



# ONE HUNDRED PERCENT QUALITY OF SERVICE

Net Insight's products enable transport of video, voice and data in customer networks without loss of quality.



## CONTENT

- 1 This is Net Insight  
Founders with a crystal ball
- 2 Business value through  
technology and service
- 4 Global presence ensures  
first-class service
- 6 Broadcast and Media
- 8 Digital Terrestrial TV
- 10 Cable TV and IPTV
- 12 Technology leader in  
media-rich networks
- 14 Success built on people and  
responsibility

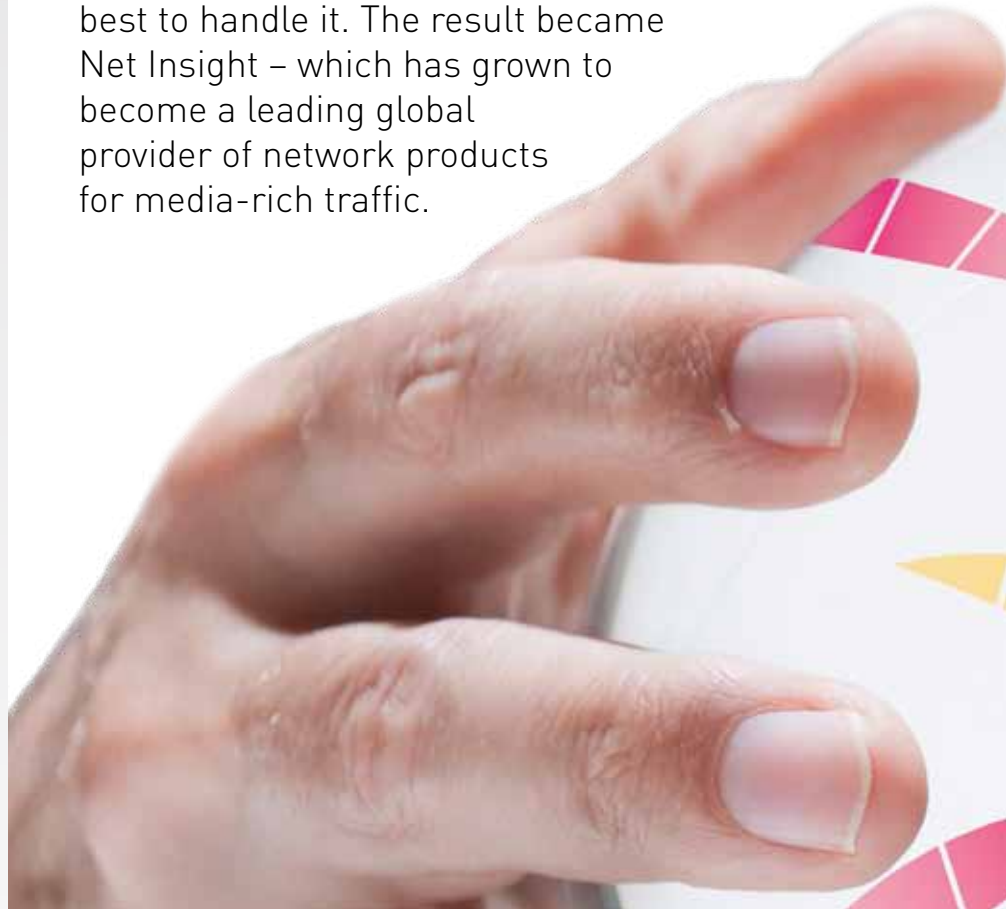
### NET INSIGHT IN BRIEF

Net Insight's products ensure efficient transport of video, voice and data services in terrestrial communication networks without loss of quality. Optimal use of network capacity allows new revenue-generating video services such as HDTV, digital TV and video-on-demand to be launched and delivered simultaneously with voice and data traffic. All is delivered with 100% Quality of Service (QoS)- guaranteed. Net Insight's products mean lower capital expenditures, shorter payback periods and lower total cost of ownership compared with competition. A 100% QoS media network enables broadcasters and content producers to change their workflow, significantly reducing cost and increasing efficiency. Net Insight's solutions span the globe – reaching 130 customers in 50 countries. Customers are broadcast and media companies, network owners and telecom operators, cable TV and IPTV providers.

## THIS IS NET INSIGHT

# FOUNDERS WITH A CRYSTAL BALL

● As early as 1997, we anticipated a future of steadily rising media-rich network traffic and decided to be the best to handle it. The result became Net Insight – which has grown to become a leading global provider of network products for media-rich traffic.



That early vision has proven correct, with the need for reliable media network capacity growing along with TV and movie delivery over broadband, the transition from analog to digital TV broadcasts, major increases in TV and video-on-demand services, and the transition to HDTV in media production and broadcasting.

Matching sophisticated users of all kinds requires what we do best – real-time Quality of Service networks combined with highest bandwidth utilization that enhance your business. Our backbone is the Nimbra™ product family, the world's most efficient and scalable media-rich transport solution.

