Falcon 5208

NVMe Virtual Function Reassignment

Version 1.0 October 1st, 2021



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.

Notes:

This document explains virtual function reassignment process under Falcon 5208 NVMe SR-IOV management mechanism for users who had assigned NVMe virtual functions in the initial settings and would like to reallocate virtual functions. For first time users, please see Falcon 5208 User Manual and Quick Installation Guide

Virtual function reassignment can be done from the re-assign page:

Resource Management (SSD) > Select a device and click "Action"

HЗ	🚦 Overview	🕲 Resource Management	III VF Config	よ Port Config	C Monitor	💝 System Health	ථ Chassis	A Maintenance	🌲 Event Log	🏚 Setting			L,
	Host SSC	•											
	Device 个	Used VF	Namespace	Q'ty	NVM Capa	city (Used/Total)		Model Name			Link Capability (Curr/Max)	Action	
	1:1 (005500)	14	2		1.06 TB /	3.20 TB		NVMe SSD Contro	iler PM173X		G4x8/G4x8	8	
	1:5 (004000)	11	2		3.10 TB /	3.20 TB		NVMe SSD Contro	ller PM173X		G4x8/G4x8	R	

Find "VF assignment Information" and click "Re-assign VF"

Model NVWe SSD Controller PM173X Berlal Number SSD Hu60R100149 Vaailable / Total NVM Capacity 2.14 TB / 3.20 TB Seed VM Capacity 3.20 TB S	Model NVMe SSD Controller PM173X Sarial Number S551HN00R100149 Available / Total NVM Capacity 2.14 TB / 3.20 TB Used NVM Capacity 1.06 TB (Private - 1.06 TB/ Shared - 0 MB) Created Namespace 2/92 Used VF n/a Health n/a	(005500) Information		Detailed Info	ormation	
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Jaed VF n/a Temp. n/a 4ealth n/a Assignment Information Re-Assign VF Namespace Information	Assignment Information Re-Assign VF Namespace Information	Created Namespace	2/32			
tealth n/a Assignment Information Re-Assign VF Namespace Information	Temp. n/a Health n/a Assignment Information Re-Assign VF Namespace Information	Used VF	n/a			
Assignment Information Re-Assign VF Namespace Information	Assignment Information Re-Assign VF Namespace Information	Temp.	n/a			
Assignment Information Re-Assign VF Namespace Information	Assignment Information Re-Assign VF Namespace Information	Health	n/a			
		Assignment Information		Re-Assign VF	Namespace Inf	ormation

"Re-assign VF" page

1:1 (005500) Information								
VF Assigned : 14		Free VF:18	Total Hosts : 2		v	/Fs assigned to 2 host(s)		
Virtual Functi	ons					1:H1.0	+	
VF #	Assign to	Host Bus:Dev:Pune	Namespace Attached	Action		Host Port : 1:H1.0	Link speed :/64x16	
1	1:H1.0		No	Unassign		Assigned VF	3	
2	1:H1.0		No	Unassign	- 11			
з	1:H1.0		No	Unassign		1:H2.0	+	
4			No	Unassign		Host Port : 1:H2.0	Link speed : =/G4x16	
5			Yes	Unassign	-11	Assigned VF	0	
6			No	Unassign				
7			No	Unassign				
8			No	Unassign				

NVMe Virtual Function Reassignment

Under Falcon 5208 NVMe SR-IOV management mechanism, users can reassign virtual functions among connected host machines. It is recommended to reboot or rerun a PCIe scan on the host machines when any virtual function reassignment is made.

As all 256 virtual functions have been preassigned to host machines in the initial setting, when reassigning virtual functions, users should first unassign the unused virtual function from a host machine (VFs without any namespace attached). Users can only assign virtual functions that have not been assigned to any host. Please refer to the following steps:

Unassign unused virtual function(s) from a host machine.



Check host port and namespace attachment

Click the "Unassign" button to unassign virtual function(s) without namespaces attached (i.e., Namespace Attached=No)

1 (005500) I	nformation							
VF Assigned : 14		Free VF : 18	Total Hosts : 2		VFs assigned	to 2 host(s)		
irtual Functio	ons				1:81.	0		
17.1	Assign to	Host Bus:Dev Func	Namospace Attached	Action	* Host	Port: 1:H1.0	Link speed : -/64x16	
1	1:H1.0		No	Unassign	Ass	igned VF	3	
2	1:H1.0		No	Unassign				
3	1:H1.0		No	Unassign	1:H2.	0		
4			No	Unassign	Host	Port : 1:H2.0	Link speed :/G4x16	
5			Yes	Unassign	Ass	igned VF	0	
6			No	Unassign			•	
7			No	Unassign				
8			No	Unassign				

When unassigning VFs with namespace(s) attached, the VF will be unassigned, and the namespaces will be detached automatically. The data stored on the namespace(s) are not erased, users can still find the namespace under the SSD action page.

