ALBEDO Telecom

the innovation hearbeat

Maximise Your Investment

ALBEDO Telecom offers a full range of products, systems and services to help you make the most of your investment on telecom applications and infrastructures.

We are ready to partner with you to quickly roll out your network, maximising performance and minimising maintenance. Our technical advisors, network systems engineers and software developers will help you to design, build, manage and troubleshoot your network, making your business more profitable.

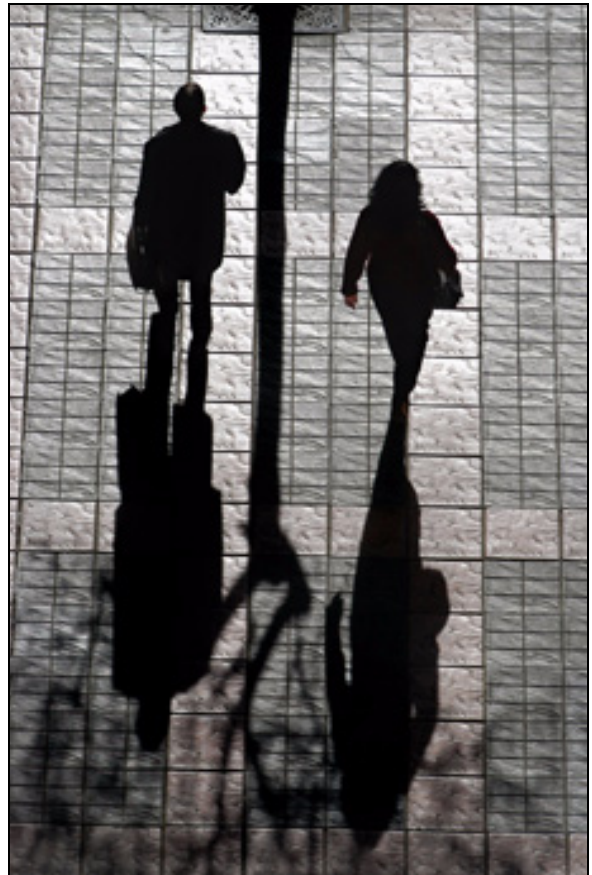### Commitment to the Customer's Needs

Our solutions and services integrate with your business ever since the beginning, and we will help you to get answers to questions such as: What type of application does your network support? How fast can your network go? How can I emulate real network conditions? Which tools do I need to install and trouble shoot my network? How can you train your engineers? Who can design this hardware I need? Where can I manufacture my complex electronics device? How can I test and you have test resources? What is the cost of downtime? Is the network ready for Voice over IP? How can monitor the new Sync-E network? Who can design a PTP syncrhonization approval test suite?

Our experts will help you to find the weak spots of your network, offer alternatives and advise you on what to do, when and why.

At ALBEDO, we understand how essential networking is to your business. We also know that there are so many different technology solutions but only a few can really achieve the SLA you need. We can advise you to make the right decisions, to certify the quality of your network, or verify your provider is matching our requirements, therefore you will rest assured that your network investment is well protected.

Enterprise to Telco

Whether you need help with a specific network problem now, or you are still at the planning stage, ALBEDO has a solution for you. From the best market equipment to serve your particular network, to web-based monitoring systems offered to many professionals around the world.

ALBEDO Telecom can develop customised solutions that will be even manufacture in our premises in order to provide you a 100% guarantee of top quality. We are more than willing to share our know-how with your organisation's system engineers.

Wealth of Knowledge

From electrical to optical, from wide area to Gigabit, from core to edge - ALBEDO lives and breathes networking. Our team of instructors and engineers provide you with a network of knowledge that can be very profitable for your business.

Our experts are constantly studying the market, developing new technology, solving problems for organisations worldwide, and giving a whole new meaning to efficient and secure network management.

ALBEDO

Telecom

the Path to Excellence

Instruments Design and Manufacturing

MADE-IN-ALBEDO

At ALBEDO Telecom, we convert ideas into tangible and manufacturable worthy solutions.

