

# Intel® Tiger Lake-UP3 Solution

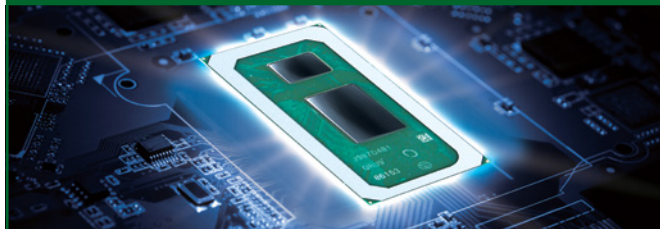
## » Intel® Tiger Lake-UP3 Platform Overview

### Graphics Media, and Display



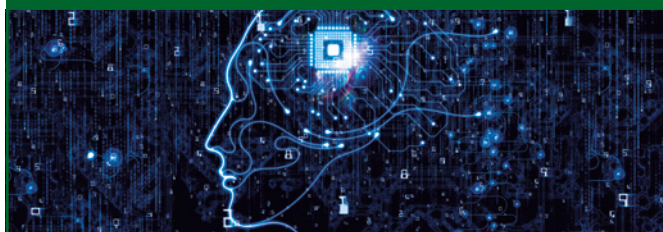
- New Xe (Gen12) Gfx Engine with up to 96 EUs
- 4 independent display units (4 x 4K or 2 x 8K)
- Image processing unit IPU6
- \* Up to 27MP image capture
- \* Up to 4K@60fps video performance
- \* Support for 4 concurrent streams
- \* VTIO and RGB-IR for facial recognition

### Security and Manageability



- Intel® Total Memory Encryption (Intel® TME)
- \* Hardware based encryption to protect entire memory contents from physical attacks
- Intel® AES-NI
- \* A new, hardware based AES-NI instruction set to protect private keys from malware
- \* Keys are no longer exposed and handlers are utilized to perform encrypt/decrypt operations
- Control-Flow Enforcement Technology

### AI Experience



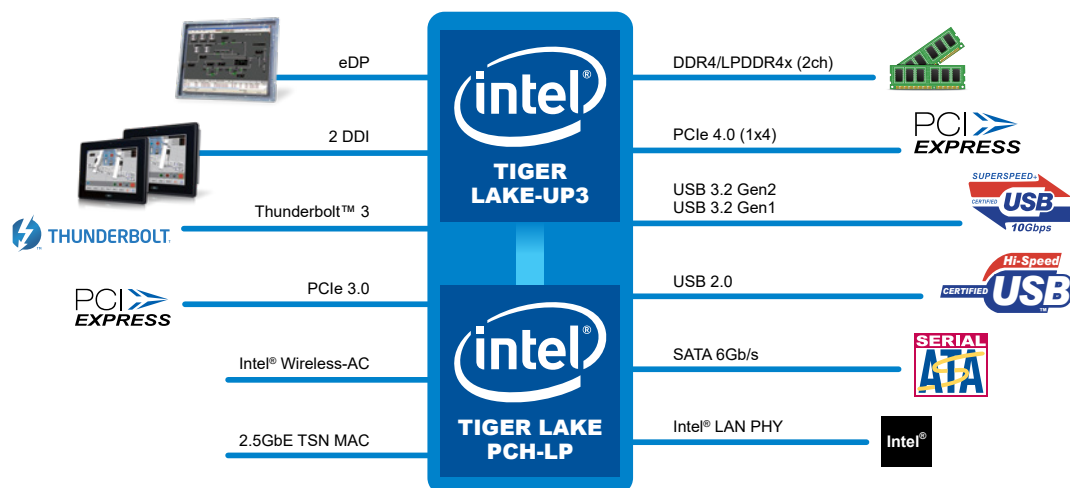
- Vector Neural Network Instruction (VNNI) improves inferencing workload performance
- Common industry wide AI frameworks optimized on Tiger Lake architecture (via OpenVINO™)
- Intel® Deep Learning Boost
- AI/DL Instruction Sets including VNNI and CV/AI applications

