

BitWise Dual-IP Technology Overview

by Kevin Hock, BitWise Client Programmer

Document Revision 1.2, April 19th, 2005

Overview

BitWise is designed as an Internet and an Intranet messenger. That is to say, BitWise can be used on the Internet, or on an Intranet/LAN/VPN without sending your conversations and files over the Internet. This gives BitWise a distinct advantage over most other instant messaging systems which are not able to make connections on an Intranet/VPN but instead continue to unnecessarily send data over the Internet.

What is dual about Dual-IP Technology?

Every computer connected to a network or the Internet has a unique IP address, similar to how each home has a unique phone number. However, when a computer is connected to a LAN, its IP address only needs to be unique to the LAN. A device such as a router or gateway must be used to get onto the Internet to translate between Internet and LAN addresses. Many networks use Network Address Translation, which gives non-routable LAN IP addresses such as 192.168.1.100. Therefore, a computer on a LAN actually has two relevant IP addresses: its own non-routable IP address on the LAN, and the IP address of the router or gateway connecting it to the Internet. The Dual-IP Technology refers to those two IP addresses hereinafter as the Internet IP and the LAN IP.

How does BitWise use the Dual-IP Technology?

When you connect to any other device or machine on the Internet, such as a web server, a mail server, or the BitWise server, that server uses your Internet IP address to transmit data back to you. If your computer is connected directly to the Internet, then it has only an Internet IP address. The BitWise server will give this address to your contacts so that they are able to establish a direct connection with you.

If your computer is on a LAN, the BitWise server will see the Internet IP address of the router connecting you to the Internet. The BitWise server records that address as your Internet IP address that others on the Internet would use to connect to you. However, your PC also detects its IP address and sends its perception of its IP to the server. If the addresses are different, your computer is noted as using a LAN and your computer's IP is recorded as the LAN IP by the BitWise server.

If the server has noted that you have both an Internet and a LAN IP address, the address it gives to each of your contacts depends on their Internet and LAN IP address. If a contact has a different Internet IP address, meaning that they are not on your LAN, that contact is given your Internet IP address. If a contact has the same Internet IP address as you, then that contact is on your LAN and is given your LAN IP address. In either case, the correct IP address is given to establish a direct connection to you. Note that the BitWise server does not give out your LAN IP address unless the Internet IP addresses match, so no one outside of your LAN will be able to "eavesdrop" on your LAN structure.

Does BitWise allow for VPNs that connect all locations?

Yes, BitWise can be used over a VPN by enabling a Professional setting called VPN mode. When using VPN mode, the Internet IP addresses are ignored, and only the LAN (VPN) addresses are used for establishing direct connections. This deviates from the behavior described above, but provides Professional Networks with a powerful connection option not available in BitWise Personal. This mode can be enabled or disabled anytime using Web Services by the Master Account.

Consider a brief example: Office A connects to the Internet via a router with Internet IP 4.5.6.7, and all PCs at Office A are given LAN/VPN addresses of 192.168.1.x. Office B connects to the Internet via a router with Internet IP 7.6.5.4, and all PCs at Office B are given LAN/VPN addresses of 192.168.2.x. *Without* the VPN mode enabled, connections between offices would be routed via the Internet as originally described and are will not pass through the NAT router at each location, leading to direct connection failures. *With* the VPN mode enabled, only the 192.168.x.x. addresses are used, and the direct connections will be routed through the VPN rather than over the Internet.

Auto-Detecting the LAN IP address and overriding the LAN IP

BitWise detects your computer's IP address by querying your operating system for the IP address(es) currently assigned to the network interface(s) in your computer. Most systems have only one network interface, so only one IP address will be returned. On systems with multiple network interfaces, BitWise will display a list of IP addresses assigned to the computer and ask you select which one should be used as the BitWise LAN IP. You can reselect the LAN IP address by entering the *Setup* prior to logging in and clicking *Detect LAN IP*.

There may be some situations where the IP address for reaching your computer is the address of a router, gateway or other device. You can override an auto-detected IP address by entering the *Setup* prior to logging in and clicking *Override LAN IP*. Enter the IP address in dotted decimal notation that you want BitWise to use for your LAN IP. BitWise will confirm the IP address by displaying it back to you. Once you confirm your entry, BitWise will use that IP address as your LAN IP until you override it again or use the *Detect LAN IP* feature to reselect one of the auto-detected IP addresses.