

Lane Passport 4000 Fax over IP

Bringing fax into a single converged network

Demand for ever greater convergence of data and communications networks is fuelled primarily by the cost savings achievable through more efficient communications management and lower infrastructure overheads. There is also a greater need to improve corporate governance in order to comply with legislation requiring better record keeping and greater data security.

Convergence in the voice market has gathered pace over recent years as standards have become well established and vendors have integrated IP capabilities into their equipment which has made migration a relatively straightforward process.

Where fax is managed within the business, the next logical progression is to move fax communications fully onto the IP network through the introduction of Fax over IP (FoIP). FoIP offers significant benefits and now that standards have been set the migration of fax onto integrated data networks has become a well established process.

What is FoIP

FoIP (Fax over Internet Protocol) is a method of sending faxes over the Internet or your wide area network. FoIP changes the transmission method of faxing in much the same way that VoIP (Voice over Internet Protocol) changes the transmission method of a phone call. In both FoIP and VoIP, data travels most of the distance between sending and receiving devices on a packet-switched network, often avoiding the long-distance phone lines of the telephone network. This reduces the cost of transmission and can be a more efficient setup for a business that already has access to Internet bandwidth or a wide area network. It is a common misconception that all of the fax transmission from end to end is conducted over IP. Unless you are sending messages within the organisation this will not generally be the case; you will need to switch out through your PSTN gateways to deliver to the destination fax machine.

Lane's Passport 4000 FoIP system is based on the T.38 protocol which was designed specifically for the transmission of FoIP. T.38 preserves the fax experience for users familiar with traditional T30 fax machines; the sending and receiving devices establish a session, send and verify transmission and then terminate the session using active confirmations.

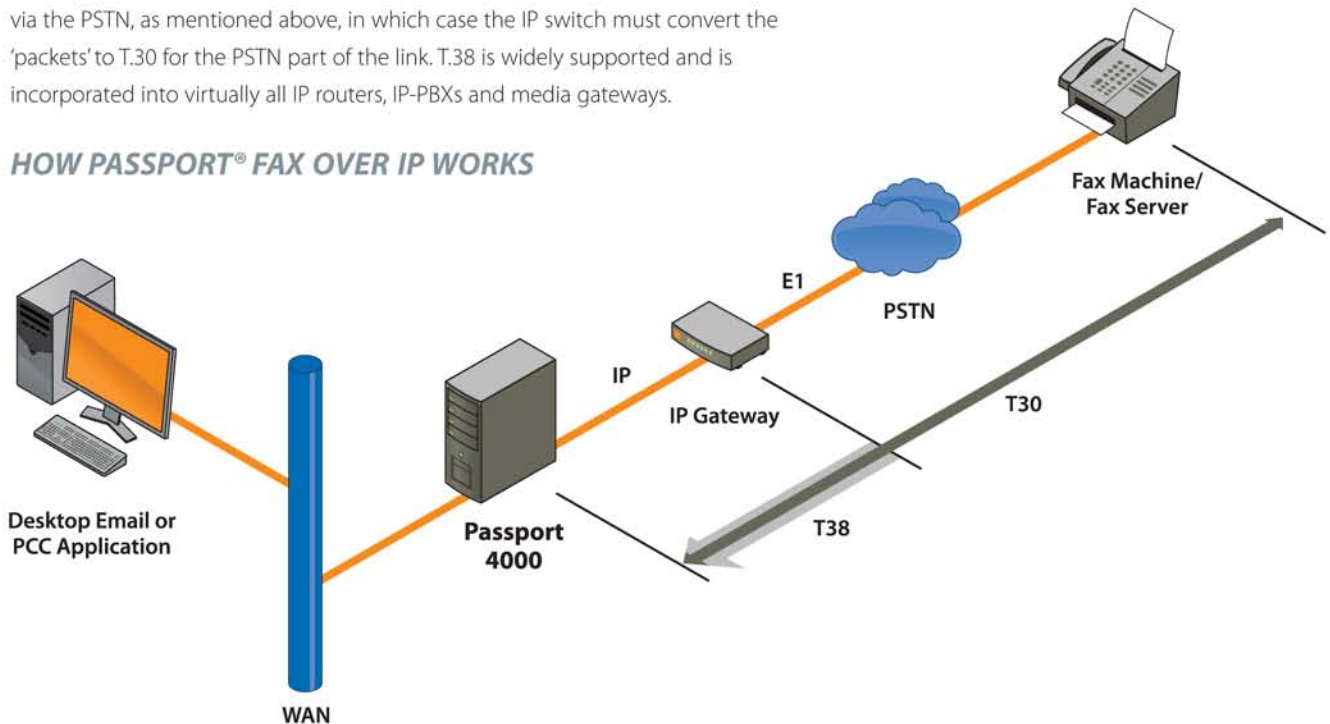
Communication could be entirely over an IP network in which case the session uses T.38 throughout or it could be routed via the PSTN, as mentioned above, in which case the IP switch must convert the 'packets' to T.30 for the PSTN part of the link. T.38 is widely supported and is incorporated into virtually all IP routers, IP-PBXs and media gateways.

