Smart TV is More Than Just an Appliance!

Interview
• Dr. T. Stergiou: Cloud, Security as a Service and Information Security

Article
• Affordable & Reliable Gbps Connectivity for Organizations Lacking Experience in Wireless Systems

News
• Small-Cells Wireless Backhaul Radios to MTS Russia
• Awards in Greece and Romania
• Intracom Bulgaria: 20 years of leadership and innovation
Intracom Telecom Supplies Small-Cells Wireless Backhaul Radios to MTS Russia

On May 6, 2015, Intracom Telecom, through its subsidiary Intracom Svyaz in Russia, announced the signing of a contract to supply its new mmWave, fully outdoor Ethernet radios, StreetNode™-V60 (6250 PTP) and UltraLink™-FX80, to MTS Russia, the country’s largest mobile operator. The duration of the frame agreement is 2 years. MTS Russia selected the specific systems through an international tender, as it prepares for future growth for its 4G+ network, upgrading the offered capacity to its subscribers at street level locations. The StreetNode™-V60 and UltraLink™-FX80 systems operate in the 60 GHz and 70/80 GHz bands respectively and ideally address applications ranging from Small-Cell Backhaul to Macrocell Backhaul and Fronthaul. Both systems provide leading capacity (up to 3 Gbps for UltraLink™-FX80 and 1.7 Gbit/s for StreetNode™-V60) and can be deployed easily on lamp posts or walls, as well as, on rooftops and telecommunication towers.

Commenting on the Frame Agreement, Mr. Athanasios Antoulinakis, General Director of Intracom Svyaz, said: “We are very proud to supply our innovative systems to MTS Russia that today serves more than 100 million subscribers in Russia. The operator can take advantage of the compact size, multiple interfaces and flexible powering capabilities of these radios for fast and easy installation. The systems’ Auto-Alignment and ‘Zero-Touch’ provisioning via a Bluetooth-connected Android Tablet, enable rapid, cost effective and error-free link deployment.”

First open source NSTAT

Intracom Telecom recently released the first open source version of its Network Stress Test Automation Tool (NSTAT), which allows DevOps teams to perform automated stress tests on virtual network functions written for the OpenDaylight Software-Defined Network (SDN) controller. NSTAT’s full functionality was released to the global SDN/NFV community as open source under the “Eclipse Public License”, an open source software license. To assist the OpenDaylight community in improving and optimizing its SDN controller, Intracom Telecom plans to regularly release performance reports that can be used as a generic guide. Moreover, the company is committed to continue contributing as a silver sponsor to the collaborative open source OpenDaylight project, and keep innovating to deliver virtualized network services over the SDN architecture. The open source release can be found at the GitHub website https://github.com/intracom-telecom-sdn/nstat.
Romania
“Best Use of Technology” Award

On March 26, during the annual Romanian Contact Center Awards held in Bucharest, Intrarom, jointly with Genesys, received the “Best Use of Technology” award for their large-scale IP contact center project to enhance customer experience at Telekom Romania, one of the country’s leading telecommunications operators. The project’s integrated applications include inbound call routing, outbound campaigns, workforce management, quality assurance, CRM IVR and analytics, allowing the telecom’s teams to deliver unique omnichannel customer experience. Kostas Fiakas, Sales Director at Intrarom, represented the company at the award ceremony.

Greece
Gold Medal for Health & Fitness App

During the 2015 Apps Awards held on April 2 in Athens, Intracom Telecom’s “Empower” mobile application, a unique tool empowering the self-management of diabetic patients, received the “Best Health and Fitness App” Gold Medal. An outcome of the “Empower” EU co-funded R&D project, the application, listed as Empower (Demo) at Google Play, supports manual and automatic collection of Observations of Daily Living (ODLs), such as blood glucose, blood pressure, body weight, physical activity, nutrition, and sleep sessions. During standalone operation patients can collect ODLs or review previous measurements, while in integrated mode the app gets synchronized with the backend infrastructure of the Empower framework and a peer web application. Users have the option of receiving voice feedback or listening to music while executing physical activity, and have access to collected data graphs and useful information regarding diabetes management and nutrition facts. The application, built in collaboration with healthcare professionals and diabetic patients, underwent a thorough validation process in Germany and Turkey. The award was received by Dr. Elias Lamprinos, Senior R&D Engineer at Intracom Telecom.

