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SATELLITE Markets & Research

MARKET BRIEFS

Executive summaries of market trends and opportunities in key market segments and regions worldwide

Content Delivery Networks

Highlights

- **The expected growthof CDNs is at a CAGR of around 31.4% over the next decade, to reach approximately US $ 70.3 billion by 2025.**
- **Global IP traffic will increase nearly threefold over the next 5 years, and will have increased 127-fold from 2005 to 2021. Overall, IP traffic will grow at a Compound Annual Growth Rate (CAGR) of 24 percent from 2016 to 2021.**
- **Content delivery network (CDN) traffic will carry nearly 21% of all internet traffic by 2021, according to CISCO.**

by Virgil Labrador, Editor-in-Chief
Satellite Markets and Research

An even more intense competition is expected in the US$ 5 billion global content delivery network (CDN) industry as the market is expected to grow, according to the latest Technavio's industry report, at a compounded annual growth rate (CAGR) of close to 30% during the period 2017–2021.

Technavio's report mirrors another recent industry report of Accuray Research LLP, which found that the global CDN market is poised to grow at a CAGR of around 23.6% over the next decade to reach approximately $41.3 billion by 2025.

In fact, just for the global mobile CDN alone, the expected growth is at a CAGR of around 31.4% over the next decade, to reach approximately $70.3 billion by 2025, says Accuray.

Rise of Content Delivery Clouds

In the past five years, there has been a gradual shift from the use of traditional CDNs to cloud-based CDNs. Content delivery clouds improve delivery service capabilities of web applications and storage. They also provide access to numerous specialized services. Content delivery clouds facilitate possible research that emphasizes on recognizing essential application requirements, improved scalability, the robustness of systems, usability and access performance, reduced cost, durability of data, and support for security and privacy.

The increasing pricing pressure on vendors is one of the main trends being witnessed by the global CDN market owing to the intense competition. The market today is dominated by Akamai Technologies, but the company is now witnessing immense competitive pressure from peers such as Level 3 Networks, Limelight, and CDNetworks. As a result, Akamai Technologies has reduced its prices, which earlier used to adopt a premium pricing strategy for its CDN solutions. Hence, vendors, such as Akamai Technologies, are managing to attract more customers but are compromising with their margins.

With a rapid increase in data usage on service providers' networks, it has become financially advantageous for big companies to build their own CDNs for consumers rather than outsourcing them. Apple relies on Akamai Technologies and Level 3 to deliver Apple-related contents including apps, iTunes videos, and software updates for iOS and OS X platforms. It has now built its own CDN to serve its consumers. This development is expected to affect the revenues of Akamai Technologies and Level 3 in the coming years, depending on the scale and location of the network.

Ujjwal Doshi, a lead analyst from Technavio, says "Leading brands like Amazon, Apple, Google, and Microsoft are the reason for the huge increase in Internet traffic. The inclination of these major service providers to own their dedicated CDNs is expected to be one of the key highlights during the forecast period," says Ujjwal.

CDNs to Carry 21% of Internet Traffic by 2021

The rapid developments in the cloud-based CDNs don't come as a surprise. According to Cisco's Visual Networking Index: Forecast and Methodology for 2016–2021, annual global IP traffic will reach 3.3 zettabyte (1 Zettabyte (ZB) = 1000 Exabytes) by 2021. In 2016, global IP traffic was 1.2 ZB per year or 96 EB (one billion Gigabytes [GB]) per month. By 2021, global IP traffic will reach 3.3 ZB per year, or 278 EB per month.

Global IP traffic will increase nearly threefold over the next 5 years, and will have increased 127-fold from 2005 to 2021. Overall, IP traffic will grow at a Compound Annual Growth Rate (CAGR) of 24 percent from 2016 to 2021.

Among the other Cisco forecasts that support cloud-based CDNs:

- Global Internet traffic in 2021 will be equivalent to 127 times the volume of the entire global Internet in 2005. Globally, Internet traffic will reach 30 GB per capita by 2021, up from 10 GB per capita in 2016.

