FADU

Flash Controllers

Customizable Firmware

SSD Designs

Turnkey Solutions

Private Label Manufacturing Services

ECHO
U.2 15mm SSD

ECHO
U.3 SSD

ECHO
E3.S SSD

ECHO E1.S SSD with 15mm Heat Sink

FADU

FC5161
Gen5

ECHO
E1.S SSD with 9.5mm Symmetric Enclosure

FADU

ECHO
E1.S SSD with 8.01mm Heat Spreader

FADU

Leading the Industry with
# Next Generation FLASH SSD Solutions

for Data Center Servers and Storage Arrays
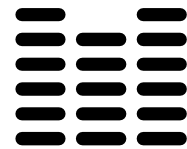
Introducing FADU

FADU is a fabless semiconductor company innovating Flash storage technology and the Flash storage supply chain.
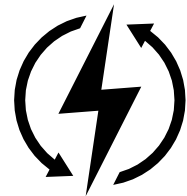
We are dedicated to developing a revolutionary Flash Controller architecture for SSDs that meets the explosively diversifying data demands placed on enterprise datacenters.
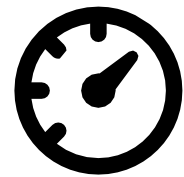
High-performance for peak throughput

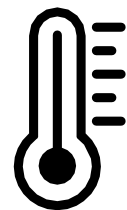**Low latency for high sustained QoS**

Low power without throttling

Rich enterprise storage feature list

High reliability and endurance

Advanced thermal management

Leadership

Jihyo Lee
CEO AND CO-FOUNDER

Jihyo Lee is the CEO and co-founder of FADU. He is a former partner at Bain & Company and a successful serial entrepreneur involved in multiple businesses in technology, telecom and energy. As CEO of FADU, he has established FADU as a fabless semiconductor innovator, uniting exceptional industry talent to create a revolution in data center and storage for next generation computing architectures.

Dr. Peter Nam
CTO AND CO-FOUNDER

Dr. Peter Nam is FADU's Chief Technology Officer, where he is in charge of developing NVMe SSD controllers and firmware. He received his B.S. degree in Electrical Engineering and a Ph.D. degree in Computer Science & Engineering both from Seoul National University. Between 2004 and 2014, Peter and his team had designed, prototyped and commercialized several SSD controller/FW architectures from scratch.

Dae Keun (DK) Lee
COO AND CO-FOUNDER

Dae Keun (DK) Lee is the COO and a co-founder of FADU. Mr. Lee is responsible for day to day operations of the company. Before joining FADU, he was a VP of finance at Sapphire Technology and worked as a senior software engineer at Grtg, a Korean start-up. DK holds a Bachelors Arts in Business Administration from Seoul National University.

Jong Yun (Jeremy) Yun
PRESIDENT

Jong Yun (Jeremy) Yun is the President of FADU, with more than 30 years of storage industry experience, and is responsible for the company's products. Previously, he was an Executive VP at Exicon and President at EKRI where he developed SSD semiconductor testers. Prior to Exicon, Jeremey was VP of Flash Solution Development at Samsung, with an emphasis on enterprise and data center applications. He holds an MBA from Sungkyunkwan University and a BS in electrical engineering from Kyungbook University.

Jongtaek Won
CFO

Jongtaek Won is the CFO of FADU. For more than ten years as a Bain & Company partner at its Seoul office, he led the Financial Investor Practice, advising global and local top-tier private equity funds and venture capitalists. Prior to Bain, he worked as a senior software engineer for Samsung SDS. Jongtaek holds an MBA from Columbia University and a bachelor's degree from Seoul National University.

Anu Murthy
VP OF MARKETING

Anu is a recognized leader in the Flash storage industry. She's a seasoned executive with experience in architecture, strategy, marketing and business development with a keen ability to embrace and drive technology that has a profound impact on the industry. Prior to FADU, Anu held key positions at storage leaders Seagate, Toshiba, SanDisk and Samsung.

