



INDeX

INDeX is an eBusiness Digital Communications Platform. It offers Avaya's world class telecoms and data technology and is the market leading telephone system with one million lines installed in the UK alone.

Overview

Much more than a conventional telephone system, INDeX is an open digital communications platform, capable of handling a range of voice, data and video conferencing requirements and is also eBusiness ready. INDeX offers choice whereas conventional systems have tended to offer either a PABX or key system solutions – with little room for manoeuvre between the two. With INDeX advanced features and functionality can be added as needed to improve business processes and enhance customer service.

Positioning

INDeX meets the voice and data communications needs of an organisation and offers the highest levels of customer response. INDeX can be configured to suit an individual business as a PABX, call centre or key system, supporting ISDN, application solutions, manager/secretary, multi-tenancy, voice and data networking, intranet access, DECT, voice over IP and computer telephony integration (CTI) in any combination.

INDeX offers a truly converged solution. It offers fully featured department and enterprise-wide call centre and voice processing combinations as and when required. For

multi-site operations, INDeX's transparent voice and data networking capability brings an organisation together seamlessly, whether over ISDN, PSTN, IP, Private or Virtual Private Network (VPN). Furthermore, INDeX is an open platform and compatible with the latest advances in CTI.

INDeX is capable of growing with any business. With the capacity for 10 to 1088 ports per site, it offers an almost limitless combination of function, size and applications. Most importantly, INDeX is easy to install, configure and program to the exact requirements of an organisation and its customers in a the new eBusiness world.

Features & Benefits

- INDeX is a proven market leader for Small to Medium Enterprises
- Scalable solution which can grow (10-1088 ports) - protecting investment
- Independent resilient circuitry
- Automatic diagnostics
- Remote maintenance & hot maintenance
- Supports a range of integrated applications: PBX, key system, hybrid, VPN, DPNSS networking, Qsig networking, call centre, voice messaging, CTI, integrated data routing, ISDN, integrated cordless DECT solution, guest services, VoIP, Internet access, remote working & voice compression
- Defines a unified communications layer in an integrated & intelligent manner
- Maintains the integrity of the applications
- Leverages & integrates to current IT infrastructure - avoids forklift upgrades
- Enables voice, IP telephony data & video
- Reduced cost of calls (compressed calls)
- Reduced cost of network infrastructure/service
- Reduced cost of access devices (one gateway does it all)
- Simplified management & provisioning



Voice over IP & Voice over Frame Relay

Overview

Voice over IP and voice over Frame Relay allow voice traffic to be transported across a data network by compressing the voice signal into data packets which can be sent with other data over the LAN and WAN. Voice traffic is time sensitive whereas most data is not. Therefore, the industry has adopted a standard called 'Diffserv' which allows voice packets to be prioritised for prompt handling on the network.

IP Trunking

The INDeX IP Networking cassette allows the use of the data WAN to make voice calls between INDeXs. Since leased lines typically have a fixed cost, voice traffic essentially travels for free courtesy of data. The IPNC uses voice compression technology to make the most of the available space. Using industry standard compression (G.723.1 and G.729a), up to 20 voice calls can be made simultaneously.

There are two methods of implementing this type of solution, connecting the leased line directly to the INDeX or by using existing leased line routers. Connecting the leased line directly to the INDeX is the simplest and safest solution.

Direct connection of the INDeX also allows organisations to benefit from its support of Frame Relay. Leased lines are usually charged per end but Frame Relay requires only one end, so allowing the number of leased lines to be rationalised resulting in costs savings.

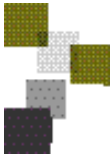
IPtrunking is delivered on the INDeX platform through the IPNetworking Cassette equipped with the voice compression option (IPNC-VC) and the IPNC licence key (LIC-IPNC32). It occupies a single slot within the INDeX and is capable of handling 20 simultaneous calls. The cassette has a 10/100Mbit Ethernet interface to connect to the LAN and a X21/V35 interface to connect to the WAN.

IP Extensions (IP in the LAN)

Through the IPNC's support of the H323 standard multimedia IP extensions can be connected to the INDeX via the LAN. These extensions can accept audio calls from and make calls to other INDeX extensions and trunks.

