Express
Summer 2015

NEXCOM
The Intelligent Systems

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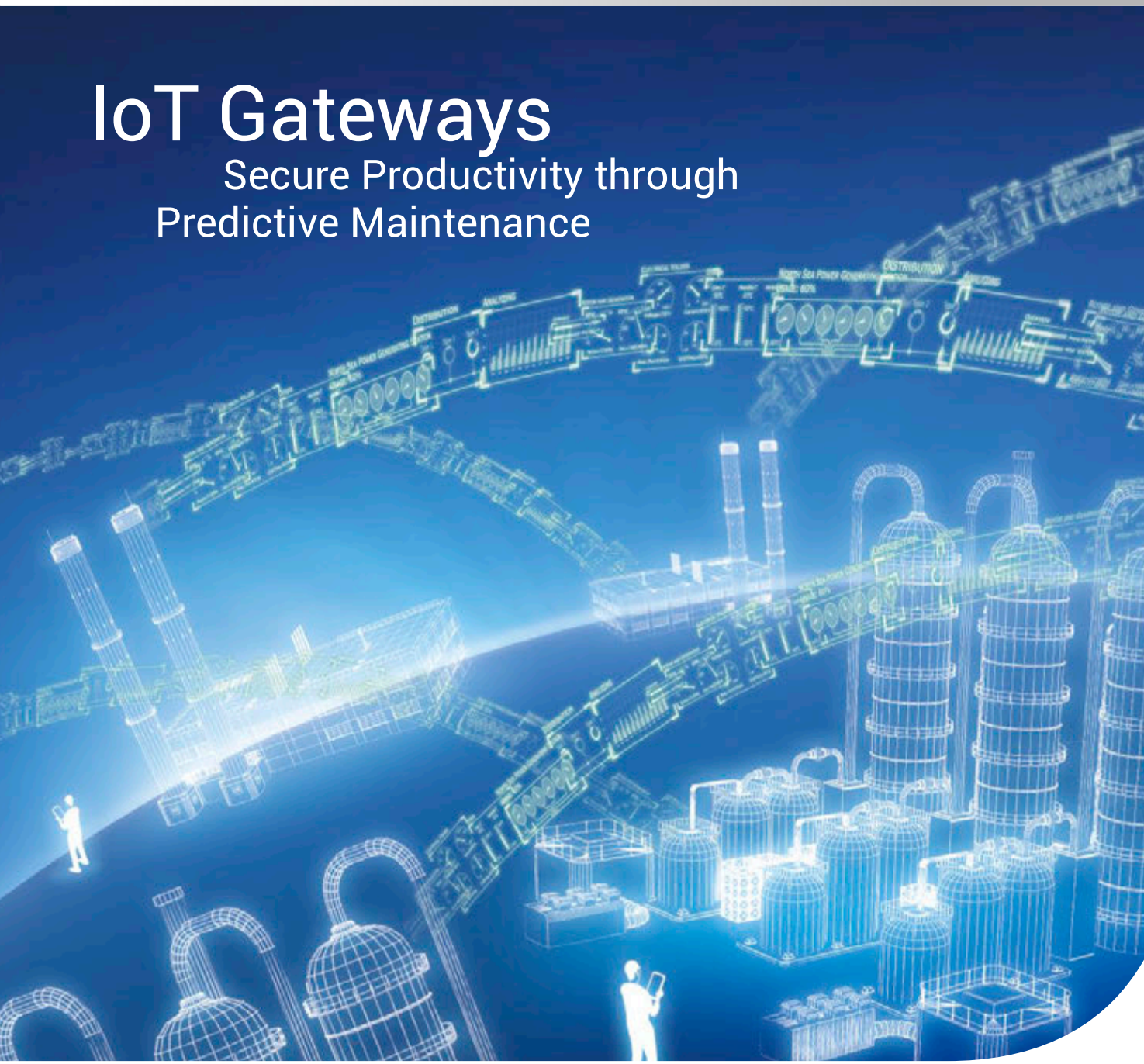
IoT Gateways

Secure Productivity through Predictive Maintenance



Market Story
NEXCOM's WDR Cameras Augment Surveillance Accuracy and Coverage in Sydney Car Park

Technology Focus
Bring Intelligence to the Edge

White Paper
Increase Transportation Security with Video-based Intelligence

Dear Partners,

From this year's COMPUTEX, or even from NEXCOM's 2015 GPC, everybody must have heard the term "IoT" many times. Every company is talking about IoT everywhere. It's almost becoming the national strategy of many countries with strong ICT industry. We call it the IoT Age, but more or less it's also an "IoT Rush", just like the "Gold Rush" 150 years ago!

Even though "IoT Rush" is a rush of a kind, the rule is still the same for all kinds of "Rush", which is: "Only the Earliest Wins the Most!" In project based businesses, we all know the importance of the first "Spec In". IoT business is not only a "Project Business", it's also a "Vertical Solution", and a "Long Term" deployment. All these factors make IoT players long term winners if their IoT solution is adopted by customers from the very beginning.

NEXCOM is not in a "Rush" in dealing with the IoT products and businesses, but we are very serious and rationally cooking the IoT related solutions domain by domain. It should be a vertical solution, an End to End Solution, and a partnering business under a solid ecosystem! Whoever can build the complete ecosystem first in the world can enjoy the long term advantage over the competitors. That's why all the major players are so busy engaging the Partners worldwide, and make it look like an "IoT Rush"!

As we have mentioned in NEXCOM GPC 2015, all NEXCOM products and solutions are built with "IoT Aware". We reposition NEXCOM as the "IoT Last Mile Builder". We have also developed the "World's Easiest E2E Builder S/W", the NEX C2C, to let ordinary users to build their own E2E infrastructure from Sensors through Gateways to Edge Servers and, finally, to the Private Clouds or Public Clouds with simple Drag & Drop operations.

All NEXCOM's products and solutions will be NEX C2C complied, which will be very easy to link together, all the way from Sensors to Public Clouds. Hopefully we could change the business activities a little bit from the "vendor push" to "market pull" through the free release of NEX C2C to the public. With much more free downloads gathering around NEX C2C, we'll have a much larger potential customer base for our products and solutions. They all need reference platforms for further added value activities, thus creating a big demand from the much easier "market pull", not from the harder "vendor push"!

We always announce many innovative products or solutions in every issue of NEXCOM Express. This time we have some topics in Robotics and Big SCADA, and the Industrial IoT. Both are hot topics nowadays. We also have new Wi-Fi products introduced to make our Industrial & Enterprise Wireless Solution one of the complete Neural System in enabling the worldwide IoT deployments.

We are building the Ground Work for an easier and smoother way to the IoT world. No shortcut on the road ahead! Anybody looking for the "IoT Rush" won't have any luck but loss. Maybe through the free release of NEX C2C, together with all of NEXCOM's "IoT Aware" products & solutions, we might make the "IoT Rush" not merely like the "Gold Rush", but a "Golden Age"!

Clement Lin

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About NEXCOM

Founded in 1992, NEXCOM integrates its capabilities and operates six global businesses, which are Multi-Media Solutions, Mobile Computing Solutions, IoT Automation Solutions, Network and Communication Solutions, Intelligent Digital Security, and Medical and Healthcare Informatics. NEXCOM serves its customers worldwide through its subsidiaries in five major industrial countries. Under the IoT megatrend, NEXCOM expands its offerings with solutions in emerging applications including IoT, robot, connected cars, Industry 4.0, and industrial security. www.nexcom.com

Proactive Defense Against Increasing Cyber Threats with **NEXCOM's IDS and IPS Empowered Firewalls**

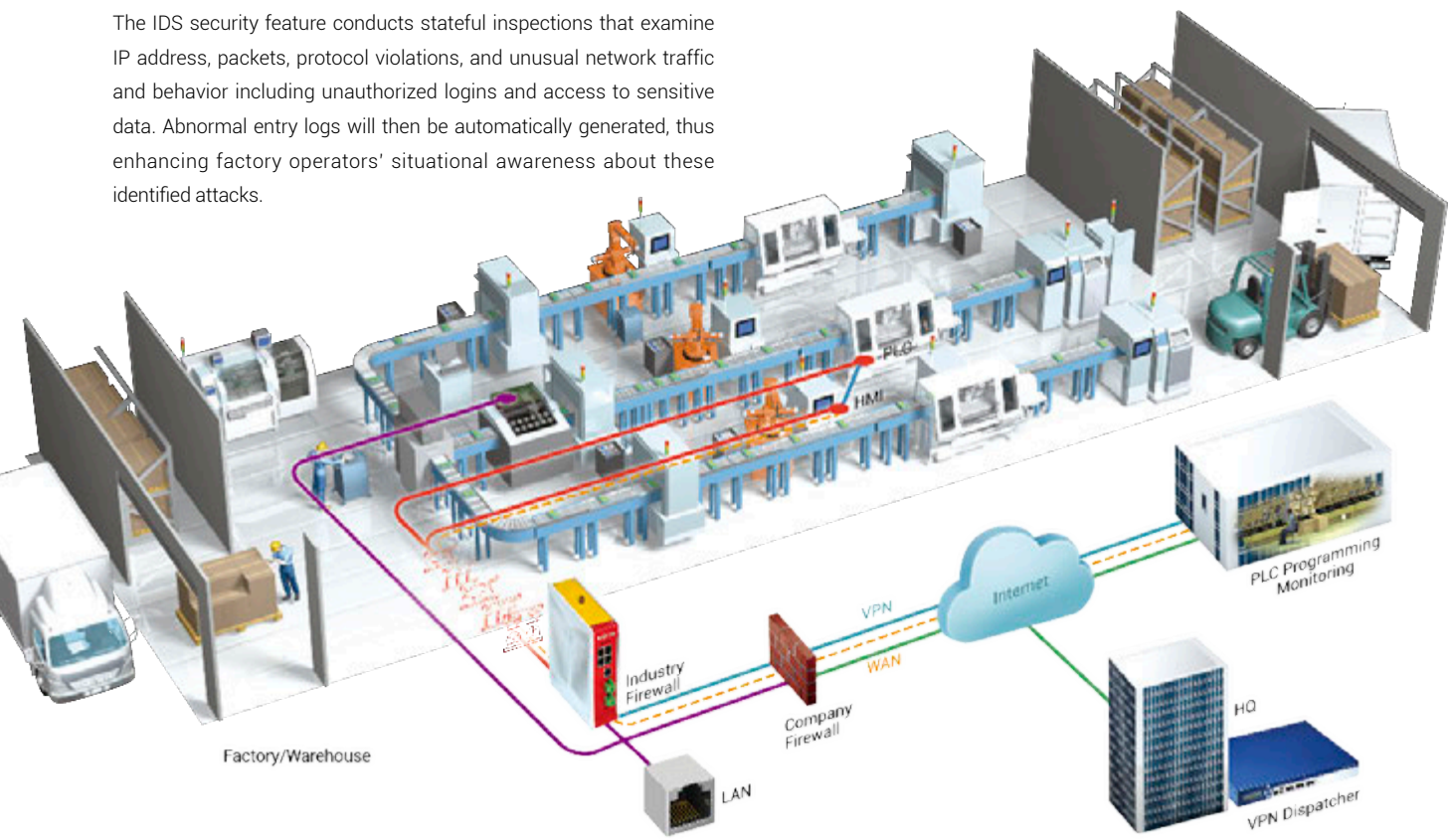
As production facilities and machinery are linked to the internet, the increased cyber threats might result in loss of critical data, system performance degradation, and even system failure. With productivity and business reputation at risk, factory administers require network security solutions with smarter and more effective technologies that detect security gaps and close them reliably. To help construct a secured, reliable network, NEXCOM's latest firewalls offer stateful inspection, detection, and intelligently detain malwares from increasing cyber threats with intrusion detection systems (IDS) and intrusion prevention systems (IPS) features.

