



**COMING**  
COMPUTER ENGINEERING

Go further, faster®

# Nova generacija NetApp FAS series

*Bojan Jevtic, Fujitsu*  
*Roberto Poletto, Coming*





- NetApp danas u Srbiji
- NetApp FAS2500
- NetApp FAS8000
- FlexPod, Enterprise Flash Storage
- EndOfLife i promo
- Degustacija, meze i Q&A



# COMING – Computer Engineering



# NetApp®

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Gold Partner

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# Industry-Leading Integration

Management Automation



Applications



Virtualization



FAS Hardware





# FAS8000 Product Line

## Flexible Building Blocks for Scale-Out Storage

New Extremes  
of Hybrid Array  
Performance

### FAS8080 EX

### FAS8020



**1920TB**  
480 Drives  
6TB VST Flash  
4x Flash

### FAS8040

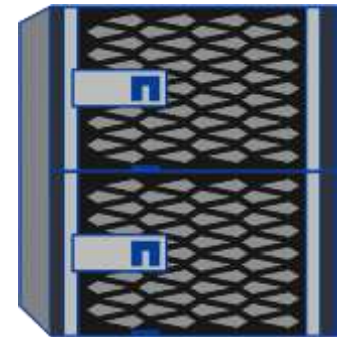


**2880TB**  
720 Drives  
12TB VST Flash  
3x Flash

### FAS8060



**4800TB**  
1200 Drives  
18TB VST Flash  
1.5x Flash



**5760TB**  
1440 Drives  
36TB VST Flash  
1.5x Flash



# NetApp FAS Product Line

- Flash accelerated
- Cloud integrated
- Massively scalable
  - Scale up
  - Cluster to scale out



FAS8020

**1920TB**  
480 Drives  
6TB VST Flash



FAS8040

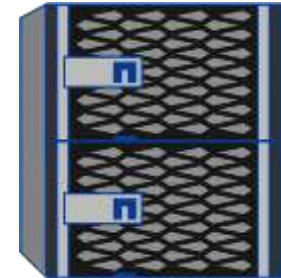
**2880TB**  
720 Drives  
12TB VST Flash



FAS8060

**4800TB**  
1200 Drives  
18TB VST Flash

FAS8080 EX



**5760TB**  
1440 Drives  
36TB VST Flash

NEW



FAS2220

**180TB**  
60 Drives  
800GB VST Flash



FAS2240

**432TB**  
144 Drives  
800GB VST Flash



FAS/V3220

**1920TB**  
480 Drives  
1.6TB VST Flash



FAS/V3250

**2880TB**  
720 Drives  
4TB VST Flash



FAS/V6220

**4800TB**  
1,200 Drives  
12TB VST Flash



FAS/V6250

**5760TB**  
1,440 Drives  
18TB VST Flash



FAS/V6290

**5760TB**  
1,440 Drives  
24TB VST Flash

Existing Portfolio

Scale →



# Introducing FAS8000

## Four Enterprise Storage Models



FAS8020

FAS8020 replaces FAS/V3220



FAS8040/FAS8060

FAS8040 replaces FAS/V3250  
FAS8060 replaces FAS/V6220



FAS8080

FAS8080 EX replaces FAS/V6250 & FAS/V6290



# Introducing the FAS8020

## HA Pairs

### What's New Compared to FAS/V3220



FAS8020

- New architecture delivers 2.3x more performance
  - 12 CPU cores: 50% more cores
  - 48GB of memory: 2x more memory
  - 8GB of NVRAM: 2.5x increase
    - Can help with large sequential writes
- Increased flash support minimizes latency
  - 6TB of VST flash support: 3.75x increase
- New IO layout delivers greater flexibility
  - 4 10GbE ports
  - 4 UTA2 ports (10GbE / 16Gb FC)
  - 4 GbE and 4 6Gb SAS ports
  - 4 PCIe Gen 3 slots