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## NET INSIGHT – ALWAYS AT THE FOREFRONT

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- First to send 3D live soccer games contribution
- First DVB-T2 all-IP network launching HDTV to viewers in Sweden
- First and only GPS-free synchronization of DTT
- First MPEG4 DTT network
- First to send all-HD live from the Olympic Games in Beijing 2008
- First to deliver uncompressed 3G-SDI (full 1080p-50/60 video) over a public transport network
- First to deliver uncompressed 4K video over a public transport network



# BUSINESS VALUE THROUGH TECHNOLOGY AND SERVICE

● **Net Insight together with** its Nimbra platform delivers true business value to your business. As a network operator you can easily add new services ranging from production, contribution to distribution enabled by our multi-service platform, always, guaranteeing 100% Quality of Service. By implementing the Nimbra solution you can achieve lower total cost of ownership and benefit from other related cost savings.

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## UNSURPASSED NIMBRA FEATURES

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Nimbra technology maximizes the efficiency of bandwidth utilization for video traffic, guaranteeing full quality video and other mission-critical traffic throughout the network, even at full load. Separation rather than prioritization of services ensures that traffic on different channels never interfere.

The high bandwidth utilization in combination with simplified management will reduce your total cost of ownership, and you can easily add new services which will increase revenues without risk of interfering with existing services.

Our products solve your media

transportation needs today, and they are scalable with future challenges. What could be simpler?

### **End-to-end media network solution**

The Nimbra platform enables Broadcast, IP Media, TV Distribution and Broadband TV networks to deliver video and IP media services from the core backbone to the end customer. The same Nimbra platform serves production, contribution and distribution of media services.

### **100% Quality of Service**

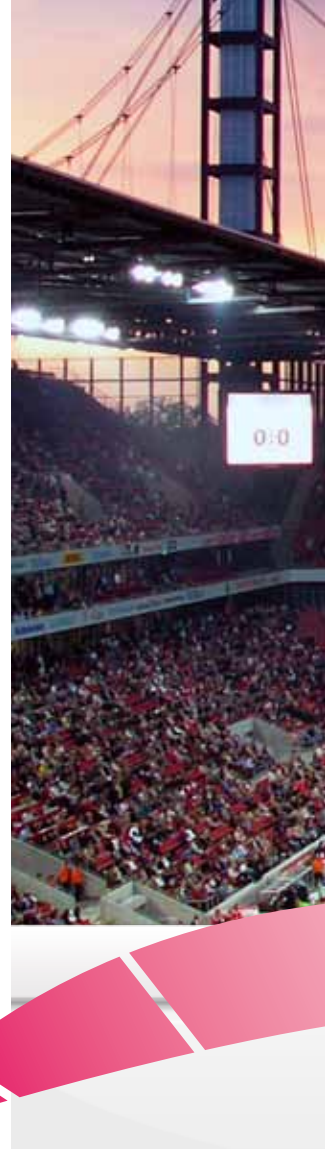
The Nimbra platform delivers loss-less routing and enhances QoS over IP infrastructure. That means real-time media services such as HD video are transported without any packet loss or distortion.

### **Highest bandwidth utilization**

The Nimbra platform further increases network utilization by combining low mapping overhead with non-hierarchical, fine granular switching. Channels feature configurable sizes, unsurpassed granularity and they can be symmetric or asymmetric as desired.

### **Simplicity**

Nimbra networks are not only among the industry's most scalable and efficient – they're also exceptionally simple to manage. Add Nimbra Vision Network Manager for comprehensive status and performance monitoring, and virtually every aspect of your Nimbra network is fully under your control.





### **One integrated box**

The Nimbra platform is ideally suited for high-end video production and event networks that require 100% QoS. Nimbra facilitates the transport of uncompressed video and HDTV streams, as well as distributing hundreds of ASI or IP MPEG streams on IPTV, CATV, digital terrestrial or mobile TV networks. All services can be multicast for efficient distribution over any network topology.

### **Any media over any type of infrastructure**

The Nimbra platform offers unified comprehensive multi-service support for video, audio, data and voice, including IP/Ethernet, SDH/SONET, PDH, wavelengths or dark fiber.

### **GPS independence**

The integrated GPS-Independent Time Transfer function allows DTV and Mobile broadcasters to synchronize transmitters and provide inter-studio sync without relying on GPS satellite signals or using any external devices. This unique feature eliminates the need for costly and potentially vulnerable GPS receivers in the network.

### **Service-Aware Media Networks**

End-to-end performance and monitoring per service in combination with sophisticated per-hop PM for both IP/Ethernet and SDH/SONET links reduce the need for external probes and monitoring systems. This significantly lowers cost, while ensuring easy trouble-shooting and monitoring.



For its IP Trunk, offering enhanced QoS Video and Data transport over IP/Ethernet, Net Insight won the CSI Award in 2010. The solution enables on-demand video over large IP networks with guaranteed quality and reliability.

# GLOBAL PRESENCE ENSURES FIRST-CLASS SERVICE



● **Net Insight's customers** are leading global and major national network operators as well as television and media companies. More than 130 world class customers run mission critical video services over Net Insight products in over 50 countries. To ensure first-class services and local support Net Insight has developed a partner network consisting of more than 50 partners worldwide.

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## DEVELOPING OUR CUSTOMERS' BUSINESS

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Depending on your specific requirements, we offer a comprehensive selection of products and services that can be adapted to your needs. Based on our extensive experience with the telecom, media and broadcasting industries, we believe in having the most reliable and easy-to-operate transportation tools on the market.