Bulgaria
Intracom Bulgaria: 20 years of leadership and innovation

This year, Intracom Bulgaria is celebrating its 20th anniversary. In these past two decades, a critical period in the country’s development, the company established itself as a local technology leader, contributing to the modernization of Bulgaria’s telecommunications and information technologies. A trustworthy systems integrator of the country’s second and third largest mobile operator networks, the company expanded into the local financial and retail markets through a series of data center and disaster recovery construction projects along with IT solution integrations, providing support services to leading financial institutions, while maintaining strategic partnerships with such vendors as Cisco, HP, Symantec, Genesys and Oracle. George Roussos, CEO of Intracom Bulgaria, stated: “Over the last 20 years, the solutions and services we provide in Bulgaria enable mobile operators to advance their network on their way to offer premium and high-quality services to their subscribers, as well as enterprises to generate new revenue streams and facilitate their day-to-day business. We work hard, in line with our vision, to contribute for a world with broadband communication everywhere that will enable innovative, life improving services in the market we serve. I am proud, as the CEO of Intracom Bulgaria, to say that our company, throughout these years, has played an important role in realizing this vision.”

USA
Custom IPTV solution adopted by ESCO

Conklin-Intracom’s fs/cdn/foundation will be deployed by CareConnect, USA’s leading telecommunications solution for senior living communities, offered by ESCO Technologies. The deployment will feature a customized electronic program guide and an interactive experience designed specifically for seniors, as well as a network DVR and a series of interactive local advertisements. A single source of communication, information and entertainment solutions for senior housing communities nationwide, CareConnect currently supports over 100 facilities across the US.
**USA**

**TV solution deployed by Zito Media**

*Zito Media*

Conklin-Intracom’s award-winning fs|cdn|foundation solution was selected by Zito Media to offer TV services, whole home and network DVR together with fs|cdn conditional access for content protection. Zito Media reaches over 200,000 homes across 16 states. To find out more on fs|cdn|foundation visit [http://conklin-intracom.com/cdn-foundation](http://conklin-intracom.com/cdn-foundation).

**Greece**

**Meeting young talent**

In May 2015, Intracom Telecom participated for the fifth consecutive year in Job Fair Athens, an event organized by students attending engineering and technology universities in Greece. During this event, company’s Human Resources Department representatives had the opportunity to meet and briefly interview potential candidates. The Job Fair was mutually beneficial, enabling students to become familiar with specific market needs and our company to strengthen ties with the academic community.

**Participation in EU initiative for 5G**

Intracom Telecom participated in the very competitive first EU call for 5G research and development proposals of 25/11/2014, with significant success. As a result, the company has now the opportunity to work on 3 projects that will develop components of 5G. In this first call, a total of 83 proposals were submitted by European consortia and 18 were funded. All major operators participate in these projects, so the company will be developing 5G technology alongside potential customers. Projects start in July 2015 and last for about 3 years.

- **SPEED-5G** will work on solving the network capacity bottleneck by increasing densification, rationalizing traffic allocation over heterogeneous wireless technologies and creating a better load balancing across the available spectrum. Among the partners in SPEED-5G are BT, Intel Mobile Communications and Rohde & Schwarz.
- **CHARISMA** will work on meeting the goals of low-latency and security required for 5G networks, by proposing an intelligent hierarchical routing and virtualised architecture that unites devolved offload with shortest path nearest to end-users and an end-to-end security service chain via virtualized open access physical layer security. Telekom Slovenije, Ethernity Networks and Cosmote are some of the CHARISMA partners.
- **VirtuWind** was the highest ranking “innovation” proposal, focusing more on development and much less on research. The aim of VirtuWind is to apply Software Defined Networking (SDN) and Network Function Virtualization (NFV) to networks with strict performance requirements. The custom networks used in wind parks will be used as an indicative application. Industrial partners abound in VirtuWind, including big companies such as Siemens, Intel, NEC, and Deutsche Telekom.

**Greece**

**Honored with the “Active Greece” award**

Intracom Telecom was recognized during the 2015 “Active Greece” Awards organized on March 12 by Active Business Publishing to honor the country’s most export-oriented companies. The event was attended by the Defense Minister Panos Kammenos, the Minister of Tourism Elena Kountoura, foreign ambassadors and members of the Hellenic Parliament.

**Greece**

**Charity Bazaar**

In early March, the non-profit welfare organization “The Smile of the Child” organized Easter charity bazaars at Intracom Telecom’s premises in Athens and Thessaloniki. Both events were warmly welcomed and strongly supported by company personnel.

