



# **Performance**

## ONTAP Select

NetApp  
January 10, 2026

# Table of Contents

Performance . . . . .	1
ONTAP Select performance overview . . . . .	1
ONTAP Select 9.6 performance: Premium HA direct-attached SSD storage . . . . .	1
Reference platform . . . . .	1

# Performance

## ONTAP Select performance overview

The performance of an ONTAP Select cluster can vary considerably due to the characteristics of the underlying hardware and configuration. The specific hardware configuration is the biggest factor in the performance of a particular ONTAP Select instance. Here are some of the factors that affect the performance of a specific ONTAP Select instance:

- **Core frequency.** In general, a higher frequency is preferable.
- **Single socket versus multisocket.** ONTAP Select does not use multisocket features, but the hypervisor overhead for supporting multisocket configurations accounts for some amount of deviation in total performance.
- **RAID card configuration and associated hypervisor driver.** The default driver provided by the hypervisor might need to be replaced by the hardware vendor driver.
- **Drive type and number of drives in the RAID group(s).**
- **Hypervisor version and patch level.**

## ONTAP Select 9.6 performance: Premium HA direct-attached SSD storage

Performance information for the reference platform.

### Reference platform

ONTAP Select (Premium XL) hardware (per node)

- FUJITSU PRIMERGY RX2540 M4:
  - Intel® Xeon® Gold 6142b CPU at 2.6 GHz
  - 32 physical cores (16 x 2 sockets), 64 logical
  - 256 GB RAM
  - Drives per host: 24 960GB SSD
  - ESX 6.5U1

Client hardware

- 5 x NFSv3 IBM 3550m4 clients

Configuration information

- SW RAID 1 x 9 + 2 RAID-DP (11 drives)
- 22+1 RAID-5 (RAID-0 in ONTAP) / RAID cache NVRAM
- No storage efficiency features in use (compression, deduplication, Snapshot copies, SnapMirror, and so on)

The following table lists the throughput measured against read/write workloads on a high availability (HA) pair of ONTAP Select nodes using both software RAID and hardware RAID. Performance measurements were taken using the SIO load-generating tool.



These performance numbers are based on ONTAP Select 9.6.

**Performance results for a single node (part of a four-node medium instance) ONTAP Select cluster on a direct-attached storage (DAS) SSD, with software RAID and hardware RAID**

Description	Sequential Read 64KiB	Sequential Write 64KiB	Random Read 8KiB	Random Write 8KiB	Random WR/RD (50/50) 8KiB
ONTAP Select large instance with DAS (SSD) software RAID	2171 MiBps	559 MiBps	954 MiBps	394 MiBps	564 MiBps
ONTAP Select medium instance with DAS (SSD) software RAID	2090 MiBps	592 MiBps	677 MiBps	335 MiBps	441 3MiBps
ONTAP Select medium instance with DAS (SSD) hardware RAID	2038 MiBps	520 MiBps	578 MiBps	325 MiBps	399 MiBps

#### 64K sequential read

Details:

- SIO direct I/O enabled
- 2 nodes
- 2 x data NIC per node
- 1 x data aggregate per node (2TB hardware RAID), (8TB software RAID)
- 64 SIO procs, 1 thread per proc
- 32 volumes per node
- 1 x files per proc; files are 12000MB each

#### 64K sequential write

Details:

- SIO direct I/O enabled
- 2 nodes
- 2 x data network interface cards (NICs) per node
- 1 x data aggregate per node (2TB hardware RAID), (4TB software RAID)
- 128 SIO procs, 1 thread per proc
- Volumes per node: 32 (hardware RAID), 16 (software RAID)

- 1 x files per proc; files are 30720MB each

## 8K random read

Details:

- SIO direct I/O enabled
- 2 nodes
- 2 x data NICs per node
- 1 x data aggregate per node (2TB hardware RAID), (4TB software RAID)
- 64 SIO procs, 8 threads per proc
- Volumes per node: 32
- 1 x files per proc; files are 12228MB each

## 8K random write

Details:

- SIO direct I/O enabled
- 2 nodes
- 2 x data NICs per node
- 1 x data aggregate per node (2TB hardware RAID), (4TB software RAID)
- 64 SIO procs, 8 threads per proc
- Volumes per node: 32
- 1 x files per proc; files are 8192MB each

## 8K random 50% write 50% read

Details:

- SIO direct I/O enabled
- 2 nodes
- 2 x data NICs per node
- 1 x data aggregate per node (2TB hardware RAID), (4TB software RAID)
- 64 SIO proc208 threads per proc
- Volumes per node: 32
- 1 x files per proc; files are 12228MB each

## Copyright information

Copyright © 2026 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—with prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

**LIMITED RIGHTS LEGEND:** Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

## Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.