Kartik Krishnan
VP OF SALES AND BUSINESS DEVELOPMENT

Kartik Krishnan is responsible for sales, business development and strategic partnerships at FADU. He is a seasoned technology professional with about 20 years of experience delivering semiconductor solutions and platforms. He has held leadership functions in product engineering at Intel and SanDisk and also has been a strategic sourcing executive with experience at Rivian (EV) & Hyper scalars like – Microsoft & Meta (server infrastructure).
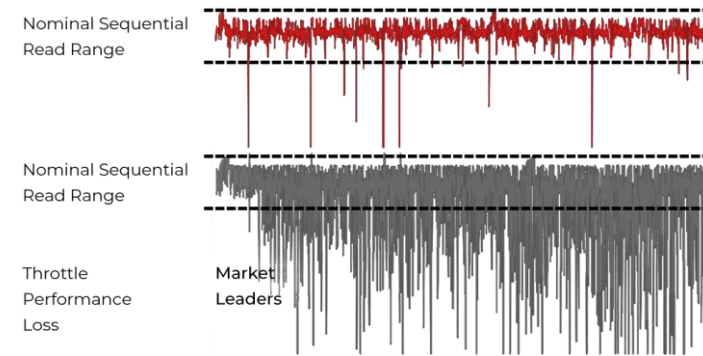
Architectural Approach

Legacy Controllers Fail to Deliver and Suppliers Didn't Care

Legacy Architecture
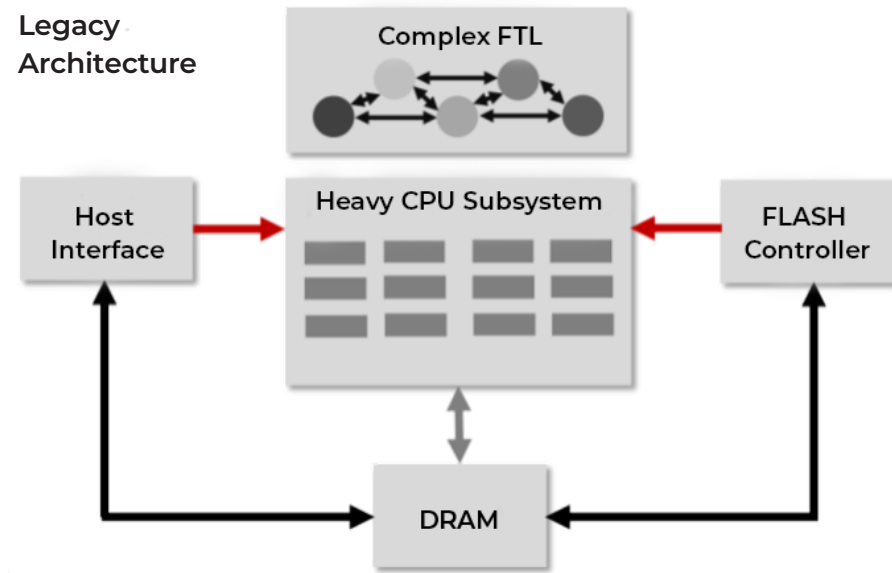
SSDs are defined by the capability of their controllers.

High power legacy controllers, with complex FTL layers and heavy CPU subsystems, cannot meet specifications without overheating.
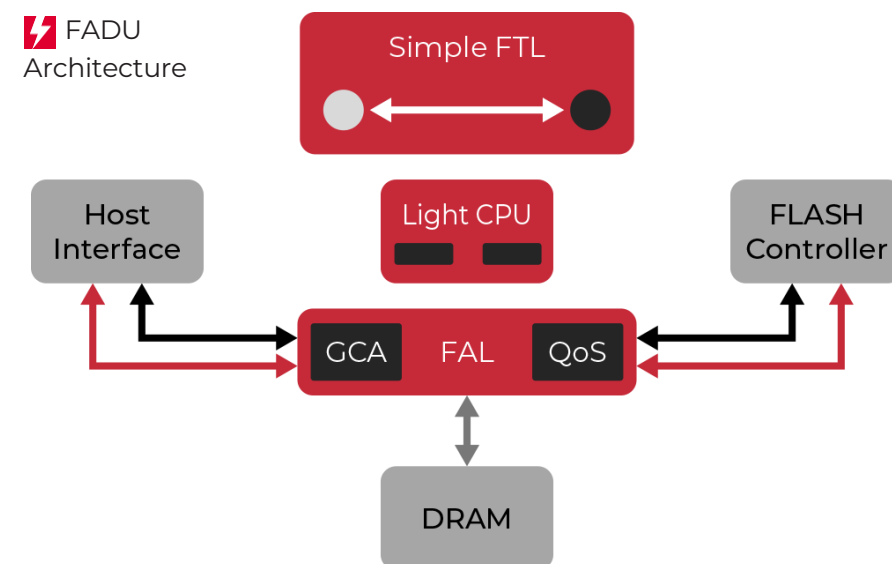
Their answer is to throttle SSDs to low power and temperature, which compromises the throughput performance, low latency consistency, and Quality of Service.

