SAN Performance Workflow

End User

End User Complaint

Case Closed

Application Team

Application Team Investigate

Workload Assessment

New

Workload Assessment

Existing

What has changed

Read/Write? Sequential vs Random IO Size ?

NOT OK

Review Application Event Log

Review Application and Storage Vendor - Best Practises

Resolve Application Issue

Application still having Performance Issue

Case Closed

Server Team

Server Team Investigate

Review CPU & Memory Requirement

Review System Event Log or /var/log

Review NetApp FC/ iSCSI HUK, relevant MS Hotfixes and Linux/Unix Hotfixes

Review MPIO Configuration

Microsoft MPIO {Make sure its set to LQD}

NetApp DSM

Review Mulitpath on Linux/Unix

Review HBA Queue Depth

Calculate the total number of Queue Depth for all the hosts

Tune HBA Queue Depth if necessary

Review the Performance

Not OK

Performance OK

Case Closed

Open Apps/OS Vendor Case

Architect Team

Review SLA

For an SLA of no latency impact during TO Maintain HA combined Node Utilization less than 100%

For an SLA where latency impact during TO is an acceptable risk Maintain HA combined Node Utilization less than 150%

Maintain aggregate utilization less than 50%

NOT OK

Storage Team (Controller Performance)

Storage Team Investigate

Review Controller Performance

Node Utilization Greater than 85%

Is the load balance across all Nodes

Not Balanced

Perform a volume move to another Node

The load is balanced across multiple nodes

Review whether we have enough target port.

Target Queue Depth Port is 2048

NOT OK

Add more Target Ports

No

Can we clamp the application down with Qos

Yes

Perform a QoS against the LUN or Volume

Review the Performance

OK

Case Closed

Aggregate Utilization

Review Aggr Utilization

Review Disk Utilization

Only applies to SAS and SATA only

Aggregate Disk busy greater than 50%

> 50%

Consider moving the load to other aggregate or Node

Review Process

Review IOPS

SSD can yield as high as 82000 IOP/s
SAS random access time ~7ms
Gives ~120 IOP/s per data spindle
SATA random access time ~10ms
Gives ~80 IOP/s per data spindle

IOPS required exceed the number of data spindles. Consider buying more disk spindles or move the load to SSD

Did Application Improve

No

Yes

Case Closed

Storage Team

NOT OK

Open a NetApp Case

Open a Performance case

Run the perfstat on the host where there is a performance issue with the controller.

You must capture the period during the performance hit.

