



# Wi-Fi HOTSPOT POLICY IN THE SULTANATE OF OMAN

**Public Consultation Document**

**No. USO/001/2010**

**Date: 27/10/2010**

**Release version: 1.0**

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## 1. Introduction

- 1.1 TRA has recognized the need to increase the penetration of Internet and specially the broadband across the country to fulfill the national objective of providing affordable and reliable Internet connectivity. The published policy of 'e-Oman' also envisages spread of e-Government services and evolving of knowledge based society to improve the competitiveness of the national economy. In order to accelerate the growth and penetration of the Internet, TRA proposes to establish a policy on implementing hot-spots throughout the country to encourage licensed operators and service providers to offer internet connectivity at vantage points.
- 1.2 It has been observed based on statistics available that mobile broadband is fast catching up in the Sultanate ever since the availability of 3G services by the mobile operators. With the ability to offer WIMAX as well, as a delivery mechanism, there is expected to be a considerable growth in wireless access to internet in the country. However the coverage and usage shall be rendered uniform as far as possible and thus the TRA is proposing multiple options to enhance the penetration of internet including the remote and rural areas of the country.

## 2. Objective of the Consultation

- 2.1 TRA wishes to carry out a public consultation to framing a policy on hotspots, its relevance to enhancing internet connectivity in the Sultanate and the effect of such services on the business models of the existing and potential operators and service providers. The aim of this consultation is to provide the TRA with the views of the local industry and the market by inviting all members of the public including public and private individuals, government organizations, public organizations, local operators, service providers, and equipment vendors to participate in this consultation.
- 2.2 The TRA shall give due consideration to all comments, views, and contributions received from the interested parties towards consultation document. The TRA, at its own discretion, may publish the comments and views of the respondents on TRA website unless confidentiality is requested and justified by them.

### 3. Response to the Consultation

- 3.1 Responses with contact details of the interested parties may be sent in writing by post, e-mail or delivered by hand to the following:

**By Post:**

Telecommunication Regulatory Authority (TRA)  
Universal Service Obligation Unit (USO)  
P.O. Box 579, Ruwi, P.C. 112. Sultanate of Oman

**By e-mail:**

[uso@tra.gov.om](mailto:uso@tra.gov.om)

**By hand:**

Telecommunications Regulatory Authority Office at 2<sup>nd</sup> floor, Oman Oil Building, Al Qurum.

**Closing date:**

The closing date for submission of comments is the 30<sup>th</sup> of November 2010. Comments received after this date will not be taken into account.

### 4. Wireless Wi-Fi Hot-Spots:

- 4.1 Wireless (Wi-Fi) hotspots are public places - such as cafes, airports, libraries, stadiums, parks, ...etc., where an individual or group of individuals can connect wireless enabled device (laptop, PDA, mobile handsets) to an Internet connection made available through a multiplicity of platforms (technologies).
- 4.2 There are multiple models of operating public /private hotspots today. Airports, hotels and convention centers were among the first venues to deploy public hotspots because they are often visited by business travelers on the move who often needed access to Internet.
- 4.3 Other venues like cafeterias, fast food chains and libraries became popular hotspot locations as wireless access becomes more appealing to the general public. However, the potential of wireless hotspots has not been fully realized in the Sultanate yet. The challenges lie in the complexity of addressing the issues in network infrastructure, WLAN coverage, operators' business models and billing and settlement requirements in a roaming context etc.

## 5. Location of the hotspots:

- 5.1 Setting of a Wi-Fi hotspot location shall be determined by set of criteria to be adopted in designating public and private hotspots. The TRA would like to designate such of those hotspots as “Public Hotspot” are location with high human traffic areas where the access to the Internet provided through Wi-Fi is free of charge to the public applying certain limits on usage and fair use of policy.
- 5.2 Examples of such public places may include areas such as parks like Qurum Park, shopping areas like shopping malls and old Muttrah Souq, food courts, public beach areas like Qurum and Azaiba beach, natural and history museums, historical tourist areas like forts, and other areas that falls in the same classification. However, there might be some areas that may not have high traffic demand during the summer time but during the winter time or the night time for places like Qurum park. Traffic distribution or load sharing may be an issue.
- 5.3 Participants to this consultation are encouraged to clearly identify other hotspot areas that deemed commercially viable.

