



By Nutanix X-Ray

# Test Infrastructure Lifecycle

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# About X-Ray

## Test Infrastructure Life Cycle

Enterprise clouds leverage hyper-converged infrastructure technologies, mixing compute and storage resources into systems which are then shared by multiple application workloads. When architecting these infrastructures, it is important to test different real-world datacenter scenarios to understand how controlled and uncontrolled situations affect consistent application performance.

X-Ray models and tests typical datacenter scenarios that mirror the infrastructure lifecycle requirements including: pure infrastructure and application performance, performance while using infrastructure data protection features, performance scaling capabilities, and implications of failure scenarios. As shown below, tests have been categorized into typical phases of the infrastructure lifecycle.

Infrastructure Life Cycle Phase	Related Tests
<b>Infrastructure Performance</b> Measure raw infrastructure performance.	Four Corner Microbenchmark Throughput Scalability
<b>Application Performance</b> Model application-specific workloads and measure performance.	VDI Scalability OLTP Simulator
<b>Data Protection</b> Measure effects of data protection features on application workload performance.	Snapshot Impact VM Clone Impact
<b>Infrastructure Resiliency</b> Measure effects of unplanned infrastructure failure events on running applications.	Sequential Node Failure Rolling Upgrade Extended Node Failure
<b>Infrastructure Scalability</b> Measure effects of introducing new application workloads on infrastructure running existing workloads.	Database Colocation HCI Workflow

# Test & Scenario Summary

## Target Summary

Target Name	Cluster Type	Hypervisor	Manager	Node Count
Nutanix	Nutanix 2020.09.16	AHV CE 20190916.276	Prism 2020.09.16	3

## Test Summary

Finish Time	Duration	Test Name	Target Name	Status
04/15/21 12:50:02 am EDT	17 m	Four Corners Microbenchmark: Default	Nutanix	Completed

# Test Result Details

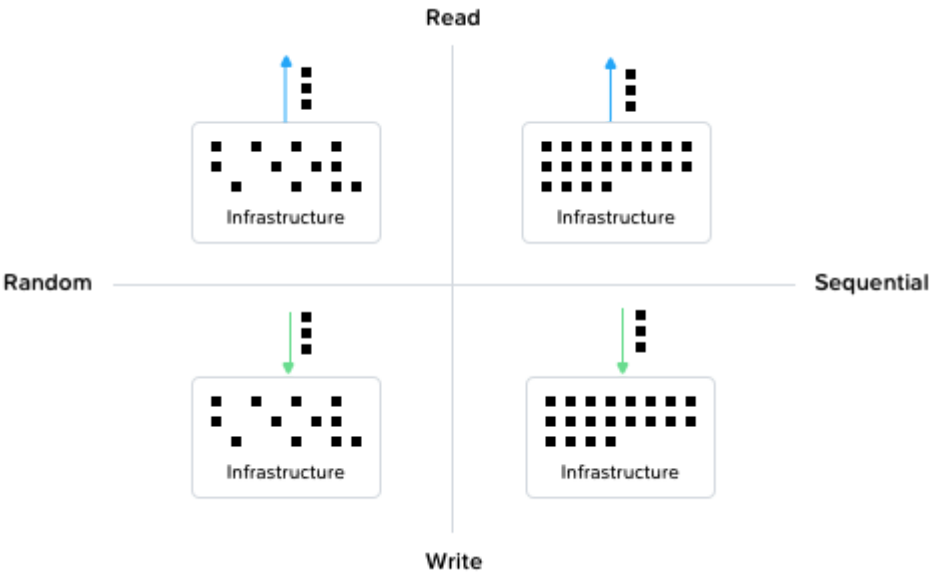
For: Nutanix

Target Name	Test Variants	Result
Nutanix	Default: Runtime (seconds) - 60, Additional Datastores -	Completed

## Test: Four Corners Microbenchmark

### Test Description

This test runs the four data workload types (random reads, sequential reads, random writes, and sequential writes) and shows their peak burst performances. Each of these workloads runs in sequence for 1 minute with 1-minute intervals between. For random reads and writes, higher IOPS indicates better performance; for sequential reads and writes, more bytes per second indicate better performance.



## How X-Ray runs the test

Note: This test scales with the number of nodes.

### Test Requirements

vCPU: 4 vCPU per node.

RAM: 4 GB per node.

Cluster storage: 116 GB per node.

IP addresses: one per node.

### Setup

Deploy one workload VM per host.

Fill virtual disks with random data.

Run random read workload warmup for 5 minutes.

### Measurement

Run random read workload for 1 minute on all VMs.

Wait 1 minute.

Run sequential read workload for 1 minute on all VMs.


Wait 1 minute.

Run random write workload for 1 minute on all VMs.

Wait 1 minute.

Run sequential write workload for 1 minute on all VMs.