### Enhanced Features



- Up to 4 cores
- In-Band ECC available
- PCIe 4.0 (off CPU complex), 12 HSIO lanes (off PCH complex)
- Improved Thunderbolt™ data performance
- Integrated Type C subsystem with for USB4 compliance

## » Intel® Tiger Lake-UP3 Platform Block Diagram



# » Intel® Core™ Processor Generational Comparison

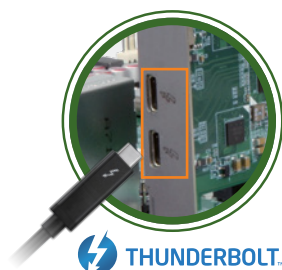
Brand	Kaby lake-U	Whiskey lake-U	Tiger lake-UP3
<b>Launch</b>	2017	2019	2020
<b>Process</b>	14nm	14nm	10nm
<b>Core</b>	2	4	4
<b>Processor TDP</b>	15W	12.5/15/25W	12/15/28W
<b>Memory</b>	LPDDR3-1866 DDR4-2133 DDR3L-1600	LPDDR3-1866/2133 DDR4-2400 DDR3L-1600	LPDDR4x 4267 DDR4 3200 In-Band ECC
<b>PCI Express Lanes</b>	Up to 12 PCIe 3.0 lanes (PCH)	Up to 16 PCIe 3.0 lanes (PCH)	Up to 12 PCIe 3.0 lanes (PCH) Up to 4 PCIe 4.0 lanes (CPU)
<b>Storage</b>	Intel® Optane™ Memory, PCIe 3.0, SATA 6Gb/s, SD 3.0, eMMC 5.0	Intel® Optane™ Memory, PCIe 3.0, SATA 6Gb/s, SD 3.0, eMMC5.1	Intel® Optane™ Memory, PCIe 3.0, PCIe 4.0, SATA 6Gb/s, SD 3.0

# » Intel® Tiger Lake-UP3 Platform OS Support

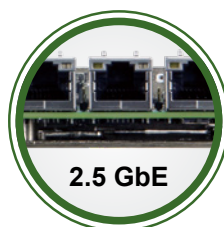
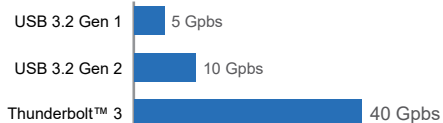
Licensing Model	Operating System and Hypervisor	Distributor and Scalability Partnership
<b>Commercial</b>	Windows 10 IOT Enterprise (64-bit) LTSC RS5	Microsoft
	Ubuntu Linux	Canonical
	Redhat Linux	Redhat
	Wind River VxWorks RTOS	Wind River
	Real-Time System (Type 1 Hypervisor)	Real Time Systems
<b>Open Source</b>	Linux LTS Kernel with Preempt RT Patch	Open Source Community: <a href="http://kernel.org">http://kernel.org</a>
	Virtualization: KVM (Type 2 Hypervisor), ACRN	Intel Open Source Community: <a href="http://01.org">http://01.org</a> <a href="http://projectacrn.org">http://projectacrn.org</a> <a href="http://1.org/projectceladon">http://1.org/projectceladon</a>
	Android Celadon	

# » Features of IEI Intel® Tiger Lake-UP3 Products

Thunderbolt™	2.5GbE LAN	PCI Express® 4.0
Supporting Thunderbolt with USB-C integrated ports, allowing a reduction of routing complexity and removing PCIe lane consumption from SoC or PCH.	Supporting TSN (Time Sensitive Networking), providing time synchronization with IT network and timeliness between systems.	Interconnect performance bandwidth double of the PCIe 3.0 specification achieving 16GT/s and compatibility with software and mechanical interfaces is preserved.



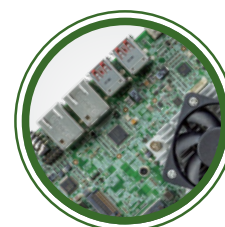
**THUNDERBOLT™**



**2.5 GbE**



Controller IC:  
Intel® I225LM / Intel® I225V



PCIe 3.0 and 4.0 Data Transfer Time  
Faster and time-saving!

