



## **Global Inter-WISP Roaming**

The Pronto Roaming Network



## Introduction

Due to the growing popularity of 802.11b / Wi-Fi technology, a number of public WLAN hot spots have begun to emerge on a global basis. However, it is difficult for any one wireless Internet Service Provider (WISP) to build an infrastructure that offers wireless, high-speed Internet access to subscribers worldwide. Roaming between service providers thus becomes a critical element for delivering global access to end-users. Inter-WISP roaming enables service providers to quickly and affordably expand their Wi-Fi footprint and to improve overall service offerings to subscribers. Service providers also financially benefit by receiving additional revenue from other end-users roaming onto their location and, in some cases, from their own end-users roaming onto other locations.

The Pronto Roaming Network was created to enable service

provider customers of Pronto's Hotspot Managed Services the ability to offer global roaming to end-users. This document provides an overview of how the Pronto Roaming Network works and an example of the financial flows among parties involved.

## Inter-WISP Roaming Overview

The figure below is an overview of the Pronto Roaming Network.

The participants in the Pronto Roaming Network include:

- *End-User:* business user or consumer that has a billing relationship with the Home WISP and roams onto other hot spots operated by other WISPs within the Pronto Roaming Network
- *Home WISP:* service provider that owns account relationship with end-user.

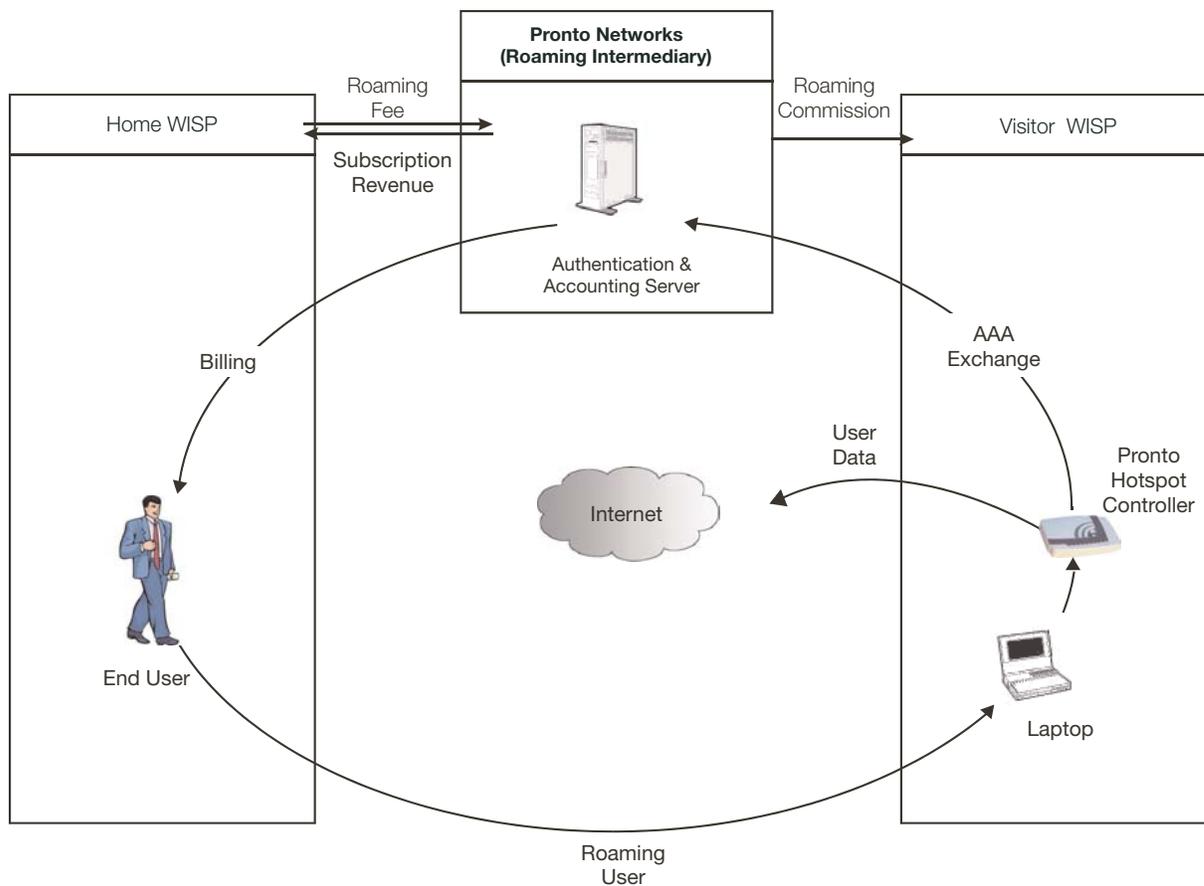


Figure A: Inter-WISP Roaming Overview



- *Visitor WISP:* service provider that allows that allows end-users of other WISPs within the network to gain Internet access at their locations.
- *Pronto Networks:* roaming intermediary that facilitates AAA and financial settlement between one or more Visitor WISPs and the Home WISP.

Other elements of the Pronto Roaming Network include:

- *Pronto Roaming Network Online Directory:* a web-based directory of hotspots listing the location address and SSID information of participating hot spots within the Pronto Roaming Network.
- *Pronto Roaming Network Logo:* an icon placed on the initial splash page of each location participating in the Pronto Roaming Network.

In this example, the end-user from the Home WISP identifies a convenient, hot spot location to visit via the Pronto Roaming Network Online Directory and travels to that location to logon. After launching his/her browser at the Visitor WISP location, the end-user sees the Pronto Roaming Network logo on the initial splash, reaffirming that this location is part of the Pronto Roaming Network. The end-user proceeds by entering the WISP's domain name, followed by a forward slash and his/her username (i.e., <domain name>/<username>) plus their password to logon.

