

...by people who care!

For IIoT Developers **READY-TO-USE CLOUD-BASED IPC**



Ready-to-use Cloud-based IPC Series for IIoT developers

The **Cloud-based IPC** QGW series (**Q**TS-**G**ate**W**ay) from ICP Deutschland successfully combines the industrial **hardware of IEI** and the **software know-how of QNAP**. IEI has been convincing for 20 years as a leading hardware manufacturer of industrial computers. QNAP, a market leader in NAS systems, complements the QGW series with a software package specifically designed for IIoT. It consists of a Linux-based QTS operating system (V4.2.1/V4.3.x), pre-installed software and standardized tools. The results of this in-house teamwork are Cloud-based IPCs, which sustain the progressive digitization and networking of processes, machines and systems. True to the motto IEI x QNAP, ICP offers its customers solutions for the IIoT and the industry 4.0.



The key software functionality for IIoT developers is virtualization.

Container-based virtualization: Container Station



The Container Station, lightweight virtualization technology, can instantly and truly create a ready-to-use environment on Cloud-based IPCs and the Cloud for RD developers. It supports both **Docker**[®] (applications) and **LXC** (operating systems) virtualization technologies.





Container Station only requires **64MB of memory**. This so-called microservice allows a quickly deployment of large numbers of environments. This enables the development of new functions that can easily be added to the existing application without rewriting it from scratch. Self-developed software can be packed in containers and flexibly transferred to other cloud-based IPCs, NAS & applications.

Container Station offers the most up-to-date and top-of-technology applications for rapid deployment with just a click. The Docker Hub can be used to search for official and third party applications. The following install-on-demand apps are now available for multiple functions:

- Translating protocols (MQTT, HTTP, CoAP...) with message brokers e.g. Kafka, Ponte, RabbitMQ
- Processing data and executing actions with rules engines e.g. Node-RED, Blockly
- Merging, managing and storing data in databases e.g. MySQL, MongoDB, MariaDB, Redis
- Accessing and monitoring from anywhere with dashboards e.g. Dashing, Freeboard
- Facilitating integrated development environment with one-click installation, an automatic set-up process and easy collaboration e.g. Private Registry, GitLab, Jenkins
- Using lightweight Linux operating system e.g. Debian, Ubuntu, Fedora
- Customized text and image editing with different office file types e.g. LibreOffice®, Pinta, Emacs
- Creating websites with open-source CMS e.g. Joomla!, WordPress, CentOS, Node.js

Hypervisor-based virtualization: Virtualization Station



The Virtualization Station enables painless migration and complete operating system (OS) virtualization. **Up to four Virtual Machines** (VM) with different OS (Linux, Windows®, Unix) can be run at the same time.



Retrofitting - Quick transfer and zero thresholds

Replacing old machines with new ones isn't a challenge anymore because physical-to-virtual (P2V) technology can be used to create a familiar operating system (e.g. Windows XP, Server 2003) on the virtual machine. This means that existing services and data can be moved to the VM, adding more flexible system management.

Advanced Virtual Machine (VM) - Software Defined Network (SDN)
The past restrictions of VM taking up network ports for external-only
 networks and limited file transmission speeds can now be overcome.
 A dedicated 10 GbE LAN port for VM Ethernet is no longer needed. By
 adopting a SDN approach, VMs can now share the Ethernet network
 interface with Cloud-based IPC due their virtual switches. In that way,
 the best data transmission speed can be maintained without being
 limited by hardware resources.

PCIe card and USB pass-through

Virtualization Station can connect to PCIe and external USB devices through I/O pass-through, achieved by Intel's[®] Virtualization Technology for Directed I/O (VT-d). The advantage is that PCIe cards with older

Software do not become obsolete but maintain their value and their lifetime can be extended at low costs.

VM backup & restore

The task-oriented VM supports local and remote backup and recovery. A centralized easy-to-use management interface can be used to determine task progress and to schedule in real-time.

Web-based VM operation

VMs can be operated and managed through web browsers.

More functionalities

The Cloud-based IPCs offer a wide range of additional functionalities in order to enhance the development of IIoT applications.

Data center and backup

Integration of public and private clouds. It can be used to manage and to backup either locally, remotely or via the cloud.

Data security

The Cloud-based IPCs are strictly protected via several measures such as network environment configuration, two-step verification, transmission and data encryption, anti-virus protection, RAID and QNAP's snapshot technology.

Remote and multi-server management with QRM+

Enabling agent-based (QRM Agent) or agentless (IPMI 2.0) KVM functions to track all mission-critical device settings.



Available Cloud-based IPC models with QTS operating system













HMI Panel PC	
Applications	Monitoring Surveillance
Chipset	Intel [®] Coffee Lake / Baytrail
RAM	64GB
Screen size	12"~24"

Scalable Embedded PC		
Applications	Machinery and plant engineering	
Chipset	Intel [®] Skylake / Haswell	
RAM	64GB	
Size	Medium with PCI/PCIe	

Compact Embedded PC		
Applications	Edge computing Intelligent machines	
Chipset	Intel [®] Haswell / Baytrail	
RAM	16GB	
Size	Compact	

DIN-Rail PC	
Applications	Remote monitoring Building automation
Chipset	Intel [®] Baytrail
RAM	4GB
Size	Compact

Ultra Compact	Embedded PC
Applications	Intelligent gateway in confined space
Chipset	Intel [®] Braswell
RAM	8GB
Size	Ultra compact

Storage Backup
Intel [®] Baytrail
8GB
Ultra compact

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