FADU Reinvented the FLASH Controller from the Ground Up

FADU Architecture

In 2015, we invented a new design to overcome the limitations and establish an architectural roadmap that scales as generations pushed performance and power.

- Simplified the FTL
- Replaced the complex CPU with a RISC-V core
- Introduces a Flash Acceleration Layer (FAL) to improve QoS
- Eliminated common controls between the host, CPU and DRAM

Benefits

Maximize Performance by Minimizing Throttle

FADU's controller keeps cool, leaving more thermal headroom for NAND memory and running virtually full-throttle so NAND stays cool and performance peaks.

## Save OpEx by Reducing Energy Consumption

Cooling and powering storage arrays has no ROI. FADU's architecture saves OpEx on both cooling and from lower controller power consumption.
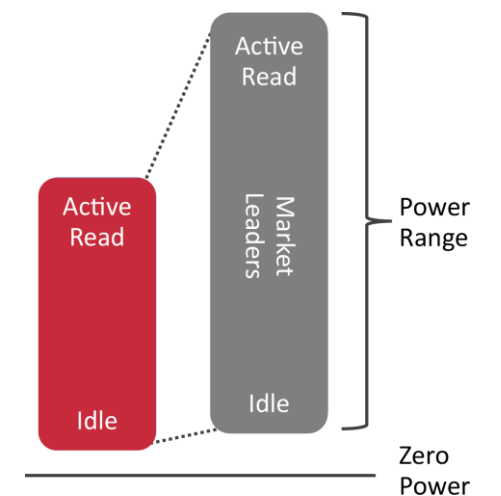
Achieve Peak, Sustained QoS and Consistent Low Latency

We've added new accelerators and schedulers enabling FADU to deliver extraordinary Quality of Service (QoS) to help meet the most stringent Service Level Agreements.
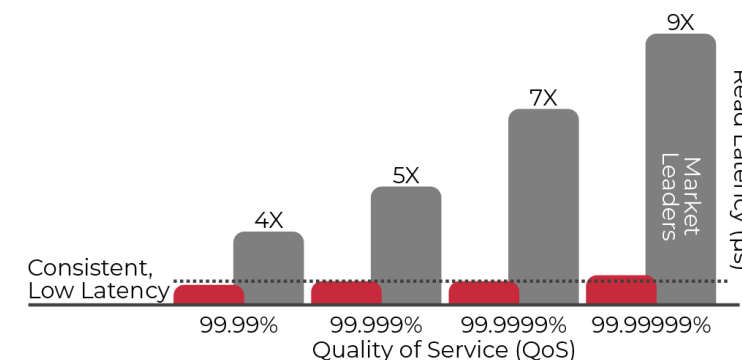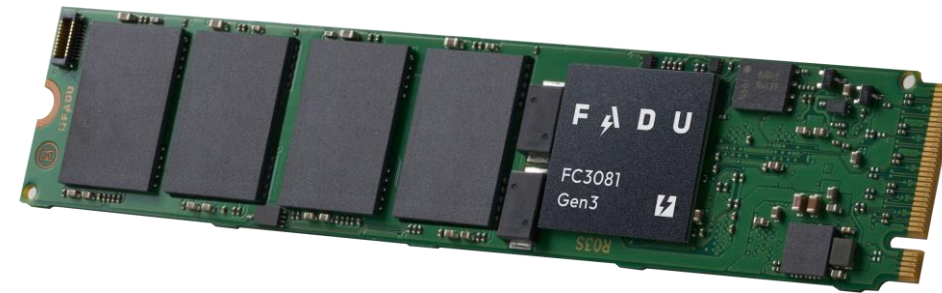
BRAVO

