



## TenStep Supplemental Paper

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### Network Address Translation

Network administrators can now have their routers use the Network Address Translation (NAT) functionality, which was previously available only in traditional firewall products. NAT helps to map private/hidden IP addresses to public/global ones so that they can be used on the Internet. It runs on a router connected to a private network and the Internet.

NAT helps to resolve address-duplication contentions among remote office sites. With NAT, the entire network can have a single address/interface. This technique, referred to as IP masquerading or Port Address Translation (PAT), is particularly beneficial to remote offices that employ ISDN connections.

NAT can be used in networks comprised purely of private IP addresses. It can also be used in networks involving both private and global IP addresses. Users present in the internal network can access the Internet through NAT. Users on the Internet can also access internal network servers. The correct way to implement NAT is to protect internal network servers from outsiders (the Internet) or to allow private network users to connect to the Internet by using registered global IP addresses.

NAT is very helpful when organizations cannot afford to purchase registered IP addresses. However, NAT is restricted in certain cases. For instance, the sharing of IP addresses by the entire private network to access the Internet hampers the surveillance of logging and Internet activities of particular users. Moreover, there can be delays in the transmission and consumption of router CPU cycles caused due to the translation done by NAT. This can cause critical applications to wait, and can finally lead to a loss of connectivity. Further, NAT can cause performance degradation of the router if the router's CPU is already loaded.

#### **Here are a few things you need to consider before implementing NAT.**

- 1) How many servers or clients need Internet connectivity?
- 2) Is purchasing global, registered IP addresses economically feasible?
- 3) Can the surveillance of logging and Internet activities of users be compromised?
- 4) What is the CPU usage?
- 5) How critical or sensitive is a given application against the delay in transmissions?

Careful implementation of NAT while keeping the above factors in mind can provide an economic and efficient method to connect to the Internet.