Our technology comprehensively supports your requirements for any service over any network, from production to distribution of TV and media. Nimbra is seamless, secure and cost effective.

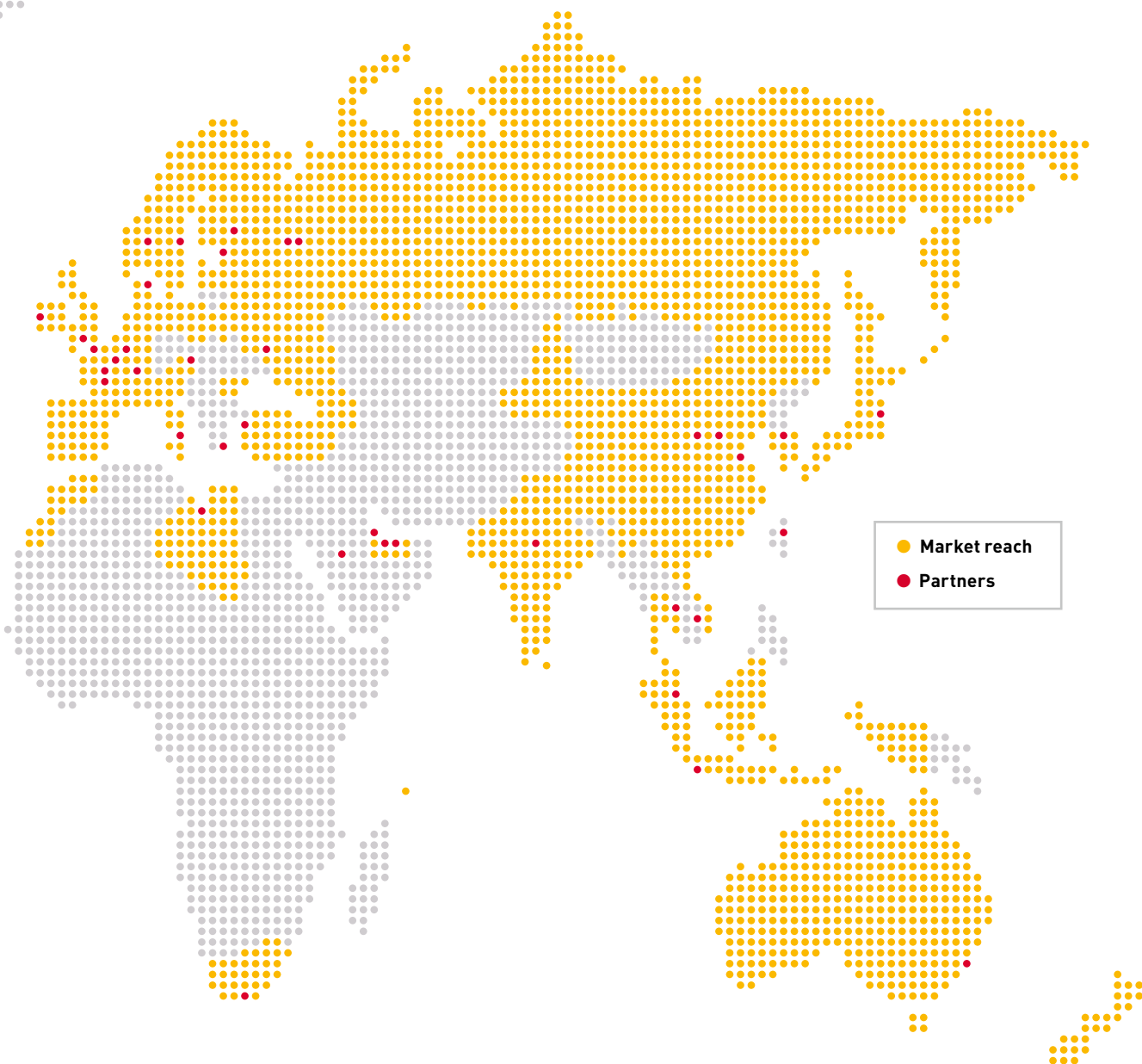
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## EXCELLENT PARTNERSHIPS

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Adhering to the maxim that all business is local, we continue to extend our global partner network, comprised chiefly of large system integrators and value-added resellers. We currently have about 50 affiliates in our Global Partner network. To ensure customer satisfaction, we train and certify our partners, each of which represents specific areas of expertise, either geographically or through specialized segment capabilities.

In addition, Net Insight is working with leading network equipment providers when suitable for the customer projects. The leading network equipment providers see the Nimbra platform as a competitive complement to their portfolio.



## PARTNER PROGRAM

The partner program is a framework for a strong and dynamic relationship between Net Insight and our partners.

Our partner certification ensures highest quality of customer satisfaction. We reward our partners according to their success and investment in training, information sharing and business generation.

The aim of the Net Insight partner program is to provide our partners new revenue streams from the media segment. Net Insight offers our partners a world leading solution for media-rich networks.

## NET INSIGHT ACADEMY

Through Net Insight Academy, we provide both in-house and on-site training for partners and customers' staff.