With our understanding of telecoms, quality monitoring systems, test and measurement, engineering, production

processes and most importantly the end users - their behaviour and needs, we attempt to enrich product-user experience at all levels.

We develop projects from scratch and with special emphasis on aesthetics and ergonomics.

We aim at creating and developing concepts and specifications that optimise the function, value, and appearance of products and systems for the mutual benefit of both user and manufacturer. We emphasize on those aspects of the product or system that relate most directly to human characteristics, needs, and interests.

Hand held Instruments

This is a rugged hand set, equipped with a full colour GUI, for field use in the

analysis and maintenance of telecom circuits.

It performs any analysis you may need including framed, unframed, signalling, drop and insert Nx64Kbps, data, and jitter into any time slot. The AT-2048 also provides the market most complete variety of E1 line status, transmission events, performance testing, BERT, monitoring, results, remote control and configurations.

Telecom Testers

Testing has become an important topic during the IP convergence, because of the diversity of underlying technologies, and the adaptive behavior of applications.

Net.Storm facilitates the verification of new applications, services and nodes through emulation of the real nature of IP networks modifying arbitrary performance dynamics including packet delay, jitter, bandwidth limitations, congestion, packet loss, errors and duplication on live IP packets.

Network Adapters

Network adapter PCI cards equipped with double GbE interface optical and electrical. Enhanced hardware capability for traffic capturing applications such as

VoIP / IPTV protocol analysis, security, intelligence, performance monitoring, or sniffer.

This card is able to drop filtered traffic while retransmitting received packets transparently to the original destination. It can also modify some packets according to a defined criteria with MAC CRCs recalculated.

A key feature of IPether taps their native hardware ability to process traffic at full line rates with no packet loss and no CPU overhead. Key features are the programmable filters for flow recognition which can be based on MAC, IP addresses, VLAN, Protocols, and flows.

Monitoring Systems

Completely manage IP-Voice guarantee the quality and back it up with an SLA to distinguish between basic network transport statistics and true Quality of Experience (QoE).

Provides a view of VoIP traffic, signaling session and quality data, permitting rapid pro-active management of VoIP and multimedia traffic. This includes the measurement of QoE on a call-by-call basis as an integral part of the solution, where all data are available in real time.

Network Synchronization
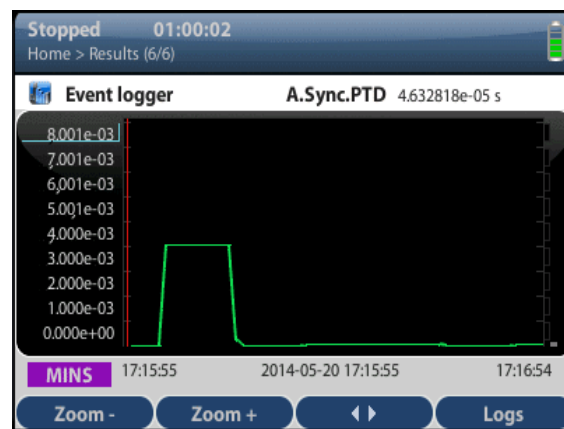

Quality of Timing (QoT)

LTE operators Power Utilities have to face with several technologies including Ethernet / IP at transmission layer, PTP and SyncE at timing plane.

The synchronization paradigm is moving forward new timing requirements for not only frequency but phase as well. This scheme probes to be very flexible but it is necessary to provide an absolute time reference. LTE operators, Power utilities and large Corporations are adopting PTP for timing distribution across the existing Ethernet/IP packet networks.

However switches and routers cause packet lost, jitter or delays, while fibre optics generate phase impairments and bit errors. Therefore the PTP packets being distributed across suffer impairments that may degrade the synchronization.

Network Configuration

ALBEDO can design and create policies for best-practice network configuration validation and auditing, including QoS policies. The entire network model is tested against a set of rules to identify problems that may result from incorrect configurations or incompatibility. Any changes that you may wish to make to

your existing network can also be validated before implementing them.