Features & Benefits

- Simplification of management through the use of a single infrastructure for both voice & data
- Investment protection & a competitive edge through the ability to capitalise on new IPservices as & when they become available
- Delivered on a robust reliable platform independent of the LAN & PC operating systems
- Does not force a change in equipment & will evolve to take advantage of new technologies with no forklift upgrade
- VoIP technologies can be added to INDeX for those parts of the business requiring VoIPsolutions/applications whilst still supporting the existing infrastructure
- INDeX is a reliable platform, secure from virus attacks & independent of the LAN – it will keep going even if the LAN fails
- Has a straightforward migration path for supporting IP based applications & business solutions
- INDeX's IPNC is based on industry standards, permitting inter-operability with other vendors' equipment
- The next release of INDeX software will see the inclusion of an integral H.323 gatekeeper to allow IPextensions to collaborate in call handling and RSVPto allow the extensions to make bandwidth reservations



Voice Compression Cassette

Overview

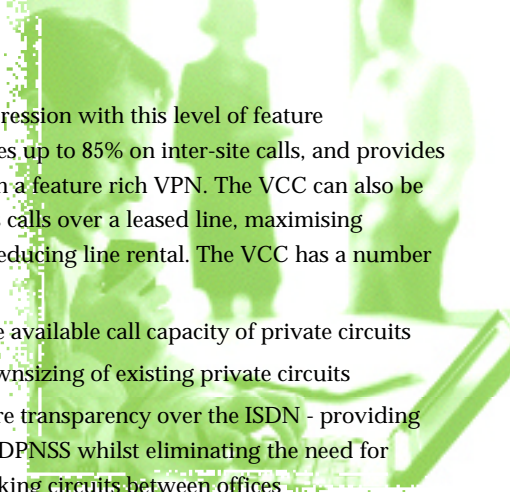
Before the introduction of the Voice Compression Cassette (VCC) individual calls between INDeX sites were carried within 64K K/bits bearer channels. These calls could be delivered via leased lines or ISDN dial up connections - yet the bandwidth required for such calls is significantly less than this.

As a result, voice compression is a commonly used method of maximising the use of bandwidth within both public and private voice networks. With advances in the latest compression algorithms such as G729a and G723.1, Avaya enables toll call quality with compression rates as low as 6.3 Kbit/s i.e. 7 channels down a single 64K link.

Advances in ISDN services now allow the problem of the loss of features and services to be addressed by tunnelling a DPNSS 'D' channel alongside the compressed voice calls within a 64K ISDN channel to provide feature transparency between sites - across both private AND public voice networks.

Positioning

The VCC incorporates high quality voice compression to maximise bandwidth by delivering up to 7 calls via a single ISDN channel, and tunnelling of the DPNSS 'D' channel all within a single ISDN connection.



Combining compression with this level of feature transparency saves up to 85% on inter-site calls, and provides the customer with a feature rich VPN. The VCC can also be used to compress calls over a leased line, maximising bandwidth and reducing line rental. The VCC has a number of applications:

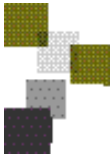
- Maximising the available call capacity of private circuits
- Facilitating downsizing of existing private circuits
- Enabling feature transparency over the ISDN - providing the benefits of DPNSS whilst eliminating the need for private networking circuits between offices

The VCC acts as a central resource, taking calls from a terminal or trunk interface and compressing them onto any suitable digital bearer with the supplementary service sub-addressing enabled.

The VCC can be deployed in any INDeX, ranging from the INDeX 100 through to the 1000. This allows the benefits of voice compression to be provided to all INDeX user organisations regardless of size.

Features & Benefits

- Unique method of combining compression with a high level of feature transparency
- Excellent voice quality using traditional TDM circuits
- Can be used with INDeX-Net to further enhance inter-site functionality
- Will revert to traditional DPNSS facilities if the VCC connection is lost (leased line only)
- Reduces rental charges by lessening bandwidth rented between sites
- Reduces voice mail implementation cost per head, by allowing a single platform to serve multiple sites
- Uses VoIP technology, converting voice into packets & passing them over TDM channels
- INDeX will exploit future advances in voice compression algorithm standards - an increase to 12 calls down a single 64K channel is already under consideration