Net Insight Academy offers a comprehensive training program that covers the entire range of Nimbra products and offers in-depth product and technology knowledge for field engineers, network designers, product experts and operations personnel. The courses span from introduction of the technology to installation.

The aim is to give partners and customers an opportunity to get the most out of the solutions.

# 130+

customers worldwide

# 50+

countries

# 50+

partners worldwide

# BROADCAST AND MEDIA

● **The Broadcast and Media** business area comprises network solutions for production and contribution of media services. Net Insight's products are used in transmitting TV images and sound from sports arenas, concerts and other events to TV and media company studios, as well as interconnecting studios and media companies to facilitate their content production and delivery. Telecom and satellite operators are growing customer segments.

## TRENDS

The commercial importance of live productions with audience interaction is growing rapidly. The ever-increasing amount of content dovetails with innovative new TV formats like HDTV and 3D. This in itself calls for an estimated twenty-fold increase in network transportation capacity. With the growing use of uncompressed signals in production, capacity requirements could escalate up to one hundred-fold.

For production companies, digitalization opens up new possibilities for increased productivity with lower operating costs. Networks are becoming an integrated part in production and automation flows, which will likely lead to further development of virtualization and "cloud media" services. Tapeless, non-linear editing of huge files is already a reality. Traditional studio networks will be increasingly based on terabit/s LAN/WAN.

## SOLUTIONS

Fiber optic-based terrestrial solutions enable TV and production companies to exchange high-quality, uncompressed material in real time, at low cost and independent of geographic distance. Our technology, with its unique "auto sensing" feature, makes it possible to transport all video, voice and data within the same production and contribution network, significantly reducing total communication costs.

Through our channelized IP Trunk module the solution offers end-to-end provisioning, protection performance monitoring providing IP media networks with advanced QoS and manageability.

### Efficiency and shorter production

Studio equipment and servers can be directly connected to standard video and audio interfaces in the Nimbra platform. The low latency and high transmission quality gives the producer a remote environment that feels like being on-site.

All this enables more efficient use of studio resources and shorter production schedules for television companies.

## CUSTOMERS

The many benefits of the Nimbra product family have made Net Insight a recognized supplier to the global broadcast and media industry. Customer testimonials label us an "exceptional partner," appreciated for our proven competence and commitment, and for being easy to work with. Our solutions are used by well-known companies including GlobeCast, Norkring, AR-SAT, Telia Sonera, TATA, ESPN, KPN Broadcast Services, EBU, ZDF, CCTV, TV Globo, Korea Telecom and WDR and at major live events such as the FIFA World Cup 2010.

### Quality pays off

We see strong demand from customers for sports and event-driven business. The Nimbra platform supported nine different network operators and rights holders in the FIFA World Cup 2010 as well as the Asian Games by a Chinese network operator. Customers such as GlobeCast, KPN Broadcast Services and Telia Sonera design their Nimbra-networks to meet high quality requirements for live sport broadcast by connecting national venues and stadiums.

# Innovation to meet customer needs

As part of the Tata Group, one of India's most respected business conglomerates, Tata Communications delivers managed solutions to multinational enterprises, broadcasters, service providers as well as consumers in India. In 2008 Tata Communications began planning to broaden its service offering with comprehensive support for professional media services, initially covering major cities in India with international connectivity to Europe, North America and the Asia-Pacific region. In addition to technical requirements, Tata required a fully managed solution designed to provide a complete graphical overview of the status of all network resources, to quickly provision services end-to-end, and to monitor service quality and performance. When required, the system also allows Tata's end users to manage their part of the network in-house using secure and highly granular client management definitions.

## Global services

After thorough evaluation and testing in Tata Communications' labs and in the field, Net Insight was selected to deliver the solution. Key reasons to the order was the Nimbra platform's multi-service capabilities, future scalability, QoS and wide range of network restoration options.

The new global media network was successfully launched in December 2009. Customers include other media operators as well as local broadcasters who can exchange content between India, Europe, USA, Australia and other Asian countries.

Due to the positive reception and increasing bandwidth demands from customers, a further expansion and scaling of the network was performed in 2010.

Net Insight's proven track record has made them an ideal platform for our global video distribution network."

GENIUS WONG, Senior VP,  
Global Network Services, Tata  
Communications.



TATA COMMUNICATIONS



## BUSINESS AREA

# DIGITAL TERRESTRIAL TV

● **The Digital Terrestrial TV** is currently in a major development phase as analog terrestrial networks are converted to digital. The annual growth in household digital uptake worldwide is estimated to exceed 40 percent for consecutive years. Digital Terrestrial TV is superior for providing distribution of live TV to subscribers in a cost-efficient way. Over-the-Top viewing is rapidly increasing as an alternative to consume on-demand TV and is often seen as complementary to live DTT.

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## SOLUTIONS

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Digital TV provides better picture and sound quality and offers more options to the viewer. The transition to digital terrestrial networks also frees up more frequencies for mobile applications such as wireless broadband and mobile TV. For operators, the technology leads to lower operating costs and the opportunity to offer more TV channels and new services.

Nimbra DTT networks provide not only nationwide TV distribution but also supports additional services such as contribution for TV and radio, radio distribution, Mobile TV, remote management to third party equipment and mobile backhaul. The advantages of the Nimbra platform are improved

quality and availability with higher utilization giving operators the ability to broadcast 15-20 percent more TV-channels in the same infrastructure, as well as better provisioning and multicasting.

