

FADU BRAVO SERIES ENTERPRISE SSD

FADU

PCIe NVMe 3.1 X 4 / M.2 22110 & U.2 7mm (dual port)



MEET THE BEST OF THE BEST

Modern data center needs next generation SSD – better performance, lower power, and new innovative features. However, SSD industry has been stagnated in legacy and lazy to hear the voice of customers. That is why we started FADU to change this industry. Finally, FADU introduces the new enterprise NVMe SSD. We don't want to focus just one or two new features. FADU BRAVO is the simply the best in every single dimension and satisfies any sophisticated needs from customers. It is the SSD what you look for.

⚡ VERY LOW POWER

- >30% lower power both in U.2 and M.2
- Remove thermal issue enabling 24/7 full performance operation without throttling

⚡ ULTRA PERFORMANCE

- >30% faster performance – 800K IOPS and 3.5GB/s throughput
- Low power M.2 and U.2 7mm SSD deliver faster performance than traditional 25W U.2 15mm and AIC SSDs

⚡ SUPERIOR QOS

- Very stable latency QoS at any workload
- Can beat 3D Xpoint(Optane) SSD and Z-SSD (Bravo U)

⚡ FULLY LOADED FEATURES

- Comprehensive support on up-to-date features required by hyperscale data center and enterprise storage (SR-IOV, Multistream, CMB, PMR, IOD, dual port & more)

⚡ SOLID RELIABILITY

- 2 times more reliable 4KB LDPC engine
- End to end data protection
- TCG OPAL 2.0 / Dynamic internal RAID

⚡ FULL LINE-UP

- TLC, QLC, and low latency SLC versions
- M.2 22110/2280, U.2 7mm single/dual port, and NGSFF (TBD)
- Open Channel SSD 2.0 support (Bravo O)

IT'S TIME TO CHANGE.

VISIT # 715 @ Flash Memory Summit 2018
www.fadu.io / sales@fadu.io



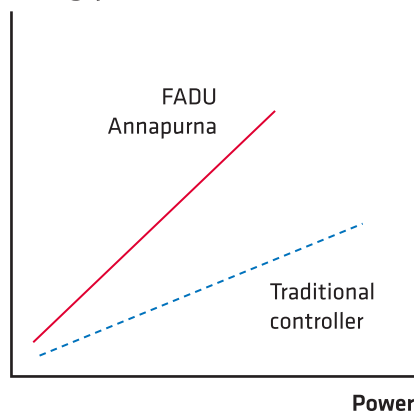
DIFFERENTIATED VALUES



LOWER POWER, FASTER THROUGHPUT, BETTER QOS, AND MORE...

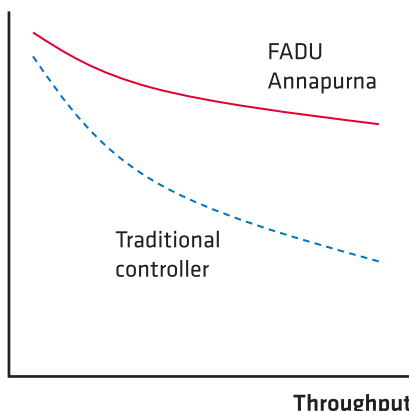
POWER EFFICIENT

Throughput



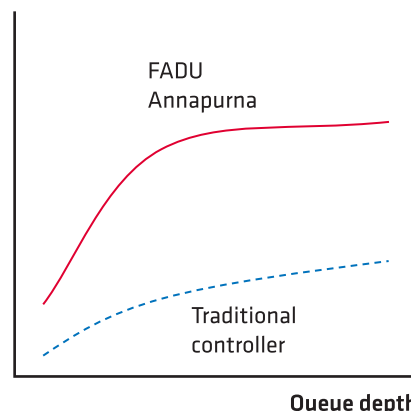
RELIABLE QoS

QoS



SUPERIOR IOPS

IOPS



FADU SSD is faster and more stable. But most importantly it consumes much lower power. It means thermal is no more issue, and throttling performance is no more needed.

