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VMID Enablement for Fibre Channel (FC) Storage – Benefits & Performance

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Issue/Introduction

This article provides an overview of VMID, benefits, configuration guidance, and how it relates to performance.

Environment

VMware vSphere ESXi

Resolution

What is VMID tagging?

VMID tags are able to be utilized by Fibre Channel (FC) switches, hypervisors, and software, to enhance visibility to identify FC data flowing through network infrastructure.

What are the benefits of VMID?

- VMID tagging provides administrators with the ability to understand how workloads access storage devices offers end-to-end visibility.
- By enhancing visibility into FC data flowing through the network, VMIDs improve monitoring insights, detect outages, and mitigate failures more efficiently.

How to verify VMID is enabled?

Marvell's qlnativefc Driver:

Use the following command in ESXi shell to verify if VMID is enabled:

```
# /usr/lib/vmware/vmkmgmt_keyval/vmkmgmt_keyval -i MOD_PARM/qlogic -k DRIVERINFO -g | grep ql2xvmidsupport
```

Output:

```
ql2xvmidsupport = 1
```

- If VMID is disabled then the expected output will be ql2xvmidsupport = 0
- If VMID is enabled then the expected output will be ql2xvmidsupport = 1

Broadcom lpfc driver:

Use the following command in ESXi shell to verify if VMID is enabled:

```
# /usr/lib/vmware/vmkmgmt_keyval/vmkmgmt_keyval -i vmhbaX/Emulex -k vmid -g
```

'X' in 'vmhbaX' is a number:

Output:

```
Key 'vmid':
```

```
lpfc VMID page: on
```

- If VMID is disabled, "lpfc VMID page: off" will be shown in the output.
- If VMID is enabled, "lpfc VMID page: on" will be shown in the output.

How to Enable VMID?



Marvell's qlnativefc Driver connected to either a Brocade or Cisco switch:

To enable, please use the following commands:

```
# esxcli system module parameters set -m qlnativefc -p 'ql2xvmidsupport=1'
# reboot
```

Broadcom's lpfc Driver connected to a Brocade Switch:

Set up the driver parameters to enable VMID on your ESXi host. For example:

```
# esxcli system module parameters set -p "lpfc_max_vmid=8 lpfc_vmid_app_header=1" -m lpfc
# reboot
```

lpfc_max_vmid is the driver parameter that indicates the number of VMID VMs supported.

- The minimum value is 4
- The maximum value is 255
- The default value is 8

lpfc_vmid_app_header is the driver parameter that enables Brocade VMID support on ESXi.

- 0 = Disabled
- 1 = Enabled

Broadcom's lpfc Driver connected to a Cisco Switch:

Set up the driver parameters to enable VMID on your ESXi host. For example:

```
# esxcli system module parameters set -p "lpfc_max_vmid=8, lpfc_vmid_priority_tagging=1" -m lpfc
# reboot
```

lpfc_max_vmid is the driver parameter that indicates the number of VMID VMs supported.

- The minimum value is 4
- The maximum value is 255
- The default value is 8

lpfc_vmid_priority_tagging is the driver parameter that enables Cisco VMID support on ESXi. The possible values are:

- 0 = Disabled
- 1 = Priority tagging for targets that support it in their PLOGI LS_ACC response.
- 2 = Priority tagging for all targets, whether they support PLOGI LS_ACC.

How to Disable VMID?**Marvell's qlnativefc Driver connected to either a Brocade or Cisco switch:**

```
# esxcli system module parameters set -m qlnativefc -p 'ql2xvmidsupport=0'
# reboot
```

Broadcom's lpfc driver connected to a Brocade Switch:

```
# esxcli system module parameters set -p "lpfc_vmid_app_header=0" -m lpfc
# reboot
```

Broadcom's lpfc driver connected to a Cisco Switch:

```
# esxcli system module parameters set -p "lpfc_vmid_priority_tagging=0" -m lpfc
# reboot
```

Additional Information

Enabling VMID in Fibre Channel drivers may cause a minimal performance impact during intense I/O processing. The extent of this impact can vary based on available compute resources, workload, and other factors. Note that no errors, logs, or messages will be generated.



Potential impacts may include:

1. Increased CPU utilization
2. Higher latency
3. Reduced throughput

The delay which may impact performance is expected behavior since the driver I/O stack needs to perform a lookup for every I/O. To mitigate effects arising out of VMID tagging, the user can disable tagging as outlined above.

Feedback

Was this article helpful?

 Yes  No

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