Assign the virtual function(s) to a different host machine.

HЗ	E Creview	Resource Management	III VT Config 🕹 Port Config	🖵 Mosilior 🗢 System Health 🔿 (Chanala 🔌 Maletonaece	8 Event Log	0 Set	ing		[1001] 0
	Host 550								Back	5
	1:1 (00550	0) Information								
	VF Assigned	14	Free WF : 18	Tota	l Hosta : 2		v	To assigned to 2 host(s)	List of host	ts
	Virtual Fun	ctions						1:H1.0	I	+
	17.1	Antign to	Host Bus Dev Fune	Namespace Attached		tion	i.	Heat Port : 1.H1.0	Link speed :=//D4x56	
	1	1.HIL0		No	U.	essign		Assigned VF	12	
	2	1.942.0		No	U-	****			-	
	3	1.H1.0		No	U	reles		1:H2.0		+
	4	1.942.0		No	U+	eolos		Hest Port: 1:H2.0	Link speed :-/04x16	
	5	1.HIL0		Yes	U.	499101	Ы	Assigned VF	2	
	6	1.911.0		No	U.	a esign				_
	7	1.911.0		No	U+	a salga				
		1.911.0		No	U.	a calga				
	9	1.HIL0		No	U+	****0*				
	10	1.911.0		No	U-	eeelon				_

issigned to 2 host(s)	Assign
1:H1.0	+
Host Port : 1:H1.0	Link speed :/G4x16
Assigned VF	12
1:H2.0	+
Host Port : 1:H2.0	Link speed :/G4x16
Assigned VF	2

(i) One VF can only be assigned to one host at a time.

I) The system will assign VFs on first available basis in VF number order.

e.g., If VF 1-2 and 1-3 are both free, when assigning VFs, the system would prioritize VF1-2.

Reboot the host machines that received VF re-assignment.

An example is given in the next pages.

Example

If customers would like to change the assigned VFs to the connected hosts, below is an example of changing the assigned VFs.

The original assigned VFs are as below. The host with x16 host connection gets 16 VFs from every NVMe SSD, the hosts with x8 host connection get 8 VFs from every NVMe SSD. The number of VFs assigned to each host was based on the bandwidth of host connection.

Original VF assignment:

Host connections 1 x16, 1 x8, and 1 x8 8 Samsung PM1735 NVMe SSD 32 virtual functions per NVMe SSD Assigned VFs: 16x VFs for host 1; 8x VFs for host 2; 8x VFs for host 3

Host	Host 1	Host 2	Host 3
Link	PCIe 4.0 x16	PCIe 4.0 x8	PCIe 4.0 x8
SSD	VF	s assigned to each host per S	SD
1	16	8	8
2	16	8	8
3	16	8	8
4	16	8	8
5	16	8	8
6	16	8	8
7	16	8	8
8	16	8	8

Reassign virtual functions

The VF assignment is changed to the following: Host 1 gets 20 VFs, the host 2 gets 8 VFs (unchanged), and host 3 gets 4 VFs from every NVMe SSD.

New VF assignment:

Host connections 1 x16, 1 x8, and 1 x8 8 units of Samsung NVMe SR-IOV SSD 32 virtual functions in one NVMe SSD Assigned VFs: 20 VFs for host 1; 8x VFs for host 2; 4x VFs for host 3

(Continue to next page)

Host	Host 1	Host 2	Host 3
Link	PCle 4.0 x16	PCle 4.0 x8	PCle 4.0 x8
SSD	VF	s assigned to each host per S	SD
1	16 +4	8	8 -4
2	16 +4	8	8 -4
3	16 +4	8	8 -4
4	16 +4	8	8 -4
5	16 +4	8	8 -4
6	16 +4	8	8 -4
7	16 +4	8	8 -4
8	16 +4	8	8 -4

Steps:

For each SSD

1. Unassign 4 VFs that are previously assigned to host 3.

Resource management \rightarrow Device \rightarrow SSD, click on action \rightarrow Re-assign VF From the Virtual Function panel, find any 4 VFs assigned to host 3, unassign them.

2. Assign the 4 VFs to host 1

From host panel, find host 1, click the "+" button 4 times.

When all the reassignments are done, reboot host 1 and host 3 for the changes to take effect.

After the host 1 and host 3 are rebooted, the VF re-assignment is finished. The host machines should recognize any change that has been made. Users can now attach namespaces to the VFs added to host 1.