- The number of devices connected to IP networks will be three times as high as the global population in 2021. There will be 3.5 networked devices per capita by 2021, up from 2.3 networked devices per capita in 2016. Accelerated in part by the increase in devices and the capabilities of those devices, IP traffic per capita will reach 35 GB per capita by 2021, up from 13 GB per capita in 2016. Broadband speeds will nearly double by 2021. By 2021, global fixed broadband speeds will reach 53.0 Mbps, up from 27.5 Mbps in 2016.

- It would take an individual more than 5 million years to watch the amount of video that will cross global IP networks each month in 2021. Every second, a million minutes of video content will cross the network by 2021. Globally, IP video traffic will be 82 percent of all consumer Internet traffic by 2021, up from 73 percent in 2016.

- Global IP video traffic will grow threefold from 2016 to 2021, a CAGR of 26 percent. Internet video traffic will grow fourfold from 2016 to 2021, a CAGR of 31 percent. Live Internet video will account for 13 percent of Internet video traffic by 2021. Live video will grow 15-fold from 2016 to 2021.

- Internet video to TV grew 50 percent in 2016. Internet video to TV will continue to grow at a rapid pace, increasing 3.6-fold by 2021. Internet video-to-TV traffic will be 26 percent of consumer Internet video traffic by 2021, up from 24 percent in 2016.

- Consumer Video-on-Demand (VoD) traffic will nearly double by 2021. The amount of VoD traffic in 2021 will be equivalent to 7.2 billion DVDs per month.

- CDN traffic will carry 71 percent of all Internet traffic by 2021. Seventy-one percent of all Internet traffic will cross CDNs by 2021 globally, up from 52 percent in 2016.

Beneficiaries of CDN Growth

But the benefits of CDN growth is also being felt by equipment manufacturers like Work Microwave, which develops frequency converters, DVB-S2/S2X equipment, and other digital signal processing technologies. Work Microwave's satellite technologies have been deployed by operators worldwide to support a range of applications within the satellite broadcast and satellite communications markets, including SNG/contribution, direct-to-home, IP networking, teleport management, governmental and more.

One of the company's latest innovations is the A-Series End-to-End DVB-S2X Wideband Transmission and Reception Solution. With this equipment, satellite operators can run links with less back off and higher power, boost statmux efficiency, and maximize throughput. One significant improvement that the DVB-S2 standard offers is multistream technology, which allows operators to transmit several transport streams or IP streams via one satellite carrier in a transparent way. As soon as more than one stream is transmitted or received, a multistream device replaces several single stream devices, thereby reducing equipment costs.

Thomas Fröhlich, CEO of Work Microwave, says big broadcast and satellite operators like SES, Eutelsat, Intelsat, iDirect, and Comtech are buying from them. "We're a small-sized company but we are selling worldwide all around the globe from China to the Americas, including all the Arabian countries," Fröhlich says.

Pay-TV to Remain Competitive

One important sector of the CDN industry, the Pay-TV market, recognizes that 2017 is a period of unprecedented global change with many service providers facing a perfect storm of slowing growth, intensifying competition and business model disruption. However, 82% of pay-TV executives agree that competition in the industry is set to increase over the next five years, and 71% believe that service providers will struggle to grow their businesses during the same period.

NAGRA, an independent provider of content protection and multiscreen television solutions, in partnership with MTM, an international research and strategy consultancy, has identified three key disruptive challenges facing the industry worldwide: the proliferation of cheaper OTT services, changing consumer behavior and demand, and the rise of content piracy. Sixty-seven percent of executives agree that competition from subscription VOD services will have a negative impact on pay-TV, pushing down prices and in-

creasing churn. Another 66% agree that the industry will see a new wave of mobile-first services to cater to evolving consumer viewing habits.

While this outlook remains challenging, the research highlights a strong consensus among executives that innovation is becoming more and more important in the industry: the majority of executives (85%) agree that in order to grow, pay-TV service providers will have to innovate strongly over the next five years (up from 78% in 2016), with 74% considering innovation to be a top strategic priority.

Pay-TV executives are increasingly focused on delivering standalone OTT services (64% of respondents believe it to be a commercially attractive area opportunity), multiscreen TV Everywhere (67%), app-based TV services (61%) and advanced functionality (53%) such as voice and 4K, alongside innovative content propositions (74%) and new pricing and packaging models (78%).