Network Architecture Design

Our experts can also help you to define your synchronous network infrastructure and provide assistance on choosing the right equipment. ALBEDO provides a customised service package to make sure that your time signals will be up and running as soon as possible. For smaller networks, this might only take a day or two. For large networks, this may involve a training session for your staff, followed by remote technical support.

PTP & SyncE Expertise

ALBEDO will help you to understand the impact of any changes that need to be made to your network, such as adding new equipment, new services and new applications.

During the installation of PTP connectivity problems may occur between the master and slave units. When troubleshooting these links, the appliance can be used in Terminate mode to capture PTP messaging on both the transmit and receive test ports up to 1 Gbit/s. In this mode it simultaneously generates, receives, and captures PTP messages on the circuit under test. Users can quickly identify higher layer protocol issues that may be associated with PTP messages.

Once the project is completed, we will provide detailed network analysis and reports with easy-to-understand

explanations and recommendations for the future. This service helps you to reduce infrastructure and operational costs, ensuring that your applications, systems and networks work as expected.

Transport SLA

The Quality of the transport layer may determine the success of the syntonization. To pre-qualify those infrastructures distributing the PTP streams.

Acceptance and Interconnectivity Labs

SyncE, PTP, GbE, xDSL, LTE, IPTV, VoIP Labs

Interoperability Labs allow the execution of comprehensive testing in a controlled environment that completely emulates a real network in a rack.

ALBEDO is a global supplier of customized laboratories capable to execute interoperability test suites to ensure the continuity – and growth – of telecom equipment based on access, tramission or wireless technologies.

Our test results make it easy for you to decide if the products meet your business requirements, and if they do, you can use our test reports to make sure that the equipment gets shamelessly integrated into your network.

Evaluation of New Solutions

Evaluating all the technology that is available today can be a very time-consuming task. By taking advantage of our expertise in networking and convergence, you can make this task a lot easier.

- **Approval**: devices must conform not only international standards, but also the particular implementation of each deployment.
- **Acceptance**: provide the functionality needed and are compatible with existing technologies.
- **Selection:** test intended to compare devices from different vendors, with a view to choosing one.
- **Interoperability**, between equipment of different vendors is the goal of most vendors and operators today.
- **Internetworking**: new deployments must operate with legacy technologies as well as core networks

Interoperability Testing Services

Interoperability is the goal of most vendors and operators today. ALBEDO provides interoperability services to ensure the continuity – and growth – of the services you offer.

We offer a all the technical knowledge, equipment, applications and experts needed to perform comprehensive testing in a controlled environment. We can help you to draft test plans that include different networking scenarios:

- Functionality/Interoperability: Carrier Ethernet is maturing every day – devices must conform to standards.
  - Internetworking: Carrier Ethernet technologies are connected with legacy technologies as well as core networks.
  - Quality of service must be verified for triple-play traffic.

Proof-of-Concept Testing

We can use proof-of-concept testing to help your organisation build a business case for new technologies. This will help to minimise downtime when the new technology is implemented.The infrastructure and resource costs associated with proof-of-concept testing can 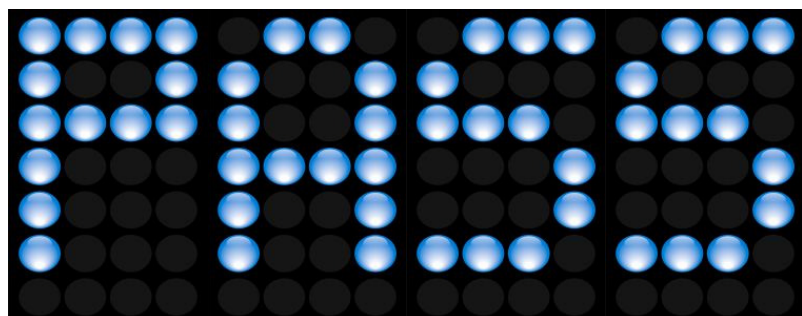sometimes make it difficult. Our test laboratory services can assist by providing the infrastructure, resources and demonstration facilities you need. To ensure that you get the best possible benefit from these tests, our highly trained staff can help you to draft test plans and document the results.