Remote LAN Access

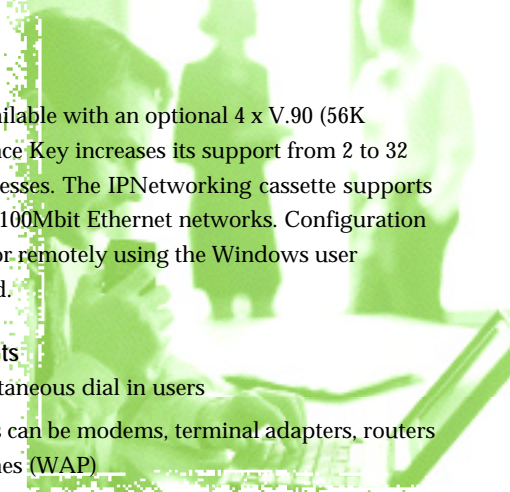
There are three main categories of remote workers needing to access to the corporate LAN; occasional, permanent and mobile. The occasional worker is one who is office based for the vast majority of time but occasionally works from home, typically accessing the office from analogue lines although the proportion of ISDN is increasing. Permanent home workers spend the majority of their time at home and will typically have ISDN access to the office. Mobile workers, such as salesman, will access the LAN using modems via analogue lines, although this is likely to migrate to wireless technologies such as WAP over the coming years.

Overview

The INDeX IP Networking Cassette provides a fully featured Remote Access Solution for fixed or mobile workers.

The IP Networking Cassette with an optional licence key allows up to 32 simultaneous connections to the LAN. An additional hardware option provides 4 x V.90 (56K) modems, these are dynamically allocated as required on a call by call basis. Calls can be accepted from modems, ISDN terminal adapters, routers or mobile phones using Wireless Access Protocol (WAP). A powerful combination of timed access restrictions and firewalling allows tight control over who can access the LAN, when they can access the LAN and what they can do once connected.

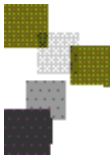
The IP networking cassette occupies a single slot in the



INDeX and is available with an optional 4 x V.90 (56K Modems). A licence Key increases its support from 2 to 32 simultaneous accesses. The IPNetworking cassette supports both 10Mbit and 100Mbit Ethernet networks. Configuration is over the LAN or remotely using the Windows user interface supplied.

Features & Benefits

- Up to 32 simultaneous dial in users
- Calling devices can be modems, terminal adapters, routers or mobile phones (WAP)
- Integral firewall security provides individual firewalls for each dial in user
- Time of day/day of week access control per user
- Trusted calling telephone number security
- Standards based security (PAP,CHAP)
- Sharing of voice lines for remote
- Reduced real estate costs through worker relocation
- Improved efficiency through any time access to the LAN
- Easy access to information for sales force – order tracking, product and pricing information, access to corporate intranet



INDeX Internet Access

From browsing to e-Business every business in today's society can benefit from the wealth of information available on the Internet, be it market research, competitor analysis or looking for a supplier. Similarly, by hosting a web site opportunities arise to sell and market products through e-Commerce and e-Business applications.

All forward looking organisations either have, or are looking to provide, Internet access to their business. Those companies looking to provide Internet access for the first time will be reassured by firewall security and service quotas that limit the amount of online time permitted. Companies who already having some form of access may be looking to increase speed or upgrade their solution to allow easy transition to leased line access at a later date.

Positioning

The INDeX IP Networking Cassette provides a fully integrated solution, the ideal way to enable Internet access and e-Commerce opportunities.

The IPNetworking Cassette as standard allows either one or two 64K-dialup connections to an Internet Service Provider giving 64K or 128K bandwidth.

Customers requiring greater bandwidth or the desire to host a Web site on site can make use of the standard X21 interface to connect to kilostream leased line service. The

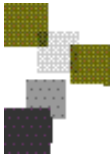
X.21 can operate at speeds of up to 2Mbps

Simply adding an IPNetworking cassette and supplying answers to a few questions using its configuration wizard will have Internet Access to the Internet up and running within minutes.

Features & Benefits

The IPNC has an excellent price performance ratio. It is undoubtedly the most competitive method of delivering Internet access (the IPNC will be less expensive than the combined cost of a router and the ISDN interface on the PABX or the combined cost of a router and the ongoing rental of a direct line).

- Up to 128K dialled access offers high speed dialup access
- Direct leased line connections for very high usage or hosting a Web site
- Integral firewall security to protect the integrity of the Local Area Network
- Service quotas to control usage and cost
- Wizard for quick easy configuration
- Ideal for a first venture in Internet access yet has the capability to support leased lines up to 2Mbps - sufficient for companies hosting their own e-commerce Web sites without the need to replace any equipment



INDeX-Net

Overview

INDeX-Net is a proprietary method of providing a seamless connection between multiple INDeX switches. Traditionally private networks which required advanced supplementary services have utilised DPNSS interconnects. INDeX-Net uses a combination of traditional TDM switched voice networking coupled with a wide area IP connection.