Conclusion

The global content delivery network industry is in the throes of transitioning to a new business model.

While these digital disruptions create opportunities, they also create challenges. In the midst of all these transformation, Jon Watts, Managing Partner at MTM, has this sound advice to the players: "In this period of change and disruption, those service providers that are prepared and willing to innovate by deploying new pricing models, technology partnerships and improved user experience will be successful in meeting quickly evolving consumer demand."

Modems for the Next Generation Content Delivery Networks

At IBC, 2017 in Amsterdam **WORK Microwave** demonstrated the latest enhancements to its satellite technologies portfolio, including a new high-performance DVB-S2X demodulator for transport stream applications. Using WORK Microwave's analog and satcom solutions, operators can dramatically increase their flexibility, bandwidth, and margins while reducing operational costs.

WORK Microwave devices are deployed by operators worldwide to support a range of applications within the satellite broadcast and satellite communications markets, including SNG/contribution, direct-to-home, IP networking, teleport management, governmental, and more.

Key Products and Technologies from Work Microwave include:

NEW AR-61 Demodulator. WORK Microwave is expanding its A-Series IP modem, demodulator, and modulator family at IBC2017 with the introduction of the all-new AR-61 demodulator for transport stream applications.

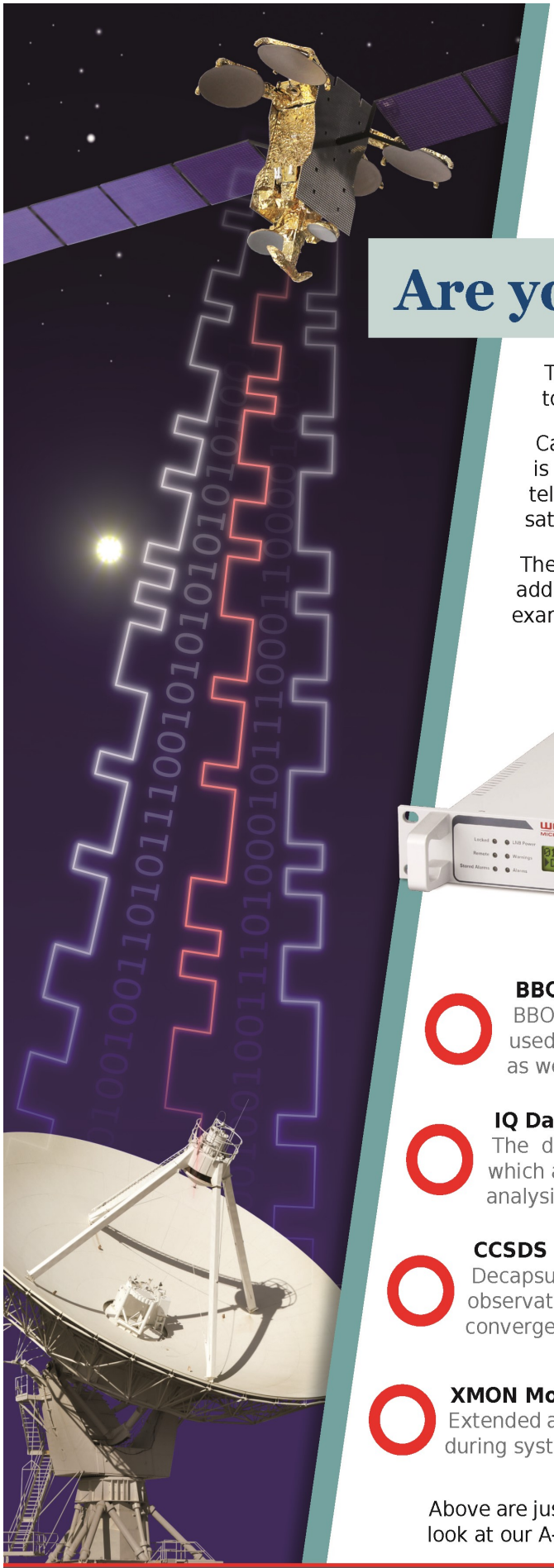
The AR-61 provides the best DVB-S2X performance on the market for high-quality video transmission with minimal satellite bandwidth occupation. It is ideal for professional video contribution and distribution use cases. Offering compliance with DVB-S2X, DVB-S2, and DVB-S, the platform is entirely future-proof, enabling seamless migration to next-gen infrastructures and evolution to advanced functionalities for operators relying on legacy standards. Upgrades are made easy via software licensing.