**The EU flagship initiative for 5G**

Communication networks are essential for connecting citizens, enabling the Internet, powering digital applications, boosting growth and competitiveness forming an estimated global market of €400 billion. EU-headquartered companies have 40% of the global market share, offering more than 1.3 million jobs in Europe. Today, there is an insatiable need for network capacity; data traffic increased 80% between 2012 and 2013. Adding to this, there are new demand areas, such as the Internet of Things (IoT) and Machine-to-Machine (M2M) communications, with 50 billion devices to be connected to the internet by 2020, according to market predictions. EU has set leadership in 5G as a strategic target and has launched the 5G-PPP (Public-Private Partnership), with indicative funding of €700 million for research, development and innovation for the period 2014-2020. For more information, visit the [ICT-14-2014 website](https://ict-14-2014.eurepad.eu/).
Meet us at Small Cells World 9-11.06.2015 | London

Meet us at GITEX Technology Week 18-22.10.2015 | Dubai

Meet us at AfricaCom 17-19.11.2015 | Cape Town
Sviaz Expocomm 2015 held on May 12-15 in Moscow proved an excellent opportunity for Intracom Svyaz to showcase our recent developments in wireless access and transmission, big data and cloud analytics, and revenue management. As noted by General Manager Athanasios Antoulinakis, “we are pleased to see how interested visitors are in Intracom Telecom’s innovative solutions.” Exhibits included the fully outdoor Ethernet radios StreetNode V60-PTP and UltraLink-FX80, which were recently selected by MTS Russia, the country’s leading mobile operator.
Bulgaria >> Sofia
17th Finance Tech Forum

Intracom Bulgaria was a sponsor of the 17th Finance Tech Forum “Financial business and digitization: sharing a common direction” held on April 23 in Sofia. Dr. Theodoros Stergiou, Intracom Telecom’s Cloud Security Officer, delivered the presentation “Security for the new business paradigm”, a hot topic in our era of mobility. From location-based offers to improved service delivery, financial organizations are increasingly using models and tools to analyze big data, along with data from social media and other interactive channels to deliver personalized customer experiences. Discussions on cloud implementations also gained momentum, driven primarily by optimization, efficiency, productivity and cost reduction considerations.

Romania >> Bucharest
From Big Data to Deep Learning

Last January, Intrarom, in partnership with Dell, organized an executive event on innovative solutions powered by big data analytics. In light of current developments in big data and virtualization technologies, which are expected to revolutionize enterprise datacenters and the telecom industry in the next few years. Spyros Sakellariou, Content Delivery & VAS Manager of Intracom Telecom, delivered a presentation titled “From big data to deep learning - big data machine learning algorithms evolution", in which he discussed how big data triggered an unexpected renaissance of artificial intelligence. The event received positive feedback, showing a strong interest in big data across all industries in Romania.

Italy >> Sicily
HP CommsWorld

Telco executives and experts from all over Europe, the Middle East and Africa attended the HP CommsWorld 2015 event, held this year at the popular seaside resort of Giardini Naxos on the island of Sicily in Italy, on May 20-22. This year’s agenda was dedicated to the latest Telco industry developments, focusing on voLTE/VoWi-Fi, NFV, IoT, NG VAS and OTT apps monetization. During the event presentations and round table discussions, participants exchanged views on the main challenges and opportunities in the new telco market landscape. The successful partnership between Intracom Telecom and HP in the Communication and Media (CMS) domain was reviewed at the “HP partner presentation” session, during which we unveiled our Telco Software CMS related product portfolio evolution.

Romania >> Bucharest
Customer experience dinner

On May 7, Intrarom, in cooperation with Genesys, organized a “customer experience dinner” in Bucharest, during which executives from the telco, banking and utilities industries were given expert advice on how to engage digital consumers, manage customer experiences, drive better results, lower costs and build more profitable long-term relationships. Apostolos Kemos, Genesys Sales Director, elaborated on how innovations simplify the deployment of customer experience technologies from contact center to back office, while Dan Russ, Telecom Director at Intrarom, noted that his team has the highest level of expertise and certifications for Genesys contact center technologies in Romania.

UK >> London
TV Connect

As part of our showing in 2015 TV Connect, the world’s leading event in connected entertainment held in London on April 28-30, Telco Software Marketing Director Sotiris Bithas participated in an interactive panel discussion, addressing how Intracom Telecom’s fjs|cdn|anywhere IPTV/OTT platform, combined with our big data-powered subscriber analytics module, can help deliver truly smart TV services, over a highly-personalized, cloud-enabled service platform.
The global IP video industry is currently undergoing a rapid transformation which affects all players in the field. Video is now responsible for exploding traffic volumes that force service providers around the globe to constantly enhance and upgrade their networks. One can identify three major trends that accelerate change:

1. Globalization
   Video, like so many other media, is becoming a global ‘entity’, in terms of both reach and content origin. Netflix, for example, covers almost half the world: the Americas, Europe and Asia-Pacific. Likewise, Amazon Video serves several geographies, while nobody can ignore YouTube and its worldwide acceptance. Similarly, a number of extravert European players are steadily growing.