Seeing the insufficient security of traditional firewalls based on port and protocol logic, NEXCOM developed its state-of-the-art firewall solutions featuring IDS and IPS to safeguard the networks from the factory floor to the hospital operating room. In addition to examining IP address, NEXCOM's firewalls can not only look into packets searching for threats but also react to attacks by sending alarms and blocking them.

The IDS security feature conducts stateful inspections that examine IP address, packets, protocol violations, and unusual network traffic and behavior including unauthorized logins and access to sensitive data. Abnormal entry logs will then be automatically generated, thus enhancing factory operators' situational awareness about these identified attacks.

The IPS feature, on the other hand, actively responds to these malicious attacks by rejecting packets and blocking their IP connection. In addition, the IPS can be configured to trigger alarm LED and send SMS, email notifications to administrators so that they can take real-time actions. The contamination can be controlled before the damage worsens.

With years of experience in industrial network communication and network security, NEXCOM brings peace of mind and intelligent solutions for at various application needs. Capable of fieldbus protocol support, NEXCOM helps build a secured network in industrial environments. Also, firewalls can be tailor made with encrypted VPN to offer secured remote access to factory networks, or port forwarding function to redirect network traffic to virtual hosts, meeting different layers of security demands from automation, healthcare, and oil and gas processing systems. With rugged and wide temperature design, NEXCOM's firewalls ensure 24/7 threat monitoring and responses.



Bring Intelligence to the Edge

Functionality and compact design are key to edge systems in IoT applications. To build versatile requisite functionality into edge devices, NEXCOM has developed a series of products based on Intel® Pentium® and Celeron® Processors N3000 product family for industrial, retail, enterprise, surveillance applications and more.

Fanless Computer

NISE 106

The NISE 106 is a compact feature-rich fanless computer delivering compute, control, and communication functions all at once. The NISE 106 features up to quad-core computing power, HEVC decoding, three independent display support, high compatibility with the latest and legacy devices, and internet connectivity.

For industrial automation applications, the NISE 106 can serve as an intelligence controller, human machine interface (HMI), and server node. Automatic optical inspection machines can also benefit from the NISE 106's high speed USB 3.0 and GbE LAN interfaces and flexible display output options. The NISE 106 is also equipped with wireless Wi-Fi/LTE connectivity for use as IoT gateways.

4K OPS Media Player

NDiS M335

The NDiS M335 increases viewer engagement with smooth running of 4K multimedia contents and whiteboard applications at airports, enterprises, and schools. With three HDMI outputs, the NDiS M335 can drive 3x1 video wall for flight information display systems (FIDS), and be used in teleconferencing and training sessions for more interactive communications in enterprises.

The NDiS M335 improves startup speed and overall performance with support the latest M.2 SSD interface. While the OPS design simplifies installation, wired and optional wireless network communication enable remote management of content and BIOS for management efficiency.

H.265 NVR

NViS 1410

The H.265 NVR NViS 1410 delivers 4K resolution and extended recording time at a lower total cost. Featuring the latest HEVC technology (or H.265), the NViS 1410 delivers up to twice the compression efficiency compared to the H.264 technology, optimizing bandwidth usage at nearly half of the file size. Strategically installation of high resolution ultra-wide angle cameras is made possible for retailers and SMBs.

The NViS 1410 supports up to 6TB surveillance-grade storage and offers the USB 3.0 and eSATA 3.0 for capacity expansion or footage backup. The mSATA also allows for quick system startup and added reliability.

Single Board Computer

EBC 356

Type 6 COM Express Module

ICES 621

The EBC 356 single board computer meets the growing demands for bigger-screen kiosks. Dedicated to embedded applications, the EBC 356 features triple HDMI outputs and advanced I/O interfaces, making it ideal for places such as museums and shopping malls, that require large-screen updates, demonstrations, and promotions around sales and special events.

The Type 6 COM Express compact module ICES 621 is also available to provide an upgrade path required for existing systems. Through carrier board, the ICES 621 supports a wide variety of interfaces including USB 3.0, SATA 3.0, and DP/HDMI.

Intel® Pentium® and Celeron® Processors N3000 at a Glance

- High Efficiency Video Coding: the built-in Intel® HD Graphics and hardware-accelerated HEVC coding deliver rich visual experiences with ultra HD 4K resolutions and three independent displays.
- Highly integrated SoC: based on 14nm manufacturing technology, the processors integrate up to four computing cores, graphics, and high speed interfaces onto one SoC chip with a low power envelope.
- Hardware-assisted security includes Intel® AES New Instructions, Security Key, Trusted Execution Technology to provide protection for data and systems.

NEXCOM's WDR Cameras Augment Surveillance Accuracy and Coverage in Sydney Car Park

The apartment complex in Sydney, Australia installed NEXCOM's WDR (wide dynamic range) cameras in order to bring residents and drivers an excellent sense of security. Thanks for their abilities to record greater color details from shadows and rugged design, parking management and occasional investigations were simplified as blurred license plate images caused by headlight were avoided while clear video footage helps identify suspicious activity or accidents.

Effective surveillance in low-light parking areas is of paramount importance. Over the years, the complex community had relied on a CCTV system for maintaining car-park security and came to acknowledge its limitations such as poor image quality in dark conditions. The committee turned to EQL, NEXCOM's Australian distributor, and decided to install NEXCOM's WDR cameras to maximize surveillance coverage.

Headlight and high-contrast conditions made it especially challenging for surveillance cameras to capture a usable video footage that identified license plate as they create glare, inconsistent image quality and inaccurate color. To tackle these issues, nine NCo-201-VHR WDR cameras were used to monitor parking spaces, entrances, and narrow areas such as stairwells and corridors where high-contrast or insufficient lighting conditions prevail. With true WDR and P-iris features, these cameras were able to reduce glare with headlight suppression while constant, clear image quality and vibrant color were assured. Image details for drivers or license plate could thusly be clearly captured throughout the field of view. Thanks for these, security staff got correct vehicle color identification for a red sedan instead of seeing it as a burgundy one. Most important of all, they could get accurate vehicle identification, locate vehicles of interest, and conduct the best possible matches in a timely manner.

Also, the active infrared lighting range of NCo-201-VHR was 25 meters, longer than the average 20-meter IR illuminators. Longer range delivered extended surveillance capabilities and the superior IR illuminator automatically adjusted illumination in response to the distance of given object in view so that NCo-201-VHR captured clear license plates 24/7 under shadow conditions.

In addition, these WDR cameras featured a cable management back box design which could enclose cables, provided better protection from tampering, and facilitated easier surface or flush mount installation, thus lowering total cost of ownership and simplifying installation. Most important of all, NCo-201-VHR has IP 67- and IK10-rated housing, adding its indoor and outdoor reliability under different weather conditions.

Thanks to EQL's efforts and NEXCOM's WDR cameras, the car park's new surveillance system provided remarkable advances in coverage and reliability. The security staff could instantaneously view events at different sites, thus increasing operational efficiency and speeding the reaction time whenever events occurred "We are very happy with this solution. NCo-201-VHR is easy to install. NEXCOM provides vibrant colors, better WDR and wider coverage," concludes EQL Engineer.

WDR off

20-meter IR illuminator

WDR on

25-meter IR illuminator

IoT Gateways Secure Productivity through Predictive Maintenance

Predictive maintenance allows manufacturers to address failure risks lying in plants in early phases. To be able to make accurate predictions, manufacturers need IoT gateways to monitor manufacturing equipment, systems, and sensors spread across plants and to collect data from them in order to run big data analysis in the cloud. Gaining access to these field devices plays a pivotal role in securing productivity and smoothing plant operation (see Figure 1).

In this white paper, we examine the challenges of deploying IoT gateways and show how these challenges can be met with the NEXCOM cloud-ready IoT gateway solution NIO 100

Figure 1. Gaining access to field devices plays a pivotal role in securing productivity and smoothing plant operation.

which integrates critical hardware and software components. We explain how the NIO 100 uses the Intel® IoT Gateway platform to offer a universal solution to bridge the last mile gap between the edge and the cloud. We demonstrate how edge servers installed with NEXCOM IoT Cloud Studio simplify implementation of data handling policies, third-party cloud service integration, and gateway management. We then discuss how the security of IoT gateways can be enhanced with pre-integrated Wind River® Intelligent Device Platform and McAfee® Embedded Control.

Need for cloud-ready solutions

Manufacturers require IoT gateways to provide end-to-end connectivity for monitoring and maintaining manufacturing assets. The IoT gateways connect standalone devices in only partially connected industrial networks to the cloud, filling the critical gap between them. To be useful, IoT gateways must be able to extract information from field data and transfer information to the cloud for analytical, archival, or other purposes. To ensure low cost of ownership and maximum utility, IoT gateways must be easy-to-manage and flexibly adapt to diverse industrial environments.

The lack of fully integrated IoT gateway solutions has challenged non-IT professionals without programming background like manufacturers in many ways. Problems ranging from incompatible hardware to a deficit in application features compel manufacturers to spend considerable time and efforts struggling to fit IoT gateways into existing infrastructures.

Build end-to-end connectivity

To build end-to-end connections from the edge to the cloud, IoT gateways must support a wide variety of industrial communication protocols, and wired and wireless connectivity. The NEXCOM cloud-ready IoT gateway solution NIO 100 does this by delivering an open-architecture solution based on the Intel IoT Gateway platform powered by an Intel® Quark™ SoC X1021 and fieldbus expansion capability (see Figure 2).

The Intel Quark SoC series features a rich I/O set including two on-chip Ethernet interfaces, PCI Express, USB 2.0, SD/SDIO/eMMC, SPI, UART, and I2C/GPIO. This I/O assortment enables the NIO 100 to establish wired connection to a wide variety of edge nodes. Coupled with pre-validated NEXCOM industrial fieldbus modules, the NIO 101—a modified version of the NIO 100—ensures interoperability with fieldbus-based industrial networks, allowing data communication using Modbus RTU/TCP, PROFIBUS, PROFINET, DeviceNet, EtherNet/IP, and EtherCAT protocols. For industrial networks incorporating image sensors like cameras, a NIO 100 variant powered by a multi-core processor from the Intel® Atom™ processor E3800 product family delivers the graphics performance for image processing.