Interface: PCIe 3.0 x 4
Specifications: NVMe 1.4 | OCP NVMe Cloud SSD 1.0

The **BRAVO PCIe 3.0 Platform** delivers up to twice the KIOPS at 30% less power than other solutions.

It's powered by the **FC3081 Controller**, the industry's first RISC-V based controller consuming less power and delivering peak performance with virtually no throttle.

FADU BRAVO SSD designs are available in E1.S and M.2 SSDs.

Turnkey and Private Label BRAVO solutions are available today.

M.2 2210

E1.S 9.5mm

FC3081 Controller

E1.S 25mm

PCIe 3.0 SSD Platform

Storage Platform	BRAVO	
Interface	PCIe 3.0 x 4	
Specifications	NVMe 1.4 | OCP NVMe Cloud SSD 1.0	
FLASH Controller	FADU FC3081	
SSD Designs	M.2 | E1.S Form Factors	
	1TB | 2TB | 4TB Capacities	
SSD Performance Up To	Sequential Read	3,400 MB/s
	Sequential Write	2,400 MB/s
	Random Read	800 KIOPS
	Random Write	95 KIOPS
SSD Power Consumption	Active	<10W
	Idle	<3W
Latency	Random Read	70 µs
	Random Write	15 µs
Reliability	1.3 DWPD 5 yrs 7% OP	
	2.0M Hours MTBF	
Security	Data-path E2E Protection (SECDED)	
	Internal RAID	
	Self Encrypting Drive (AES-XTS)	
	Secure Boot	
	TCG/TCG OPAL 2.01	
Features	Multiple Namespaces (16NS)	
	SMART / Health Log / Telemetry	
	Atomicity of 512KB	
	NVMe-MI 1.0a	
	Power Loss Protection (PLP)	

DELTA

Interface: PCIe 4.0 x 4
Specifications: NVMe 1.4b | OCP NVMe Cloud Spec 1.0a

The **DELTA PCIe 4.0 Platform** delivers double the performance of the BRAVO PCIe 3.0 platform.
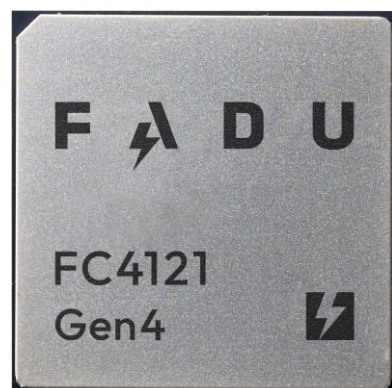
It's powered by the **FC4121 Controller**, FADU's second generation controller, consuming less power and at twice the performance as PCIe 3.0, to deliver industry leading KIOPS/Watt.

FADU DELTA SSD designs are available in E1.S and U.2 SSDs.

Turnkey and Private Label DELTA solutions are available today.

