DapuStor

Roealsen6® R6 Series

DapuStor Enterprise NVMe SSD | Transparent Compression

PCIe 5.0

DapuStor® Roealsen® R6101C Transparent Compression SSD series is built on DapuStor's in-house DP800 controller and firmware, featuring PCIe 5.0 and 3D eTLC NAND Flash. As the first wave of PCIe Gen5 transparent compression enterprise NVMe SSD, it integrates advanced hardware compression and scalable capacity to achieve up to a 4:1 compression ratio, 3.5× capacity expansion, and 4× random write performance gains. This effectively reduces write amplification, improves SSD endurance, and provides a high-performance, low-TCO, large-capacity solution with zero adaptation for enterprises and data centers.

| First-Wave PCIe5.0 Transparent Compression

DapuStor® Roealsen® R6101C is the first wave of PCIe Gen5 transparent compression SSD. Powered by the in-house DP800 controller, it features an application processor platform and transparent compression module, expanding user-available capacity without changing physical storage size while optimizing data density based on compressibility. With unchanged user capacity, it significantly extends endurance and enhances steady-state random write performance. Seamlessly integrating into existing storage architectures, it supports plug-and-play with no additional adaptation required.

14/13 GB/s	**3000K/1200K**	**60/8 µs**
Sequential Read/Write	Random Read/Write IOPS	Read/Write Latency

| High-Performance Scalability

DapuStor® Roealsen® R6101C is built with an application processor and transparent compression module, significantly enhancing steady-state performance and SSD lifespan through data compression. By optimizing compression ratios, it achieves lower latency, higher IOPS, and superior performance-to-power efficiency. At a 4:1 compression ratio, its random write performance is up to 4× faster than non-compressed NVMe SSDs.

| High-Capacity Expansion

Leveraging real-time lossless expansion, the R6101C dynamically adjusts physical storage based on data compressibility, achieving up to 3.5× logical capacity expansion. This reduces the actual storage cost per GB while increasing total available storage, maximizing efficiency for enterprise applications.

| In-House DP800 Controller

Powered by DapuStor®'s latest DP800 intelligent storage SoC, the R6101C supports the standard NVMe interface with minimal host processing and memory overhead. Optimized for high-performance 4K random read/write and on-chip flash management, DP800 enhances read/write efficiency while significantly reducing latency and power consumption. This next-gen controller marks a breakthrough in computational storage, delivering greater value and efficiency to enterprise users.

| Advanced Features

Transparent Compression
- Multiple compression ratio configurations.

NVMe 2.0
- Online firmware upgrades, up to 128 namespaces, atomic writes, etc.

OCP 2.5
- Telemetry
- Latency Monitor
- NVMe-MI Send, NVMe-MI Receive

NVMe-MI 1.2
- MCTP Over I2C/SMBUS, PCIe VDM
- Out-of-band firmware upgrades
- NVMe-MI Send, NVMe-MI Receive

End-to-End Data Protection
- T10 DIF/DIX
- Multiple sector formats, Protection Information (Type 1, 2, and 3) with detailed logging to safeguard user data

High Reliability
- Secure Boot, firmware integrity verification, Format, and Sanitize
- Multi-level capacity usage alerts to prevent write overruns, ensuring system stability and data integrity
- Thermal Throttling

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Product Specifications

PCN (Product Code Name)	R6101C					
Capacity (TB)	3.84			7.68		
Form Factor	U.2 15mm					
Interface	PCIe 5.0×4, NVMe 2.0					
Compression Ratio	1：1	2：1	4：1	1：1	2：1	4：1
Read Bandwidth (128KB) MB/s	14000	14000	14000	14000	14000	14000
Write Bandwidth (128KB) MB/s	5800	11500	13000	7500	13000	14000
Random Read (4KB)K IOPS	3000	3000	3000	3000	3000	3000
Random Write (4KB) K IOPS	230	1200	1200	300	1200	1200
4K Random Latency (Typ.) R/W µs	60/8					
4K Sequential Latency (Typ.) R/W µs	8/8					
Typical Power (W)	16					
Idle Power (W)	5					
Flash Type	3D eTLC Nand Flash					
Product PN	DPRP5104T0TG03T8050			DPRP5108T0TF07T6050		
DWPD	1	8	18	1	8	18
MTBF	2.5 million hours					
UBER	1 sector per 10^18 bits read					
Warranty	5 yrs					

*Differences in hardware, software, or configuration will affect actual test results.

✉ mkt@dapustor.com

☎ +86 400-9938-968

🌐 http://en.dapustor.com/

📍 Chuangtou Building, Longgang District, Shenzhen, China

DapuStor