As to devices or device networks exchanging data over radio frequency waves, the NIO 100 can include wireless connectivity through expansion options to connect to ZigBee-based wireless sensor networks (WSN), Z-Wave-enabled meters, other machine-to-machine (M2M) networks, and of course the internet via 3.5G/LTE and Wi-Fi.

The multi-protocol support and flexible configuration of the Intel® processor-based NIO 100 IoT gateway enables manufacturers to set up heterogeneous networks comprised of

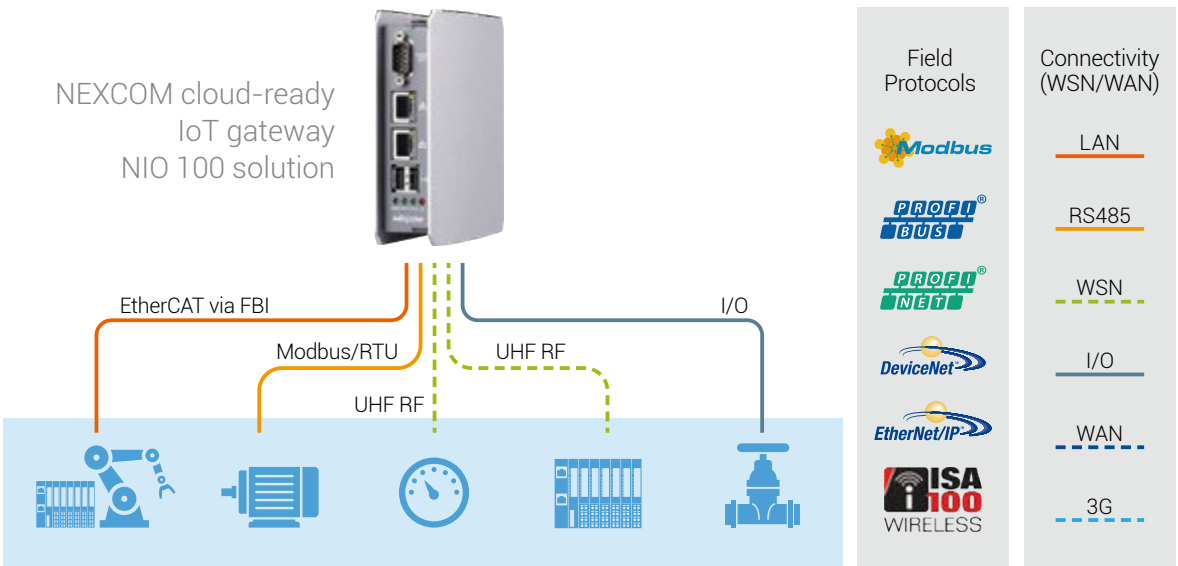


Figure 2. NEXCOM NIO 100 connects standalone devices in only partially connected industrial networks to the cloud, filling the critical gap between them.

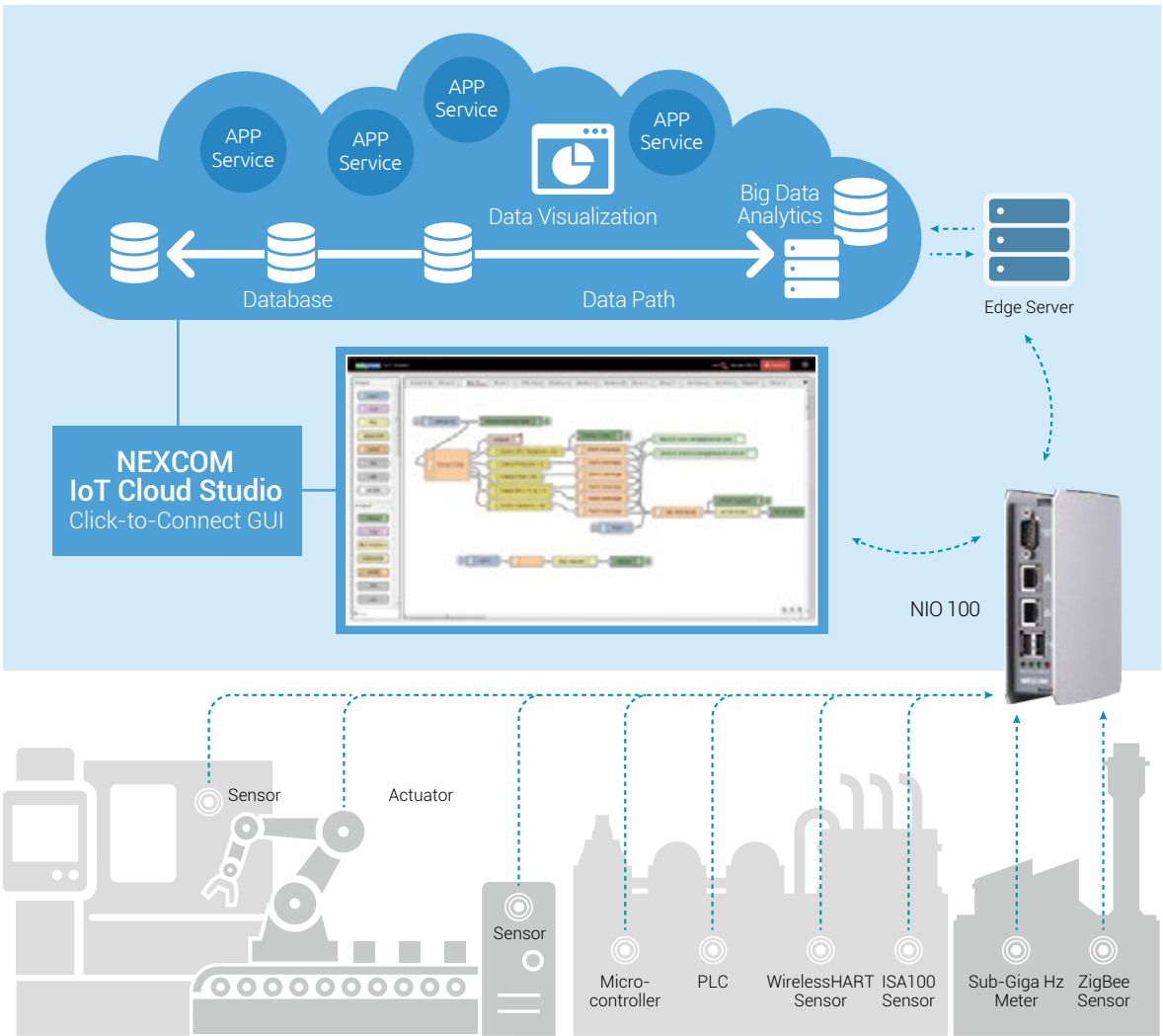


Figure 3. NEXCOM IoT Cloud Studio simplifies network provisioning and third party API integration.

field devices, enterprise intranet, and the internet.

Bring intelligence to the edge

With data channels opened, the volume of machine- and sensor-generated data gushing into IoT gateways can be overwhelming and stress network resources at peak hours of data transfer. Setting data handling policies to extract the necessary information for manufacturers therefore takes on practical importance.

To simplify the implementation of data handling policies, NEXCOM edge server installed with the programming tool NEXCOM IoT Cloud Studio offers a web-based graphics user interface (GUI) for network provisioning. Providing a click-to-connect command and pre-integrated third party application programming interfaces (API), this solution allows manufacturers to create granular policies, defining physical connection interfaces, data collection intervals, network protocols, data parsing rules, and data receiving ends for every device connected to NIO 100 (see Figure 3). For manufacturers with special protocol needs, NEXCOM IoT Cloud Studio includes add-on support for proprietary protocol expansion.

Once NIO 100 IoT gateways are installed and data handling polices are applied, NEXCOM edge server will parse the incoming data into small pieces, extract the pieces that matter to manufacturers, convert the pieces into pre-defined formats so that they can be recognized by receiving ends, and then send the pieces to private enterprise clouds, IBM Bluemix, or Axeda Machine Cloud Service.

In addition, NEXCOM edge server can perform preliminary data analysis on the edge, as well as event management. Since NEXCOM edge server can make sense of sensor readings — for instance a pH value — it can decide whether

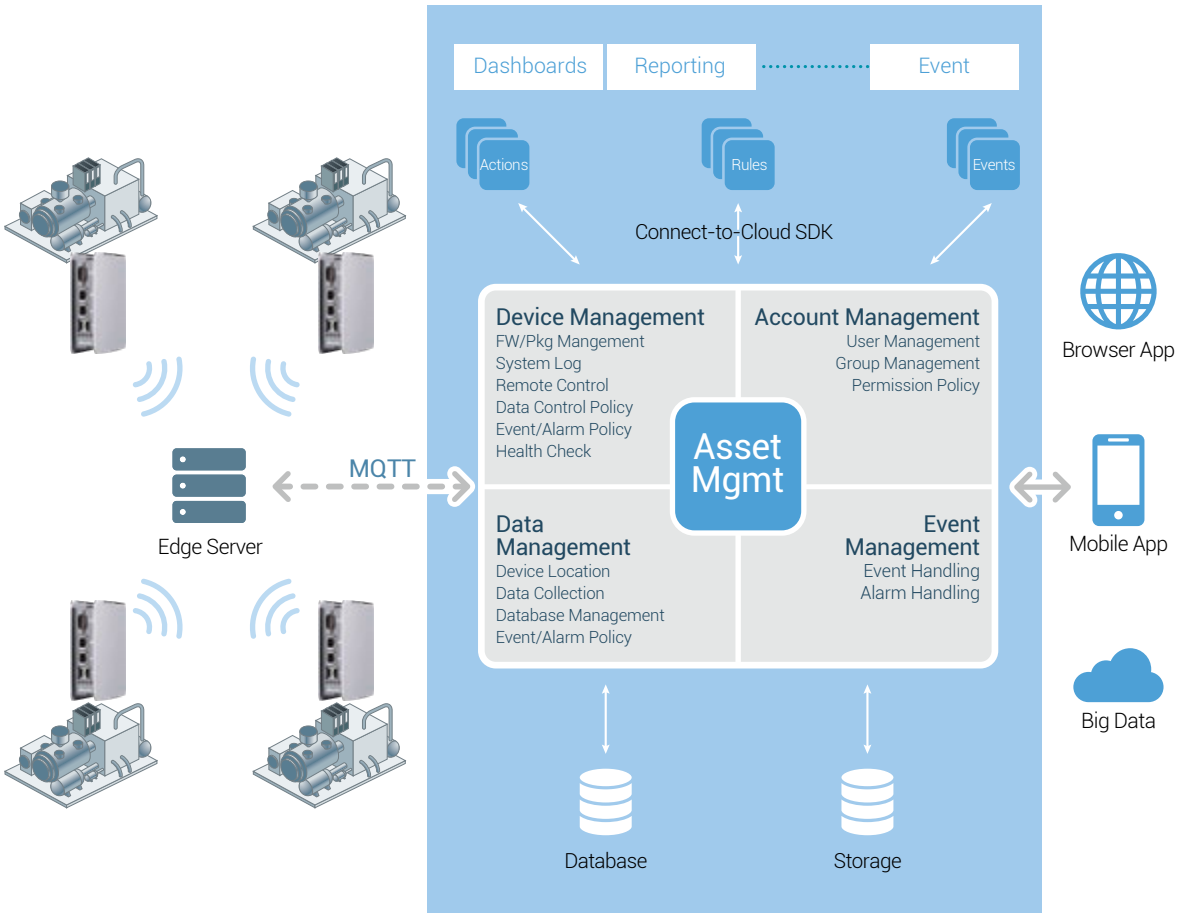


Figure 4. NEXCOM cloud-ready IoT gateway solution NIO 100 allows data-driven maintenance.

a response is required and incorporate cloud application services to take actions like issuing alert messages via short message services (SMS) or emails. NEXCOM edge server can also help distribute over-the-air update packages if IoT gateways need updating.