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HOW PASSPORT® FAX OVER IP WORKS



Benefits of FoIP

Installing FoIP delivers wide ranging benefits due to its centralised and fault tolerant nature. The primary advantages are:

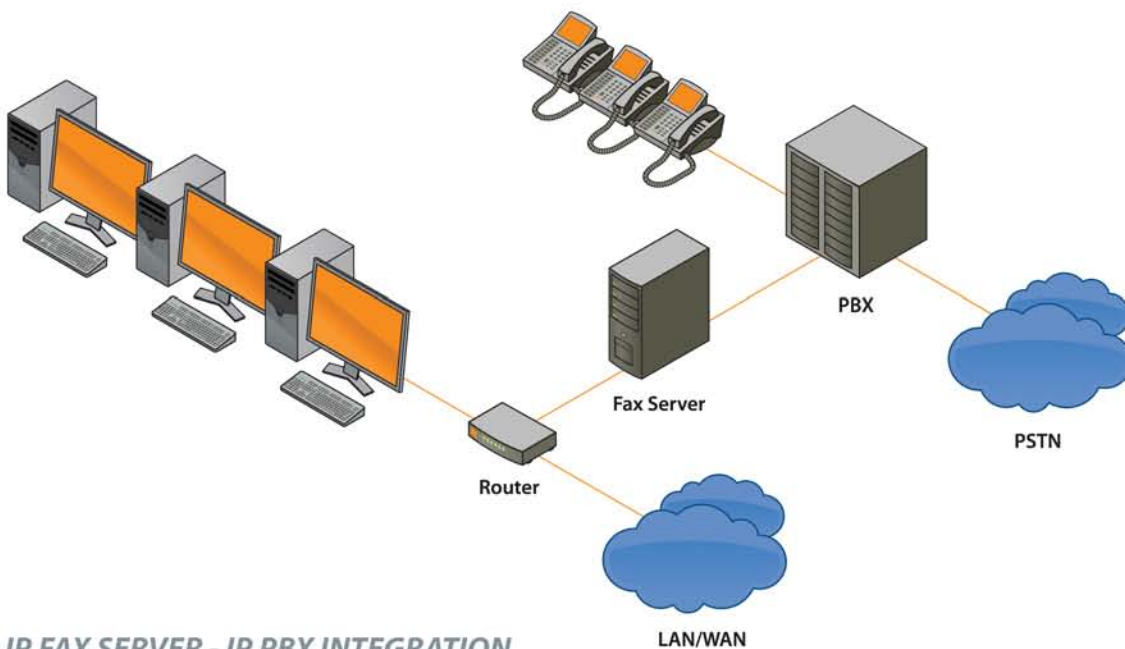
- **Reduced long-distance phone charges:** Faxes sent via the IP network avoid the PSTN and therefore avoid large long distance call charges.
- **Much lower maintenance costs:** With a FoIP solution fax traffic enters the IP environment via a gateway rather than through the PBX. As the maintenance costs of routers are significantly less than those for a PBX regular maintenance contract costs are greatly reduced.
- **Lower operating costs:** Complex network infrastructures made up of disparate technologies are common in medium to large enterprises. Complexity is forced on the company as it expands and having to operate separate data and telephone networks adds to this issue. Integration of data, voice and fax communications over the IP network eliminates the need for a telephone network and allows support resources and personnel to be focused on the data network.
- **Easier deployment and maintenance:** In a VoIP/FoIP environment the location of the IP fax server is independent of the PSTN network access point as gateways provide the connection to the PSTN. The fax processing resources simply need access to a data network, Local Area Network (LAN) or Wide Area Network (WAN), where the gateway resides.