# Introducing the FAS8040

## HA Pairs

### What's New Compared to FAS/V3250



FAS8040

- New architecture delivers 1.9x more performance
  - 64GB of memory: 60% increase
  - 16GB of NVRAM: 4x increase
    - Can help with large sequential writes
- Increased flash support minimizes latency
  - 12TB of VST flash support: 3x increase
- New IO layout delivers greater flexibility
  - 8 10GbE ports
  - 8 UTA2 ports (10GbE / 16Gb FC)
  - 8 GbE and 8 6Gb SAS ports
  - 8 PCIe Gen 3 slots



# FAS8080 EX

## Accelerate Business-Critical Applications





# FAS8080 EX Business-Critical Systems



Delivering PB  
scale capability

## Boost Critical Application Performance

- Deliver more SAN and NAS workload performance with 4M IOPS
- Speed response time of database applications with almost half a PB of hybrid flash
- Provide all-flash performance without compromising manageability

## Realize New Economies of Scale

- Consolidate more workloads with ~70PB of scale
- Connect to more clouds and servers with over 600 I/O channels
- Easily manage and control large complex storage environments

## Achieve Higher Availability for Business-Critical Applications

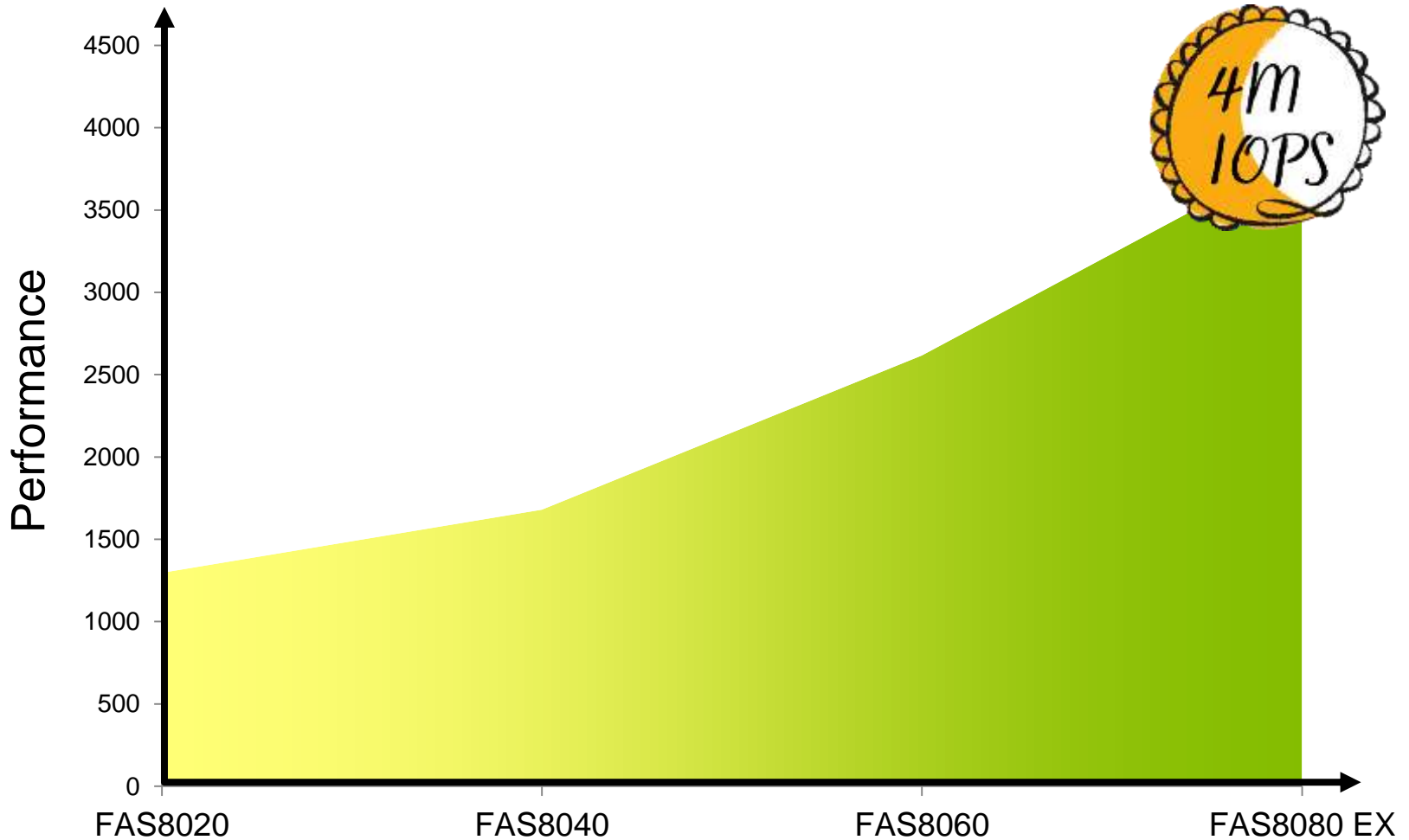
- Keep operations running with proven >99.999% availability
- Protect data with industry-leading Snapshot™ and replication software