We can also provide you with experienced project managers for your transition projects, to help ensure that business goals are met.

Acceptance and Approval Tests

Approval and acceptance tests make it easier for operators to compare devices from different vendors. Once the equipment is chosen, every single device is usually tested to confirm that they are working properly before they are accepted. It is essential to test all the equipment used, to make sure that they provide the functionality needed and are compatible with existing technologies.

However, in many organisations there just simply are not enough resources to carry out these tests. This can mean that new product enhancements are not fully utilised, or even that new features may be upgraded to a live network without testing.

Telecom Service Certification

Network Health Check

ALBEDO certification provides operators an independent statement of the end-to-end service focused on the performance and the quality capacities.

Whether you are implementing a major change, or just want to get your existing environment analysed, we can help to communicate your capacities across your customers. We will provide a detailed analysis of your network, so that it would be easier for you to plan ahead on concentrate on your clients.

Drawing from our vast experience in test and measurement on network access, Carrier Ethernet Transmission, and IP core we will:

- Analyse your network structure to optimise your infrastructure
- Test the consistency of your network application level
- Review all application and connectivity issues in detail

This benchmark and certification process will finally improve your position in the market and the perception of your customers.

Identify and Prioritise

Our engineers review your network architecture thoroughly, identify strategic monitoring points and research key applications that require special configuration.

We will review your critical ADSL2+/ VDSL2 networks, SDH nodes, GbE switches, VoIP applications and network architecture.

Our experts will prioritise your most critical issues and develop a strategy plan. The final report will summarise our findings, providing a list of solutions and recommendations.

On-site Measurements

If you prefer, you can also have one of our network experts on site, analysing and discussing the issues that affect you. This is also a good opportunity for your staff to learn new things about your network.

Our experts have solved network challenges for several international customers in both the private and public sector. They have developed plans and helped optimise networks to better support mission-critical applications.

Network Auditing

The objective is that ALBEDO as independent authority verifies and files may be passed back and forth. If you should wish, a ALBEDO engineer may even connect to your analyser over a secure link and perform remote analysis. This is a quick and comfortable way to check your network and see if it is behaving as expected.

Network Auditing

Application performance does not depend on the application only. It is a combination of application, network components and network configuration factors.

Our network experts will analyse the throughput and latency characteristics that affect performance, and examine how you can optimise your service. This analysis will point out the weakest links of your system and provide instructions for improvement. Our engineers will collaborate with your staff and provide your organisation with a comprehensive report.

Service Level Agreements

Today's networks require consistent control and maintenance to ensure reliable service delivery and check that Service Level Agreements (SLA) with third parties are met.

ALBEDO telecom has a division specifically prepared to evaluate your telecom service, your network equipment and software, standards compliance and any potential issues that may affect performance. Their work confirms that each part of your network complies with the corresponding standards and your SLA.

Network Monitoring and Surveillance

Identify Critical Issues

Take advantage of our expertise, systems, and experience in providing maintenance and monitoring services to operators and providers.
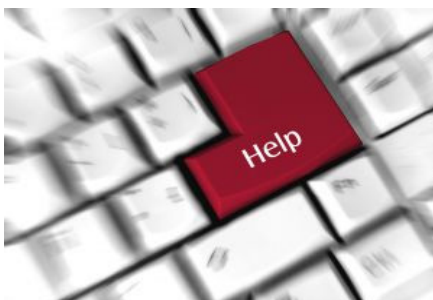
We have solutions

When you have application or network performance problems, you need clear answers fast. Net.Audit will give you those answers, offering efficient view to your network infrastructure, performance and application problems. We are ready to install a black-box probe on your premises when needed to:

- Confirm, investigate and diagnose problems
- Troubleshoot your infrastructure by using industry-leading test and measurement platforms
- Give advice and recommendations to your staff or third-party personnel

Hands-On Support

Our test and measurement divisions, are established and well-known companies that have been supplying innovative test solutions for field engineers and service providers around the globe.

