

Enabling End-to-end IP Visual Communication by Securely Traversing Firewalls and NATs with TANDBERG Expressway™

TANDBERG’s Expressway is the right solution for secure firewall and network address translation traversal. While there are a few solutions available, many are expensive, not secure, not available everywhere, restricting of feature sets, not ISP-friendly and not scalable.

This paper identifies alternative solutions and compares them to the TANDBERG Expressway solution for firewall traversal.

| Method | Description | Disadvantages | TANDBERG Expressway Advantages |
|-----------------------|---|---|---|
| No Firewall No NAT | Static public IP address for each device Place equipment outside firewall. | Endpoints are on the public internet and have no protection. Cost of public IP addresses. Effort to manage static NAT. IP address of endpoint advertised to all callers. Not favored by IT staff – requires outside network connection (unprotected) to conference room or wherever endpoint is located. Some locations, like hotels or public broadband locations, do not allow connections “outside the firewall.” | TANDBERG lets you keep endpoints behind the protection of a firewall & NAT. TANDBERG lets the endpoints use addresses in the private address space behind NAT. TANDBERG works with dynamic addresses. Callers only see the IP address of the TANDBERG server, never the IP address of the endpoints, or the enterprise firewall. TANDBERG keeps your network security infrastructure intact so no compromises are made to the rest of your business operations when adding IP voice and video capabilities. Since TANDBERG works behind any number of NAT routers and firewalls, telecommuters and road warriors have access to public IP addresses. |

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| Virtual Private Network (VPN) | <p>VPN to connect separate locations.</p> <p>Some VPNs are implemented within the firewall.</p> | <p>VPN typically only used for intra-company communications, not for inter-company.</p> <p>VPN may not be designed to handle real-time requirements of IP voice and video. This means possible unacceptable delay in the voice and video.</p> <p>Some VPNs may not be configured to handle H.323 random port assignments.</p> | <p>TANDBERG lets you securely reach beyond the limits of your intra-company VPN to other companies or other locations.</p> <p>TANDBERG can take the load off of your VPN by handling IP voice and video traffic in a secure fashion.</p> <p>TANDBERG places all voice or video traffic on ports 2776 and 2777 to make managing your IP voice and video traffic simple. You may even use TANDBERG in conjunction with your VPN, eliminating the need to open all ports on your VPN.</p> |

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| ISDN Gateway | <p>Use IP for local network, gateway to ISDN/PSTN network for off-net calls.</p> | <p>Removes cost advantage of IP.</p> <p>ISDN not available everywhere</p> | <p>TANDBERG lets you take full advantage of your IP network and the global IP network.</p> <p>By implementing IP, clients have a greater cost saving per call versus ISDN.</p> |

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| <p>Stand-alone or Gatekeeper Proxy</p> | <p>Place Proxy in DMZ of every location you want to call.</p> <p>Proxy works in conjunction with gatekeeper.</p> | <p>Localized solution – Requires access to every NAT/firewall on the call path for successful implementation.</p> <p>IP address published.</p> <p>Permanent inbound connection to proxy server required.</p> | <p>TANDBERG’s Expressway solution means that one publicly deployed server can reach across any number of firewalls and NATs without requiring your users to access them, or even know they exist. TANDBERG’s global reach makes the firewall a virtual “black box” – no need to understand or access any settings.</p> <p>Callers only see the IP address of the TANDBERG server, never the IP address of the endpoints, the client, or even the enterprise firewall. This “address hiding” adds another layer of protection for your network.</p> <p>TANDBERG never requires or allows an inbound connection through your firewall. The client/ server architecture makes all connections outbound just like other traffic on your network.</p> |

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| <p>Application Level Gateway</p> | <p>This approach places protocol awareness inside the firewalls and routers so they can handle the H.323 communications properly.</p> <p>This is typically a software upgrade to your firewall and routers.</p> | <p>Localized solution – Requires access to every NAT/Firewall on the call path for successful implementation.</p> <p>Firewall/NAT upgrade likely required. Additional processing on firewall.</p> <p>IP address of firewall/router published to all callers. Permanent inbound connection required.</p> | <p>TANDBERG’s Expressway solution means that one publicly deployed server can reach across any number of firewalls and NATs without requiring your users to access them, or even know they exist. TANDBERG’s global reach makes the firewall a virtual “black box” – no need to understand or access any settings.</p> <p>TANDBERG lets you use your existing infrastructure without any upgrades.</p> <p>TANDBERG lets your firewall and NAT treat IP voice and video traffic just like any other IP traffic and therefore requires no additional processing power.</p> <p>Callers only see the IP address of the TANDBERG server, never the IP address of the endpoints, the client, or even the enterprise firewall. This “address hiding” adds another layer of protection for your network.</p> <p>TANDBERG never requires or allows an inbound connection through your firewall. The client/ server architecture makes all connections outbound just like other traffic on your network.</p> |

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| MIDCOM | <p>MIDCOM (Middle-Box Communications) is a developing standard designed to remove protocol intelligence from the firewall and router, by defining a protocol to let an outside box issue commands to open and close ports and provide address translation assistance.</p> <p>This approach is designed to allow the firewalls and routers to remain protocol agnostic.</p> | <p>Complex and unproven – standard still in development.</p> <p>Localized solution – Requires access to every NAT/Firewall on the call path for successful implementation.</p> <p>Firewall & router upgrade required.</p> <p>IP address published.</p> <p>Permanent inbound connection required.</p> | <p>TANDBERG’s solution is based upon Ridgeway Communications technology (acquired by TANDBERG in 2004), which has been commercially deployed for four years. It is compatible with and transparent to the existing devices in your network like gatekeepers, gateways and MCUs.</p> <p>TANDBERG’s Expressway solution means that one publicly deployed server can reach across any number of firewalls and NATs without requiring your users to access them, or even know they exist. TANDBERG’s global reach makes the firewall a virtual “black box” – no need to understand or access any settings.</p> <p>TANDBERG lets you use your existing infrastructure without any upgrades.</p> <p>Callers only see the IP address of the TANDBERG server, never the IP address of the endpoints, the client, or even the enterprise firewall. This “address hiding” adds another layer of protection for your network.</p> <p>TANDBERG never requires or allows an inbound connection through your firewall. The client/ server architecture makes all connections outbound just like other traffic on your network.</p> |