Work Microwave's AX-60 IP modem

For operators looking to transition to all-IP, WORK Microwave also offers the AX-60 IP modem, AR-60 IP demodulator, and AT-60 IP modulator high-performance platforms for IP trunking and network infrastructure applications.

NEW Integration Between Modulator and Encapsulator . Operators now have the option to integrate WORK Microwave's AT-60 IP modulator and AT-80 wideband modulator with an encapsulator and IP routing system for large-scale VSAT systems. This integrated solution scales to every type of satellite network, from small networks with five remotes, up to the largest networks encompassing tens of thousands of remotes. Designed with flexibility in mind, WORK Microwave's solution is based on a pay-as-you-grow business model, can scale up or down to support any operator's requirements, and is completely customizable in terms of adapting to existing infrastructures. Embedded Adaptive Coding and Modulation (ACM) enables each remote to operate at its most efficient coding and modulation scheme.

Compact Satellite Up- and Downconverter Enhanced With C- and X-Band Support. Based on customer feedback, WORK Microwave has added C- and X-Band support to its integrated, compact, and cost-effective frequency converter. Ideal for satellite operators, integrators, and teleports working in classical bands, WORK Microwave's compact converter is operational in C-, X-, and IF frequency bands, allowing users to support multiple simultaneous channels in one unit to save significant rack space and costs. WORK Microwave also offers a traditional modular converter series suited for higher frequency applications, including Ku-, Ka-, Q-, and V-bands.



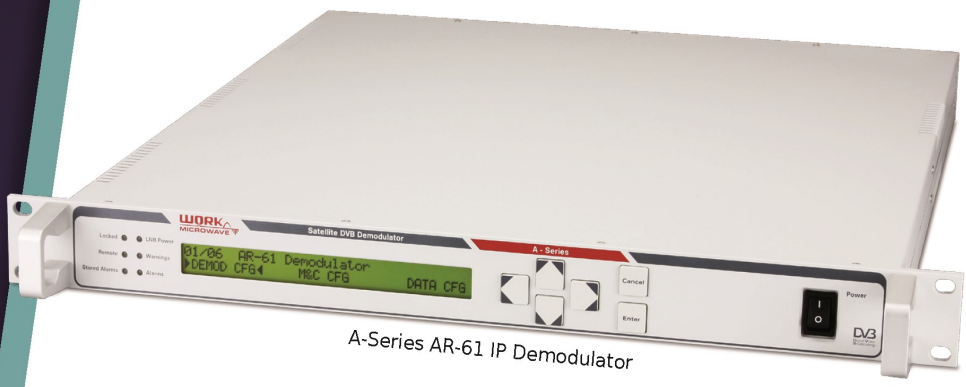
WORK MICROWAVE

Are you ready for what's next?

The extended features of the AR-60/61 IP demodulators enable users to address next generation challenges head-on.

Capable of adapting to any signal type or data format the AR-60/61 is fully customizable, making it an ideal solution for teleco's, ISP's, teleport operators, governmental agencies and operators of LEO satellites.

The highly scalable architecture allows the user to quickly and easily add functionality according to their expanding needs. Some applied examples are listed below.



A-Series AR-61 IP Demodulator

BBO Option
BBO allows the user to output the received BB frames over IP. Can be used with applications where external proprietary processing is applied, as well as BB level monitoring of carriers, including padding.

IQ Data Output
The demodulator streams the received IQ constellation points via IP, which allows either displaying via a provided Windows/Linux tool or deeper analysis.

CCSDS Standard
Decapsulation of CCSDS CADU streams over DVB-S2 as used for earth observation. Further extensions possible as DVB and CCSDS type transmissions converge, i.e. for SmallSat or telemetry.

XMON Monitoring
Extended analyzer functionality such as EVM or LDPC error management assists during system design phase as well as troubleshooting during operation.

Above are just some of the features available for more in-depth look at our A-Series technology please contact us today!

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