### **Accuracy and safety with Time Transfer GPS-free synchronization**

Time Transfer is an attractive product property that has made Net Insight even more competitive as a provider of DTT transport equipment. With the Nimbra platform, the transfer of time information adds a high degree of safety and accuracy over the same network that transmits TV signals.

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## CUSTOMERS

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Net Insight has been selected for more than 25 Digital Terrestrial TV-networks in all regions in the world. The latest DTT-implementations include countries such as Sri Lanka, Sweden, Argentina, Cyprus, Poland and Morocco.

Net Insight's strong track record in delivering DTT networks include the world's largest DTT network implementation in Norway by Norkring and the world's first all-IP DVB-T2 network implemented in Sweden by Teracom.

Net Insight has delivered its Nimbra platform to all Scandinavian countries: Digita in Finland, Teracom in Sweden, Norkring in Norway and BSD in Denmark.

## TRENDS

A number of large countries such as Russia, Brazil, Argentina, China and India plan to roll out digital terrestrial networks during the next five years. A new DVB-T2 standard, offering 50% better spectrum utilization, also drives new infrastructure upgrades in existing DTT countries.

The number of households with digital terrestrial TV is expected to triple globally over the next four years. Fast-moving technical developments such as Next-Generation DTT transmitters taking in IP MPEG instead of ASI is also an emerging trend.

# Exceeding customer expectations

The Teracom Group is Sweden's leading media operator, offering a wide variety of communication solutions for radio and TV. The main product areas are pay-TV, radio and TV broadcasting, capacity services for data transmission, and co-location and service. The business is run in Sweden, Denmark and Finland through subsidiaries. In Sweden, with a population of nearly 10 million, the broadcasting network covers approximately 99.8 percent of households.

Teracom launched the first digital terrestrial TV services in Sweden as early as 1999 and the plans for introducing new HD channels required a partial upgrade of the company's core transport network. HD broadcasts are based on the new European standard, DVB-T2 technology. Extensive preparation for HDTV in the terrestrial network has taken place during 2010, with

coverage for HDTV reaching about 70 percent of the population by year end. A gradual expansion will continue, aimed at bringing coverage to virtually all Swedish households. The DTT network should be complete in time for the summer Olympic Games in London in 2012.

Teracom's selection criteria for the new transport network were a cost-effective, scalable solution for multiple services with IP support. Net Insight fulfilled these requirements along with a response that inspired complete confidence in the project setup. After some months in operation, Teracom reports that the new infrastructure functions as expected, and that performance exceeds expectations. As planned, the roll-out continues along with addition of new functionality and GPS-free synchronization.



“ Before choosing Net Insight, we went through a rigorous selection process with a number of possible suppliers. In the end, Net Insight matched our expectations best, not least in areas connected to the implementation phase.”

PEO GAASVIK, CTO, Teracom AB.

PHOTO: MATS LUNDOVIST



## BUSINESS AREA

# CABLE TV AND IPTV

● **Networks for cable TV and IPTV** are used for distributing TV along with broadband and telephony to households. All services are transmitted in IP/Ethernet format except for older cable TV networks in which TV is transmitted as ASI signals. At the moment the CableTV and IPTV operators are driving the transition to HDTV, voice over IP and on-demand personalized video services to stay competitive.

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## SOLUTIONS

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The operational benefits of transporting all traffic over a common IP network can be significant. However, for media services it is critical to select an IP transport solution that delivers the required QoS and manageability with a minimum of complexity and without losing operational savings. In traditional IP networks, packets are transported using shared resources, giving flexible utilization of the network resources. However, this sharing makes it difficult to guarantee the quality of transport.

When using the Nimbra platform, a channelized IP trunk interface strictly reserves the bandwidth needed for quality-demanding media services while at the same time allowing an

optimal utilization of shared capacity. Whether unicast or multicast, services can be provisioned seamlessly end-to-end across a mix of IP/Ethernet/SDH/PDH/WDM networks. In case of network failures, services will be automatically rerouted or protection-switched across infrastructure boundaries. Taken together, this provides guaranteed video service delivery with maintained high network utilization. Using the Nimbra platform for video and TV transport and multicasting also significantly reduces the operational complexity, reducing total cost of ownership.

For cable TV, the unique GPS-free Time Transfer function can be used to achieve a more efficient distribution.

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## CUSTOMERS

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Several major operators in Europe, Asia and North America use Net Insight's Nimbra platform. In Asia, Nimbra was initially deployed by telecom companies in Hong Kong, Singapore and India.

In Japan, a regional cable TV operator chose the Nimbra platform for its distribution network from regional exchanges to hub nodes.

A national North African telecom operator distributes TV through a national core network for cable TV video content with 100% QoS among 15 regional localities.

## TRENDS

The way end-users consume media is changing rapidly. Users expect to watch and consume media anywhere, anytime on any device with increased interactivity. The addition of Video on Demand and Personal Video Recorder services is driving large infrastructure upgrades to meet the demand for network capacity.