Our solutions combine excellence and high technology with ease of use, covering such technologies as Converged Networks, IPTV, VoIP, VoD, HSI, Carrier Ethernet, FTTN, xDSL, ISDN, IP, Gigabit Ethernet, PDH, T-Carrier, SDH/SONET, ATM and Jitter/Wander.
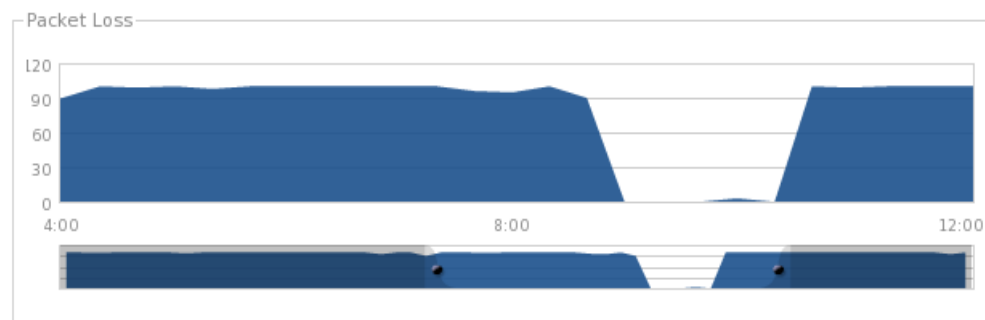
Net.Audit

Local-loop technologies are developing fast to support higher transmission rates and new multimedia applications. These new applications and services need to be verified by experts that can deal with any existing technology and adapt to any architecture with ease.

ALBEDO has a vast experience in monitoring systems for converged networks based on IP / Ethernet. This is one of the reasons why we are the preferred partner for many organisations around the world.

Carrier Ethernet

Ethernet is found almost everywhere – in the vast majority of workstations, servers and local area networks, and it improves the flexibility and granularity of telecom services. Because Ethernet is more efficient and scalable than legacy technologies, many operators now base their services on Ethernet. ALBEDO has a vast technological expertise in analysing Ethernet, Gigabit Ethernet,

IPTV/VoIP and other multiplay networks. We can check your Gigabit Ethernet network at any testing point from the user premises to the core of the network.

Multiplay Services

Video is a bandwidth-demanding and QoS-sensitive application. This is why IPTV and VoD provisioning call for new technologies and business models. Video services also require the most innovative and powerful verification services, and this is where our expertise can really help your business.

VoIP monitoring

Voice over IP (VoIP) is revolutionising the world of telephony. It started out as a technology that enables users to make low-cost Internet phone calls, but today, it is also a key strategy area for telecommunication companies. For these enterprises, the main issue is how to turn IP telephony into a carrier-class service with performance similar to traditional telephony.

ALBEDO is a global player that operates in several countries to test the Quality of Service (QoS) of VoIP networks and the performance of voice encoders. We can help you make your IP telephony business more profitable.

IPTV Surveillance

IPTV operators need to know immediately if the service works for a given customer or not. ALBEDO uses the most innovative service-oriented testing tools to make sure that our customers' needs are met without delay.

ALBEDO is the only international organisation that can verify Quality of Experience (QoE) at both layers of the provider network infrastructure, while checking the customer premises equipment, encoding/decoding processes and transport mechanisms.

Professional Training on Telecoms

ALBEDO University

Enhance your business prospects, learn about new applications and explore emerging markets for next-generation networks.

ALBEDO offers a series of training courses on telecommunication technologies that will give you the opportunity to understand why converged networks are becoming increasingly important for modern economies, how this affects the business, and what are the technological implications.