2. OTT Tactics Assimilation
   Video Service Providers embrace OTT tactics or even go beyond them when dealing with their subscribers. HBO in North America, with their ‘GO’ service, along with BSkyB, Swisscom and so many others are among the providers that have ridden the wave, with a growing number of other players adopting similar strategies.

3. Expansion to B2B
   Service providers traditionally focused on residential users, fighting hard against their competitors for bigger market shares, higher APRUs and minimal churn. Lately though, service providers increasingly devote attention to enterprise customers, since the B2B market is seen as the new battlefield offering lucrative opportunities.

Because of all the above trends, every digital video player needs to be agile and efficient in a variety of roles. These two universally sought-after qualities, however, cannot be realized without the aid of 3+1 major enablers.

Cloud

In order to keep up with geographic expansion, network bandwidth and quality demands, global video service providers have two options: either to invest heavily in high-capacity networks, practically covering the entire globe, or to outsource their networking needs to partners. The second option is much more efficient, allowing them to focus on acquiring and promoting video content, which is their core business. In this respect, there is no wonder why Cloud TV, in one form or another, is a concept well positioned in the agendas of service providers everywhere.

Migrating one’s video delivery engine and CDN to the Cloud can be a complex and risky endeavor. Thankfully, cloud technology advances successfully address nearly all challenges, including capacity, flexibility and security issues.
The second enabling technology is the combination of Software Defined Networks (SDN) and Network Function Virtualization (NFV). With network virtualization, functional nodes, like video streamers, transcoders or video encryptors, become just software instances that can be brought to life or be dynamically ‘de-commissioned’ through a powerful orchestrator platform. In this way, service providers can promptly respond to the needs of special, high-attendance events, like football finals or news flashes.

Despite the important benefits of such an elastic, totally on-demand infrastructure, one should not neglect certain hurdles that may arise. Deploying, managing and optimally operating a network of functions rather than just a network of routers, apparently increases the level of complexity by orders of magnitude. The OSS stack needs to be re-invented since, under this new concept of NFV, processing the traffic and events volume generated by the interconnected nodes makes the whole endeavor practically unfeasible. This particular challenge is addressed by a third enabler technology.

**Big Data Analytics (BDA)**

BDA offer the power to process the vast amount of data coming from every network node, analyze traffic needs and even predict them before they emerge. This sequence of processing steps eventually provides the necessary input to an orchestrating platform that automatically adjusts the network it controls, so that it may efficiently and optimally support the services requested.

BDA can prove decisive in adding extra benefits to global video providers. Mining data from a huge global pool of millions of subscribers watching tens or even hundreds of millions of video streams is indeed an invaluable ‘goldmine’. Analyzing and truly understanding the usage patterns of subscribers, intelligently segmenting them and targeting the proper user groups with the right offers at the right time, can help service providers make the difference between a killer video service and a ‘me-too’ one.

In conclusion, the above comments by no means underestimate the importance of the traditional video technologies and tools that video technology providers have developed and built over time. One should rather realize that the focus is now shifting to serving millions of subscribers both at huge scale traffic trends with network planning teams, and define user segments that would react positively to a new offering campaign. Last but not least, it is data scientists who facilitate discovery and recommendation over a huge content library, enabling service providers to make the difference between a killer video service and a ‘me-too’ one.

**Human Capital**

A final important enabler is not technological but rather skills-based. Data scientists and other professionals with an analytical and data mining background are now becoming key players for, more or less, any team within a service provider. They help analyze CDRs and usage records with the billing teams, identify network utilization and in a fully personalized manner, over networks that can grow or shrink at a blink of an eye. And this is where the expertise in network virtualization, cloud services, big data analytics and video delivery needs to be efficiently combined and synergized.

If you want to know more on how video delivery technology and platforms can be intelligently bundled with the cloud, network virtualization and big data analytics, please visit www.intracom-telecom.com/telco or contact us at fs-cdn@intracom-telecom.com
Given that these days information security is not only a complex technical topic but also a critical business challenge for organizations worldwide, our Security Solutions Product Manager Dr. Theodoros Stergiou was interviewed by NETWEEK magazine (Greek edition), elaborating on security issues in public and private cloud environments and offering his expertise on how a Managed Security Services provider can help organizations meet security demands.

Information security appears to be one of the most important inhibitors for organizations wishing to adopt cloud computing. Which are the greatest concerns potential customers have regarding cloud security?

*Dr. T. Stergiou* >> First of all, we should clarify the notion of information security being the most important inhibitor in adopting cloud computing. And this because of all cloud deployment models, private clouds are deployed within the strict boundaries of an organization and are therefore subject to the existing internal security framework.

With therefore respect to public clouds, indeed there are several aspects concerning information security that lead to a lack of trust between the cloud service providers and potential customers. This lack of trust is what feeds a vicious circle whereby organizations do not adopt cloud computing even though its benefits may have already become apparent.