The various application servers on the enterprise WAN can now deliver services to all locations from one central data center, using the gateways in remote offices to gain access to the public telephone network. This arrangement reduces the number of parts that are remotely managed, consolidating maintenance and lowering costs. This also simplifies deployment to remote locations, enables greater

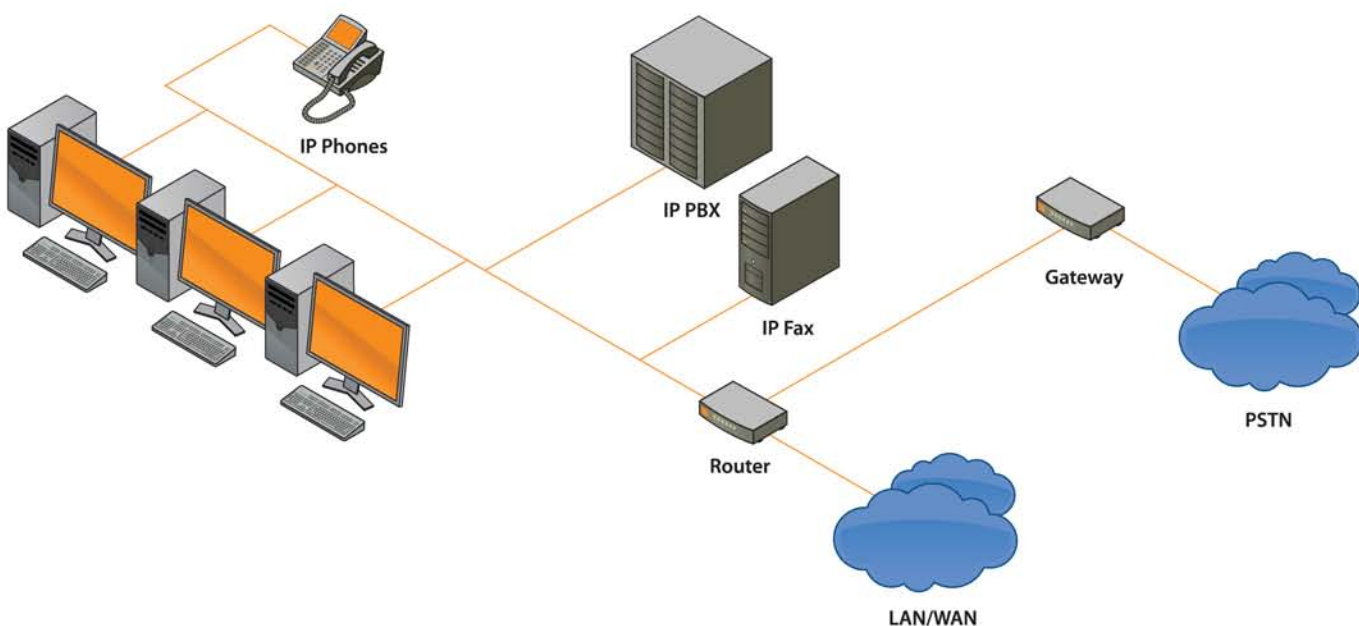
consolidation of fax services, lowers disaster preparedness costs, and enables least cost routing via the WAN.

Traditionally, provisioning fax services to employees in remote locations required installing an on-site fax server in those remote locations, which usually required a large user base to cost-justify. However, with an IP fax server, employees can access the fax image and signal processing capability that resides in a remote data center. The gateway that resides in the field offices provides the ramp onto the PSTN. Thus, with IP fax services, adding remote employees to an IP fax server is now done entirely through software, e.g., purchasing a seat license for the fax server, and no additional equipment is needed in remote locations. With IP Fax, a remote employee in Paris can use the company's fax server in London just as easily as if it were located in their local office.