## Maximize Control of PB Cloud and Virtual Infrastructures

- Meet and beat service-level objectives with QoS and NDO
- Securely isolate shared resources with multi-tenancy



# Boost Critical Applications Performance





# FlexPod Datacenter Integrated Infrastructure

## Validated Platform to Speed Application Deployment



### Shared NetApp® and Cisco® core architecture

- Cisco UCS® B or C Servers, Cisco UCS Manager
- Cisco Nexus® switch
- Cisco fabric interconnect and fabric extender
- Optional virtual switch
- NetApp FAS storage and Data ONTAP®

### Workload (application and/or hypervisor)

- VMware®, Microsoft®, Oracle®, Citrix, big data...

### Validated design document

- CVD, NVA, Solution Guide

### Meet in the market delivery via service partners

- Distis, SIs, VAR: global coverage

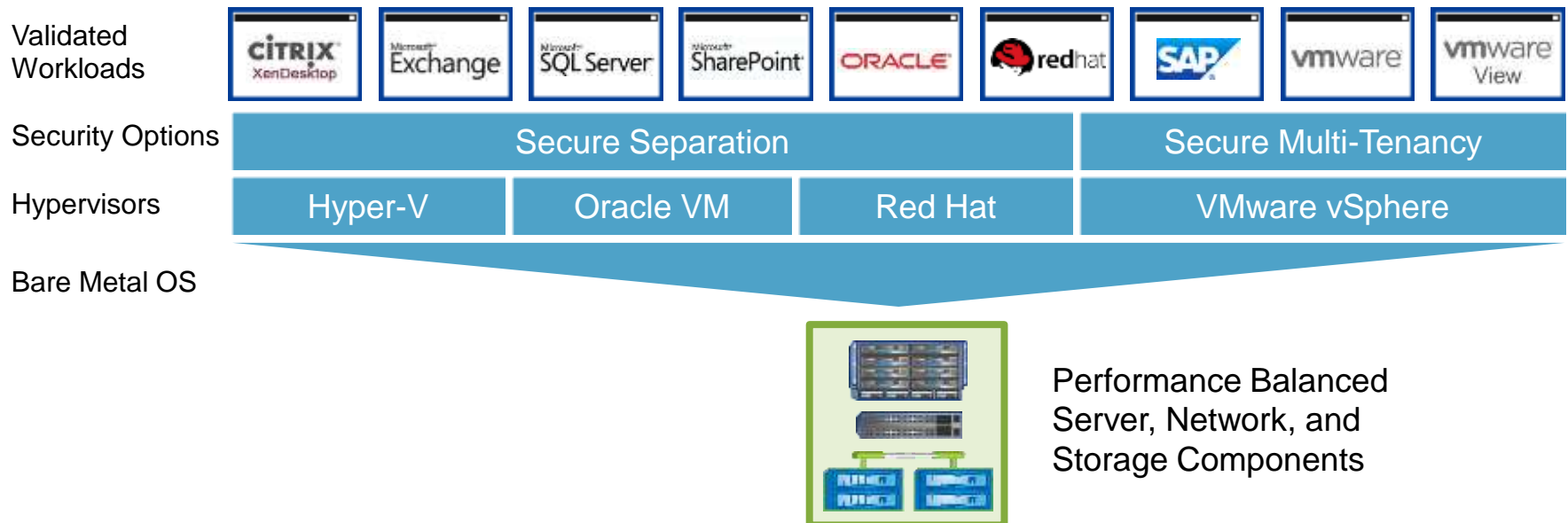