This lack of trust is the result of numerous factors; we should note that at least six to seven years after the first commercial deployments of public clouds, customers are not fully aware of what cloud computing really is, nor of the cloud services applicable to them or the adoption methodology. Furthermore, many organizations cannot comprehend how cloud service providers can cover their requirements with respect to information security, what the administration and management of their infrastructure by a third entity entails and what the roles and responsibilities of both parties really are.

This lack of in-depth comprehension drives organizations to ask questions whose replies cannot provide an adequate level of assurance. For example, the most common question they ask Intracom Telecom is whether the cloud is secure. This is a very generic question that we can only partially answer with a generic reply. This is because cloud security is a function of customer security governance, framework, security strategy, policies and procedures, as well as their compliance to legal and regulatory requirements, risk management and so on.

This is the point where cloud service providers must step up and provide potential customers with the necessary information to assist them in identifying what cloud adoption would really signify for them, what the prerequisites for such a
step are and what this would entail for the security of their information.

Unfortunately, many providers fall short in this task. The lack of comprehensive contracts, information security controls and proper certifications cannot provide potential customers with the assurance level they require.

A cloud provider must be ISO 27001:2013 certified, actively participate in the working groups of the Cloud Security Alliance (CSA), ENISA, NIST and ISACA, and be ready to provide information about the methods used to protect customer information. At this point, however, we should note that customers must be aware of the fact that cloud service providers will not divulge too much information regarding their controls and infrastructure to protect their existing customer base.

**INTERVIEW >>** Certifications are undoubtedly important; however, are they enough on their own to assure cloud security? What else needs to be done?

**Dr. T. Stergiou >>** Certifications are indeed important as they essentially provide proof that the cloud service provider complies with specific internationally accepted practices and standards. This, in turn, means that a level of information security can be assured, while standards mandating a continuous improvement paradigm can be strong indicators of sound practices followed by the provider.

At the same time, certifications alone are not enough to guarantee information security and a number of other practices can be adopted by cloud providers.

We need to note a few important things regarding certifications. Currently, there exists no single certification standard related to cloud security. ISO 27001:2013 specifies the requirements for establishing, implementing, maintaining and continually an information security management system in general, and, ISO 27017 only provides guidance on the information security elements of cloud computing, that is, general guidelines that should be followed but are not mandatory.

Additionally, the work of the Cloud Security Alliance (CSA) reflected in the Cloud Control Matrix (CCM) is not appropriately recognized as a de facto standard and, similarly, CSA’s certifications are not widely known in the marketplace.

Finally, other security-related certifications, such as PCI DSS, address needs of specific market verticals and do not apply solely to cloud computing.

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**“SecaaS can help simplify the application of information security controls and regulatory compliance, while providing customers with the necessary tools to adhere to their internal policies and procedures.”**

All these signify that a cloud service provider must operate under a framework mandating the certification of its infrastructure and services against numerous standards and practices so as to differentiate itself against the competition. At the same time, the provider must also keep pace with advances and changes in information security, expert groups and so on.

We should also not forget that many equipment manufacturers provide their own certifications, even though these may not purely address information security. However, such certifications can provide a level of assurance to potential customers that the provider’s infrastructure and services are aligned with strict rules and regulations and are subject to continuous audits by independent parties.

As previously stated, the effort of securing the cloud must be rigorous, formalized and based on the notion of continuous improvement.

**INTERVIEW >>** Which are the benefits that a Security as a Service provider can offer its customers? How can it cover compliance requirements?

**Dr. T. Stergiou >>** Security as a Service, or SecaaS, merits some analysis with respect to what the offering means and its potential benefits.

A SecaaS provider must firstly be able to provide Infrastructure as a Service (IaaS) to its customers, so that their infrastructure can be hosted in the cloud. If such customers exist, then additional information security controls can be offered to cover their requirements, such as Firewall, WAF, VPN, IDS/IPS, log management, server-based protection, disaster recovery, etc. Additionally, a provider can offer innovative services, such as mobile device management, web content security, email security, and so on.

This is also SecaaS’s difference with Managed Security Services (MSS); the former mandates the use of the cloud computing infrastructure by the customer, whereas the latter can be offered by the cloud service provider to non-cloud customers.

Organizations, though, must realize that regulatory compliance ultimately remains their responsibility. As an example, suppose that a cloud provider is ISO 27001 certified. This is a certification that can provide a quite reasonable assurance to customers regarding the protection of their information by the provider. However, hosting systems in that cloud provider does not mean that they too will be ISO 27001 certified. It is the customer’s responsibility to ensure that all ISO requirements are covered, that specific provisions have been included in the contract with the provider and so on. Through the SecaaS offering, customers will reap the benefits of a security enhanced infrastructure that cannot, though, lead to a certification of their organization.