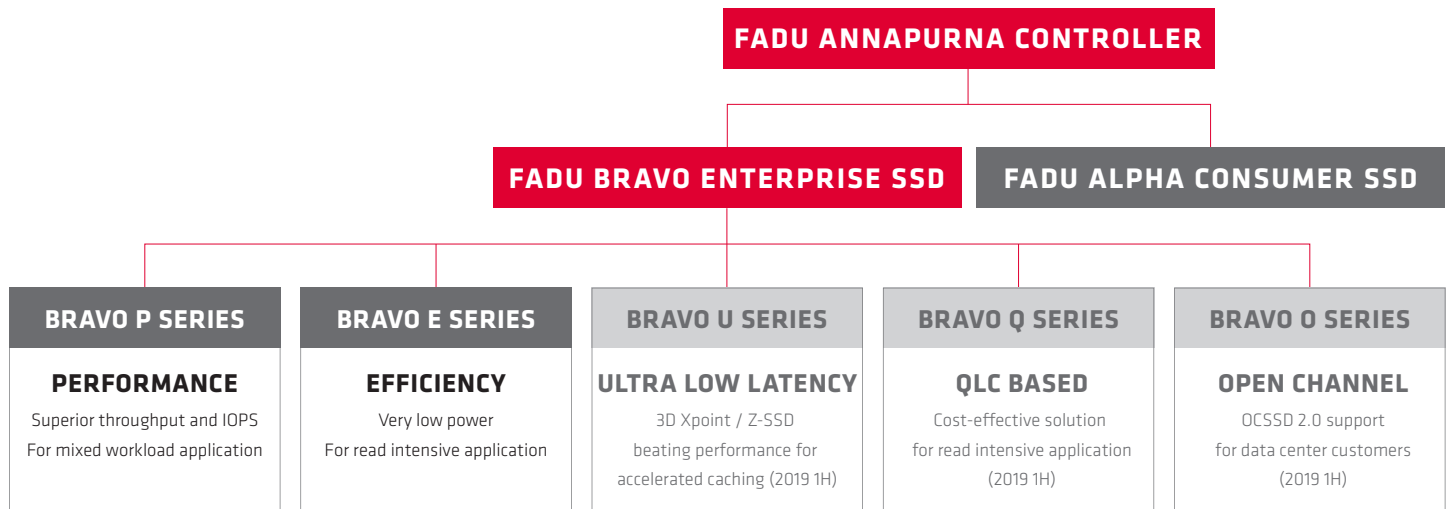
SIMPLY COMPARE WITH OTHER SSDS

M.2 22110 comparison						U.2 comparison							
	FADU	FADU	Intel	Seagate	Samsung		FADU	Seagate	Intel	Intel	Micron	Samsung	Samsung
	BRAVO P	BRAVO E	P4511	Nytra5000	PM983		BRAVO P	Nytra5000	P4501	P4610	9200MAX	PM1725a	PM983
Capacity	1.92TB	0.96TB	2TB	1.92TB	3.84TB	Form Factor	U.2 7mm	U.2 7mm	U.2 15mm	U.2 15mm	U.2 15mm	U.2 15mm	U.2 15mm
Sequential Read (GB/s)	3,500	3,500	2,000	2,000	3,000	Capacity	1.6TB	1.6TB	2TB	1.6TB	1.6TB	1.6TB	1.92TB
Sequential Write (GB/s)	2,700	900	1,430	1,200	1,900	Sequential Read(GB/s)	3,500	2,000	3,100	3,200	3,500	3,300	3,200
Random Read (K IOPS)	750	400	295	245	520	Sequential Write(GB/s)	2,700	1,200	860	2,100	1,900	2,950	2,000
Random Write (K IOPS)	70	35	36	28	45	Random Read(K IOPS)	750	245	362	620	680	800	540
Active Power-Read (W)	6	5.2	8.25	7	8.7	Random Write(K IOPS)	200	67	36	200	255	160	50
Active Power Write (W)	8.1	4.1	8.25	7	10.6	Active Power (W)	6.2 / 8.5	9	12	13.3	25	23	10.6
Idle Power (W)	1.7	1.7	3.5		4	Idle Power (W)	2		5	5	7	7.7	4
K IOPS/W (read)	125.0	76.9	35.8	35.0	59.8	IOPS/W (read)	121	27	30	47	27	35	51
K IOPS/W (Write)	8.6	8.5	4.4	4.0	4.2	IOPS/W (Write)	24	7	3	15	10	7	5

FADU's low power M.2 and U.2 easily outperform existing high power U.2 SSDs. It is the best SSD.