### Cooperative support

- NetApp, Cisco, VMware, Citrix

# FlexPod Prevalidated Application Stacks

## Expanding Business-Critical Workload Support

- Cisco Nexus® Data Center Switches, Virtual Multiservice Data Center
- Citrix XenDesktop, CloudPlatform
- Cloudera Distribution
- Hortonworks Data Platform
- Microsoft® Private Cloud, Exchange, SQL Server®, SharePoint®, Hyper-V®
- NetApp® MetroCluster™, SnapProtect®
- Oracle® RAC, JD Edwards, Oracle Linux®, Oracle VM Server
- Red Hat Enterprise Linux
- SAP® Applications
- VMware® vSphere®, View®



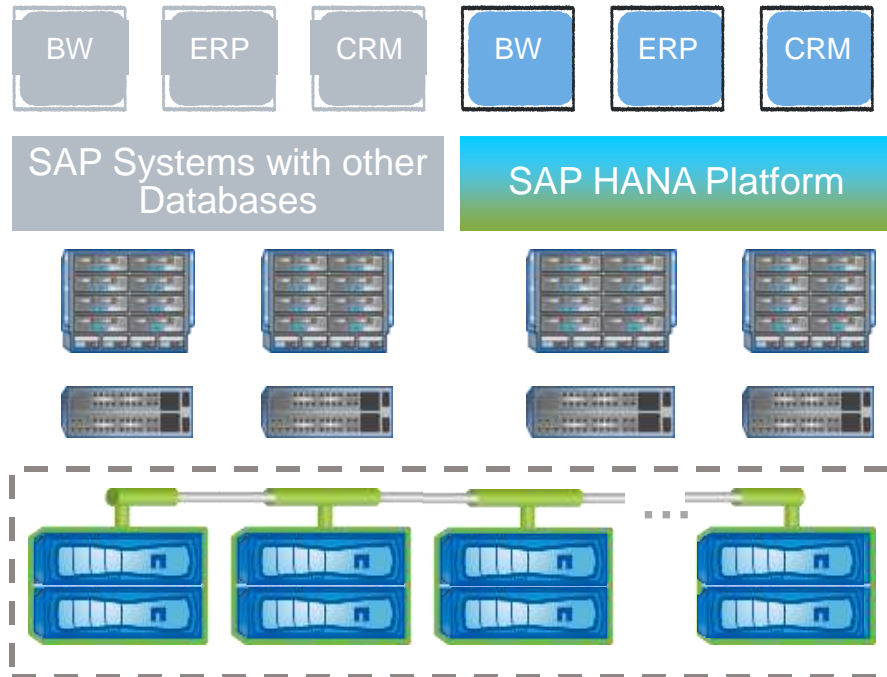
# Delivering a Flexible Choice for HANA

## Appliance Model



Validated and certified by SAP and include servers from Cisco or Fujitsu

## Tailored Datacenter Integration Model



Delivering a unified solution with greater flexibility of server and storage combinations and leveraging existing IT ecosystem