## 6. Coverage area of a hotspot

- 6.1 The size of the coverage area for the hotspot is dependable on the amount of human traffic (users) for that particular area. However, TRA would like to indicate that the maximum area of hotspot site coverage shall not exceed the 1 sq.km range for the outdoor application envisaged. The respondents are requested to suggest coverage areas according to their best judgment and experience.
- 6.2 The percentage of geographical coverage for outdoor areas envisaged should be at least or more than 95% including street level and between buildings.
- 6.3 The percentage of geographical coverage for indoor areas should be at least or more than 90% within the building human traffic area.
- 6.4 The coverage should not interfere with other hotspot either indoor or outdoor. The network in this case shall be designed to prevent any interference issue.

## 7. Wi-Fi Hotspot Consumers

- 7.1 The target consumer group is the general public on the move who could identify themselves at the public places where the Wi-Fi services are made available through a Wi-Fi enabled device. But should these users be segmented based on their type of requirements or special needs (like students, amateur reporters, mobile workers, business travelers, tourists, on weather data etc) within the consumer group?

## 8. Type of Service provided

- 8.1 The supported services to users should have open access but not limited to:
- Internet Browsing.
  - Email.
  - Instant Messaging (chat service)
  - Online games.
  - Video Streaming.
  - Video Conferencing
  - VPN Tunneling.
  - Voice-over-IP (VoIP) service, only through licensed operator.
  - Directory Search.
  - Location based Services
  - Hotspot location search.
  - Tourist Information.
- 8.2 The service shall provide a data service with access or download speed of at least 512 Kbps. The internet speed should be to acceptable level that should not discourage users from using the free service.
- 8.3 To further sustain the market for wireless broadband, should operators offer paid premium services? And what these services should be?

## 9. Service Providers

- 9.1 The intention of the TRA to promote healthy competition in the provision of telecommunications services and hence would like to broad base the number of providers of services in respect of hotspots. The TRA would like to assess whether there shall be separate class of hotspot service providers including the existing licensees to provide the services.
- 9.2 Should there be a separate class of hotspot to new entrance service providers?
- 9.3 Should there be multiple service providers providing the service at the same time in the same area? In order to promote the healthy competition, customers (users) should have the flexibility and option to choose the services and select

the licensed operator of their choice; therefore, the need to sign up and access the network with one account should be considered.

- 9.4 What bidding approach or criteria should be adopted for selecting the service providers?

## 10. Network Security and Reliability

- 10.1 The services provided to the public should be available at a reliable level. In order to support fault tolerance and eliminate point of failure, it is proposed that the network should be at least or more than 99.9% reliable.
- 10.2 Other security risks may rise from hackers, spammers and other forms of malicious attacks on the network, what mechanism can be suggested to avoid this issue?

## 11. Authentication and Authorization

- 11.1 It is proposed that local consumers with valid and active mobile connections within Oman alone would be entitled to access the Wi-Fi connection. Visitors who obtain prepaid SIMs, or Wi-Fi prepaid subscription would be allowed to access the service based on their mobile number, or identification validation.
- 11.2 The provision of services shall be subject to the security regulation listed in the Telecom Act, article (44).
- 11.3 Identification of the user during every session of access shall be mandatory and complied with the existing rules, regulations and procedures.
- 11.4 Proper records of each network user shall be kept at operator's server for accessing the service based on the current regulation and guidelines in place.

## 12. Proposed Frequency bands

- 12.1 The proposed frequency band are to be unlicensed and fee-exempted and shall comply to Annex-F of the Regulations Organizing the Registration and Utilization of Frequencies and Radio Equipment and Their Pricing issued by decision 133/2008 with the following notes:
- Notwithstanding fee exemption, other mandatory requirements like type approval of the telecom equipment have to be met.
  - Operations of such hotspots shall be on non-interference and non-protection basis.