More and more people are beginning to watch TV on their broadband connection, dubbed "Over-the-Top" changing the TV-distribution landscape. As video traffic increases and users require better and better quality, QoS will be the main differentiator between distribution platforms. New premium content delivery networks will be essential in ensuring quality for Over-the-Top.

# Immediate results

Wisconsin Independent Network (WIN) was founded in 1999 as part of Communications Management Group, LLC, a privately-held company based in Eau Claire, Wisconsin, USA. WIN offers state-of-the-art fiber optic network and data center services in three states and beyond, including locations in Asia. It is jointly owned by a consortium of 31 independent local telephone companies. As a group, WIN serves more than 200,000 telephone, Internet and video customers.

## The issue

Network demand for media-rich content began to grow exponentially in 2007, and WIN began receiving reports that end users were experiencing tilting and artifacts in video signals. Network operators could not easily identify the source of the errors, so the engineering team introduced video quality probes on each layer to monitor the transport

network performance. After several months, the problem was still not solved since the detected errors were sporadic and not confined to any one component or location.

## The solution

After a reference from a member company, WIN contacted Net Insight to solve their problem. A pilot test across a 90-mile network was performed using the Nimbra 680 platform and showed immediate and overwhelmingly favorable results. Measurements proved that the existing network infrastructure suffered a highly disruptive 0.5 percent packet loss on content delivery. Once the Nimbra platform was implemented, this loss was reduced to zero. Based on these results and subsequent production deployment, WIN introduced more than 20 new Nimbra nodes across its entire network.



“The benefits of the Nimbra platform have given us the flexibility, quality and reach that we require as a Tier 1 level wholesale bandwidth provider.”

SCOTT HOFFMANN, Executive Director, Wisconsin Independent Network (WIN)



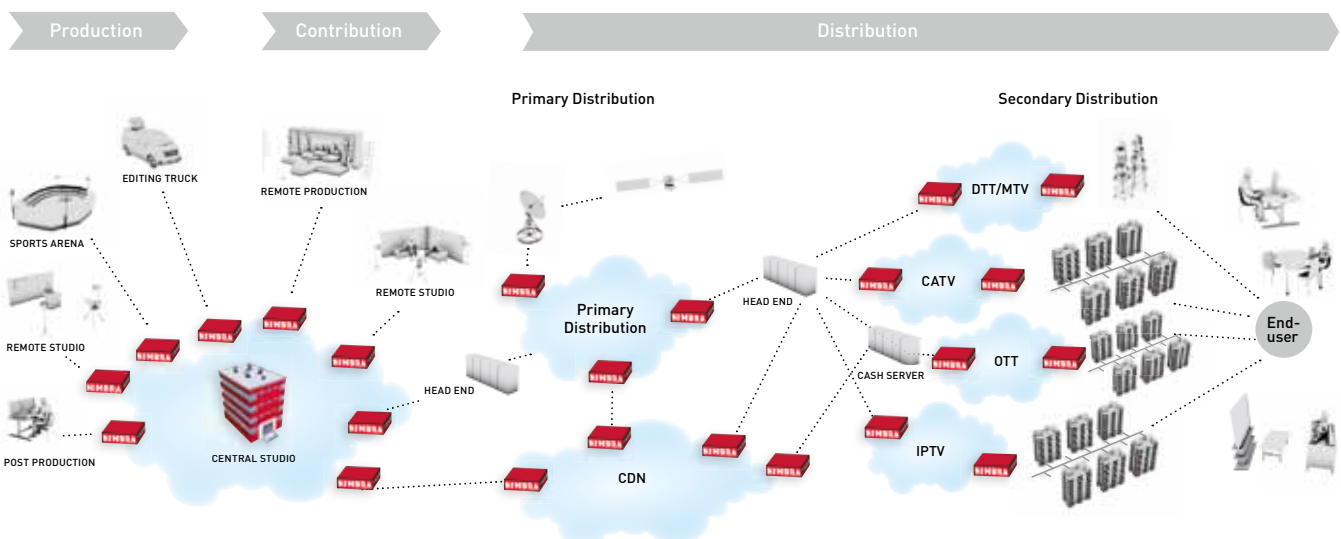
# TECHNOLOGY LEADER IN MEDIA-RICH NETWORKS

● **The Nimbra product family** embodies the worlds most efficient and scalable media-rich transport solution. With the industry's highest bandwidth utilization and always with 100% Quality of Service, we care for your business. Guaranteed.

**In developing and enhancing the Nimbra platform, we focus on three main customer values: quality of service, bandwidth efficiency and simplicity.**

## ANY MEDIA OVER ANY TYPE OF INFRASTRUCTURE

The Nimbra platform uses channelized bandwidth in steps of 0.5 Mbps to ensure the necessary capacity for each service throughout the network. This enables comprehensive multiservice support for video, audio, data and voice, delivered over any type of network, including IP/Ethernet, SDH/SONET, PDH, wave-lengths or dark fiber. These features make Nimbra the most versatile media transport platform on the market.





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## NIMBRA BENEFITS

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### Designed for real-time video requirements

The Nimbra platform offers resource allocation by separating different types of traffic into secure, logical channels. This means that real-time, critical services such as HD video and audio are transported without packet loss or distortion, ensuring 100% QoS for all kinds of services regardless of the complexity or size of the network.