Data-driven maintenance

Taking compressed air systems, for example, these systems are widely used in production processes across industries and require custom engineering to meet individual client's needs. With NEXCOM edge server, it takes system manufacturers only a few clicks to put NIO 100-enabled systems under remote monitoring even when these systems are installed on remote sites (see Figure 4).

If a system's readings or measurements fall out of the expected ranges, system manufacturers will be warned and can run a thorough inspection on the NIO 100-enabled system from the office. Based on the inspection results, manufacturers can either keep a closer watch on the system by shortening data collection intervals using NEXCOM edge server or, if necessary, schedule a maintenance visit with the client to prevent potential system failures from affecting the client's productivity. Furthermore, the collected data can be used as the base for further system design improvement and new extended warranty programs.

Secure data from the bottom up

With productivity at stake, it is important to keep IoT gateways up and running as well as protected from unauthorized access. The NIO 100 based on the Intel IoT Gateway platform and Intel Quark SoC X1021 supports error correcting code (ECC) to avoid potential gateway crashes and changes in data, increasing data integrity. The NIO 100 also benefits from the extended temperature support of the Intel Quark SoC X1021 by faithfully gathering and transmitting data at temperatures from -20 to 70 degree Celsius.

With pre-integrated Wind River Intelligent Device Platform XT and McAfee Embedded Control—both are key parts of the Intel® IoT Gateway platform—the NIO 100 includes Secure Boot. This security feature provides protection from system boot to operations

and allows only trusted software to run while stopping applications that have been tampered with.

In addition, the included McAfee Embedded Control is an endpoint protection software which uses whitelisting to block malware from execution and installation on the NIO 100. Given the fact that IoT gateways like the NIO 100 are purpose-built appliances that execute only a limited set of applications, the whitelisting approach is more effective at protecting against zero-day attacks than traditional anti-virus software. McAfee Embedded Control allows only policy-based changes that are expected and authorized. Also, the built-in OpenSSL engine can encrypt and decrypt data to avoid in-transit data manipulation.

Conclusion

Designed to simplify and accelerate the implementation of the IoT gateways, the NIO 100 based on the Intel IoT Gateway platform and Intel Quark SoC X1021 lifts barriers to data communication, seamlessly and securely integrating industrial networks with business intranet and the cloud (see Figure 5). Not only does the NIO 100 provide the last mile connection required of the IoT gateways, but the NIO 100 also helps manufacturers take advantage of available cloud applications, shortening deployment time from months to within an hour. As a result, manufacturers can nearly immediately realize the benefits of big data analysis in predictive maintenance, harvesting many benefits in terms of smooth production, higher productivity, financial savings, and more efficient energy use.

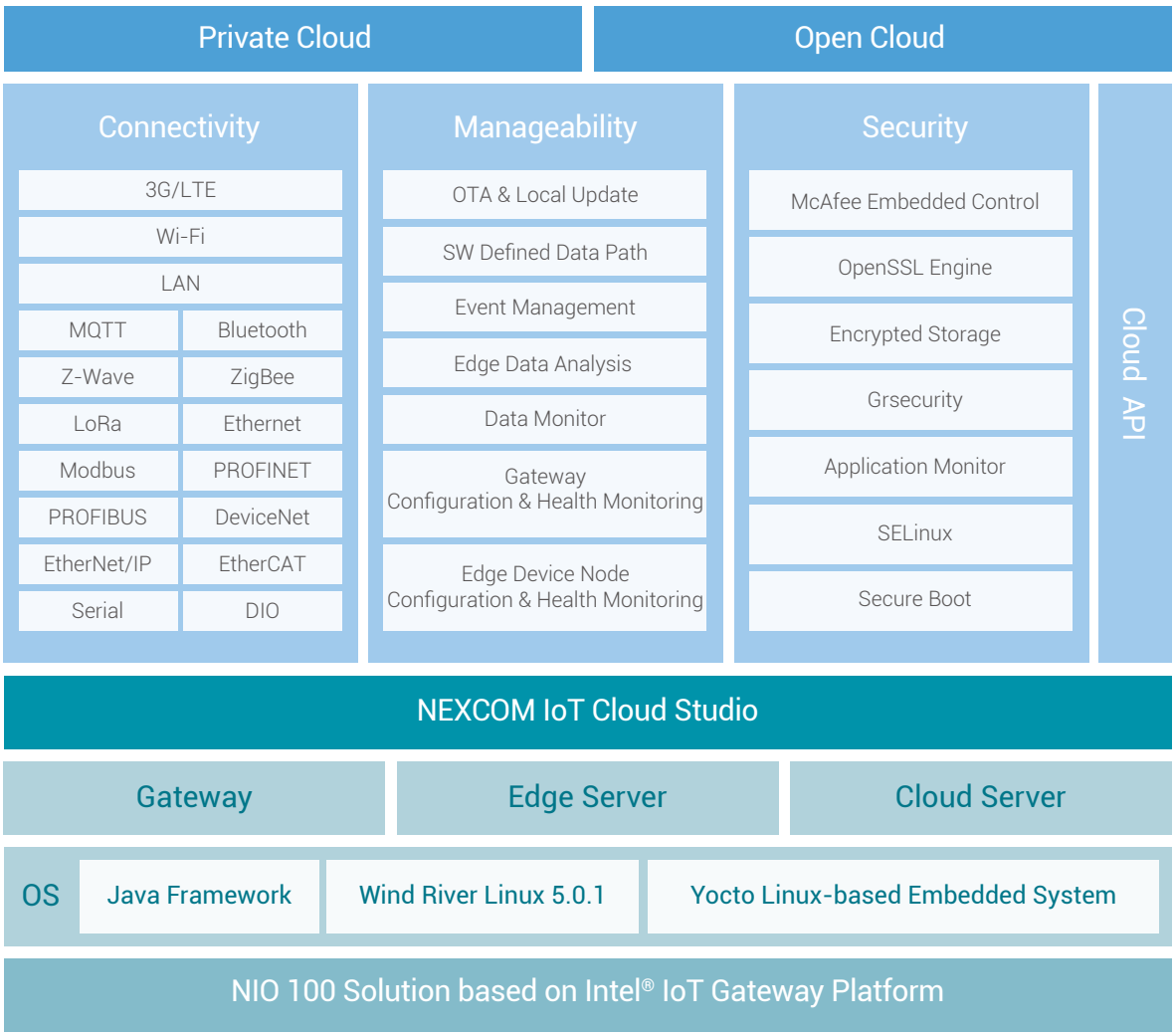


Figure 5. NEXCOM NIO 100 integrates critical hardware and software components to meet the challenges of deploying IoT gateways.

Increase Transportation Security with Video-based Intelligence

Commonly used in the transport sector, computer vision has been used to produce video evidence or render visual assistance on buses, commercial fleets, and patrol vehicles. For concerns over transportation security, computer vision can have more active uses to allow precautionary measures to be imposed or immediate response taken on the spot. To this end, computer vision is increasingly inseparable from video analysis.

In this article,

Figure 4. Temporary placement of in-vehicle computers on scope trucks enables law enforcement agencies to strategically complement surveillance cameras installed along borders.

we show how NEXCOM's In-vehicle Computers VTC 7230 and 7240 leverage the 5th generation Intel® Core™ processors to generate video-based security intelligence. The article looks at how the VTCs provide a flexible approach to not only delivering video analysis but also providing consistent performance regardless of evolving analysis techniques. The article also gives consideration to the size and power design of the VTCs, and illustrates how these design enhancements give users mobility to adapt to highly dynamic mobile environments. The article moves on to potential security risks and introduces security tools to create a safe operating environment for video analysis to run.

The Need for Intelligence

Security is a common concern shared among the overall transport sector and law enforcement agencies such as border patrols. Buses and metro transit systems are equipped with mobile surveillance systems to clarify liabilities after a criminal offense or incident takes place. Truck drivers count on cameras providing a view of blind spots for the purpose of gaining situation awareness. Border patrols also deploy camera-equipped trucks to help monitor borders.

However, these systems often compel drivers to divert their eyes from roads to view video, posing road risks from distracted driving. A new paradigm is needed where mobile computing systems can automatically convert video images into actionable information and alert drivers only when necessary (Figure 1).

Turn Images into Intelligence

The new systems must aggregate multiple video streams and data feeds from video cameras and in-vehicle sensors, and perform video analysis based on existing, newly emerged, and yet to be discovered behavioral patterns. Bringing these server-like capabilities onto a mobile system is taxing. NEXCOM in-vehicle computers VTC 7230 and 7240 based on Intel® Core™ i3-5010U and i7-5650U processors respectively can fulfill the requirements by providing outstanding video analytics performance for detecting, identifying, and tracking suspicious activities and objects shown in video images.

These Intel® Core™ processors include the Intel® Advanced Vector Extensions 2 (Intel® AVX2) instruction set, an upgraded vector-processing technology from Intel® Advanced Vector Extensions (Intel® AVX). Intel® AVX 2.0 extends most of integer instructions to 256 bits, doubles the number of floating-point operations per second (FLOPS) per clock cycle, and adds instructions for floating-point fused multiply-add (FMA), vector gather, shift, and permute operations. These improvements enable higher integer, fixed- and floating-point arithmetic throughput to allow for more vector processing operations (Figure 2). The processors also support graphics programmability features like OpenCL 2.0 so developers can utilize the integrated graphics processing units (GPUs) to further boost video analysis performance.

In-vehicle computers like NEXCOM VTCs benefit from using these processors, achieving higher precision and speed in signal and image processing. Take for example unattended package detection. On transit systems, an unattended package is typically regarded as suspicious and a potential security threat. To enhance transport safety, NEXCOM VTCs can apply image sharpening, image segmentation, and object

Figure 1. A new paradigm is needed where video images can be converted into actionable information.

