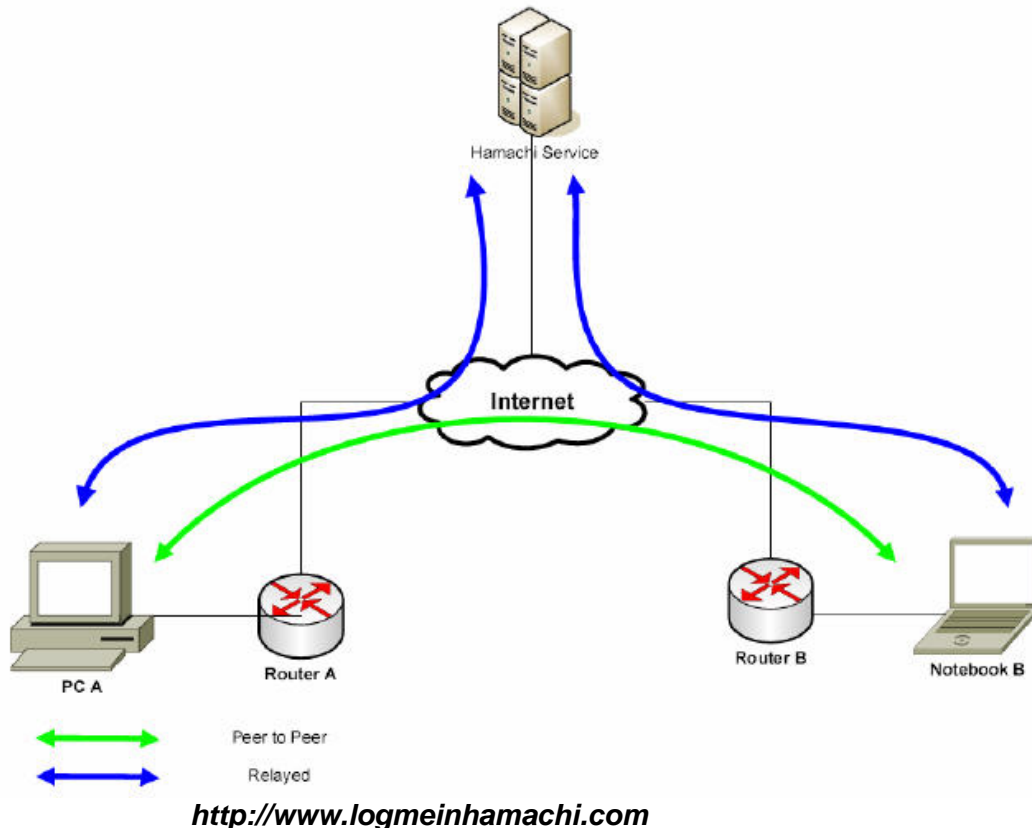# Virtual Private Networks (VPN)

What is a VPN?

Basically, a Virtual Private Network (VPN) is a private network that uses a public network (usually the Internet) to connect remote sites or users together. Instead of using a dedicated, real-world connection such as leased line (T1, etc.), a VPN uses "virtual" connections routed through the Internet from the company's private network to the remote site or computer.

How Does The LogMeIn Hamachi VPN Work?

http://www.logmeinhamachi.com

LogMeIn Hamachi is a virtual private network system, comprised of **mediation servers** managed by LogMeIn Hamachi, and end-node **clients** running the Hamachi software. *The Hamachi servers provide the mediation services required for establishing direct peer-to-peer tunnels between clients.*

Every client creates and maintains a control connection to the mediation server. The connection is used for learning the client's location, tracking its online presence and assisting a pair of clients in establishing a VPN tunnel. If the connection becomes idle, it is re-activated with a small "keep alive" packet to ensure that any intermediate firewalls do not shutdown the connection due to inactivity. When the control connection is established, the client goes through a three step initialization process: Login, Probing, and Synchronization:

- The Login step authenticates both the client to the server, and the server to the client.
- The Probing step determines the topology of client's internet connection, specifically it detects the presence of NAT and firewall devices that may be present on the route between the peer and the Internet.
- The Synchronization step brings the client's view of its networks in sync with the server and marks it as online. It also initiates the setup of VPN tunnels as dictated by the client's network memberships and the online status of its peers.

When a peer of any given network goes online or offline, the server directs other network peers to either create or tear down the tunnel to the former. If a control connection with the server is unexpectedly lost, the client retains all of its tunnels and begins to actively check their status. When the server loses a client's connection, it

informs the client's peers and they also start tunnel status checks. This enables Hamachi tunnels to withstand short periods of complete server unavailability.

In English, please: The key concept is that Hamachi sets up and verifies a secure connection, called a "tunnel," between 2 or more computers (called "clients"). Once that tunnel is established, Hamachi is essentially out of the picture. All data is passed directly between the clients, and no traffic flows through Hamachi or their servers. And it works through various firewalls and broadband routers (aka NAT devices).

Is a VPN Secure?
The "tunnel" itself is like a private, well, tunnel, between computers. Here is what the company had to say when I asked them if any of our the computers on the network could be hacked into while connected:

> *"Hamachi can only connect to other users in your networks, and traffic between users can be blocked at any time. Because of this, there is no possibility of an outside attack. Also, unless your peers are unable to make a peer to peer connection (only 5% chance), no data will go through our servers after you are authenticated and the tunnels between your peers are built, essentially eliminating the possibility of a man-in-the-middle attack. We use 256 bit encryption on all communications for your security as well."*

If you really want to read the specifics, see the web link at the end of this handout: "Hamachi_Security_White_Paper.pdf."

Can I Work on My Files Directly Over the VPN Connection?
We have been doing so on smaller files. Opening larger files takes longer; sometimes a very long time. That might just be a connection speed issue. You'll have to try it yourself to see. The benefit to opening files across the VPN is that if someone tries to open the file you are working on, they will get the same "in use" message that they would if you were in your office working on the computer.

If it's too slow for direct work then you will need to "check out" or download files to your local computer to work on them. But temporarily moving an Xref'd file would cause the XRef not to show up in other drawings. Most programs, like DataCAD, will let you open a "Read Only" file, but won't tell you it's "Read Only" until you try to save it, so that can be dangerous if you've already been working on the file. We haven't come up with a foolproof solution yet.

How Difficult Is It To Set Up?
There is NO configuration required! It is dirt simple to set up. It takes about 3 minutes to set up on any computer; another 2 minutes if you have to change your Windows file sharing setup, and another 2 minutes if you have to modify your software firewall.

How Much Does Hamachi Cost?
It's FREE! There is a paid version with more administrative tools that are probably useful for larger offices, but for most small businesses, the free version is probably good enough. But even the paid version is very reasonable. A 1 year subscription for 5 licenses would be about $200.

What Platforms Does Hamachi Run On?
Hamachi will work on any computer that can install the software. So if you want access from a client's computer, or a friend or family member's computer, you can do so. And when you are done you can uninstall the software and leave no trace. Hamachi is currently available for Windows 2000, XP, 2003, and Vista. Console versions of Hamachi are also available for Linux and OS X.

References
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