### Channelized IP ensuring 100% QoS

Our channelized IP trunk interface strictly reserves the bandwidth needed for a certain service, with any mix and any size of channels allowed. It enhances the quality of transmission over IP networks and even synchronizes media streams in each switch hop. It also enables easy handling of media services when constructing large IP-based media networks as well as effective performance monitoring on the IP links as well as end-to-end services.

### Time and synchronization capabilities

The Nimbra platform features a unique solution, Time Transfer, for both network synchronization and transport of 1 PPS/10 MHz absolute time, facilitating telecom synchronization as well as GPS-free Single Frequency Network (SFN) synchronization of Digital/Mobile TV applications and mobile base stations.

### Network and service flexibility

All network configurations are possible with Nimbra, including ring, star, point-to-point, mesh or any combination of these structures. Freedom of configuration simplifies network planning and allows for a flexible, build-as-you-grow strategy. The Nimbra platform offers comprehensive network management tools, providing a superior overview of the operation of a Nimbra network through our network management system, Nimbra Vision.

Net Insight's network operating system, NimOS, provides an automated control plane with signaled end-to-end provisioning and rerouting. NimOS is included in all hardware platforms together with a web-based element manager. It is also possible to further enhance the functionality of network elements by adding our software packages and feature licenses to the system.

### Unique multicast support

The Nimbra platform efficiently distributes TV, radio and video simultaneously. Multicasting of all services, including Ethernet traffic, means that hundreds of IPTV channels may be broadcast with efficient use of bandwidth and without disrupting other traffic on the same link.

Nimbra also assures instant, dynamic fault restoration in the event of fiber cuts or other disturbances.

### Ethernet switching

The Ethernet switching feature delivers an unprecedented level of flexibility. It allows for transporting any service to any network location and the creation of virtual networks for any application such as QoS multicast transport of IPTV/CATV traffic, distributed office LAN applications, file transfers or live broadcast video. Nimbra can also easily be combined with native video/audio/telecom services.

### Acceptance for new formats

Nimbra supports video compression through JPEG 2000 video and IP audio as encoders increasingly use IP/Ethernet outputs instead of ASI.

### End-user provisioning and workflow management

Net Insight proactively integrates partners with state-of-the-art workflow and end-user management vendors such as ScheduALL, Skyliner and Dimetis. Through this, network owners have a network that can handle the most demanding video traffic, as well as fully automated management capabilities that ensure smooth workflow.

# SUCCESS BUILT ON PEOPLE AND RESPONSIBILITY



● **Net Insight is a** customer- and technology-driven company. Like other creative, global high-tech players, the company's success relies on the expertise, creativity and commitment of its employees.

# 70%

of the staff hold  
university degrees

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## THE NET INSIGHT ADVANTAGE

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### **Committed, highly trained employees**

Net Insight is characterized by a high level of education among its employees. More than 70 percent of the staff hold university degrees. Since our unique solutions challenge a number of established industry concepts, the company embraces people with cutting-edge skills who are able to produce solutions that add substantial customer value.

Almost half the workforce has been with us more than five years, and many since the establishment. The company enjoys a strong sense of loyalty from team members, as we actively strive to create a work environment where all employees are empowered.

### **Responsible business**

Net Insight's business is characterized by respect for customers, business partners and employees. The business is always conducted in accordance with relevant legislation in each country and consistent with accepted principles of fair competition and good business practice. In all areas of Net Insight's business, we support accurate and

comprehensive competition regarding bids, tenders, contracts and purchases.

### **Corporate responsibility**

Net Insight's code of conduct for responsible business means handling environmental, ethical and social aspects in a manner that enables the creation of superior value for customers, owners and society as a whole. The executive management team coordinates our strategic efforts in Corporate Social Responsibility (CSR) and sets policies and directives for environmental, social, ethical and economic governance.

### **Sustainable development**

The overriding ambition to meet and exceed customer requirements and expectations in every aspect of our business is at the core of Net Insight's corporate culture. All manufacturing is outsourced to external business partners and has little environmental impact on the company's own activities. We require major suppliers to be environmentally certified according to ISO 14001, and products must meet the EU's Directive on the Restriction of the



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Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS-5). Net Insight also requires suppliers to specify that their sub-contractors must comply with RoHS-5.

The use of the Nimbra platform supports the increased use of digital communication as an alternative to physical transportation. In itself, this promotes energy efficiency and environmental improvement. For our customers, the Nimbra solution lowers power consumption by more than 50 percent as compared to commonly used network equipment on the market.

### **Responsibility towards employees**

Net Insight is structured as a flat organization, with the aim of reducing the distance between management and employees. We seek diversity in the workforce in terms of background and experience, and offer our employees equal treatment in all matters. Equality at Net Insight also means creating conditions for employees to balance work and private life. For example, the company offers flexible hours and the option of working from home.

# GLOSSARY

**ACCESS NETWORK** The part of the public network closest to end-users. Consists of copper lines in the telephone network and coaxial cable for cable TV. Fiber and wireless solutions are also increasingly being used.

**ASI** (Asynchronous Serial Interface). A standardized physical interface for compressed video. Used within the media industry to transport content between geographically remote production units and in cable TV networks.