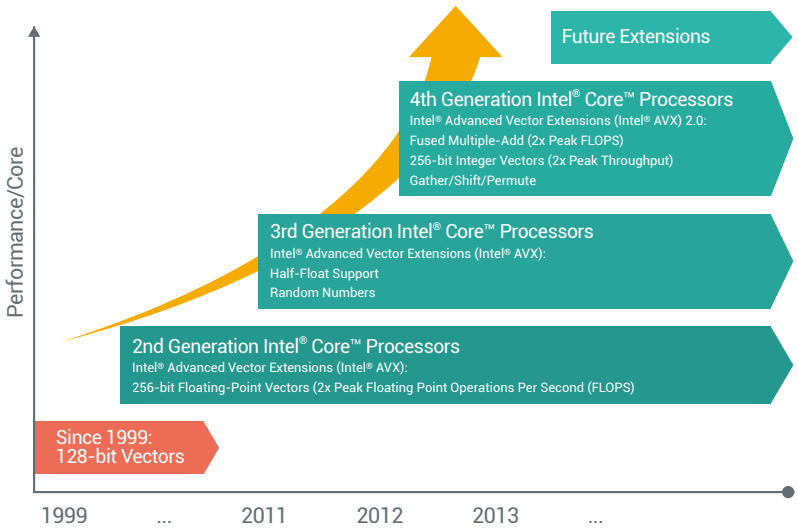


Figure 2. Intel® Core™ processors deliver an upgraded vector-processing technology for signal and image processing.

extraction algorithms—compute-intensive workloads usually handled by servers—to identify a static object on real-time surveillance footage.

On discovering a possibly abandoned object, the VTC 7230 and 7240 can send alarm signals to metro conductors and drivers. If necessary, NEXCOM VTCs can report the incident to metro control centers and metro police, transferring the metro train's GPS location, video footage, and other details over cellular or wireless broadband networks (Figure 3).

offered by Intel Core processors also enable in-vehicle computers to ease workloads for commercial drivers. The VTC 7230 and 7240 integrate a wide variety of interfaces including controller area network (CAN) and on-board diagnostics-II (OBD-II) protocols to connect to in-vehicle electronic systems. By consolidating information from multiple sources such as dashboard cameras, proximity radars, and tank level gauges, in-vehicle computers can evaluate a traffic situation ahead, calculate minimum stopping distance, and suggest drivers slow down to a safe speed to obviate the need to slam on the brake. Taking such preventive precautions can avoid a potential rollover crash and spill, increasing road safety, and even protecting the environment when goods in transit are flammable materials or hazardous chemicals.

In addition to providing a second set of eyes, in-vehicle computers can assist in fighting illegal border crossing. Temporary placement of in-vehicle computers on scope trucks enables law enforcement agencies to strategically complement surveillance cameras installed along borders. Tracking multiple suspect objects in motion and identifying a wanted suspect are some of practical uses of the VTC 7230 and 7240. They can also be used to apply analytics to thermal images, bringing potential incidents to the eyes of border patrol agents. The Intel® HD Graphics 5500 and 6000 built into these Intel Core processors enable NEXCOM VTCs to show a variety of information simultaneously on as many as three displays with a maximum resolution of 4K (Figure 4).

As opposed to platforms using proprietary video analytics integrated circuits, the Intel processor-based NEXCOM VTCs deliver

Reinforce Mobile Task Forces

The signal and image processing capabilities

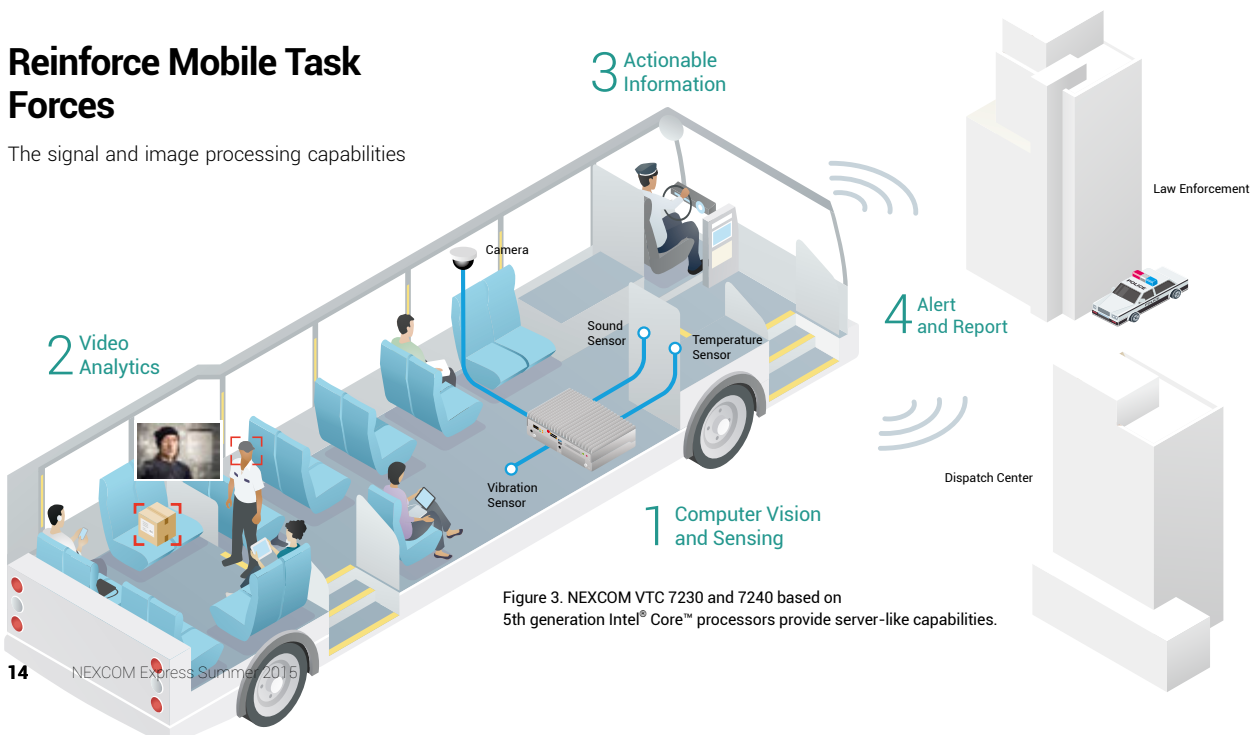


Figure 3. NEXCOM VTC 7230 and 7240 based on 5th generation Intel® Core™ processors provide server-like capabilities.

excellent compute and visual performance, and most important of all the flexibility to run diverse algorithms for imaging analysis needed for specific circumstances and needs. Moreover, Intel Core processors manufactured by the 14nm production technology have a thermal envelope of as low as ten watts and support configurable thermal design power (TDP). As a result, the VTC 7230 and 7240 can carry out compute-intensive video analysis using Intel AVX2 and sidestep processors' TDP limits to assure optimal performance. The DI and DO channels in the VTC 7230 and 7240 can even operate when in-vehicle computers are in a power-off state and wake NEXCOM VTCs to tasks when devices sense vibrations, smoke, or other signals.

Keep Intelligence in Safe Hands

Due to the role played by the VTC 7230 and 7240, securing in-vehicle computers holds great significance. NEXCOM VTCs are armed with Intel® Platform Protection Technology, Intel® Data Protection Technology (Intel® DPT), and Intel® Identify Protection Technology (Intel® IPT) to address security challenges from system boot to application execution.

Intel Platform Protection Technology consists of Intel® BIOS Guard, Intel® Boot Guard, Intel® OS Guard, and Intel® Trusted Execution Technology (Intel® TXT), to help verify the integrity of basic input/output system (BIOS), operating systems (OS), and software. This verification is important since many security tools only offer OS-level protection and may leave in-vehicle computers exposed to attacks aimed at firmware or the OS kernel. Malware targeting a BIOS can persist after a system is rebooted or hard drive wiped, bypassing security mechanisms, and installing an invisible backdoor on a system. With Intel Platform Protection Technology, the BIOS is protected against unauthorized modification. If altered, the BIOS can be restored to a known good state while hardware-based authentication verifies a known and trusted BIOS is used for system boot.

Intel DPT includes new Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI). Intel AES-NI allows faster data encryption and decryption for securing data and helping protect confidential intelligence and surveillance footage stored in the VTC 7230 and 7240 from loss. Moreover, Intel AES-NI uses hardware-based acceleration to achieve security enhancement without performance penalties.

Figure 5. Due to information sensitivity, layers of security protection are provided from system boot to application execution.

In respect of information sensitivity, Intel IPT can add an additional security layer to restrict information access to authorized in-vehicle computers only. Using a combination of private keys, one-time password (OTP) tokens, and public key infrastructure (PKI) certificates, it is possible to examine the authentication of an in-vehicle computer before connecting it to a virtual private network (VPN) to retrieve intelligence stored in remote databases or servers (Figure 5).

Conclusion

Turning captured images into intelligence is an important prerequisite for a response to an incident. The VTC 7230 and 7240 relieve the need for security staff to constantly view surveillance video by enabling excellent performance of video analytics. Using these analytics to identify potential dangers in surroundings, can produce alerts to mobile task forces and provide information they can act on. Instead of documenting activities, NEXCOM VTCs are an active part of a joint mobile task force, searching for potential threats to public transport systems, catching ticket evaders and bus hooligans, and thwarting border trespassers. As more and more video analysis techniques and applications become available, NEXCOM's solutions provide high flexibility, allowing immediate implementation of the latest technology, making it an effective tool for managing and reducing security risks today and in the future.

Upcoming New Products
BIG SCADA Solution

The Germany, US, Japan, and China have launched initiatives to lead industrial sectors toward smarter manufacturing. Echoing Industry 4.0, NEXCOM's IoT automation solution based on PC-based architecture transforms traditional factories into digital ones, giving rise to smart factories.

Data Concentrator

Existing factories built with equipment on different proprietary fieldbus protocols typically face the challenges of multi-protocol integration when undergoing a revamp or upgrade. To meet the demands of communication integration and data processing, NEXCOM has released the fieldbus concentrator solution pack consisting of the NISE 300 and three remote I/O modules running on PROFIBUS, PROFINET, and EtherNet/IP protocols. The NISE 300 offers 6 slots of mini-PCIe interface supporting PROFINET, PROFIBUS, EtherNet/IP, DeviceNet, EtherCAT, CANopen and Modbus/TCP protocols to integrate the various control systems in a factory, such as SIEMENS PAC, Rockwell Automation PAC, BECKHOFF PAC, Schneider PLC and field devices. LAN ports, COM ports, Wi-Fi and 3G modules are also available for flexible communication options. Powered by Intel®

Core™ i5-4402 processor, the NISE 300 can perform complex gateway protocol conversion without the need of an OPC server. For low-duty-cycle data processing and gateway applications, the NISE 301 equips Intel® Atom™ processor E3845 and features two slots of mini-PCIe interface. The NISE 300 and NISE 301 are the keys to accelerate seamless integration of OT and IT for Industry 4.0 applications in oil and gas, food and beverage, and semiconductor industries.

Process Control

PC-based solutions can perform high performance SoftPLC control based on the IEC 61131-3 standard, and enable data analysis, prediction and value-added services. Take for example, the revamping of a water treatment plant that uses PC-based automation system to enhance the production rate of clean water. Due to the high processing power of PC-based computing, the PC-based automation system

can process massive data from a large number of sensors, as well as closed-loop PID control in field equipment. The PC-based automation system in the water treatment plant not only provides a cost-effective method to plant control, but also enables compatibility with existing devices. Compared to traditional PLCs, the cost of upgrading the PLC to accommodate more sensors would be a huge expense and cumbersome process. The solution pack for water treatment demonstrates the powerful PC-based control delivered by the NIFE 200 with VIPA remote I/O which captures DI, DO, AI and AO signals from a variety of sensors and field equipment.