We can therefore note that SecaaS can help simplify the application of information security controls and regulatory compliance, while providing customers with the necessary tools to adhere to their internal policies and procedures. As an example, the Mobile Device Management as a Service is not mandated by any standard; its adoption, however, is crucial for an organization wishing to implement a mobile device policy, address BYOD and control employee owned devices, etc.

In closing, information security is the sole responsibility of the information owner (the customer) who will need to establish the appropriate framework to manage it. A SecaaS provider can offer very useful tools to organizations wishing to enhance their cloud-hosted infrastructure with various information security controls.

For more information contact us at sales@intracom-telecom.com.

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INTERVIEW | June 2015
Affordable & Reliable Gbps Connectivity for Organizations Lacking Experience in Wireless Systems

Dr. Konstantinos Dimopoulos (Senior Product Manager, Wireless Network Systems, Intracom Telecom)

Introduction

Today, a wide range of organizations need Gigabit connectivity solutions that are cost-effective, flexible, future-proof and easy to deploy and operate. The option of fiber deployment is in many occasions cost prohibitive and slow in implementation. Alternatively, the deployment of more than one MicroWave (MW) links working in parallel may fulfill the capacity requirements, but it does not satisfy the need for very low CAPEX and OPEX in the new ubiquitous-broadband era. The high recurring costs and delays imposed by the licensing procedures for current MW systems further exacerbate the cost impact on wireless transport deployment business plans. Moreover, organizations without prior experience in wireless systems face additional barriers to the adoption of such systems due to the lack of competent personnel in the areas of planning, licensing, deployment and operation.

Millimetre-Wave (mmWave) wireless technology now offers a solution to these issues. The Millimetre-Wave (mmWave) wireless technology lies in the 30-300 GHz frequency range and corresponds to an electromagnetic wave wavelength range between 1mm and 10mm, ergo the naming of the spectrum. Nevertheless, the wireless radio industry uses this term to describe frequencies over 55 GHz. The importance of this spectral area lies in its sheer size, which allows the use of large communication channel bandwidths ranging between hundreds MHz to more than a GHz. These large channel sizes, in turn, allow the achievement of very high, multi-gigabit per second, radio link capacities, which are very difficult to obtain cost effectively by conventional MW (6-42 GHz) systems (MW systems currently operate on channels with a maximum possible bandwidth of 56 MHz).

The growing interest for mmWave technology as a solution to the above issues has been recently confirmed by the creation of the Industry Specification Group on Millimetre-Wave Transmission (ISGmWT) by ETSI in January 2015. The Group’s primary aims include defining the most suitable mmWave frequency bands within the entire mmWave frequency range, promoting spectrum use regulation and its harmonization worldwide, enhancing confidence in the use of mmWave frequency radio links and, importantly, defining appropriate use-cases for mmWave radio systems.

Key Features of mmWave Systems

The characteristic features that determine the range of applications for this technology are:

- **Very high capacity.** As already mentioned, the use of very wide channels allows link capacities of Gbit/s or Multi-Gbit/s in a simple and cost-effective way, using simple 1+0 link configurations and unsophisticated modulation formats. The application of more advanced techniques and configurations will lead to future systems offering 10 Gbit/s or more.

- **Short to medium range.** The higher the electromagnetic wave frequency, the larger the free space propagation and rain precipitation-induced losses. Furthermore, in some spectral areas, within the mmWave range, the absorption from chemical bond resonances of atmospheric gas molecules (O2 and H2O) exhibits peaks, which further increase the propagation losses.

- **Equipment of Small Form Factor.** High Frequency of operation corresponds to small wavelengths and small wavelengths entail that small waveguides and small antennas with high gain can be manufactured.
Facilitating Adoption of 60GHz Radio Systems by Organizations Lacking Experience in Wireless Systems

The organizations mentioned above do not usually employ personnel that can handle the planning, licensing, installation and operation/maintenance of wireless transport systems. They usually employ IT or telco staff that is familiar with Ethernet/IP switching equipment, Wi-Fi access points and their integration into the organization’s LAN. Therefore, to overcome the significant lack of expertise and operational capabilities barrier and be introduced to the networks of such organizations, V-Band radio equipment should be designed to offer automations that simplify and speed up operations necessary during the life cycle of the radio equipment, from design and deployment to monitoring and maintenance.

Small size, low weight and clever design is needed to facilitate the installation of these radios on lightweight poles and even walls, without requiring specialized or expensive lifting rigs or tools and, making it very easy even for non-experts.