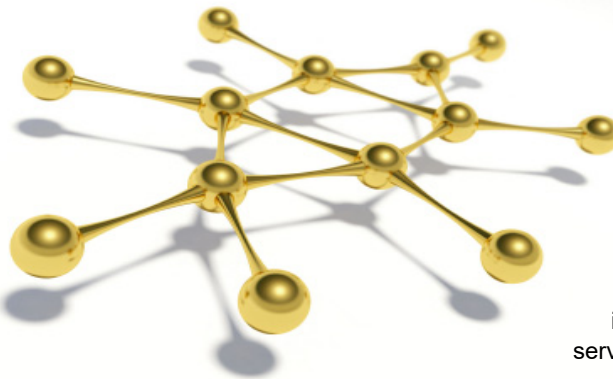We will provide a detailed technology analysis, seeking to answer questions such as:

- Why is my company adopting this new technology?
- What are its benefits?
- What do the changes mean for me?
- What market trends are there?
- What challenges will I face?
- How can I install it?
- How can I test it?
- How can I maintain it?

Training Courses

Our training courses are particularly valuable for decision-makers, business developers, sales and marketing professionals, field engineers and those involved in the development of new networks and services.

1. Access Technologies

Digital Subscriber Loop (DSL) technologies,

designed for digital transmission over existing copper lines, combine cost-effectiveness with acceptable performance.

2. Carrier Ethernet Networks

Telecom operators are now providing Ethernet-based telecommunications services. Ethernet is becoming a real alternative for both traditional data-based applications such as Virtual Private Networks (VPN), and new ones like Triple Play.

3. SyncE & PTP architectures

The financial and technological cycle of the telecom industry is forcing manufacturers, carriers, operators and standards organizations to move towards a new network that reduces costs while offering new services including voice, video or data transport, the syncronization signals required by wireless networks, power substations and circuit emulation. All can be satisfied by Syncronous Ethernet and PTP.

4. Triple Play Services

The decline of the traditional voice business, together with the ever-increasing competition between companies, is pushing the telecommunications industry to provide more services in a more flexible way. This new strategy is based on Triple Play, a bundle of voice, video and data services for residential customers.

5. Voice over IP (VoIP)

Although Voice over IP (VoIP) started out as an alternative technology, carriers and service providers are now taking advantage of it to make installation and management tasks easier and more cost-effective, or to integrate fixed and mobile services.

6. Audiovisual Applications

Bundling TV and video with data and voice services is more than just a marketing plan. It is a very ambitious strategy with well-defined targets to reduce churn, gain customer loyalty, minimise costs, gain TV customers, increase profits, grow the brand name and enable network convergence.

"We have had great Pleasure in sharing Knowledge and Experience with Neutral parties" F. Grogan, Canada

"This high level of Support will Help develop our Business" J. Molina, Florida

"Above all, the Talk was really Captivating" S. Haouala, France

"A valuable insight into the concept of Triple Play and related Technologies" R. Obiodu, California

"This Training Course was far more effective than Consulting Services" P. Sethi, India

test + monitoring + WAN emulation + packet capture + certification + consultancy

ALBEDO Telecom

ALBEDO Telecom delivers solutions that enable Telecom organizations of all sizes to troubleshoot, monitor, and migrate mission critical networks.

From the desktop to the data centre, from Access Network, Metro Ethernet, Sync-E, PTP, Optical backbones, LTE, VoIP or IPTV applications.

On local segments and across distributed networks, ALBEDO enable Telecom Organizations, Telecom Installers, Network Operators, Internet Service Providers and Contents Suppliers to quickly check the health of your network, verify SLA, or find and fix problems.

Benefits

Results. The ALBEDO Telecom to help Telecom industry to make the most of the investment on network infrastructure.

Expertise. ALBEDO trainers, auditors, engineers and consultants provide industry-leading knowledge to address the unique needs of customers.

Integration. ALBEDO integrates disparate telecom resources and applications, realizing new business efficiencies.

Agility. ALBEDO increases the ability of customers to respond quickly to new market opportunities and requirements.

Coverage. ALBEDO offers solutions that facilitates the migration and the roll-out to new telecom architectures.

ALBEDO

Telecom

the Path to Excellence

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aims

+ LEARN from business models and case studies
+ UNDERSTAND the potential of interoperability with legacy services
+ EXPERIENCE the use specialised test equipment first hand
+ ASSESS different solutions for installation and maintenance