

# Intel Workload Optimized Silicon

## Selecting the right Intel Processor for your Workload

- » Are you servicing a diverse set of workloads in your data center?
- » Are your servers designed to service general-purpose workloads?
- » Are you looking to maximize the return on your data center investment?

Optimizing each workload is a challenge for the data center. To meet this challenge, Intel has developed a number of different processor lines that meet the compute needs for these diverse server workloads and maximize performance and ROI.

### Adopting a Workload Optimized Approach

Adopting a workload-optimized technique when configuring servers in the data center can lower overall datacenter costs while providing several major advantages:

Workloads requirements matched to the optimal mix of CPU, memory, I/O, and advanced technology built into the latest Intel processor provide peak performance. Traditionally, customers have standardized on servers configured to meet general-purpose workloads – sacrificing workload optimization for data center standardization. This standardized approach essentially allows diverse workloads to run on any server and attempts to maximize ROI by reducing the number of server configurations maintained in the data center. Adopting a workload-optimized technique when configuring servers in the data center can lower overall datacenter costs while providing several major advantages:

- » Provides servers with the best CPU, memory and I/O performance for the workload improving performance and throughput for critical application
- » Takes advantage of the advanced Intel technology built into the processor, further optimizing server performance for specific workloads

### Maximizing ROI

Maximizing ROI using a workload-optimized approach focuses on four main areas:

- 1 Business case** – Acquisition costs of the hardware and software and services required weigh against the business value of the server. Maximizing the workloads performed on a server increases its business value and lowers TCO.
- 2 Workload characteristics** – what is the technical profile of the workload? Does it scale with more cores? Configuring the server to maximize workload performance allows more work to be done on each server, lowering overall costs.
- 3 Scale** – How does the acquisition handle peak workloads and future growth? Planning growth within the server prevents the need for additional servers, lowering overall costs.
- 4 Application considerations** – Workload optimized silicon can also take advantage of the pricing models for application software. Minimizing the cores in a server can reduce the overall cost for applications priced per core.

## Applications and Workloads

Matching the processor to the application or workload will optimize performance of the server in the datacenter. Intel has provided guidelines for common workload applications.

In the charts below, the dark green indicates where a processor is very applicable for a workload. The lighter green indicates where a processor is applicable for the workload.

The following chart is for the Xeon E7 v4 family of processors:

Business Processing		Scientific	
OLTP	Xeon E7	Simulation/CAE & CFD	Xeon E7
Email	Xeon E7	Life Sciences—Genomics	Xeon E7
ERP	Xeon E7	Financial—Trading	Xeon E7
CRM	Xeon E7		
Application Servers	Xeon E7		
Analytics		Storage	
Data Analysis & Mining	Xeon E7	Analytics	Xeon E7
Big Data Analytics	Xeon E7	Business Processing	Xeon E7
Machine/Deep Learning—Training	Xeon E7		

The following chart addresses the E5 v4 family of processors. E5 indicates any E5 family member processor, HCC indicates an E5 High Core Count processor is preferred, and HF indicates a E5 High Frequency processor is preferred for those workloads.

Business Processing		Scientific		Comms		Visualizaton & Audio	
OLTP	HCC&HF	Simulation/CAE & CFD	HCC	Wired Networking	E5	Media Delivery and Transcode	HF
File & Print	E5	CAD	E5	Packet Processing	E5	Remote Visualization	E5
Email	E5	Life Sciences—Genomics	HCC	Virtual Switching	E5	Remote Gaming	HF
ERP	HCC	Molecular Dynamics	HCC	Network Security	E5	VDI (Clients)	E5
CRM	HCC	Financial—Trading	HF	Wireless Access	E5	Image & Video Analytics	HF
Application Servers	E5	Financial—Risk	HCC	Wireless Core	E5		
Analytics		Cloud Services		Storage			
Data Analysis & Mining	E5	Energy—Seismic/Reservoir	HCC	Analytics	HCC		
Big Data Analytics	HCC	Weather	HCC&HF	Business Processing	HCC		
Machine/Deep Learning—Training	HCC	Defense/Security	HCC	Cloud, Object Storage	E5		
Machine/Deep Learning—Evaluation	HCC	Front End Web	E5	Active—Archive	E5		
		Data Caching	E5	Backup/Recovery	E5		
		Search	E5	Disaster Recovery	E5		

## Highlights

- » Maximizes Return on Data Center Investment
- » Optimizes Server Utilization
- » Improves Performance for Critical Workloads and Applications