NEXCOM's NIFE 200 equips CODESYS Control RTE, CODESYS TargetVisu, Hilscher fieldbus card and VIPA remote I/Os for complete SoftPLC functionality. With CODESYS Control RTE, NIFE 200 follows the IEC 61131-3 standard and supports mainstream fieldbus (Hilscher card) and industrial Ethernet protocols, allowing engineers to program PLCs with traditional ladder and functional block language. Based on Intel® Celeron® processor J1900 (quad-core, 2GHz), NIFE 200 offers support for more than 25,000 I/O nodes, and features SSD for reliable storage of historical data, event logs and alarm records. For local HMI applications, NIFE 200 can be optionally installed with CODESYS TargetVisu for HMI capability, while extending the display through NEXCOM's IPPD series of panel PCs (18" to 21", DVI-I interface). NIFE 200 is an ideal solution for non-critical process control, in such as water treatment applications or food and beverage and pulp and paper industries.

Industry 4.0-ready HMI

In the era of Industry 4.0, remote maintenance of unmanned factories has become the main foundation for governing smart machines in factories, driving demands for HMIs with remote-browsing features to facilitate machine monitoring. The HMI solution pack demonstrates the remote capabilities of the eTop product line and the HMI software—EXOR JMobile Runtime and Studio. NEXCOM's IPPC and APPC series of panel PCs come in sizes from 8" to 21" and support EXOR JMobile Runtime for both local and web-based HMI with high resolution touch screen. In addition to supporting user-friendly interaction, JMobile Studio provides a library of high quality images to easily develop intuitive and robust HMI interface, as well as support for mainstream PLC drivers. NEXCOM's APPC and IPPC series offer advanced and flexible HMI solutions for intuitive operation for all factories and industries.

New Products Highlight fo Big SCADA Solutions

1 NISE 300

High Performance Fanless Industrial Automation System

- 4th generation Intel® Core™ i5-4402E processor (BGA)
- 1 x HDMI & 1 x DVI-I display output for three independent displays
- 6 x mini-PCIe expansions with support for mSATA/Wi-Fi/3G functions
- 2 x Intel GbE LAN Ports and 2 x COM (2 x RS232/422/485 auto)
- Support CODESYS Control RTE Real-time SoftPLC & CODESYS SoftMotion for PC-based controllers

NISE 300

2 NISE 301

Intel® Atom™ Quad Core E3845 Fanless System

- Onboard quad-core Intel® Atom™ processor E3845, 1.91GHz
- 2 x mini-PCIe sockets, 2 x RS232/422/485 auto
- 3 x USB 2.0, 1 x CFast (SATA 2.0), 1 x 2.5" HDD (SATA 2.0)
- 1 x VGA, 1 x DVI-D, and 1 x external RTC battery holder
- DC Input 24V ± 20%

NISE 301

Robotic Solution

Man-machine collaboration is one of the key elements of Industry 4.0. As an Industry 4.0 innovator, NEXCOM has developed robotic solutions featuring EtherCAT master communication, collaborative robotic control, and cloud HMI. As opposed to traditional robots locked up in cells, NEXCOM's robotic solutions are smaller, lighter, and more collaborative with humans.

EtherCAT Motion

NET series of EtherCAT controllers offers a complete EtherCAT master platform with motion controls. NET EtherCAT controller can control up to 32 EtherCAT motors, performing advanced motion control function such as fly-cutting. In the solution pack simulating paper cutting scenarios, a NET 100 compact EtherCAT controller controls four different brands of EtherCAT motors over NEXCOM's EtherCAT master and nexECM. Two motors on top are synchronized to control a conveyor, and the third motor controlling a cutting knife opportunely follows the first two so paper can be cut in a straight line. The openness of EtherCAT and nexECM motion control is key to the accurate control of the motors. Similarly, nexECM control can be applied to other applications such as liquid injection where the injector must follow conveyor during the injection period.

Collaborative Robotic Control

A robot control system can be complicated as it involves calculations of sensors, motor control, and movement algorithms. NEXCOM provides open EtherCAT platforms that flexibly connect I/Os, sensors and motor drives in a distributed architecture. The high-performance NET 3600E EtherCAT controller

can control industrial robots. In the solution pack, a NET3600E drives six Omron EtherCAT motors to control a 6-joint articulated robot. 3D robot simulation is provided to show a robot arm movement, and collaborative operation is also added so that the robot can switch to emergency operation mode if the movements of the robot are affected. The robotic control can also be applied to other industrial robot applications, like SCARA and Delta robots.

Cloud-ready Motion

PC-based automation is becoming prevalent for its superior performance and growing stability. Adding cloud and IoT technologies into PC-based controllers makes them even more versatile. The 15.6" IPPC 1632P panel PC is equipped with CODESYS SoftMotion and EXOR JMobile Runtime Server to serve as a stand-alone controller. In the solution pack, it simulates the operation of a pasting machine in factories. The IPPC 1632P provides rich support for multiple fieldbus protocols and different PLC drivers, advanced HMI functionalities, and web-based monitoring, allowing users to develop value-added functions that are hard to achieve through traditional PLC controllers.

New Product Highlights for Machine Vision

3 ROKA Series

Machine Vision for Industrial Applications

NEXCOM ROKA series gives clear sight to machine automation systems, enabling production to pick up the pace and quality inspection procedures to be held to high standards. Aimed at machine vision for industrial applications, NEXCOM ROKA series encompasses a selection of cameras, lenses, and lights to capture quality images for use in robot guidance, object recognition, and defect inspection applications.

To fulfill different speed and precision requirements of automation processes, NEXCOM ROKA cameras offer three combinations of resolutions and frame rates. The 0.3-megapixel camera ROKA 30 can generate one hundred images per second, offering quick prompt guidance on object alignment for repetitivepallet stacking and dangerous heavy lifting.


ROKA Series

The ROKA 130 has a higher resolution of 1.3 megapixel and 60 fps to perform profile inspection on metal parts and to collaborate with robots for material sorting and product packaging. Meanwhile, the ROKA 500 featuring 5-megapixel capability and 15 fps support is intended for high precision inspection. With manufactured parts shrinking in size and demand for precision growing stringent, the ROKA 500 can find defects with tolerance measured in hundredths of millimeters, capturing subtle nuances that are hardly seen with human eyes.

To provide optimum angle of coverage for machine vision, the ROKA series can adapt to the dimension of an inspection area with lenses with a field of view of 37.2, 24.7, and 18 degrees. Also available are a LED bar array light, backlight, and ring light to optimize illumination conditions for enhanced image capture quality.

NEXCOM ROKA machine vision series belongs to NEXCOM NexMotion machine automation solution family which consists of motion control platform, machine vision, SoftMotion programming tool, servo motors and I/O modules to build industrial robots, distributed control systems, general motion control systems, and CNC machines.

- Resolutions: 752 x 480 / 1280 x 960 / 2592 x 1944 with up to 100 FPS
- GigE interface
- Binning and ROI
- Global shutter
- Trigger input and I/Os, Digital I/O strobe
- PoE and direct power option
- Compatible to C and CS mount lensesGlobal shutter
- Trigger input and I/Os, Digital I/O strobe
- PoE and direct power option
- Compatible to C and CS mount lenses

4 NISE 50

Fanless Box PC Powered by Intel® Atom™ Processor E3826 for Industrial Applications

Powered by the latest generation Intel® Atom™ processor E3826 (formerly codenamed "Bay Trail-I"), NISE 50 is an intelligent PC-based controller and IoT gateway for factory automation. With support up to 2GB of onboard DDR3L memory, NISE 50 supports operating temperatures from -5°C to 55°C with a DC input of 12V. NISE 50 features high integration ability, supporting optional mini-PCIe module and 3 x COM ports for establishing reliable connection with devices in factory automation applications, optional Wi-Fi, 3.5G/4G LTE module for IoT applications, and optional GPIO and RS232 for communication applications. NISE 50 is the ideal factory automation controller and gateway for M2M intelligent systems.

- Onboard dual-core Intel® Atom™ processor E3826, 1.46GHz
- 1 x HDMI Display
- 1 x Intel I120AT LAN ports with WoL, Teaming and PXE support
- 4 x USB 2.0 and 3 x RS232, each port only has Tx/Rx/GND
- 3 x Optional interfaces for optional Wi-Fi/3.5G/LTE modules
- Support -5°C to 55°C extended operating temperature range
- Support 12V DC input

NISE 50

NISE 106 Rear View

NISE 106 Front View

For industrial control applications, the NISE 106 with dual- or core computing power can serve as an intelligence controller, human machine interface (HMI) and server node. Automatic optical inspection machine can benefit from the NISE 106's hardware-accelerated high efficiency video coding (HEVC) support and high speed USB 3.0 and GbE LAN interfaces. Also, the small-sized fanless computer provides highly flexible connections with three display interfaces: DVI-D, HDMI, and DisplayPort. Legacy devices using serial communication are supported with four independent COM ports. Facing the need for IoT gateways, the NISE 106 is also equipped with wireless Wi-Fi/3.5G/LTE connectivity to allow for network communication. Moreover, NISE 106 featuring versatile functionality is sometimes used as interactive kiosks, delivering a sensational feast to the eyes or delivering information and services.

- Onboard quad-core Intel® Pentium® processor N3700, 1.6GHz
- 3 x Independent displays with 1 x HDMI display + 1 x DVI-D + 1 x DP port
- 2 x Intel I120AT LAN ports with WoL, Teaming and PXE support
- 4 x USB 3.0, 4 x COM ports with RS232, 2 x COM port with RS422/485
- 1 x Optional interface for optional Wi-Fi/3.5G/LTE modules
- Support -5°C to 55°C extended operating temperature range
- Support 9V to 30V DC input

5 NISE 106

Packs Compute, Media, and Connectivity into One Compact Fanless Computer

NEXCOM NISE 106 is a compact yet feature-rich fanless computer, aimed to satisfy user's need for compute, multimedia, connectivity, and networking functions all at once. Supporting Intel® Pentium® and Celeron® Processors N3000 product family (codename Braswell), the NISE 106 offers excellent value for cost with up to quad-core computing power, HEVC decoding with three display support, high compatibility with both the latest and legacy peripherals, and internet connectivity. The fanless computer NISE 106 can help ensure product quality through vision inspection and factory operation monitoring.

6 NIO 100

Certified Intel® IoT Gateway Based on Intel® Quark X1021 Processor

NIO 100 is an industrial IoT (Internet of Things) gateway designed for cloud-based applications in the Industry 4.0 era. NIO 100 can collect information and data from sensors in wired or wireless networks, and transmit the data to the cloud over multiple diverse WAN (Wide Area Network) connections such as 3G, Wi-Fi or Ethernet for big data analysis. Furthermore, NIO 100 can be equipped with customized interfaces and customized fieldbus protocol support to interface with different industrial sensors and devices. To meet environmental challenges in industrial applications, NIO 100 features a 9V to 36V wide-range DC power input and comes with dual LAN and multiple I/Os.