FULLY LOADED FEATURES TO SATISFY ANY NEEDS FROM ENTERPRISE CUSTOMERS

FADU BRAVO is powered by FADU ANNAPURNA, the most innovative SSD controller. FADU ANNAPURNA contains the full set of features such as SR-IOV with virtualization, multistream, multiple namespace, PMR, CMB, and more which data centers are looking for. Especially, FADU ANNAPURNA is designed to have full flexibility with 'Microcode' based architecture enables full customization of NAND control. If you desire to have new features to improve/maximize your system performance, do not hesitate to talk to FADU. WE DELIVER.

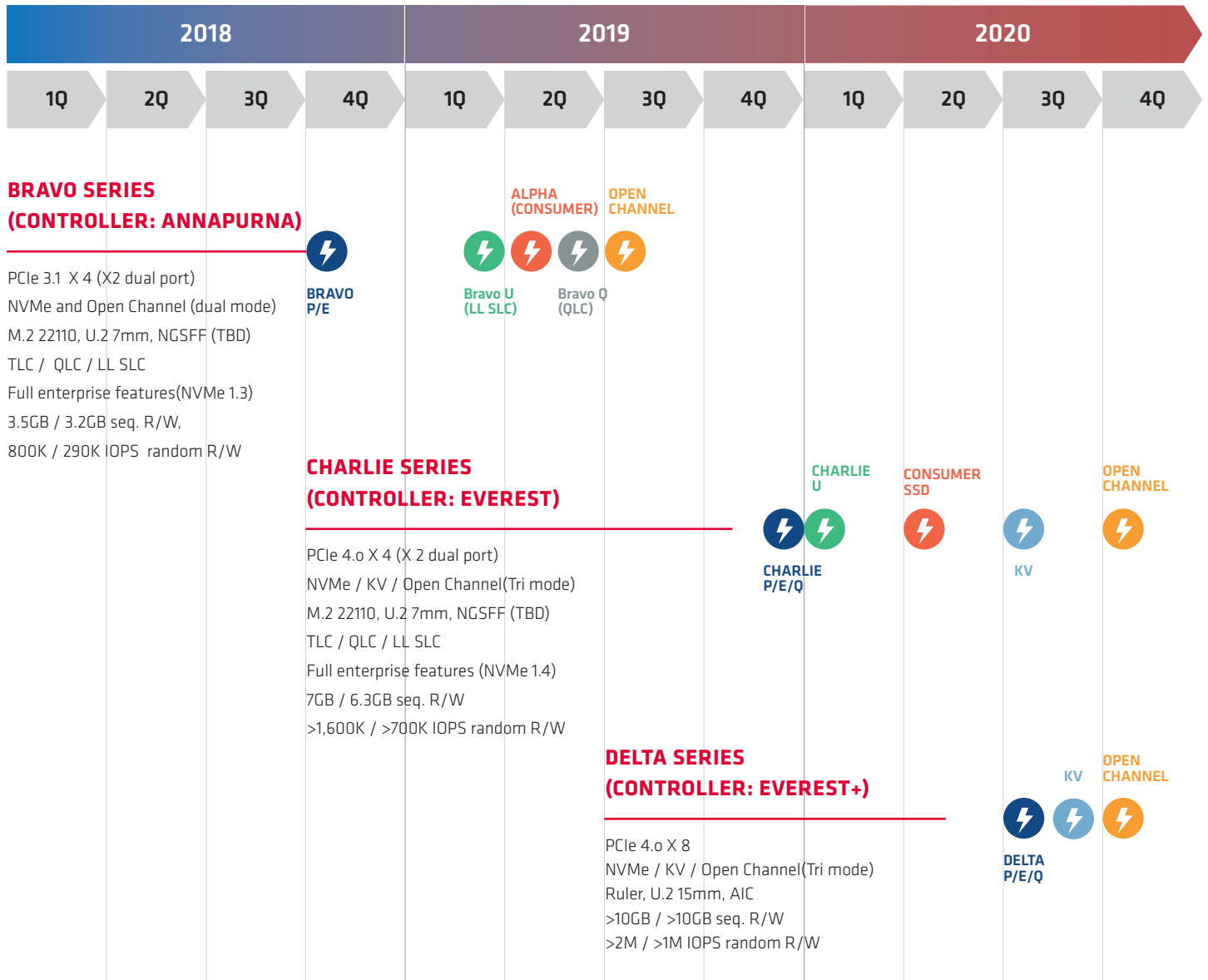


		P SERIES		E SERIES		FADU ALPHA
Type	Target	Performance		Low power		Consumer
	Schedule	2H 2018		2H 2018		1H 2019
Interface	Physical	PCIe GEN3.1 x 4 and 2 x 2 (Dual Port: U.2 only)				PCI GEN3.1x4
	Logical	NVMe1.3a and Open Channel SSD 2.0 (Dual Mode)				NVMe 1.3
Hardware	Form Factor	U.2 7mm / M.2 22110 / NGSFF (TBD)				M.2 2280
	Controller	FADU Annapurna FC3081 (RISC-V)				FC3082
	NAND	3D TLC				3D TLC
	Capacity	1TB / 2TB / 4TB / 8TB* (*U.2 only)		1TB / 2TB / 4TB* (*U.2 only)		TBD
	O.P	28%	7%	28%	7%	7%
Performance	Seq. Read	3.5 GB/s		3.5 GB/s		3.5 GB/s
	Seq. Write	3.2 GB/s		1.7 GB/s		3.5 GB/s (SLC buffer)