Deploying short V-Band radio links (at a range of a few hundred meters) is relatively easier compared to deploying multi-km MW links. However, it may still pose a challenge to non-expert personnel available to non-wireless telco organizations. As mentioned before, these radios have narrow antenna beamwidths, which creates a difficulty for technicians unfamiliar with wireless systems to achieve the fine alignment required for optimum link performance and will certainly increase deployment time. Using auto-alignment capable V-Band radios can lift the onus of the critical link alignment process and expedite link deployment by non-expert technicians.

Radio parameter configuration and service provisioning automation is also a highly desirable feature that enables quick and easy parameter setting for the equipment and speeds up deployment operations while minimizing potential errors.

Communications in the organizations mentioned are based on links and extended LANs requiring Gbit/s speeds. High capacity enables low latency communication, which is practical for the transfer of multimedia traffic and large files to/from data storage.

Applications for V-Band Radios

The use of the 57-66 GHz band has already been addressed by international and national regulators. The 57-64 GHz band is allocated to fixed services (FS) on a worldwide basis. In particular, this band, in conjunction to the adjacent 64-66 GHz band, is considered very suitable for short distance (around 500 meters) and high capacity links deployed in dense scenarios. Furthermore, the 60 GHz band has been chosen for the development of the next generation of ultra-high capacity unlicensed Wi-Fi access technology, called WiGig, enabling Gbps plus download speeds.

The physical propagation features in this band make possible a lighter licensing regime than what is common for FS MW systems, which may include access to spectrum through the use of flexible frequency arrangements. The choice of the assignment method remains a decision for national administrations. Currently, there is a variety of regulatory licensing approaches per country: unlicensed, lightly licensed and fully licensed. Despite the variety in terms of regulatory treatment of the V-Band by national regulators worldwide, part or the entire 57-64 GHz spectrum is currently offered free of license fees in most countries where this band is open for commercial use. This is advantageous in terms of eliminating the recurring operating cost for the licenses, as well as, the delays and costs associated with the licensing procedure itself.

The application of V-Band radio technology to the backhaul of Small Cells is expected to be instrumental to the delivery of the converged ubiquitous broadband service delivery in the short-to-medium term. However, attention should also be drawn to the adoption of this technology by organizations that, in contrast to mobile network operators, do not have experience working with wireless systems. These organizations can benefit from the cost-effective and hassle-free high capacity connectivity offered by this technology.

• Wireline Operators / ISPs
V-Band radios can be used to offer a range of services to wireless or wireline/ fixed-line operators or ISPs: from carrying out fiber extension and backhauling of DSLAM or Wi-Fi access points to providing direct high bandwidth access connectivity for large corporate customers.

• Large Industries & Utility Companies
Large industrial facilities (manufacturing, mining), electricity and water companies can deploy V-Band radios in their plant sites, storage depots, distribution stations and office locations to convey traffic from security/surveillance HD cameras to the monitoring stations and/or create Gigabit LANs between their buildings and backhaul Wi-Fi access points to enhance their productivity and data storage/security.

• Municipalities
V-Band radios can be used to interconnect public buildings in municipal areas or small towns/villages: Town Halls, police headquarters, schools and fire brigade buildings can converge on the same high-speed network infrastructure to enhance governance efficiency. V-Band radios can also be used for backhauling public access municipal Wi-Fi networks.

• Higher Education & Health Institutions
University campuses and hospitals with multi-building sites can take advantage of V-Band radios to cost-effectively and rapidly deploy Gbit/s bandwidth links among the buildings (administration, database locations, teaching facilities, laboratories, clinics, libraries, etc.) to enhance and consolidate their ICT infrastructure and enable effective information management. V-Band radios can also be used for the backhauling of campus-wide Wi-Fi networks.

• Ad Hoc Networks
Temporary networks may be set up in large construction sites, natural disaster locations, refugee camps, outdoor sport event venues, etc.

A new generation of Gbit/s capacity radios operating in the unlicensed 60 GHz band can offer significant connectivity solutions to organizations lacking experience in wireless systems.

INTERVIEW | June 2015
The StreetNode™ 6250 PTP Gbit/s radio incorporates innovations automating the deployment and operation of a wireless link and facilitating its use by non-wireless-savvy organizations.

locations. Gbit/s speed also offers the opportunity to deploy high capacity protected rings, which can practically aggregate the traffic of multiple HD cameras. Today, V-Band radio equipment needs to be capable of Gbit/s throughput to provide the bandwidth required for seamless connectivity.