Thereafter, upload the perfstat to the case owner

Open a software Vendor Case

Engage Duty Manager if issue is not resolved within satisfaction

Architect Team

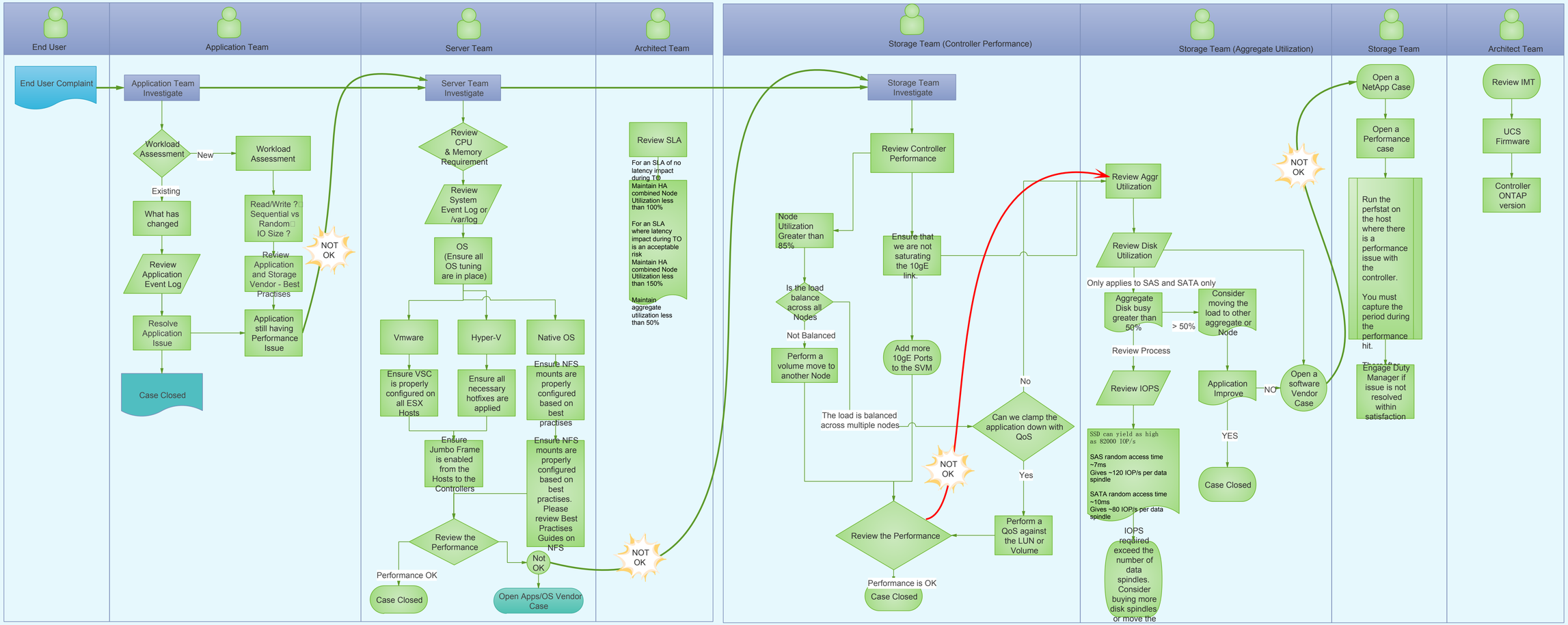
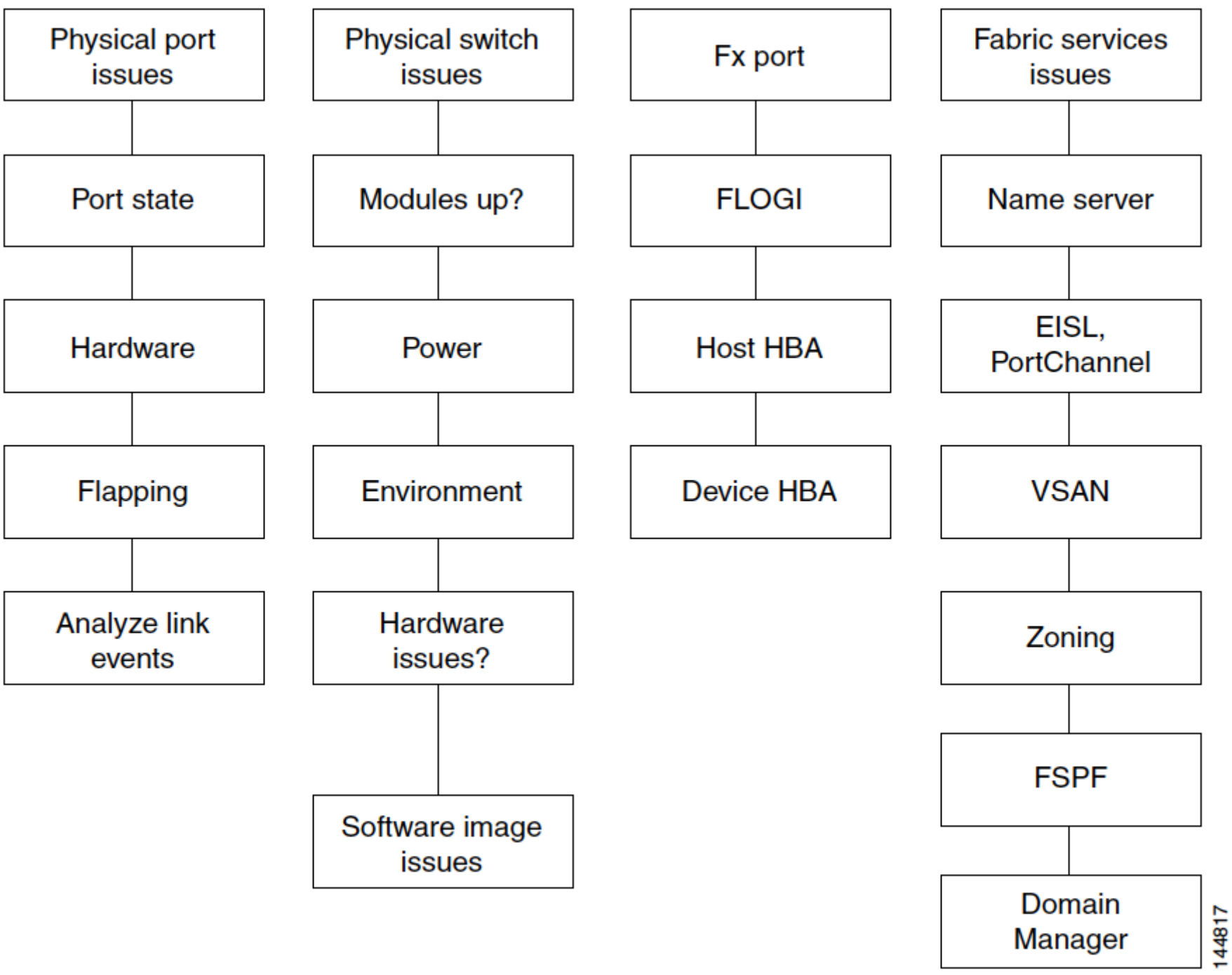
Review IMT

HBA Firmware

SAN Switch Firmware

Controller ONTAP version

NAS Performance Workflow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