	Ran. Read (IOPS)	Upto 800K		Upto 780K		750K
	Ran. Write(IOPS)	Upto 210K (Sustained)	Upto 70K (Sustained)	Upto 140K (Sustained)	Upto 65K (Sustained)	800K (upto)
Power	Active (Read)	6W (M.2) / 6.5W (U.2) @ 2TB		4.9W (M.2) / 5.4W (U.2) @ 1TB		
	Active (Write)	7.5W (M.2) / 8.3W (U.2) @ 2TB		3.8W (M.2) / 4.3W (U.2) @ 1TB		
	Stand-by	1.5W (M.2) / 2W (U.2)		1.5W (M.2) / 2W (U.2)		3mW (L1.2)
Latency	Ran. R/W (QD=1)	80 us / 15 us		85 us / 15 us		80us / 15us
Reliability	Endurance	1 DWPD		3 DWPD / 1 DPWD		1 DWPD
	MTBF / UBER	2 Million hours / 1E-17				
	Warranty	5 years				
Features	Data Security	AES 256 (Encryption) / TRNG / TCG OPAL2.0 / FIPS 140-2				
	Key Feature	Multi Streams (up to 32) Multiple NS (128) with 128 Encryption keys SR-IOV (15VF/PF/Port) with Virtualization (Dynamic allocations of Queue/Interrupt) CMB (Controller Memory Buffer) up to 16MB		PMR (Persistent Memory Region) up to 16MB NVMe-MI 1.0a+ SMART / Health Log / Telemetry Atomicity of 512KB T10 DIF/DIX Vital Product Data (VPD) over SMBus & LED Internal/External Power Loss Protection (PLP)		

PRODUCT ROADMAP



FROM 3Q 2018, FADU STARTS INTRODUCING THE FULL LINEUP TO MEET EVERY SINGLE NEEDS FROM ENTERPRISE CUSTOMERS



FLEXIBLE BUSINESS MODEL

FADU CAN PROVIDE FULL FLEXIBILITY TO MEET YOUR SOPHISTICATED NEEDS