The end-users authentication credentials are immediately sent to Pronto's Network Operations Center (NOC) using a secure channel, where the end-user is verified to be a subscriber of a roaming plan of the Home WISP. If by chance the end-user's plan does not include roaming, authentication will fail and the end-users will be provided an error message. The end-user will be redirected to a signup page of the Visitor WISP for buying hourly/day rate access.

Once authenticated and authorized, Pronto tracks the number of roaming minutes used at the Visitor WISP location provides roaming settlement services for both the Home WISP and Visitor WISP. At the end of each month, the Home WISP is charged a per minute roaming fee for its end-user's access at Visitor WISP's location, which will be credited against the monthly subscription fee collected from the end-user. The Visitor WISP is paid a per minute commission fee for allowing the end-user to roam onto one its locations at the end of month. A small settlement fee is

charged by Pronto Networks for performing roaming settlement services.

If in the rare occasion an end-user experiences any problems logging on at a remote location, the end-user can call the toll-free customer service number provided to all WISP locations within the Pronto Roaming Network for immediate assistance.

The WISP is also provided access to online reports via a WISP portal that show which end-users roamed, the locations onto which they roamed, and the number of minutes accessed. The WISP is also provided a monthly report displaying the total number of minutes its end-users have roamed onto other locations and the associated fees, as well as the total number of minutes of other end-users roaming onto its locations and the associated commissions.

### Roaming Business Model

The scenario below provides an example of the financial settlement process in the Pronto Roaming Network. In this example, two WISPs within the Pronto Roaming Network offer roaming plans to their subscribers:

- |   |   |
|---|---|
| <i>WISP A Roaming Plan:</i><br>(no annual contract) | Unlimited access at all loctions for \$40 / month   |
| <i>WISP B Roaming Plan:</i><br>(no annual contract) | Unlimited access at home locations, plus 250 free roaming minutes for \$30 / month, plus \$0.10 for each additional minute of roaming |

User A, a subscriber of WISP A's Roaming plan, in addition to gaining Internet access at home locations, roams onto WISP B locations for a total of 350 minutes in a given month. Conversely, User B, a subscriber of WISP B's Roaming Plan, roams onto WISP A locations for a total of 350 minutes.

Roaming fees and commissions are as follows:

- |                            |                  |
|----------------------------|------------------|
| <i>Roaming fee:</i>        | \$0.060 / minute |
| <i>Roaming commission:</i> | \$0.035 / minute |

	WISP A	WISP B
<b>Plan Description</b>	Unlimited roaming for \$30 / month	Unlimited roaming at home locations + 250 free minutes of roaming + \$0.10 / minute for add'l roaming
<b>End User</b>		
Monthly fee	(\$40.00)	(\$30.00)
Ad hoc roaming fee	N/A	(\$10.00)
Total	(\$40.00)	(\$40.00)
<b>WISP</b>		
Monthly subscription fee	\$40.00	\$30.00
Roaming revenue from user		\$10.00
Roaming Fee	(\$21.00)	(\$21.00)
Roaming Commission	\$12.25	\$12.25
Profit	\$31.25	\$31.25
<b>Roaming Intermediary</b>		
Roaming Settlement Fee	\$8.75	\$8.75

The above table summarizes the monthly charges and credits for all parties.

In this scenario, WISP A is credited \$40 for User A's monthly subscription fee. Since User A roams onto WISP B locations for 350 minutes, WISP B is debited \$21.00 (or \$0.60 x 350). WISP A also receives collects \$12.25 (or \$0.35 x 350) for allowing User B to roam onto its locations for 350 minutes during that month. In aggregate, WISP A earns \$21.25 for the month from both User A and User B.

WISP B is credited \$30 for User B's monthly subscription fee. WISP B also collects \$10 in additional roaming revenue from User B for the roaming 100 minutes more than the allotted 250 minutes (i.e., \$0.10 x (350 - 250 minutes)). WISP B, however, is charged \$21 (or \$0.06 x 350) for User B to roam onto WISP A locations. In essence, WISP B is collecting an additional \$0.04 / minute (\$0.10 - \$0.06) when its own user roams onto WISP B locations after the allotted 250 minutes. Of the \$0.10 charged to the user, the largest amount is paid to the WISP that has the accounting relationship with the user. The remainder is paid to the visitor WISP and settlement intermediary.

To finish, WISP B is credited \$12.25 (or \$0.035 x 350) for allowing User A to roam onto its locations for 350 minutes. In aggregate, WISP B earns \$21.25 for the month from User A and User B.

In this example, Pronto Networks as the roaming intermediary is provided a fee of \$8.75 (or (\$0.06 - \$0.035) x 350) from WISP A and \$8.75 for WISP for providing roaming settlement services.

The above example is obviously a very simplified scenario to illustrate the financial flows of a hypothetical case of two users and two WISPs. Real monthly financials are a multitude times greater than the above illustration.

### Summary

The popularity of Wi-Fi technology among business users and consumers has grown steadily over the past year, prompting many service providers to build out public Wi-Fi networks. Usage among business travelers and consumers is likely to remain relatively flat, however, unless ubiquitous access becomes available. The ability to offer an international or even national footprint is implausible due to the costs and time required to build out an expansive footprint. As a result, inter-WISP roaming among regional and national operators becomes necessary to serve the market demands of end-users.

The Pronto Roaming Network, offered as part of Pronto's Hotspot Managed Services, is an inter-WISP network created to address these WISP challenges. In addition to extensively expanding a service provider's footprint, the Pronto Roaming Network enables service providers to earn additional revenue from roaming end-users as well as from existing end-users. Service Providers are also able to offer national/international service plans which are likely to improve overall customer satisfaction and retention.



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