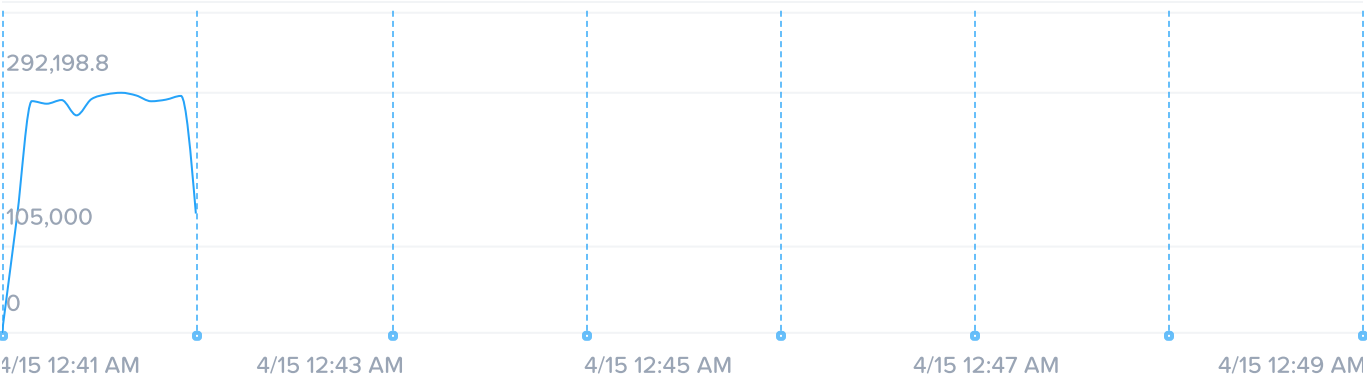
Legend

Workload	Name	Target Name
	Nutanix	Nutanix

Events	Nutanix
Random Read: Started workload	12:41:58 AM
Random Read: Finished workload	12:43:03 AM
Sequential Read: Started workload	12:44:09 AM
Sequential Read: Finished workload	12:45:14 AM
Random Write: Started workload	12:46:19 AM
Random Write: Finished workload	12:47:24 AM
Sequential Write: Started workload	12:48:29 AM
Sequential Write: Finished workload	12:49:34 AM

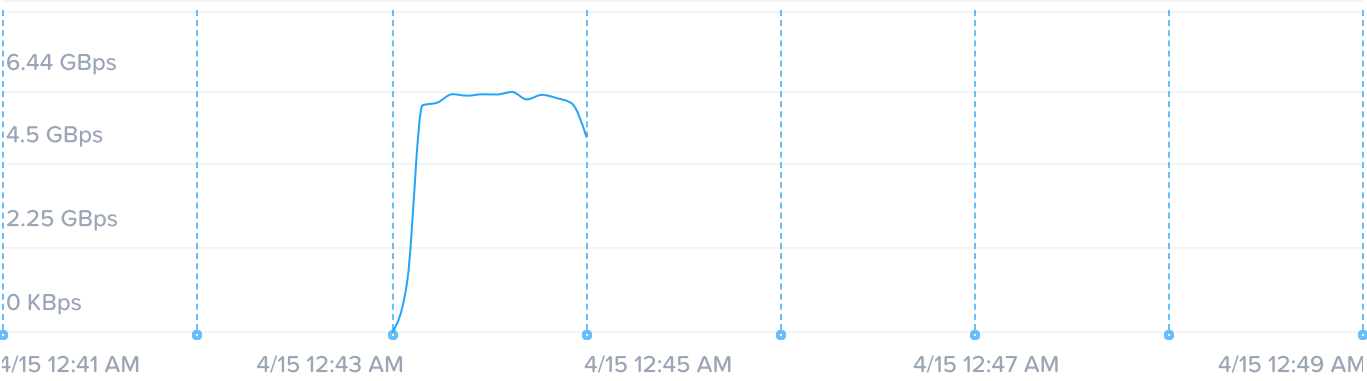
# Test: Four Corners Microbenchmark

Random Read IOPS



Min	Max	Median	Mean	Standard Deviation
● 12	292,199	282,685	243,173	86,735

Sequential Read I/O Throughput



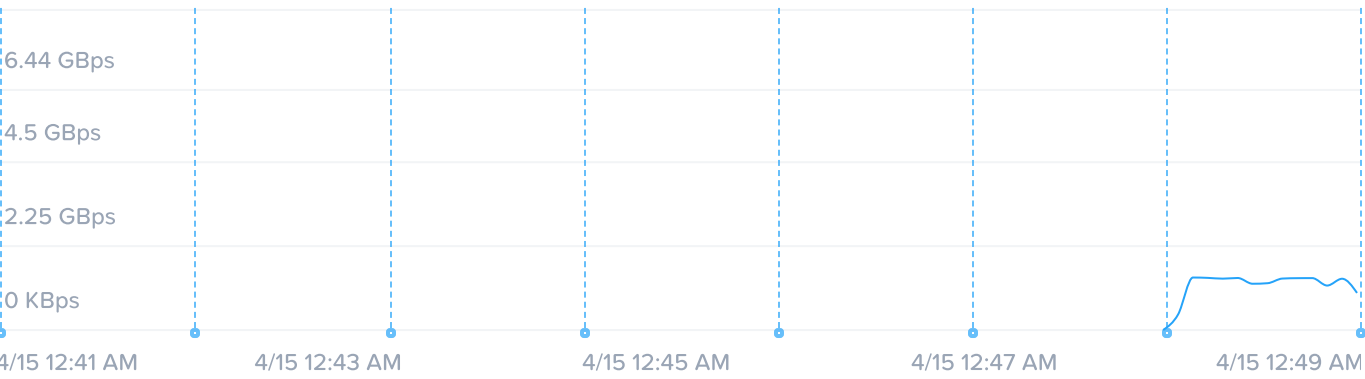
Min	Max	Median	Mean	Standard Deviation
● 103.14 KBps	6.44 GBps	6.26 GBps	5.41 GBps	2.03 GBps

Random Write IOPS



Min	Max	Median	Mean	Standard Deviation
● 8	182,533	178,986	152,747	57,729

Sequential Write I/O Throughput



Min	Max	Median	Mean	Standard Deviation
● 99.14 KBps	1.41 GBps	1.38 GBps	1.16 GBps	426.52 MBps



Cluster CPU Usage