Having multiple Ethernet ports and integrated switch functionality on the V-Band radio unit facilitates the interconnection of radios to form various network topologies, while providing add-drop capability without requiring external devices. The capability to form protected rings, requiring bi-directionally symmetrical capacity, is crucial in cases where increased reliability is required. V-Band radios, supporting standardized fast ring protection mechanisms (such as ITU-T G.8032 Ethernet Protection Ring) enable the deployment of wireless-only rings or combined wireless/wireline rings. Gbit/s capacity opens up the possibility of using radios in applications such as mixed fiber-wireless rings for enhanced reliability, with the V-Band radio chain acting as fiber route backup.

The operation in an unlicensed band offers the already mentioned advantages but may create doubts as to transmission reliability. V-Band systems can offer reliable connectivity by taking advantage of their existing features and employing new intelligent ones. First, the very short range of the systems minimizes nearby link interference. Then, the narrow beamwidth of their antenna (less than 4deg FWHM) also minimizes off-link-axis interference. Furthermore, additional measures can enhance the reliability of V-Band radio links. Automatic channel scanning and interference detection is a feature that expedites deployment and enables flexible management of potential interference during operation. The radio system should be able to automatically perform channel scanning and identify good quality frequency channels for operation without requiring additional expensive interference-detecting devices. This feature is useful at any time in the link deployment lifecycle (at installation or during its normal operation). The quality of transmission should be continuously monitored and in case of interference an alarm should notify the operator. The automatic channel scanning process could be repeated to identify a more suitable channel.

StreetNode™ 6250 PTP: A Complete V-Band Radio Solution

The innovative auto-aligning V-Band radio StreetNode 6250 PTP, part of the StreetNode V60-PTP series, combines all the necessary features to enable its easy integration with networks of any kind. It is a compact, fully outdoor radio that operates in the 57-64 GHz spectrum and can provide user throughputs well in excess of 1 Gbit/s. When Packet Header Suppression is activated, the throughput can reach up to an industry leading 1.7 Gbps Full Duplex for 64Byte packets and 11 Gbit/s for 1518Byte packets. For 99.99% link availability, StreetNode 6250 PTP can offer its maximum capacity for an up to 300 meter link range and more than 300 Mbit/s for an up to 600 meter range.

Furthermore, with a 3 x GbE interface Carrier Ethernet switch per radio unit, StreetNode 6250 PTP offers advanced networking capabilities for the delivery of standardized Carrier Ethernet services, as well as maximum deployment flexibility. The radio units can be interconnected to form relay & add-drop configurations so that Chain, Tree and Ring architecture networks may be constructed easily without needing external switch devices. The high, bi-directionally symmetrical capacity of StreetNode 6250 PTP is ideal for the formation of rings. Standards-based ITU-T G.8032v2 Ethernet Ring Protection (ERP) is supported by all the interfaces of the radio unit, enabling the formation of protected rings with sub-50ms protection switching.

The StreetNode 6250 PTP offers a unique mix of innovations and operational features that minimize the time, complexity and cost of deployment, while safeguarding against deployment errors and potential interference threats. These features are:

- **Auto-alignment**: Installed units are activated and perform the optimum alignment automatically saving time and avoiding errors.
- **Zero Touch provisioning** using an off-the-shelf Android tablet. The equipment configuration files can be uploaded from a tablet via Bluetooth, simplifying and speeding up commissioning and service provisioning.
- **Intelligent frequency scanning**: Aligned units can scan interference levels to select the best available channel or perform future troubleshooting. StreetNode 6250 PTP continuously monitors transmission quality. If interference is detected an alarm is sent to the monitoring console and the automatic channel scanning process may be repeated.
- **The capability to be powered directly from existing AC power outlets** obviates the need and cost of using fault-prone, proprietary and expensive PoE adaptors, while increasing the facility and reliability of the deployment in non-telco environments.

As a result of these features, the deployment process takes less time and can be performed by fewer and less specialized technicians, avoiding errors and generating significant capital and operating cost savings, while enabling the easy introduction of StreetNode 6250 PTP into the networks of organizations with no prior experience in wireless systems.

StreetNode 6250 PTP can be managed via its integrated Bluetooth interface, by standard LCT and by uni|MS, Intracom Telecom’s advanced NMS system. Apart from offering full FCPS functionality, the TMN-based uni|MS offers a multitude of automation, analysis and visualization tools, allowing users to better monitor and manage network equipment features and information, whatever the network size.

To find out more on Intracom Telecom’s StreetNode V60-PTP, visit our [website](http://example.com).

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Small-Cell Backhaul (MW & mmWave)

STREETNODE

» Frequency bands: 26 / 28 / 32 / 42 GHz (MW)
» Frequency bands: 57-64 GHz (mmWave)
» Self-aligned embedded antenna
» Software-defined radio (PTP / PTMP)
» Up to 900 Mbps capacity (MW)
» Up to 1.7 Gbps capacity (mmWave)
» Unique direct AC powering
» “Zero-touch” provisioning (via Bluetooth)