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# EF550 Flash Array



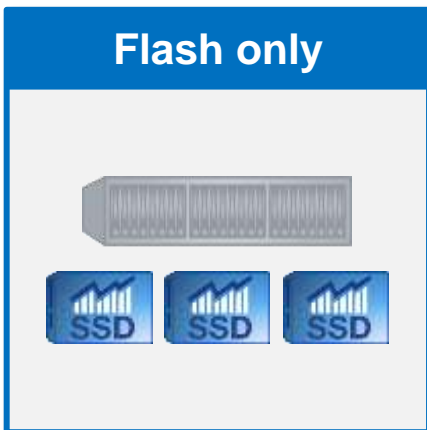


# Flash-Accelerated Storage



## Hybrid Array

- Best mix of \$/IOPS and \$/GB
  - Good average latency
  - Leverages HDDs for capacity
- Ideal for consolidated workloads



## All-Flash Arrays

- Predictable ultralow latency
- Extreme IOPS and throughput
- Ideal for performance-driven apps

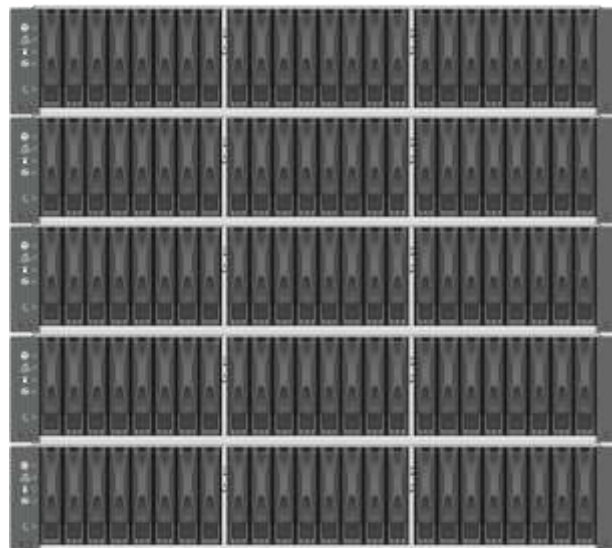
# Key Inflection Points For All-Flash Arrays

- New app or database rollout / upgrade
  - Examples: Oracle<sup>®</sup> DB 12c, SAP<sup>®</sup> Business Suite on HANA, SQL Server<sup>®</sup> 2014, Microsoft Exchange<sup>®</sup> 2013
- Analytics and data insight initiatives
  - Examples: SAP HANA, Microsoft Data Warehouse
- Virtualization initiatives
  - Examples: virtual desktop, SYBASE<sup>®</sup> r users, vmware<sup>®</sup>



# EF550 Product Specifications

<b>Min / Max base models</b>	<ul style="list-style-type: none"><li>6 x 400GB SSDs (2.4TB)</li><li>24 x 1.6TB SSDs (38.4TB)</li></ul>
<b>Expandable</b>	<ul style="list-style-type: none"><li>Up to 120 SSDs in single or multiple SSD increments</li></ul>
<b>Max capacity</b>	<ul style="list-style-type: none"><li>192TB (120x1.6TB)</li></ul>
<b>SSDs</b>	<ul style="list-style-type: none"><li>400GB, 800GB, 1.6TB SSD</li></ul>
<b>I/O interface options</b>	<ul style="list-style-type: none"><li>(8) 16Gb FC</li><li>(8) 10Gb iSCSI</li><li>(8) 6Gb SAS</li><li>(4) 40Gb IB</li></ul>
<b>Storage OS</b>	<ul style="list-style-type: none"><li>SANtricity® 11</li></ul>
<b>Key Features</b>	<ul style="list-style-type: none"><li>Dynamic disk pools</li><li>Thin provisioning</li><li>Snapshot™ copies</li><li>Volume copy</li><li>Remote mirroring</li></ul>



## Performance:

- Burst: 900,000 IOPS
- Sustained: over 400,000 IOPS @ <1ms latency
- Sustained: up to 12GB/s

# Questions



*Thank you*