- Support both Wind River® Moon Island solution and Yocto Board Support Package and built-in Secure Boot function
- Support Modbus TCP/IP or RTU
- Support 9V to 36V wide range DC input through Phoenix Contact terminal block
- Wide operating temperature: -20°C to 70°C
- 2 x Fast Ethernet, 2 x USB 2.0 Type A, 1 x selectable RS232/422/485, 1 x mini-PCIe slot for Wi-Fi or 3G radio module

NIO 100

7 NP500

Mid-level Rugged Smartphone

NP500 is a rugged, high-end 4G smartphone designed specifically for outdoors and in challenging environments. NP500 runs on Android 4.4 with a 1.2GHz quad-core processor Qualcomm Snapdragon 410, and comes equipped with 1GB of RAM, 8GB of internal storage, 5-inch multi-point capacitive touch screen with 720p HD resolution. NP500 has an 8 megapixel autofocus camera (front: 200 million pixels), equipped with a LED flash. It supports a large number of sensors including GPS, gravity, magnetic, proximity and light sensors. In addition, it supports Wi-Fi 802.11b/g/n, Bluetooth 4.0 and GPRS/3G/LTE communication. Measuring at 147x76x12.5mm and weighing at 220g, NP500 packs numerous features in a thin profile.

NP500

- Qualcomm Snapdragon 410 MSM8916 quad-core 1.2GHz, Android 4.4, 1GB DDR3, 8GB flash memory
- Wi-Fi/3G/LTE/BT GPS RF communication
- 1 x Micro USB OTG, 2 x micro SIM card, 1 x Micro SD
- Onboard gravity/magnetic /proximity/light sensors
- Front camera: 2M, rear camera: 8.0M (AF), LED flash light
- Support IP67 and 4 feet drop resistance

8 NP106

10.1" IP68-rated Mobile Tablet

NP106

The NP106 mobile tablet PC features a 10.1-inch capacitive touch screen, quad-core processor, and a large 7000mA lithium battery to support a full day's work. Housed in a compact, stainless steel enclosure, this IP68-rated mobile tablet offers industrial-grade reliability for sturdy operation. Based on Android 4.4 operating system, NP106 is easy to operate and supports a variety of software applications. In addition, NP106 comes fully integrated with a modular RFID reader, NFC, MSR and camera, as well as 3G, Wi-Fi, GPS and Bluetooth support. NP106 is a versatile and portable tablet suitable for fixed service applications, inventory management and field service.

- MTK8382 Cortex-A7 @ 1.3GHz, quad-core, Android 4.4, 1GB DDR3, 16GB flash
- Wi-Fi/BT/3G/GPS RF communication
- 1 x Micro SIM card, 1 x PSAM, 1 x Micro SD, 1 x Micro USB OTG
- Onboard gravity, 3D accelerator, magnetic, proximity and gyroscope sensors
- Front camera: 2M, rear camera: 8.0M (AF), LED flash light
- Support NFC, IC card and MSR

9 IWF 300

EZ Mesh Industrial IP30 AP, Dual RF, Dual Band, 1 x 802.11ac + 1 x 802.11a/b/g/n 2x2 MIMO

IWF 300 is a QCA9344-based industrial-grade AP/CPE/Router/EZ Mesh AP designed with IEEE 802.11a/b/g/n 2x2 MIMO and IEEE 802.11ac/an/a 2x2 MIMO technology. IWF 300 can deliver a data rate of up to 876Mbps. In addition, the RF (Radio Frequency) can support an output power of up to 27dBm for wider coverage range and wider service range. IWF 300 can also serve as a cost-effective solution for building Wi-Fi mesh networks with roaming speeds of up to 60km/h.

- Support up to 27dBm high RF power
- AP/Client/WDS/EZ Mesh modes
- 12V DC input
- Wide operating temperature range of -40°C to 80°C
- 1 x WAN and 4 x LAN GbE ports

IWF 300

10 IWF 503

IP55 Outdoor AP/CPE, Single RF, 802.11ac/an/a 3x3 MIMO

IWF 503 is a cost-effective, IP55-rated outdoor AP/CPE router equipped with IEEE 802.11ac/an/a 3x3 MIMO technology and high RF output power. IWF 503 can deliver a data rate of up to 1.3Gbps and is available with two SKUs, one with internal patch antenna (IWF 503) and the other with external antenna (IWF 503D), both of which provide high gain outputs for long distance transmissions.

- Up to 27dBm High RF power
- AP/Client Bridge/AP Router/Client Router/WDS mode
- 24Vdc PoE input
- Wide temperature: -35°C to 75°C
- 1 WAN+1 LAN Ports GbE Ethernet RJ45

IWF 503

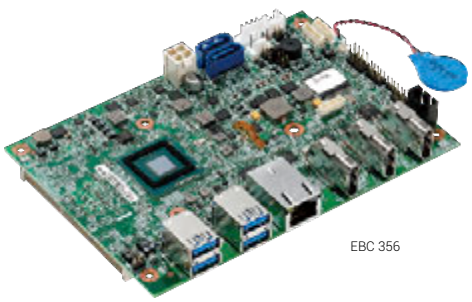
11 EBC 356

4K-ready 3.5" SBC for Large-screen Kiosk Applications

NEXCOM 4K-ready EBC 356 single board computer meets the growing demands for bigger-screen Kiosks. Powered by quad-cored Intel® Pentium® N3700 and Celeron® N3150 processors, the EBC 356 supports 4K contents with triple HDMI outputs and advanced I/O interfaces, making it ideal for places such as museums, airports, and shopping malls, that require large-screen updates, demonstrations, and promotions around sales and special events.

The EBC 356 with built-in Intel® HD Graphics allows kiosks to play superb 4K videos, providing flexibility and performance for effective information delivery. The USB 3.0 and SATA 3.0 are designed for high-speed data transmission and fast kiosk peripheral extensions. Also, the EBC 356 equips a mini-PCIe slot for an optional 3G/4G or M.2 SSD module, allowing users to build up remote manageability or to extend storage capacity.

- Intel® Pentium® Processor N3700 or Celeron® Processor N3150
- Support two DRAM slots up to 8GB
- Support two SATA HDD (SATA3.0) and one SATA DOM
- Support three independent HDMI outputs (2x4K, 1x2k)
- One mini-PCIe for M.2 SSD (key B) or 3G/4G module



EBC 356

12 ICES 621

4K-ready Type 6 COM Express Module for Large-screen Kiosk Applications

NEXCOM ICES 621 is a 4K-ready Type 6 COM Express module. Powered by quad-cored Intel® Pentium® N3700 and Celeron® N3150 processors, the ICES 621 has higher graphics capabilities than its predecessor and supports three display outputs and superb 4K multimedia contents. With 14nm Intel® Pentium® and Celeron® platform support, the ICES 621 with quad-core computing performance presenting an upgrade path required for existing systems. For high-speed data transmission and peripheral

extensions, the ICES 621 supports USB 3.0 and SATA 3.0 interfaces through carrier boards, such as ICEB 8060. Chip innovations reflect not only higher power efficiency, but also thermal performance, smaller size, and price.

- Intel® Pentium® /Celeron® N3000 product family
- 2 channel DDR3L without ECC/SO-DIMMs 1333/1600MHz up to 8GB
- Support three independent displays with DisplayPort, HDMI, and VGA outputs
- 4 x PCIe x 1, 4 x USB3.0, 8 x USB2.0, 2 x SATA3.0 and GbE
- Dimension 95 x 95mm (W x L)

ICES 621

13 ICES 5100

Type 6 COM Express Based on Next Gen. Intel® Core™ Processors

ICES 5100A is a Type 6 COM Express compact module powered by next generation Intel® Core™ and Intel® Celeron® processors. ICES 5100A supports up to 32GB of dual channel DDR4 (without ECC) SO-DIMM (2133MHz) memory, up to 16GB of onboard eMMC, and includes advanced I/O interfaces such as 5 x PCI Express Gen 3, 3 x SATA 3.0, and 8 x USB 2.0.

ICES 5100A features Intel's integrated graphics to deliver powerful graphics processing and triple-display output capability through display interfaces like eDP and 2 x DDI.

Based on the Type 6 COM Express standard, the compact-sized ICES 5100A implements the latest Intel MCP solution which delivers high graphics and computing performance with a lower TDP (15W/28W). This makes ICES 5100A ideal for applications requiring high graphics performance and multi-display connectivity, such as medical, digital signage, automation and surveillance applications.

- Support up to 32GB of dual channel DDR4 SO-DIMMs 2133MHz
- Support PCIe x16, 7 x PCIe x1, 4 x USB 3.0/ 8 x USB 2.0, 3 x SATA 3.0 and 1 x GbE
- Support up to 3 independent displays, 1 x eDP/ 2 x DDI
- Support up to 16GB of onboard eMMC
- Dimension 95 x 95mm (W x L)

14 FMS 1000

Vehicle Gateway Device

FMS 1000 is more than just a tracker or AVL (Automatic Vehicle Location) device, it is also a vehicle gateway device. Featuring CAN bus 2.0B, OBDII (SAE J1939), digital input/output, analog input, speed pulse input and G sensor, FMS 1000 can interface with various vehicle sensors and collect vital vehicle data. With added Wi-Fi and 3G WWAN connectivity, FMS 1000 can transfer these critical data and retrieve device coordinates remotely. Optional Dead Reckoning GPS modules are available for fast and precise location tracking of remote vehicles.

To prevent unauthorized access to vehicles, FMS 1000 features an interface to read RFID with RFID readers and a 1-wire interface for iButton ID key-in driver identification application. It also includes a backup battery to ensure ongoing operation in case of loss of vehicle power.

For public or private fleet management applications where the service quality is the primary consideration, FMS 1000 can be used for advanced driver behavior monitoring to identify abnormal driving behaviors, minimize vehicle exploitation costs, increase company profits and enhance driver safety.

- 1 x 10/100 Mbps Ethernet
- 3G WWAN and WLAN support
- Voice & SMS communication
- 1 x CAN bus 2.0B and OBDII (SAE J1939)
- Rugged IP67 protection

FMS 1000

15 MVS 5200/5210

8-CH PoE Premium Mobile Network Video Recorder

Featuring 5th generation Intel® Core™ processor i7-5650U/i3-5010U, the MVS 5200/5210 mobile network video recorders are professional security systems dedicated for public transportation applications, especially for video analytics. MVS 5200/5210 offer 8 Gigabit PoE ports compliant with the 802.3af standard.

MVS 5200/5210

Based on a dual-head design utilizing 5th generation Intel® Core™ processors and ARM-based processors, MVS 5200/5210 provide signal processing, machine vision, and video analytics capabilities required of ADAS, ANPR and video surveillance, giving abilities to sense and to think to fleet transport, public transport, police vehicles, ambulances and more. While the second ARM-based processor is dedicated for video playback and recording, offloading the workload of the main processor and allowing enhanced MNVR performance without trade-off or compromise.