**BACKBONE NETWORK** High-capacity network linking together geographically remote areas or a number of smaller networks within an area. Also known as a transport network or backbone.

**BANDWIDTH** Measure of how much information can be sent over a line. Measured in bits per second, bps.

**BROADBAND NETWORK** Network with extremely high capacity, at least 2 Mbps to each end-user.

**BROADCAST** Transmission from a single sender to all possible recipients in a network.

**CDN** (Content Delivery Networks) an overlay network of customer content, distributed geographically to enable rapid, reliable retrieval from any end-user location

**CONTENT** Content that is distributed in the network.

**CONTRIBUTION** Communication for production and processing of material before it is transmitted to the end-user.

**CORE** Larger transport networks between cities and backbone networks.

**DTT** (Digital Terrestrial Television). Name for digital terrestrial TV to ordinary TV receivers equipped with "set-top boxes". Also called DVB-T.

**DVB** (Digital Video Broadcast) Standard for transmission of digital video over various kinds of media.

**DVB-H** (Digital Video Broadcast – handheld). A standard for digital terrestrial TV to mobile receivers, such as a cell phone or other mobile unit with a screen.

**DVB-T** (Digital Video Broadcast – Terrestrial). Name of the standard for digital terrestrial TV to ordinary TV receivers equipped with "set-top boxes". Also called DTT.

**DVB-T2** Second Generation of Digital Video Broadcasting Terrestrial; it is the extension of the television standard DVB-T. Suited system for carrying HDTV signals.

**ETHERNET** The most common technology for communication in local area networks, LAN. Transmission speeds of 10/100 Mbps, 1Gbps and 10 Gbps.

**GIGABIT ETHERNET** Development of the Ethernet primarily used in large LAN and backbone networks. Can handle transmission speeds of up to 1,000 mbps.

**GRANULARITY** Resolution.

**HD** (High Definition). High resolution.

**HDTV** (High Definition TV). High resolution TV.

**INTEROPERABILITY** Two devices operating together.

**IP** (Internet Protocol) Protocol used for data transmission over the Internet. All Internet traffic is transmitted in IP packets.

**IPTV** Television that is broadcast over IP (broadband).

**LAN** (Local Area Network). Smaller local networks for data communication within a department, building or block.

**METRO AREA NETWORK** A high-capacity network that links together an urban or regional area. Often referred to MAN.

**MPLS** (Multi Protocol Label Switching). minutes for efficient management of connections over a package-switched network.

**MULTICAST** Transmits the same message to a large number of recipients without needing to be addressed to every single individual (unicast) or sent to all possible recipients (broadcast).

**NEXT GENERATION SDH/SONET** SDH/SONET enhanced with functions based on GFP, LCAS and VCAT (see elsewhere in the glossary for explanation).

**NGN** Next Generation Networks or Next Generation Network. General concept for the development of networks and/or a standardization framework to enable new services and integrate fixed and mobile services over common infrastructure in future networks.

**NODE** A unit that is connected to a network, either as a sender/receiver, or to connect together different networks.

**OVER-THE-TOP** Term for service that you utilize over a network that is not offered by network operators. Viewers are using their broadband connection for consuming TV.

**PAY-PER-VIEW** Pay only for what you watch. Unlike video-on-demand, the programs or films must be viewed at set times.

**POST PRODUCTION** Post production of e.g. TV programs or films.

**PROTOCOL** An agreed set of rules as to how different network equipment should communicate with each other.

**QOS** (Quality of Service). Name for the quality of service (that can be provided by a network). Video require a higher QoS. QoS is achieved in a network either by separating traffic so that interference cannot occur or by prioritization where the highest priority is sent first.

**REAL-TIME** Immediate transmission of material without delay.

**ROUTER** A unit to guide and forward data packets, for example, in the Internet.

**ROUTING** Guiding and forwarding data packets through a computer network.

**SDH/SONET** Circuit-switched technology for communication in optical backbone networks. SDH is the European standard and SONET is the American standard.

**SDI** (Serial Digital Interface). A physical standard for professional, uncompressed 270 mbps video. Is used in the media industry to connect sound and image equipment in production areas.

**STUDIO QUALITY** The quality obtained if studio production equipment is connected together locally. Can be achieved with a low or constant delay over a network with an extremely high QoS.

**SWITCH** Used to direct information between different network links and users

**TELEPRESENCE** Next generation video-conferencing solution.

**TOPOLOGY** In networks, the topology describes how the nodes are linked together, for example, in a ring or star where all nodes are switched directly to a central node, or a mesh, an irregular structure with multiple switches between many nodes.

**TRIPLE PLAY** A technology used for the transport of TV/video, data and telephony via a single network.

**UPLINK STATIONS** Where the content in a fiber optic network or other terrestrial-based network contacts a satellite network. For example, when programming companies broadcast their content for distribution.

**VCAT** (Virtual Concatenation) Facility to combine different noncontiguous data containers (SDH/SONET containers).

**VIDEO-ON-DEMAND** Enables digital delivery of films over a broadband network. The "video store" on the network means that there is always a copy available even of the most popular movie that can be ordered at any time.

**VPN** (Virtual Private Network) Technology for setting up a secure private network within the public network by using Internet infrastructure.






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