
Fax application deployment based on Aculab

The client is a provider of solutions based on technologies that automate, simplify and improve communication centric business processes. It delivers solutions to a global customer base, including nearly 80% of the Fortune 500.

Its end-to-end suite of solutions delivers hundreds of industry-specific business applications, including: audio / web conferencing; desktop and broadcast fax; document management; reminders, notifications and e-marketing; and emergency notifications via fax, voice, email and SMS. These applications, delivered on demand, are hosted on a network of platforms, comprised of server centres and network operations centres, and located worldwide.

The challenge

The client was looking to implement a technology refresh and proactively combat a potential decline in its legacy broadcast fax business. This sector remains a major income source, despite being based on what many would consider an outdated technology. After all, it was invented as far back as 1843 by the Scottish technician and clockmaker Alexander Bain. In fact, fax is a key factor in many services offered by the client. In addition to broadcast fax and desktop fax, it is an essential component of emergency notification and other forms of announcement facility.

Initially, the client was looking at developing the capability to handle T.30 fax over RTP, with the idea of cutting fax call costs using IP as the transport medium. The project priorities then changed to a focus on V.34 fax transmission over traditional telephone lines, however, still with a need to cut the cost of sending faxes.

The V.34 fax standard was established by the International Telecommunications Union (ITU) as the standard for full duplex modems sending and receiving data across phone lines at up to 33.6 Kbits/s. Compared to the V.17 (14.4 Kbits/s) standard and 9.6 Kbits/s fax, V.34 reduces call setup and session-management time by one-third, which contributes to faster transmission time per page. It also provides greater adaptability to varying line conditions, and a consequent reduction in the number of fax resends. These improvements result in cost savings through a reduction in long distance phone charges that can be significant for a company sending millions of faxes daily.

The challenge ultimately presented was to produce a high density V.34 fax capability on a PCI platform. This appeared to the client to be a difficult task as their first forays into the market suggested the competition had suitable offerings, in terms of a V.34 fax API, but fell a long way short of the densities required for a competitive solution.

The crucial factor was going to be finding a supplier with the right enabling technology and a proactive partnership approach to delivering the required functionality with the requisite densities to make the project viable.

The requirements

An enabling technology solution with a powerful fax API that would allow the client to offer a globally compliant broadcast fax solution was needed. They set out to procure a powerful, high density platform for fax to be integrated with their worldwide hosted network of server and network operations centres.

The client's hosted fax server platform was required from the outset to have signalling protocol options for worldwide network connectivity. One of the key protocols needed was support for INS 1500 with variable gain control, in order to take advantage of a large Japanese market. A PCI card with options for up to 8 T1 spans was specified to meet this demand. Additional digital trunk support for a variety of national and international CAS and Q.931-based ISDN signalling protocols was also presented as a requirement. Network interfaces and termination had to be software selectable in order to ensure one platform regardless of installation territory and RoHS standards compliant hardware was naturally specified.

Essential criteria for vendor selection included higher densities, in terms of the V.34 modem channel count per card, than were being offered by the apparent market leaders in the fax enabling technology space. Channel density of at least double the 24/30 channels per T1/E1 card that were being offered was considered to be the acceptable minimum requirement. Based on the idea that next generation, DSP-based media processing cards were available in the market, the client's real figure was a demand for over 100 channels of V.34 fax transmit per card.

V.34 modem performance was also critical, with the client mandating a real and consistent 33.6 kbits/s operation over the varying line conditions that are encountered in the PSTN. This is very important, because while connect speed and transfer rates are similar for most modems when connecting over lines that offer few impairments, the likelihood of getting a particular set of line characteristics is nowise guaranteed.

In a nutshell, the client specified an intelligent, high performance PCI fax board to provide all the necessary fax media processing functions via a flexible API and to concurrently handle in excess of 100 V.34 fax transmit channels.

The solution

When presented with these requirements, Aculab rose to the challenge by offering its revolutionary next generation Prosody X PCI card with a comprehensive base feature set, including fax. Being designed as a media processing platform for both IP and TDM applications meant the Prosody X platform was an ideal choice, satisfying the immediate requirements and providing a future proof migration path from traditional fax to IP fax.

Prosody X is 'host independent' approved for use in many countries around the world and supports, as standard, a comprehensive portfolio of digital telecommunications signalling protocols. Essentially, it offered the client an established, reliable platform, with vital PSTN connectivity and interoperability, plus a powerful, ready made migration option for IP.

Indispensably, Aculab was ready to contribute more and prepared to meet the challenge. Indeed, Aculab designed Prosody X to be able to quickly react to a dynamic market and was ideally placed and eager to fine tune its feature development. The essential options were in place beforehand as Aculab already offered a Group 3 T.30 fax and API capability. However, Aculab's relationship with the client burgeoned when it made a commitment to develop and perfect the extended V.34 functionality requirements presented.

Impressively, Aculab developed its V.34 fax with a transmit channel count of 40 per DSP (incidentally, the performance figure for fax receive, which is a more processor intensive function, is still a notable 20 channels per DSP). This figure gives a massive total of 160 transmit channels per PCI card, easily outperforming the competition and fundamentally satisfying the client's needs.

Real world interoperability testing, outside that possible with FaxLab 6, was of necessity largely done by the client sending faxes to live fax machines. Such testing often throws up issues with how well a fax product really interoperates with a wide variety of other brands. By its nature, it goes beyond emulating normal operation and error conditions for V.17 and V.34 fax devices as caller and receiver. In the real world, some fax devices are simply not standards compliant in the first place. Aculab's dedication in fine tuning its fax software to work with such rogue machines was not lost upon the client. When the hosted service provider lacks control over which devices faxes are to be sent to, as is most often the case, critical revenues depend upon vendors being flexible. Aculab's ability to deliver configurability within its software to cope with erroneous machines was an invaluable benefit.

And it's not only revenues that are important; the savings involved can be significant too. For a hosted service sending out just 100 000 V.34 faxes a day (at an average of 4 pages per fax) on a long distance rate of \$0.05 per minute, the savings compared to V.17 are in excess of \$1M per year.

Available in PCI, PCI Express (PCIe) and Compact (cPCI) formats, Aculab's Prosody X card delivers the highest density and performance with unmatched call completion at the fastest possible connection rates across a wide variety of fax machines and line conditions.

Conclusion

What is abundantly clear is that Aculab's dedication to fine tuning its software development sets it apart as a key supplier of specialist, DSP-based media processing and signalling protocols. With the flexibility of a fax option on intelligent media processing resource cards like Prosody X, dedicated, single function fax cards from specialist vendors are certainly a thing of the past. In an increasingly complicated business environment, strong partnerships are obviously important and Aculab stands ready to invest time and resource into developing products that will add value and allow its fax customers to trust their critical documents to Aculab.