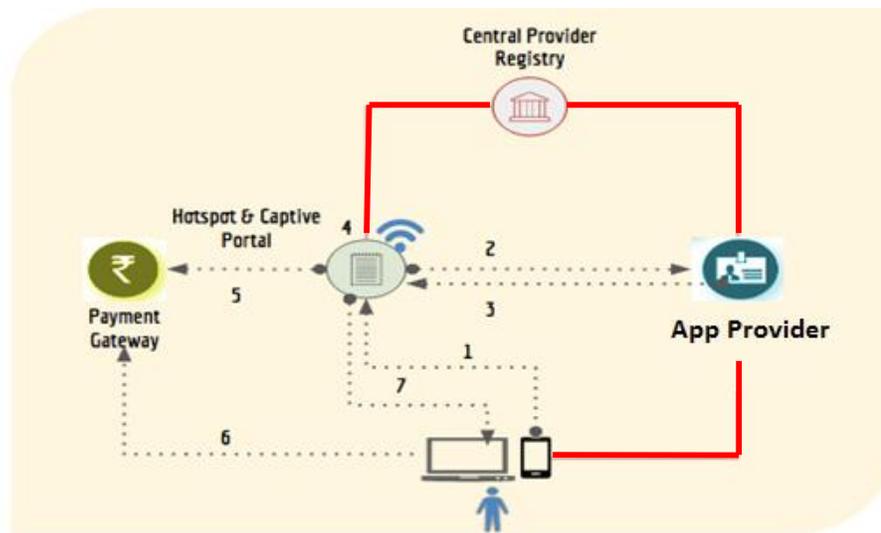
1. Any entity (company, proprietorship, societies, non-profits, etc.) should easily be able to setup a paid public Wi-Fi Access Point.

2. Users should be able to easily discover WANI compliant SSIDs, do one click authentication and payment, and connect one or more devices in single session.
 3. The experience for a small entrepreneur to purchase, self-register, set-up and operate a PDO must be simple, low-touch and maintenance-free.
 4. The products available for consumption should begin from “sachet-sized”, i.e. low denominations ranging from INR 2 to INR 20, etc.
 5. Providers (PDO provider, Access Point hardware/software, user authentication and KYC provider, and payment provider) are unbundled to eliminate silos and closed systems. This allows multiple parties in the ecosystem to come together and enable large scale adoption.
10. WANI Technology Architecture document which will provide the necessary technology and architecture for allowing multi-provider, interoperable system across the country will also be published within 3-4 days.

Objectives for the Pilot

11. For the pilot, TRAI has decided on a set of short-term objectives alongside the mission of WANI. Stakeholders are highly encouraged to join the pilot. Objectives of the pilot are:
1. Demonstrate that unbundling of services reduces rework, speeds up development and hence is the most effective way to tackle this complex problem.
 2. Prove that Multi-provider, inter-operable, collaborative model increases the overall innovation in the system, dismantles monopolies and encourages passing of benefits to end user.
 3. Test the specifications in real life conditions, and suggest improvements.
 4. Jointly develop a business model that fairly allocates value to each provider.
 5. Fine tune the technology and finalize the specifications based on pilot.
 6. Test out integrated payment methods such as coupons (purchased using cash by user or gifted to user), credit/debit cards, net banking, e-wallets, and UPI.

HIGH LEVEL FLOW



One Time Flows (Red)

1. PDO completes Self-Registration with Central Provider Registry their public certificate (for signature validation). They also registers SSIDs and locations of access points they operate.
2. App provider is registered with Central Provider registry along with their authentication URL and public certificate (to validate their digital signature)
3. User completes KYC with App Provider through mobile OTP through registration app. User registration app caches trusted SSIDs from central registry from time to time.

Connection and Usage Workflow (Dotted Lines)

1. User opens the registration app and discovers nearby WANI compliant SSIDs.
2. User chooses one SSID and connects using Registration App.
3. PDO requests user authentication from App provider using the token passed from the app during connection.
4. APP provider returns a signed user token to PDO.
5. Captive Portal displays data packs available. User selects desired data sachet.

6. Captive Portal sends request for through a payment gateway to user.
7. User completes payment.
8. PDO activates all device Mac-IDs that were part of the request and allows them to connect to the session.
9. Pack is activated and user can begin browsing.

For more details of the architecture and API details, refer to WANI Technology Architecture which will be published in 3-4 days.

PARTICIPATING IN PILOT

WHO SHOULD PARTICIPATE

1. **Public Data Office Provider/Aggregator (PDO/PDOA):** Any Indian entity (companies, associations, small merchants, etc.) having a PAN number wanting to provide one (PDO) or more (PDO Aggregator) hotspots to public using either free or paid model can be a hotspot provider.
2. **App Provider:** Any consumer internet App provider. Their application should provide features to manage user's KYC (mobile or Aadhaar) backed profile, allow all digital payment methods, and allow users to easily connect to hotspots.
3. **Hotspot Hardware/Software/Service Provider:** Any software or service provider who is providing necessary software, hardware, services, and/or support to Hotspot Providers. These can be any software/service provider, either local or global, making it easier for PDOs to get up & running.

HOW TO PARTICIPATE

12. Following are the requirements for providers wanting to participate in this pilot.
 1. Must be an entity registered in India.
 2. Must provide their PAN number and official contact details.
 3. Must play the role of a PDO provider or Wi-Fi software/hardware provider or user registration provider. The provider may opt for multiple roles if desired.

4. To ensure full testing of interoperability, each pilot must have different entities playing different roles.
5. Must mandatorily comply with the specifications laid out in WANI Technology Architecture document as per their role.

How to Apply

13. Any interested entity (company, proprietorship, societies, non-profits, etc.) registered in India can apply to TRAI with the following details latest by 25th July 2017:

- (a) Name of the entity
- (b) Legal Status i.e. company, proprietorship, societies, non-profits, etc
- (c) Date of formation and Registration number
- (d) PAN Number
- (e) Official contact Details
- (f) Email address
- (g) Role(s) in the Public Pilot Wi-Fi (PDO/PDOA, App Provider/Hardware provider/Software provider)

Details can be submitted to TRAI on the following email:

arvind@traai.gov.in or alternatively: broadbandtrai@gmail.com

In case of any clarification/information, Shri Arvind Kumar, Advisor (BB&PA) may be contacted at 011-23220209.

CONCLUSION

14. The events of the last 6 months in the telecom industry have dropped data prices, and we've seen user consumption go up proportionately. According to reports, Indians consumed more cellular data than China, and as much as the USA in the current cellular data pricing regime. The Indian Consumer is hungry for data, the question is who can provide her convenient and affordable access to the same.

15. TRAI believes that by adopting an Open Architecture approach, we place emphasis on innovation and consumer experience as the winning criteria and not deep pockets. The pilot

is the first step in shaping this eco-system and ensuring the rules are established in a fair and transparent manner that encourages participation from all.

16. The Wi-Fi Access Network Interface (WANI) represents an exciting opportunity to do for data what PCOs did for Long Distance Calling. It will bring a new generation of users on to the internet in an assisted manner. It will also boost the consumption of data by the price-sensitive Indian customer who rations her cellular data usage. The opportunities created are immense, and we invite all eligible startups and incumbents to collaborate on this unique multi-provider model and be part of the conversation.