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Musing on telecommunications industry and other sundries

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February 27, 2005

Peerio Patent Application

Previously many have taken issue with Popular Telephony's [Peerio](#) and related [GNUP](#). Some have [criticized](#) PT because the software was not made available after the public announcement; some have [pointed](#) out that the software [does not work](#). One could explain them away by saying that these are execution lapses. Probably they will fix them; if they are incapable, somebody else could be brought in. In other words they are transitory. With this background, a few days back [Andy](#) informed us that a [patent application](#) filed by PT is now publicly available and that "should go a long way to telling their story and answering some questions." [James](#) feels that the system should work as advertised because "chipmakers [and] the various phone and gateway makers [will not risk] public association with something that turns out not to work." This entry is an analysis of the patent application as I understand it. Previously, I had [questioned](#) the need for and acceptability of a "serverless" architecture. This patent application has not changed my mind.

(In my limited understanding of the patent filing process, submitting the application does not imply much. I could develop a patent application for a perpetual motion machine and can file it, if I am willing to spare the application fee which is something like \$100. Secondly, the process is far from granting a patent. Thirdly a patent does not have to describe the full system; only the aspect that is being patented. Accordingly I still have some open questions on the workings of the system.)

Concept of virtual ring

A Peerio network is a virtual ring. All the nodes in the ring have an address. The address space can be ordered. (The patent uses IP address.) This ordering is used to determine the neighbors of a node on the ring. Periodic query traffic

(which can be sent in either direction) will maintain the integrity of the ring. If the ring is broken, the ring will be reordered. To reduce the maintenance traffic, the size of the ring is controlled. A ring that exceeds this limit will be split into two rings. A node joins an existing ring by identifying two nodes that “flank” its address. There is also a mechanism to join two rings.

Open questions:

1. The default size of a ring is 6. So there has to be multiple levels of rings. It is not clear how are they formed.
2. How will two rings know that they can merge? Presumably these bridge nodes will coordinate the merging process.

Data Storing

Data is stored in a sub-ring. This way of replicating data in multiple nodes provides for a node failure or leaving a ring. The members of the sub-ring are determined via a hash function or a similar mechanism.

Remark:

This is the first hint that there are classes of nodes. These nodes are special in the sense that they have storage facilities.

Login procedure

A user who wants to use the services of Peerio will go through a login procedure at a Peerio node. The Peerio node can validate the user using the local data or getting data from other nodes. Once a user has successfully logged on, the user information is distributed to other nodes.

Open questions:

1. The ring needs to have user profile for all potential users. Since a ring is organically formed, it is not clear how the first node in the first ring will get the profile for all the users?

Call Establishment

When user A wants to call user B, node A will get the profile of user B from the ring. The profile will give the IP address of node B and the status of user B. Using this information, node A can determine whether to establish a session or not. In the affirmative case, node A will use one of the standard mechanisms (H.323 or SIP) to establish the call. Otherwise node A will collect “voice mail data” and store it in the ring.

Remark:

One of the criteria for not establishing the call is the busy status of user B. This means, Peerio call processing logic has to replicate telephony features like call waiting, multiple call appearances, instead of using those capabilities available in H.323 or SIP. More importantly, these features have implications to user interface. How will the terminal

coordinate the user interface projected by Peerio and that by H.323/SIP?

Voice Mail

As I remarked in the Call Establishment section, node A can encrypt the voice mail and store it in the “data store sub-ring”. If the user is logged on when a voice mail was stored, the node will be informed of the arrival of a new message. Otherwise, the user will be notified of stored messages during the login process.

Open questions:

1. How will the system ensure that there is at least one “data store” terminal is available at any given time?
2. What happens if all the terminals that held messages for user A are unavailable when that user logs in?

Call Center Application

Call request for the common user id is forwarded from one terminal to the next in “hot potato” fashion, till a free agent is located.

Sundry observations

- Conferencing is done through multicast and not standard bridging
- There multiple kinds of terminals - Standard, Data store, Administrator
- A major implication of this is that one needs to engineer so that there are enough terminals of each kind. It is not as simple as buying a terminal at Walmart and connecting it to the network. People have theorized that it is targeted for SMB. An open question is will SMBs have enough technical knowledge to do this and other admin functions.

Posted by aswath at February 27, 2005 01:05 PM

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Comments

My impression is Peerio has neglected the individual consumer softclient in favor of it's OEM devices for the enterprise. I don't know anyone who has successfully installed and used Peerio on a PC. And I have repeatedly been

denied replies by e-mail.

Oh well, Skype will take my business.

Posted by: [Rick](#) at February 28, 2005 10:19 PM

You actually don't know how to read patents. you missed the most interesting there. Rings are just an example of use (integrity), other mechanisms can be used. And I didn't find anything about different classes of rings - there are non. But I did find few interesting things - redundancy on top of serverless network is one of them. Patent is a protection mechanism one will be full to apply for all the system (to give competitors a now how), so one thing is certain a lot of questions will remain.

Posted by: [prostuda](#) at March 1, 2005 07:58 PM

BTW Peerio of course is not a virtual ring, it is a DHT based system (look down the patent)

Posted by: [prostuda](#) at March 1, 2005 08:05 PM

Probably I don't know how to read patents. God knows when I receive my own patent papers back from the lawyers, I know they are mine only because the lawyer says so; otherwise I can not recognize them. But I am told that the claims section is the controlling one. Claim 3 says that "the telephone units interfaced to the network form and deform virtual rings as the organizational groups."

Since not all terminals will have storage mechanism, I said that "data is stored in a sub-ring". It is not stated in the claims section, but is described in the text section.

The purpose of this entry is to start a discussion so that others can add and increase common understanding. Of course PT will not reveal much information, but others can try to decipher as much as legally allowed. For example, the fact you told me that I "missed the most interesting" point, I have to keep digging.

Posted by: [Aswath](#) at March 1, 2005 10:08 PM

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