This IP connection allows INDeX Voice networks to go beyond the capabilities of DPNSS by allowing all INDeX switches within the network to intelligently converse with each other and operate with the appearance of a single switch.

Positioning

INDeX-Net is another step towards the strategic goal of completely hiding the voice network and treating multiple INDeX sites as a single voice platform. In the first phase of INDeX-Net the following functions are provided:

- The Hot Desking facility can be operated seamlessly across a network of INDeX switches
- The Busy Lamp Field (BLF) of a user that is located at a remote site can be both programmed and monitored from another site
- Distributed groups – allowing extensions across multiple sites to be included within a single group so evenly distributing call distribution

The INDeX-Net architecture is available on CPU X and does

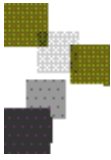
not rely upon any additional hardware within the INDeX but does require suitable data infrastructure so that an IP connection can be established from one INDeX CPU to another.

CPU X is a single board design fitted with an Ethernet interface. Four licence keys are available which enable the required number of ports to be supported. This allows the benefits of INDeX-Net to be provided to all INDeX users whether they are a branch office with 10 extensions or a headquarters with 1000 ports.

Typically INDeX-Net users are multi-site organisations making use of DPNSS services but requiring an additional level of feature transparency that improves efficiency, evenly distributes workloads and ensures contactability.

Features & Benefits

- Provides a high level of transparency between sites
- Unique method of supplementing a voice network with IP telephony
- Excellent voice quality with the use of traditional TDM circuits
- Using IP to improve functionality between sites
- Delivered over existing data network
- Resilient to WAN disruption as traditional DPNSS facilities remain in tact if the IP connection is lost
- Spread resources across multiple sites & evenly distribute workload
- Hot Desking across the entire network
- Ideal for campus environments where remote buildings require the facilities offered by INDeX-Net
- Where a WAN connects company data from one site to another, an INDeX user only needs to dedicate a small amount of bandwidth to allow INDeX-Net to operate between sites



E-Business and Customer Relationship Management

CRM offers an integrated approach to customer management. In many markets, where price has become the primary purchasing criteria, customer loyalty has evaporated and market 'churn' has become endemic, forcing suppliers to reassess their market strategies and focus on retaining profitable customers and differentiating their product offerings.

But not all customers are valuable. There is an increasing need to distinguish between profitable and unprofitable customers and therefore the market for software that helps manage customer relationships is growing rapidly.

As the world of eBusinesses continues to evolve, businesses will increasingly focus on empowering people through information, collaboration, and communication. The need for a business to absorb, create, and share information will grow, heightening the need to communicate securely with anyone, anytime, anywhere. This is producing a distinct convergence between the CRM and eBusiness.

Overview

INDeX delivers a range of applications specifically focused on catering for eBusiness and CRM. It has always been at the forefront of customer care having, for instance, dominated

the UK call centre market for the past two years. The INDeX CCM suite is therefore the key CRM offer.

Positioning

INDeX Interaction Manager is a multi-media transaction routing engine delivered on standard Microsoft Back Office servers. It has particular strengths in Internet originated transactions although it also includes very simple, non call centre, voice routing capabilities.

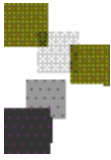
The product runs on either Microsoft's Small Business Server (Windows NT Server, Exchange Server and SQLServer) or the customer organisation's existing installation. INDeX Interaction Manager caters for three electronic media; chat, web hits/web forms and email.

The INDeX eBusiness solutions ensure that companies can cater for the new generation of Internet enabled customers as well as for voice calls in a cost-effectively, well managed and consistent manner. The INDeX applications provide just this capability.

Features & Benefits

INDeX, CCM & INDeX Interaction Manager deliver the following CRM & eBusiness benefits:

- Exploitation of the Internet as a new channel
- Ability to break through time zone barriers & serve an international market
- Establishment as a virtual enterprise - distributing functions such as support & service
- Attracting & retaining valuable clients, serving them the way they choose
- Reducing costs through having the means to manage all contact media
- Ability to assign service levels to previously unmanaged communications
- Ability to turn call centre agents into more rounded Universal Agents with career paths
- Ability to reduce costs of customer care



INDeX Digital Enhanced Cordless Telecommunications (DECT)

Digital Enhanced Cordless Telecommunications (DECT) is Europe's premier standard for private wireless networking, providing an in-built cordless solution.

