Falcon 5208

NVMe Namespace Management

Create, Attach, Delete and Modify

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Notes, Cautions, and Warning



A NOTE indicates important information that helps you make better use of your product.



A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



Warning A WARNING indicates a potential for property damage, personal injury, or death.

1. Considerations before creating a namespace

Falcon Multi-host NVMe SR-IOV solution integrates the 8 Samsung PM1735 PCIe SSDs, users can create a maximum of 32 namespaces under each SSD. Under Falcon NVMe SR-IOV management mechanism, users can define the storage capacity and multi-path I/O and sharing capability (NMIC) when creating a namespace. There are certain considerations before creating a namespace.

There is physical limitation that prevents users from attaching the namespaces of an SSD to the virtual functions of another SSD, therefore, device could limit the I/O performance when the distribution of resources is not well planned. To secure SSD I/O performance, it is recommended to avoid creating namespaces on the SSDs which the capacity and throughput are near saturation. Users can get the usage and performance data of each SSD from the overview page, or from resource management page and the monitor page. Aside from the application requirement, users can select a suitable SSD based on monitor information including availability of storage capacity, availability of virtual functions, and throughput utilization.

As the namespace capacity cannot be modified after the namespace is created, users should know clearly what purpose this namespace is serving for and set the storage capacity according to application requirements.

NMIC property defines the sharing capability of the namespace. A private namespace can only be attached to single virtual function while a shared namespace can be attached to multiple virtual functions. The NMIC property can be modified later. Set the NMIC depending on the purpose that the namespace is serving.

Users can find SSD information from different pages on the Falcon 5208 graphical user interface (GUI).

Host	SSD					
Device ↑	Used VF	Namespace Q'ty	NVM Capacity (Used/Total)	Model Name	Link Capability (Curr/Max)	Action
SSD 3	32	1	3.00 TB / 3.20 TB	NVMe SSD Controller PM173X	G4x8/G4x16	EQ.
SSD 6	32	2	3.00 TB / 3.20 TB	NVMe SSD Controller PM173X	G4x8/G4x16	Ę

Falcon 5208 GUI- Resource management-SSD

Falcon 5208 GUI- Overview

Check the NVMe SSD throughput to see which NVMe SSD still have bandwidth for new namespace (image N/A)

2. Create namespace

After users have select an SSD, click the action button to enter its management page. Find the namespace panel, click "Create namespace".

Namespace Inf	ormation		Modi	fy NMIC	Create Namespace
NSID	Status	VF	Capacity	NMIC	Action
0x1	Not Attached		1.00 TB	Private	×
0x2	Not Attached		2.00 TB	Private	×

Set the capacity and NMIC for the namespace, click yes to create.

D Controller PM	1173X	Firmware Version			EPK9CJ5QS55HM
		PCI Vendor/Subsy	ystem ID		Samsung Electro
3 / 3.20 TB		IEEE OUI Identifie	r		9528
Private – 3.00 '	Create Namespace				*
	Unallocated Capacity:		200.63 GB		
	Capacity:		1 ТВ	•	
	Multipath I/O and Sharing Capabilities (NMIC):	Private 💌		
espace				No	Yes
	0	R	0x1	Not Attached	
			0x2	Not Attached	

The capacity of the namespace **cannot** be modified after the namespace is created.

3. Attach namespace to VF(s)

Users can attach the namespace to any virtual function(s) that belongs to the same physical SSD. A private namespace can be attached to only one virtual function. A shared names space can be attached to multiple virtual functions.

Click the status of the namespace

Namespace Inf	ormation		Modi	ify NMIC Create Namespace	
NSID	Status	VF	Capacity	NMIC	Action
0x1	Not Attached		1.00 TB	Private	×
0x2	Not Attached		2.00 TB	Private	×

Namespaces that have been attached to a virtual function would show "Attached". However, if the namespace is a shared namespace, users can still click the "attached" button and attach the namespace to more virtual functions.

Select a VF(s) from the list, click yes to attach

Attach	/ Detach				
	VED	Heat & A	Casacity	Kamasaara	×
	0x1	HOST 1			-
	0x2	H0ST 1			-
	0x3	HOST 1			_
	0x4	HOST 1			-
	0x5	HOST 1			
	0x6	HOST 1			
	0x7	HOST 1			
	0x8	HOST 1			
	0x9	HOST 1			
	Oxa	HOST 1			
	0xb	HOST 1			
	Oxc	HOST 1			
	Oxd	H0ST 1			
	Oxe	HOST 1			
	Oxf	H0ST 1			*
					_
				No	Yes

When attaching namespaces, find the virtual functions that are assigned to the desired host machine(s).

4. Delete namespace

When a namespace is deleted, the data stored on it will be erased and the capacity that it originally holds will be freed.



Please make sure the data is no longer needed or is backed up properly.

Find the namespace to be deleted, click "x"

NSID	Status	VF	Capacity	NMIC	Action
0x1	Not Attached		1.00 TB	Private	×
0x2	Not Attached		2.00 TB	Private	×

Confirm deletion



5. Modify NVMe multi-path I/O and sharing capability (NMIC)

Click "Modify NMIC"

amespace Inf	ormation		Modi	fy NMIC Cr	eate Namespace
NSID	Status	VF	Capacity	NMIC	Action
0x1	Not Attached		1.00 TB	Private	×
0x2	Not Attached		2.00 TB	Private	×

Changing a private namespace into a shared namespace

Select "Shared" instead of "Private", click yes to apply.

the namespac	To protect your data, Multipath I/O and Sharing Capabilities (NMIC) modification function is disabled for the namespaces attaching to more than one virtual functions.				
NSID	Capacity	NMIC	Action		
0x1	1.00 TB	Private	Private O Shared		
0x2	2.00 TB	Private	Private Shared		

Changing a shared namespace into a private namespace

Select "Shared" instead of "Private", click yes to apply.



To prevent data loss on the host side, the NMIC modification function is disabled for namespaces that have been attached to more than one virtual function.