MVS 5200/5210 can support GPS tracker and immobilizer functions with minimum power consumption, even when the power is off, allowing remote offline monitoring of critical information such as location positioning and vehicle status.

- Dual-core Intel® Core™ i3-5010U/i7-5650U processor (2.1/2.2 GHz)
- Simultaneous real-time live viewing of 8 x 720p video channel feeds and 1080p recording
- 8 x 10/100/1000 Mbps 802.3af PoE ports
- Multitasking: No load on the PC, even when viewing 8 x real-time live video feeds and recording
- 24/7 GPS tracker and immobilizer functions support, even when the PC is off

16 NDiS B325

4K2K Digital Signage Player Based on Intel® Celeron® Processor N3150

Powered by Intel® Celeron® processor N3150, the NDiS B325 digital signage player integrates new Intel® HD Graphics that can support 4K x 2K resolution and Microsoft DirectX® 11.1. Taking advantage of the latest Intel technology, NDiS B325 can accelerate 3D rendering, image processing and video decoding to provide highly personalized information based on the result of audience measurement to deliver accurate marketing messages to target audiences. NDiS B325 is ideal as an entry level digital signage player for advertising, hospitality and brand promotion application.

- Intel® Celeron® processor N3150
- HDMI and VGA independent displays
- Support 4K x 2K resolution
- USB 3.0 support
- WLAN support
- Compact and fanless design

17 NDiS M335

4K OPS Media Player Increases Engagement at Airports, Enterprises, and Schools

NEXCOM OPS media player NDiS M335 stimulates interactive engagement for viewers and business meetings. Powered by Intel® Celeron® Processor N3150, the NDiS M335 mesmerizes message delivery with impressive 4K graphics, increased computing power, triple HDMI outputs, and remote manageability to better inform targeted audience with greater reach of messages.

The NDiS M335 delivers enhanced interactive experience with smoother running of 4K media files and whiteboard software. Featuring triple HDMI outputs, the OPS media player supports up to two 4K displays or a Full HD, 3x1 video wall. The NDiS M335 can be deployed in airports as flight information display systems (FIDS). For enterprises, the NDiS M335 can be used in business meetings, training sessions, teleconferences for more interactive communications and better decision-making beyond borders.

In addition to 2.5" SATA storage bay, the NDiS M335 accommodates the latest M.2 SSD support to provide benefits of smaller form, improved startup speed, and overall performance. Moreover, the

NDiS M335

OPS design simplifies installation while internet connectivity enables remote management of content and BIOS.

- Intel® Celeron® processor N3150
- Wide-range power input of 9V to 36V DC
- Front bezel compliant with IP54
- Vandal-proof glass
- Support Wi-Fi, 3G and GPS modules
- Daisy chain to AC22 second display (optional)

18 IFA 3610/2610/1610

The HENGE™ Industry Firewalls Ward off Threats for Critical Assets

IFA 1610

IFA 3610 IFA 2610

The HENGE™ solution is a series of fully integrated industry firewalls with VPN router functionality. The series consists of IFA 3610, IFA 2610 and IFA 1610, which are 5-, 3- and 2-port firewall routers respectively. These broadband-capable firewall routers offer stateful packet inspection (SPI) firewall, denial-of-service (DoS) and distributed denial-of-service (DDoS) protection, intrusion prevention, portscan detection, as well as real-time alerts for additional protection of machinery and equipment installed on the secure side of the firewall. Equipped with IPsec and SSL VPN function, the firewall routers provide a secure, remote access connection to help machine builders/system integrators easily execute remote monitoring and maintenance tasks.

Furthermore, the 5-port IFA 3610 features a rugged design and wide operating temperature range of -20°C to 70°C for installation in harsh environments. By combining firewall, VPN functionality and rugged design, IFA 3610 is the ideal endpoint connectivity and security solution for industrial automation, process control, energy and medical instrument management applications.

- 5-port/3-port/2-port VPN router
- Stateful packet firewall
- Intrusion detection/prevention
- Secure remote access through SSL VPN
- Unified VPN user management
- RS232/485 serial communication

19 Health Kiosk

Central Hub for Monitoring Personal Physical Status

Health Kiosk is a personal health care system designed as a management hub to monitor the physical status of individuals in need of assisted living. By integrating with telecare devices, the Health Kiosk system enables telecare devices to transfer data to tablets via Bluetooth then to a private cloud which can be monitored by doctors and nurses remotely. The Health Kiosk system provides medical personnel a quick and simple way to identify patient status and respond with the appropriate measures.

- Build 5 device in a box
  - Pad and Management software
  - Blood pressure monitor
  - Ear thermometer
  - Pulse oxygenmeter
  - ECG Recorder
- Private health management cloud
  - Recorder physical data
  - Display line diagram
  - New matter inform
  - Doctor suggestion
- Support mobile App

Health Kiosk

Industry 4.0-ready IoT Automation Solutions Saluted at Hannover Messe

At Hannover Messe, the world's biggest industrial automation exhibition, NEXCOM wins high appraisal on its Industry 4.0-ready IoT Automation Solutions from worldwide visitors. As manufactures are enthusiastic about tapping the power of big data analysis, lack of access to field data presents quite a challenge. NEXCOM Industry 4.0-ready IoT Automation Solutions enable data exchange among field devices and the cloud. Manufacturers now can apply Data-driven decision making (DDDM) to increase competitiveness, improve the bottom line, or anticipate trends.

To lift communication barriers among field devices which use different field protocols, run independently, and lack connectivity, NEXCOM IoT Automation Solutions provide an open-architecture with cross-communication capability to connect machinery, robots, PLCs, and sensors. Along with support for data connection between the field and the cloud, NEXCOM IoT Automation Solutions allow data to freely flow from factories, enterprise offices, and the cloud, helping manufactures improve operations, strengthen security barriers, simplify device management, and reduce maintenance costs.

NEXCOM IoT Automation Solutions are divided into four categories: data concentration system, PC-based automation system, prediction maintenance system, and automatic metering system.

NEXOCM's data concentration systems are intended for data acquisition, harvesting sensor readings, machinery status, and manufacturing variables. NEXCOM's fieldbus concentrators and IoT gateways can easily convert data encapsulated in fieldbus protocols into an application-specific format, provide a unified user interface with the built-in NEXCOM OPC server software for data access, and connect to cloud servers with the MQTT software component.

NEXCOM's PC-based automation systems are compatible with most of the fieldbus control networks. The systems can also be used as standalone controllers with support for multiple fieldbus protocols. Besides 3G/Wi- Fi wireless connectivity, the built-in MQTT cloud software mechanism allows NEXCOM's PC-based automation systems to support cloud based applications.

For automation applications, control and monitoring are both important to prevent machinery failure, potential production interruption, and revenue and profit losses. Aimed at SCADA applications, NEXCOM's prediction maintenance solutions, based on well-established condition monitoring systems, can help with machinery condition analysis by measuring the time domain vibration altitude or detecting power spectrum based on signals from proximity sensors and accelerometers. NEXCOM's prediction maintenance solutions can also connect to machinery's control panels to gather operation data for further analysis. NEXCOM's systems are integrated with NEXCOM OPC server and remote alarm application components—which are compatible with well-established monitor software—to send alarm messages to maintenance engineers. Vibration data can also be shared via web-based functions to enable remote analysis.

NEXCOM's Automatic Metering systems are designed for environmental monitoring and process production, helping enhance pipeline safety and industrial flow measurement. The systems provide easy expansion of wireless communication protocols such as ZigBee and Wi-Fi as well as power line communication interfaces. The MQTT software mechanism is available for cloud-based applications. NEXOCM IoT Automation Solutions cover all scopes of IoT automation applications, offering a clear solution blueprint for IoT Automation infrastructure to turn a concept into reality.

2015 Global Partner Conference

The Internet of Things (IoT) is creating unprecedented opportunities in the area of critical infrastructure. Seeing and seizing these, NEXCOM is going full throttle on six revenue-generating applications including IoT, robotics, Industry 4.0, connected car, responsive stores, and security in industry IoT. On June 1, 2015, NEXCOM held the Global Partner Conference to elaborate how to capture the emerging opportunities and realize the vision.

In IoT applications, NEXCOM focuses on vertical clouds by developing IoT gateways and complete PaaS (platform as a service) offerings. NEXCOM's C2C (click to connect and connect to cloud) platform simplifies data mining task from vertical clouds with intuitive GUI. C2C PaaS, on the other hand, enables easy integration with third-party SaaS (software as a service) and sends data analysis via computers or mobile devices anytime, anywhere. NEXCOM's vertical clouds not just cover enterprises but also healthcare including hospitals, nursing homes, and medical center hotels. The latest Medical and Healthcare Informatics Business Unit is dedicated to offering medical facilities one-stop solutions which include hardware platform, system implementation, and business cloud storage services.

For robotics development, NEXCOM establishes R&D integration center and independently develops EtherCAT controllers. By engaging in downstream servo motor and I/O connection as well as upstream integration with third-party software like CODESYS and self-developed NexECM 2.0 and Xcare 4.0 software, NEXCOM accelerates software/hardware integration and offers remote monitoring capability. With these all-inclusive streamlining capabilities, NEXCOM not just propels mechatronics applications forward but also speeds up customers' time to market.

To bring IP networking and manufacturing intelligence to the factory floor, NEXCOM's smart factory solutions of Industry 4.0 combine distributed control system, SCADA, AMI, safety system, and predictive control and maintenance system. Via IoT gateways, each subsystem sends in-factory data to cloud, enabling up-to-date decision-making information for the executives.

The IoT is not limited to industrial applications. It also helps to shape the future of retailers. NEXCOM provides digital-physical responsive store solutions that bring shoppers a more interactive and personalized in-store shopping experience. To help physical retailers recreate business value, NEXCOM's responsive store solutions cover digital signage, digital shelf management systems, digital shopping cart, virtual fitting rooms, and experience centers.

The IoT is also advancing to connected cars, which makes traffic management smarter and accelerates sustainability. NEXCOM's connected car solutions integrate critical in-vehicle data, data communications, and versatile sensors to turn connected cars into information hubs. Connected cars can perform various tasks. For instance, each car can monitor nearby vehicles to avoid road accidents, communicate with transportation infrastructure to optimize routes, amass sensor-generated data to acquire vehicle status, and provide in-vehicle infotainment to drivers and passengers. All of these make driving safer, smoother and more enjoyable.

Last but not least, privacy and data security remain critical for all IoT applications. To ease big data and related security concerns, NEXCOM's networking solutions include bandwidth management, industry firewall, industry storage, and industry switch. Thanks to these, users can enjoy unlimited data access with enhanced protection and peace of mind.

To resonate with partners on the concept of convergence of these new emerging applications, at the 2015 GPC gala dinner party, NEXCOM presented four great performances that combine Chinese tradition with modern elements. U-Theatre's drum performance blends heart-pounding drum sounds with Tao, Musou Band's Chinese orchestra performance incorporates classical Chinese music with modern beats, traditional Chinese Lion dance with modern twist, and Electric-Techno Neon Gods' dance performance with pop music.

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