Gartner Group indicates the number of DECT systems sold in the UK alone in the year 2000 will be 1million, of which 28,000 will be business systems. This aggressive growth is expected to continue as telecoms managers are increasingly concerned about employee use of GSM phones on site. DECT provides the required mobility with the advantage of zero cost for calls between handsets and an office system.

Overview

INDeX DECT provides a fully integrated solution to on-site mobility. Tight feature integration allows staff to move with ease and retain the features and functions that they need to work effectively. DECT is best suited for personnel who spend most of their time on company premises and need to be contactable.

Positioning

DECT provides a real time communications alternative to a number of solutions including GSM, on-site and network paging systems, voicemail and personal numbering services. DECT can be deployed quickly and easily without the need for cell planning although a site survey is essential to determine the number of base stations required.

Integration between INDeX and the DECT Handset, the 20DT, is provided by the Cordless Subscriber Line Cassette (CSLC). This is available in two variants, CSLC-8 supporting 8 base stations and 64 handsets and the CSLC-16 supporting 16 base stations and a maximum of 128 DECT handsets.

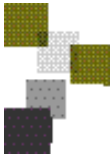
Base station range is up to 600m, typically 50m within office infrastructure, and repeaters are available to avoid the need for large numbers of wired base stations. The Repeater base station offers full feature functionality, increases the coverage area and provides DECT coverage in difficult to cable areas.

Features & Benefits

- Handsets feature context sensitive menus for ease of use
- Feature rich integration including simplified voicemail
- INDeX Directory integration using 'Dial By Name' feature
- Single supplier solution for easy integration, enhanced functionality
- Integrated – providing efficient slot usage
- Fully functional, light weight, long talk time handset

DECT incorporates a number of generic benefits:

- Lower operational costs vs GSM
- Lower cost due to reduced call backs from messages
- Immediate/efficient decision making
- Base station roaming – wide area, uninterrupted coverage
- Fully ETSI Generic Access Profile (GAP) compliant
- Alleviates the cost of building wiring
- Low power handset suitable for extended use and within areas where interference would be a problem e.g. hospitals
- The DECT standard has been designed to be future-proof with consideration being given to future services especially in the area of messaging & data services
- The DECT standard is being further developed to incorporate short range data transfer, called Bluetooth



INDeX - Convergence

Today's eBusinesses can benefit from voice and data convergence focused on the network infrastructure, and from applications convergence. INDeX delivers evolutionary convergence based on open standards which integrates seamlessly with the existing IT infrastructure.

Overview

The wide area communications environment is an access jungle. A plethora of different network services connect to many different types of gateway. In order to meet the demands of these diverse environments, the PBX is evolving into a communications gateway capable of combining voice, IP and IP Telephony for the delivery of converged voice and data. In addition to simplifying today's network, this also results in lower costs and overheads.

Positioning

Through INDeX, converged voice and data is already a reality. The INDeX platform provides a single voice and IP communications gateway delivering integrated access to the WAN. Through the IPNetwork Server (IPNC) LAN traffic can be directly routed out into the WAN. INDeX simply and effectively integrates with existing IT infrastructure providing a low risk and cost effective solution for simple networks.

By contrast, alternative solutions are delivered through external servers that are often PC based and carry with them the associated resilience, management & connectivity issues.

The IPNC supports LAN to LAN connectivity, homeworking, Internet access and remote access for either ISDN or dial up modem. INDeX will soon feature voice over Frame Relay.

Applications convergence focuses on the business processes and combines communications into the front and back office workflow environments for competitive advantage. Generally enabled by computer telephony applications, convergence has historically been expensive. However Avaya is moving and expanding application convergence to become affordable and supportable for companies of all sizes.

The INDeX platform enables breakthrough converged applications such as CT Integrator, Unified Messenger and INDeX Net to deliver powerful benefits and new ways of doing business. It provides a platform for simplified management of CRM and eBusiness.

Features & Benefits

- Reduced cost of calls with INDeX Voice Compression
Cassette or IP Telephony with IP Networking Cassette
- Reduced network infrastructure costs through integrated access capability, simplified management & provisioning
- Interoperability & support for voice, IP & IP telephony ensures a future proofed environment for new applications
- Leverages existing IT infrastructure & applications & does not require an upgrade in infrastructure
- One communications gateway negating the need for separate PBX, router, multiplexor, Internet telephony adjunct & remote access server
- Simplified management as only one device
- High bandwidth & traffic efficiency through one gateway with voice & data compression
- Flexibility enables organisations to take existing applications & features into the new converged world. INDeX also interoperates with existing traditional telephony & new IP environments while minimising risk yet maximising resilience