FC4121 Controller

E1.S 9.5mm, U.2 15mm

E1.S 15mm, 25mm Heat Sinks

PCIe 4.0 SSD Platform

Storage Platform	DELTA	
Interface	PCIe 4.0 x 4	
Specifications	NVMe 1.4b	OCP NVMe Cloud SSD 1.0a	
FLASH Controller	FADU FC4121	
SSD Designs	E1.S	U.2 Form Factors	
	1TB	2TB	4TB	8TB Capacities	
SSD Performance Up To	Sequential Read	7,050 MB/s
	Sequential Write	4,200 MB/s
	Random Read	1,350 KIOPS
	Random Write	200 KIOPS
SSD Power Consumption	Active	<14.5W
	Idle	<3.5W
Latency	Random Read	70 µs
	Random Write	15 µs
Reliability	1.0 DWPD 5 yrs 7% OP	
	2.5M Hours MTBF	
Security	Data-path E2E Protection (SECDED)	
	Internal RAID	
	Self Encrypting Drive (AES-XTS)	
	Secure Boot	
	TCG/TCG OPAL 2.01	
Features	Multiple Namespaces (128NS)	
	SMART / Health Log / Telemetry	
	Atomicity of 512KB	
	NVMe-MI 1.0a	
	Power Loss Protection (PLP)	

ECHO

Interface: PCIe 5.0 x 4 (x2 Dual Port)
Specifications: NVMe 2.0 | OCP Datacenter NVMe SSD 2.0

FADU's ECHO PCIe 5.0 SSDs are designed to meet the increasing demands placed on the next generation of Hyperscaler, Hyper-converged, Cloud, Edge, and Enterprise data centers.

At the heart of FADU's SSDs is the **FC5161 Controller**, the latest and highest performance FADU controller yet. It enables ultra-low and consistent latency and virtually eliminates thermal throttling issues for superior QoS.

This family will be the first OCP SSDs to support FDP and 64 Physical Functions with reduced WAF. Dual-port support will also be announced.
The ECHO platform is now available.

U.3, U.2 15mm, E3.S

FC5161 Controller

E1.S 9.5mm, 15mm, 25mm Heat Sinks

PCIe 5.0 SSD Platform NEW

| Storage Platform	ECHO	
Interface	PCIe 5.0 x 4	
Specifications	NVMe 2.0 | OCP Datacenter NVMe SSD 2.0	
FLASH Controller	FADU FC5161	
SSD Designs	E1.S | E3.S | U.2 | U.3 Form Factors	
	2TB | 4TB | 8TB | 16TB Capacities	
SSD Performance Up To	Sequential Read	14,000 MB/s
	Sequential Write	10,000 MB/s
	Random Read	3,200 KIOPS
	Random Write OP 7	400 KIOPS
	Random Write OP 28	800 KIOPS
SSD Power Consumption	Active	<20W
	Idle	<5W
Latency	Random Read	55 µs
	Random Write	10 µs
Reliability	1.0 DWPD 5 yrs 7% OP 3.0 DWPD 28% OP	
	2.5M Hours MTBF	
Security	Data-path E2E Protection (SECDED)	
	Internal RAID	
	Self Encrypting Drive (AES-XTS)	
	Secure Boot	
	TCG/TCG OPAL 2.01	
Features	Support for 64 Physical Functions	
	Flexible Data Placement (FDP) Supported	
	Multiple Namespaces (512NS)	
	NVMe-MI 1.2 | SMART | Health Log | Telemetry	
	T10 DIF/DIX	
	Power Loss Protection (PLP)	
	Vital Product Data (VPD) over SMBus Support	

Controllers & Custom Firmware

Design your own SSD with a FADU controller and customized firmware.

Build Your Own SSD
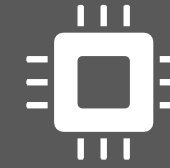
Controller | Firmware
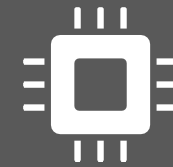
Turnkey Solutions

Use a Turnkey FADU SSD design to jump start production.

Build Your Own SSD

Controller | Firmware | SSD Design | BOM | Tech Support

Private Label Service

Minimize upfront manufacturing costs by consigning Flash to us for private labeled SSDs.

Consign Your Flash to Fadu

Design | Customization | Manufacturing | Branding | Packaging

Contact FADU today.

"We started FADU to disrupt the FLASH SSD industry - to lift it off a path of compromised performance to maintain legacy architectures.

Our mission is to deliver multi-generation solutions that enable peak performance, consistent low latency, and high sustained QoS at the lowest power.

We're charting a new path for SSDs in data center servers and storage arrays."

Jihyo Lee
CEO and Co-Founder
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