TRADITIONAL FAX SERVER PBX INTEGRATION



IP FAX SERVER - IP PBX INTEGRATION



- **Better disaster readiness:** With a FoIP solution in place, the location of the fax server is independent of the user. Fax server deployment can, therefore, be reduced to one or two strategically located data centres. The number of sites requiring rapid response is significantly reduced and the fax servers can be located in the most secure and stable environments.
- **Much lower risk of connection failure:** Apart from being more inherently stable and fault tolerant than traditional circuit switched architecture, FoIP networks provide the flexibility to route traffic via fully functional nodes even if part of the network is down. A single fax server, or multiple load balanced redundant servers can be installed on multiple network nodes effectively eliminating the risk that the fax server will be without access to the network. This is critical where fax is the method of delivery for vital health or natural disaster alerts.
- **Least cost routing:** Using the gateways installed at remote locations as part of the FoIP network, companies can route calls and faxes across their WAN so avoiding any long distance call charges even if the fax is sent across the world.
- **Enhanced business productivity:** Fax server technology sits at the heart of the communications infrastructure and can be used to enhance a company's ability to streamline business process automation and improve document management. Investment in FoIP solutions provides an opportunity to integrate communications and document management more fully into corporate workflows.
- **Compliance:** Remote office locations present a significant issue for companies that are required to conform to regulatory compliance standards. Implementation of a FoIP network architecture allows remote workers to be brought onto the fax server system quickly and easily from where all authentication, management control, archiving and retrieval to compliance standards can take place centrally.
- **MFP integration:** MFPs combine copying, printing, faxing and scanning into one networked device. They have the potential to deliver many business benefits but they do not come equipped with IP fax support. Lane's Passport Fax Server allows MFPs to be fully integrated into the IP network environment enabling users to send and receive faxes as they would from a stand-alone fax machine. All fax traffic from the MFP then goes through the central fax server ensuring that compliance obligations are met. For more information on getting the most out of MFPs see the Lane White Paper "Realising the full benefits of MFP integration with network fax".
- **Virtualisation:** New virtualisation software technologies are becoming increasingly popular as organizations seek to improve efficiency and consolidate hardware resources. Lane's Passport Software-only FoIP solution is compliant with leading virtualisation software and can co-exist in a virtualised environment.

Fax Card or Software Only solution?

Until relatively recently it was necessary to install hardware cards to integrate fax into the communications infrastructure. With the ever increasing power available from a single platform it is now possible to move to a software only solution for the fax interface. Below we explain the differences but whichever route proves appropriate for your business Lane can guide you and provide the solution.

Fax Cards

A solution incorporating Fax Cards is an infrastructure in which the fax server software as well as associated hardware is installed into a new or existing network server. The fax software application may be one among many other applications on the server or may be installed as a stand-alone application for the sole purpose of handling fax transmission and reception. This architecture is comprised of dedicated analogue fax lines as well as specialized fax boards, maintenance and supplies

The hardware card includes onboard chips to perform digital signalling processing (DSP's); this does not provide an overhead on the platform CPU as all processing is carried out by the hardware card. This does, however, provide an issue in sourcing hardware as it is becoming more and more difficult to source hardware with the required number and size of slots.

If considering purely cost, however, the later Brooktrout hardware cards support both T.30 (traditional fax) and T.38 (FoIP) and as such Lane can redeploy them into a FoIP environment, thus saving the costs of moving to a software only solution.

Software Only

In a software based solution, the fax data packets are processed by the platform's CPU and require no additional hardware. In this way the fax software may be deployed anywhere on the organisation's network, including virtual servers. Software solutions are marginally cheaper than purchasing hardware cards. The elimination of fax boards within this architecture also leads to lower energy usage.

Faxing speeds

Hardware based fax boards support transmission speeds of up to 33.6 kilobits per second whereas at this time most of the industry currently transmits fax traffic over T.38 at a maximum of 14.4 kbps.

There are exceptions, however, such as Lane's Passport fax server which uses the latest Dialogic® products including the Brooktrout® SR140 and the DMG3000 & DMG4000 Media Gateway Series which enable enterprises to deploy fax server solutions into existing VoIP installations, while leveraging their existing IP infrastructure. The addition of V.34 T.38 allows these products to transmit fax data at 33.6 kbps.

Capacity and Bandwidth

A T.38 (FoIP) session is open for the entire duration of a fax transmission and therefore requires a dedicated channel between the IP network and the fax server for the duration of the call. In this way the channel capacity for the IP Fax server is no different were it to be an IP solution or a PSTN solution. In addition, unlike IP voice, most IP fax needs a consistent signal quality and cannot operate with latency in the network.

Lane has developed a remote service for processing the T.38 anywhere on the enterprise, allowing the T.38 service to be deployed adjacent to any gateway, thus reducing the network overhead and removing the problems associated with network latency.

Which option is right for a business will depend on a number of factors which we are happy to discuss with you, just go to the Lane website at www.lanetelecom.com and follow the link to our Free FoIP Consultation.



About Lane Telecommunications

Since its formation in 1976 Lane has been at the forefront of messaging communications and is now recognised internationally as a leader in fax integration, across the financial, healthcare, manufacturing and transport industries. Based in the UK, US and Singapore, Lane has implemented systems across 50 countries and provided professional services in all time zones. Lane offers the very best solutions for integrating fax servers as a part of wider communications networks. As specialists in messaging solutions for over 30 years, Lane delivers seamlessly integrated fax and messaging systems across entire organisations and into consolidated data networks, across one site, many sites or across borders.

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