

1. **Invention Title.**

Service Provider awareness Universal Apparatus

2. **Invention Summary.**

An apparatus for universal Service Provider awareness by host computers.

3. **Invention Description.**

a. Describe the invention in detail.

Home Awareness is the mechanism by what Service Providers publishes their brand to internet subscribers for multiple reasons:

Inform the user is in the operators network

Inform users on account related events (e.g., consumption quota reached a limit)

Claims:

In order to communicate to the host the service provider information the following claims are made.

1. The host computer or application has an client that perform a sequence of standard protocol invocations plus some artifacts disclosed in this document as a way to convey the usage of data
2. Operating systems can allocate some real state space in the task bar, or a toolkit, widget or similar, to represent a link to the service provider information
3. Web Browsers and applications can separate a space in the toolbar, uri box, etc to represent the service information link to expanded information
4. A hierarchy of procedures (some examples listed below) can be defined for an application to determine the mechanism to gain access to the service information.
5. The protocol and actions are deemed in general insecure, thus personal information should not be considered for transmission over the wire. Security mechanisms can be develop further if deemed necessary.

Service Provider Awareness Discovery Protocol (SPADP)

Steps to inform a client about the service provider being served.

1. After IP Acquisition the client performs TURN, ICE Lite or similar procedure to determine its public IP
2. The client with the public address information performs a reverse DNS to determine the domain name of the address servicing network (query a PTR record using the dns name of the wan IP such as 122.6.7.48.in-addr-arpa).
3. Optionally The client performs Forward Confirmed Reverse DNS to verify the original address matches the service provider
4. The client with the top domain (first two segments of the DNS name) performs a standard http query in the form (similar to the favicon convention as default behavior) of:
 - a. <http://domain.com/sp.icon> (to retrieve the icon of a service provider)

- b. <http://domain.com/spinfo> (to invoke a service that retrieves SP information).
- 5. With a. the client can display a static icon of the service provider as described in the claims. With b. the client can retrieve additional information to place in the context of the displaying box, URIs, dialog boxes, etc.
- 6. The connection type b. can enable further actions to enable web services validation of user to disclose short information notices (source address verification of requester matched to current IP lease).
 - a. Logging on your account to check your consumption status
 - b. Billing notifications are available in your operator inbox.
 - c. Current offers, specials bonus and rewards.

Implementation options:

At the OS level, May require an RFC and look consensus for adoption

OS can publish APIs for applications and widgets to gain access to SPADP information

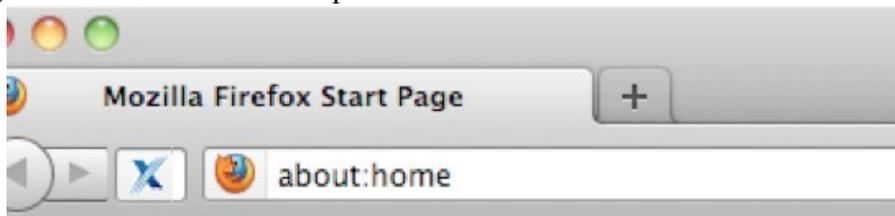
Applications (e.g. browser) can call OS services, then request SPADP if not supported by OS

When connecting via provider portal the home page can explicitly turn SPADP on, off.

`<link rel="SPADP" enable="true|false">` could indicate the browser to enable the SPADP client

Disabling client for making SPADP requests.

The figure below shows an example of how the Service Provider information can be displayed.

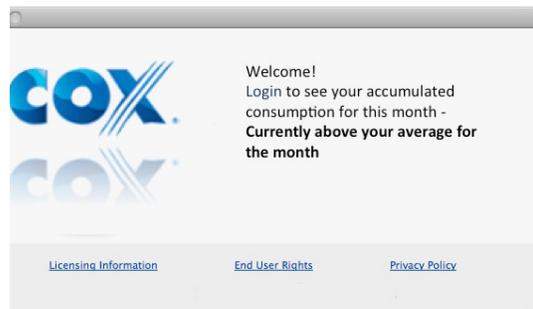


A context link can further expand information about the service Provider based on the http request. An example of a potential response for a json/text mime type is shown below (i.e., request to <http://cox.com/spinfo>). The application (e.g., browser) renders the retrieved content in a UI specific manner. Additional messages can be added or represent dynamic web pages as well; similar to Google Maplets, or bookmarklets.

Examples of rendering of the retrieved information.



Modal Dialog pop-up after clicking the Service Provider icon



b. Why was the invention developed? What problem(s) does the invention solve? How is it better?

Normally the service providers inject html tags and/or scripts on top of the visited pages to display the information of interest in users browsers.

This procedure is effective but costly as involves additional resources both physical and operational, scalability can be a problem as traffic grows and number of connected devices requires host state tracking.

As applications transition to mobile experience, the use of browsers become less than universal and “HTTP/HTML” based applications make much difficult or impossible to intercept and introduce operator information in prior all HTML traffic directed to the browser.

This solution creates a standard set of procedures that guarantee home awareness browser independence, and expand usability by the operating system and applications in general.

The information being provided to the host can be potentially used by multiple entities within the host and introduced semantics for its manipulation.

The reduction of traffic intercept has a direct impact on OPEX and CAPEX as the information is at minimum captured at the IP acquisition and/or renew process.

Future complex networks where multi-homed connections are feasible, information of the multiple providers can guarantee better host coordination of bandwidth resources and management.

Usage of encryption can improve confidentiality of user whenever personal information is being communicated to the user. This is not possible today as html information is sent in the clear with potential eavesdropping.

Closed environments like mobile network present connectivity information plus brand awareness. This is different as the mechanism presented herein. Those devices can't connect to other networks, the brand awareness is pre-set at manufacturing time and not necessarily discovered. Also SMS might be a better mechanism for those networks to communicate information as it is part of their service infrastructure.

c. Briefly outline the potential commercial value and customers of the invention.

There is a large market of Service provider awareness that can take advantage for more complex interactions, and, or cost reductions on other fronts as the mechanism simplifies the interactions for SP awareness to clients.

This procedure applies to any kind of internet based service provider and is not confined to cable networks.

4. HOW is your invention different from existing products, processes, systems?

Sourced Content: Based on Wireless Tech Team call Sept 15 2011 presented By Vikas Sarawat.

Home awareness is done in proprietary manners today, thus what apply to one operator is not necessarily the same solution or user experience when using a different service provider.

Most included visualization on main pages by insertion of frames (watermarks), scripts altering the user content. It is also hard to determine which web pages the inserted material can be displayed due use of complex styled documents altering contrast, colors and graphics to determine the overlays can be clearly displayed without compromising the customer experience.

