



## Responsive Infrastructure for the Digital Economy



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Digital infrastructure is the lifeblood of modern business. Without a strong IT infrastructure, enterprises are unable to navigate the disruptive environment that digitization is creating in all industries. In addition, maintaining competitiveness while adapting to ever-changing customer demands requires a secure infrastructure that can scale effectively.

## The Essentials of Modern Infrastructure

In considering the characteristics of infrastructure that is future proof, the below elements are the top of mind for stakeholders:

**Security** – Security is the foundational element of modern infrastructure. Constituting policies, technologies, applications, and controls, today security envelops all aspects of IT operations. With the emergence of the cloud, stakeholders want to take advantage of the scale and agility while actively mitigating associated security vulnerabilities. Threats need to be addressed at both the infrastructure level (ex. applications and data) and at the user level (passwords and authentication). Solid physical security of hardware systems, strong interface protocols, proactive user identity management, and adequate personnel security are all core to infrastructure deployment in the future.

**Responsiveness and scalability** – Business needs are prone to variations. Businesses can face exponential viral growth in very short periods of time and yet experience long lulls in growth (for example, retail sales). This puts a huge burden on the infrastructure model to expand and contract on demand. Additionally, infrastructure is expected to cater to a wide variety of use cases and deliver uniform user experiences across a diversity of operating systems and hardware. Choosing resilient ecosystems and infrastructure components that can be scaled easily is paramount.

**Cloud implementation models** – Stakeholders have a wide array of choices when determining the physical/virtual location of infrastructure. Before the widespread availability of cloud infrastructure, the predominant model of infrastructure deployment took the form of an on-premise datacenter. Now infrastructure models can vary between a full public cloud, a combination of both on-premise and public clouds or a dedicated on-premise private cloud. Data and application residencies are based on trade-offs related to costs, availability, and degree of control. On-premise infrastructure typically is harder to scale rapidly, due to the upfront capital requirements to have capacity on standby but affords greater control. Public clouds provide almost infinite capacity and mitigate business risk despite the disadvantages of lower control and the potential for security breaches. New paradigms allow for seamless interaction between private and public clouds and enable customers to deploy non-critical applications on public clouds and sensitive applications on private clouds.

**Software-based infrastructure management** – Even the most robust infrastructure choices will be inadequate without the right software to monitor and manage operations. From provisioning capacity to maximizing uptime, infrastructure management software is the glue that ensures smooth operation at scale. Optimized asset utilization, pro-active policy enforcement, load monitoring, and capacity planning are all domains where the right software can facilitate lower operating costs, reduce complexity and afford greater control of the infrastructure. The role of infrastructure management software is heightened when businesses need to adhere to compliance and regulatory requirements. The software enables businesses to enforce the right policy frameworks so that regulatory requirements are met without sacrificing productivity

All the above elements together shape the long-term viability and robustness of digital infrastructure. Innovation is occurring in all the above areas and new technologies are emerging to speed up infrastructure deployment without sacrificing best practices.

## Intel® Data Center Blocks

Intel® Data Center Blocks (Intel® DCBs) are purpose-built server hardware systems that feature Intel® processors, server boards, chassis, SSDs, accelerators, and memory – all workload-optimized to maximize performance. Intel® DCB system solutions make it easier to adopt, qualify, and implement the latest Intel technology, helping customers' address the demands of modern data centers. A wide variety of validated and pre-configured hardware and software components are available to accelerate time to deployment and time to value for customers.

Intel's philosophy towards building the next-generation data center infrastructure is guided by a mission to deliver breakthrough innovation and differentiation by integrating Intel's data-centric portfolio in unique ways to create higher customer value. Starting with the processor, systems, and components to comprehensive workload-optimized solutions, Intel® Data Center Blocks bring interoperability, scalability, and agility to help modernize the data center while implementing the highest standards of security and business model flexibility.

Figure: Intel® Data Center Blocks - Available as a pre-built system with a single order code



## Performance at Scale

To offer a new level of consistent pervasive and breakthrough performance, Intel's Data Center Blocks have Intel® Xeon® Scalable Processors at their core and deploy widely expanded resources for hardware acceleration and integration. Rapid deployment and minimal complexity are achieved using Intel® Xeon® based Virtual Machines (VM) which coexist with other server infrastructure and deliver full compatibility. In addition, the server blocks meet stringent response time criteria set by highly demanding applications like high-speed trading and real-time analysis. Since the processor cores, cache, and I/O are all part of a single die, the blocks deliver highly deterministic storage response. Moreover, the hardware acceleration features deliver diverse services at incredible efficiency.