12.2 Annex-F: Technical Specifications for Wideband and Broadband Data Transmission System

Frequency Band	Allowed Power	Type of allowed Applications	Restrictions	Mandatory Mitigation Techniques	Additional Requirements
2400-2483.5 MHz	100 mW max. mean EIRP  For wide band and broadband modulations other than frequency hopping spread spectrum, the maximum spectrum power density is limited to 10mW/MHz	RLANs	Indoor use only		Integral (no external antenna socket) or dedicated antenna only
5150-5250 MHz	200 mW max. mean EIRP  10 mW/MHz max. mean EIRP density	WAS/RLANs	Indoor use only		
5250-5350 MHz	200 mW max. mean EIRP  10 mW/MHz max. mean EIRP density	WAS/RLANs	Indoor use only	TPC <sup>1</sup> DFS <sup>2</sup>	
5470-5725 MHz	1 W max. mean EIRP  50 mW/MHz max. mean EIRP density	WAS/RLANs		TPC <sup>1</sup> DFS <sup>2</sup>	
5725-5850 MHz	2 W max. mean EIRP  20 dBm/MHz max. mean EIRP density	FWA systems only	Outdoor use only	TPC <sup>3</sup> DFS <sup>4</sup>	Elevation plane antenna patterns of FWA central and terminal stations shall meet appropriate envelop patterns derived from Recommendation ITU-R F.1336-1

Frequency Band	Allowed Power	Type of allowed Applications	Restrictions	Mandatory Mitigation Techniques	Additional Requirements
<p>1. WAS/RLANs operating in the bands 5250-5350 MHz and 5470-5725 MHz shall either employ transmitter power control (TPC), or, if TPC is not used, then the maximum permitted mean EIRP and the corresponding mean EIRP density limits shall be reduced by 3 dB;</p> <p>2. WAS/RLANs operating in the bands 5250-5350 MHz and 5470-5725 MHz shall use mitigation techniques complying with the detection, operational and response requirements described in Annex 1 of Recommendation ITU-R M.1652 to ensure compatible operation with the radiodetermination system;</p> <p>3. FWA systems operating in frequency band 5725-5850 MHz shall employ TPC with a range of at least 5 dB;</p> <p>4. FWA systems operating in frequency band 5725-5850 MHz shall employ DFS mechanisms with equivalent DFS detection threshold (dBm) at receiver input shall be as following: <math>DFS(dBm) = -69 + 23 - (Max.Tx EIRP(dBm)) - 10 \lg ChS(MHz) + Grx(dBi)</math>, where ChS is nominal operating channel width and Grx is receiver antenna gain.</p>					

### 13. Technical Issues

- 13.1 The standards of 802.11 family shall apply for wireless access technology. The intended application should be restricted to public places only.
- 13.2 The envisaged that network topology should be based on Point-to-Multipoint solution from the hub node to the hotspot nodes. Mesh application is only considered at the backbone level only but not at the hotspot level.
- 13.3 Handover may be considered from one hotspot node to another but within the serving hub node only, as long as the user is connected to one operator.
- 13.4 Some of the other issues that need further and detailed examination are:
- a) What type of Authentication, Authorization & Accounting system shall be adopted in respect of the hotspots provision?
  - b) Should interworking and interoperability be pre-requisites while making the services available?
  - c) Should there be secure and seamless hotspot roaming?
    - i. The first challenge is technical in nature, arising from the fact that standards, networks, platforms, solutions and technologies are not unified and interoperable.

- ii. The second is commercial, and requires contractual agreement on the standards, charges and billing arrangements among operators and vendors.

## **14. Charges for Access at Public Hotspots**

- 14.1 It is proposed to provide access to Internet using Wi-Fi network at these hotspots free of charge to consumer on the move in order to provide an incentive to promote internet use among the common public for a certain period.

## **15. Business Models**

- 15.1 The free access proposed in the public hotspots may have to be compensated by a suitable counter earning potential of revenues through advertisements and promotions.
- 15.2 The business models deployed by the service providers shall determine the charging mechanism in the private areas as well as the usage restrictions in the public areas.
- 15.3 Should there be government intervention to support commercially unviable hotspot areas?
- 15.4 If the service in general is provided free of charge for (up to 1, 2, or 3 years period), then what would be the appropriate support required to the service provider? And how it may be applied?
- 15.5 The TRA shall have oversight of the business models proposed and agree with the service providers the charging mechanism.

## **16. Ease marking of Physical Area**

- 16.1 What criteria should the TRA adapt to assign and ease mark an area for a particular service provider?