**Figure: Intel® DCB Portfolio - Server building blocks for specific segments with pre-configured and configure-to-order options**



### Intel® DCB for HPC

Configure to Order (CTO) tool featuring the latest Intel® technologies in custom and workload-optimized configurations



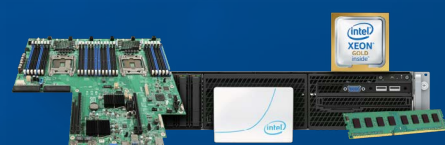
### Intel® DCB for Cloud

Purpose-built to accelerate cloud deployments, includes certification for software such as Microsoft Windows Server



### Intel® DCB for Business

Pre-configured, fully validated systems with a variety of 1U, 2U, and pedestal systems



### Intel® DCB for Networking

Configure to Order (CTO) tool featuring the latest Intel® technologies in custom and workload-optimized configurations

## Maximizing Uptime and Resources with Software-Driven Management Paradigms

To optimize features and performance, Microsoft\* and Intel® collaborated across four areas to deliver superior server infrastructure that accelerates the transition to software-defined infrastructure and private clouds.

**Compute** – New advanced Virtual Machine management features for improved performance and efficiency



**Storage** – Simplified provisioning and management of storage resources with scalable, flexible and easy-to-configure solutions. Special feature sets to pool local storage into highly scalable and available server clusters have also been implemented.

**Network** – Software-defined networking capabilities to centrally manage virtual and physical network resources are available. In addition, provisions to isolate the network infrastructure for multiple tenants is also built-in.



**Security** – Enhancements to audit and thwart system attacks are implemented to ensure that enterprise compliance goals are met. A layered security model limits damage when attacks occur and helps detect suspicious activity to proactively prevent breaches.

Since all facets of a data center operation were considered in the design and architecture of Intel® Data Center Blocks, the resulting infrastructure is not only robust but also flexible in offering the optimal conditions to maximize the uptime of infrastructure and minimize the resources required.





## Flexible Cloud Deployments to Suit any Need

With a pre-certified Microsoft Windows Server 2016 configuration to complement the myriad configure-to-order blocks, Intel® is ushering in a new age of cloud infrastructure. The Intel® cloud blocks can be easily optimized for high-performance computing, hyper-converged infrastructure, and outstanding storage performance. Intel's solid-state device technology is ideal for high throughput and low latency without the requirement for high cost or space requirements. The server boards themselves have over 100 sensors built in that can be utilized for monitoring all critical functions and for user management.

The software-defined approach to allocating data center resources and storage allows IT stakeholders to automate and orchestrate environments with ease. Business can be more agile in deploying or retracting resource allocations to suit business conditions. This highly integrated Intel® technology landscape enables the significant total cost of ownership savings through better cost efficiencies in comparison to traditionally disparate infrastructure components.

## Summary

Modern data centers require unique server solutions that run complex, business-critical workloads. Increasingly, it takes expert resources and involves high opportunity costs to develop modern data infrastructure. Intel® and Arrow Electronics are together implementing the data center of the future using Intel's industry-leading Data Center Blocks. These infrastructure modules are fully certified, can reduce complexity, and speed time to market. In addition, they are designed to meet even the most stringent compliance and regulatory requirements. Customers who embrace this new model for data center infrastructure will be in a better position to adapt to quickly changing needs and to respond to fast innovation cycles without losing current customer loyalty.

## References

- > [Video: Intel® Data Center Blocks](#)
- > [arrow.com/arrow-services/intel-data-center-blocks](http://arrow.com/arrow-services/intel-data-center-blocks)

## Arrow Electronics & Intel® Partnership Drives Customer Success

Arrow Electronics offers unique value-added services to help customers deploy the infrastructure of the future. Arrow provides a variety of Configure-To-Order (CTO) options for Intel® Data Center Blocks. Starting with a single order to building a full digital platform, Arrow services and experts can roll out datacenter solutions complete with integration and software deployment. Armed with an eco-system of service providers and partners Arrow can also help build-to-order systems specific to any customer's needs.

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For more information about Intel® Data Center Blocks and customization or integration services, contact Arrow Electronics at

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