

Quest[®] QoreStor[™] 6.1

Release Notes

May 2020 - Revision B for QoreStor build 6.1.0.838 and enhancements related to Rapid NFS plug-in 4.0.3.3

These release notes are intended to supplement the QoreStor documentation to provide last minute information available for the latest release of the QoreStor software. These release notes contain details about the latest updates and resolutions, known issues, resolutions, and other information.

Revision B of this document includes the following changes :

- Defect resolutions included in QoreStor build 6.1.0.838
- Rapid NFS plug-in version 4.0.3.3, which includes Secure Connect.

For more complete reference, the defects and enhancements included in build 6.1.0.833 are also included.

i | **NOTE:** Please check for the latest versions of the QoreStor documentation available at support.quest.com/qorestor.

About this release

QoreStor is a software-defined secondary storage platform based on Quest's proven DR Series Appliance's resilient deduplication and replication technologies. With QoreStor, you can break free of backup appliances and accelerate backup performance, reduce storage requirements and costs, and replicate safer and faster to the cloud for data archiving, disaster recovery and business continuity.

QoreStor supports all of the major backup software applications in use today and can lower your backup storage costs to as little as \$.16/GB while reducing your total cost of ownership. (For a complete list of supported backup software, see the *QoreStor Interoperability Guide*). QoreStor achieves these results using patented Rapid Data Access (RDA) technology as well as built-in, variable block-based deduplication and compression. QoreStor helps you to:

- Reduce on-premises and cloud storage costs with industry-leading deduplication and compression.
- Accelerate backup completion with protocol accelerators and dedupe.
- Shrink replication time by transmitting only changed data.
- Improve data security and comply with FIPS 140-2.
- Maximize return on investment for existing data protection technologies.
- Lower total cost of ownership through all-inclusive licensing.

QoreStor 6.1.0.838 is a hotfix release of QoreStor with minor enhancements and defect resolutions. See [New features and enhancements](#) for more information. See [Resolved issues](#) for information on issues resolved in this version.

New features and enhancements

QoreStor 6.1.0.838 includes the enhancements listed below:

- Support for Veritas NetBackup Classic Auto Image Replication (AIR).
- Added QoreStor menu support for managing **qsservice** and **qsadmin** users.
- Added support for Regular expressions in policy manager options
- Added options for EULA and UI Logo modification capability for Partners.
- Release of updated OVA files for VMWare and Hyper-V based on 6.1.0.833.
- Updated ISO file for DR Series to QS Migration based on 6.1.0.833 (please contact Quest Sales for this conversion)
- Updated Rapid CIFS plug-in version 4.0.3.2 with support for Secure Connect
- Updated Rapid NFS plug-in version 4.0.3.3 with support for Secure Connect

Upgrade notes

This topic contains important information for users who are upgrading from a previous QoreStor release.

- During the upgrade, the QoreStor installation script will verify that the Repository and Metadata filesystems are mounted with the **noatime** and **dirsync** mount options. If not, the installation script will prompt the user to allow the script to make the necessary changes in */etc/fstab* and prompt you to reboot the system and re-run the QoreStor installation process.

i | **NOTE:** The above process does not occur when installing QoreStor in Demo mode.

- To ensure proper authentication of network shares, after upgrading to QoreStor 6.1, remove the QoreStor server from the domain and re-add it to the domain.
- QoreStor 6.1 contains support for VTL protocols. To enable VTL support, you must perform the following sequence of operations:
 - Upgrade your existing installation to QoreStor 6.1. Do not select the option to install VTL support at this point.
 - Using the steps documented in "Uninstalling QoreStor while maintaining configuration data" in the *QoreStor Installation Guide*, uninstall the newly updated QoreStor installation.

i | **IMPORTANT:** Uninstalling your existing QoreStor with the command below will preserve your data and application configurations.

```
/opt/qorestor/bin/qs_uninst
```

When running this command, you will receive the prompt:

```
To completely remove the application, user data, and configuration files, answer 'no' below,
```

```
and rerun the uninstaller with the '-a' option.
```

```
Do you wish to continue? yes\nno [no]:
```

Enter **Yes** to continue without removing your data.

- Reinstall QoreStor 6.1 with VTL support by either using the **--install-vtl** option or answering "yes" to the prompt for adding VTL support.
- When using QoreStor with VTL, upgrades to the operating system of the QoreStor server require additional configuration. Refer to "Upgrading the QoreStor Operating System" in the *QoreStor Installation Guide*.

Upgrading QoreStor instances on Microsoft Azure

For QoreStor instances running on Microsoft Azure, perform the actions below before upgrading to 6.1.

- At the prompt, execute the following commands:

```
curl -o azureclient.rpm https://rhui-1.microsoft.com/pulp/repos/microsoft-azure-rhel7/rhui-azure-rhel7-2.2-74.noarch.rpm

sudo rpm -U azureclient.rpm

sudo yum clean all
```

Upgrading a migrated DR Series appliance to QoreStor 6.1.0.838

If you have previously migrated your DR Series system to QoreStor, you must upgrade your QoreStor software to build 6.1.0.814 **before** upgrading to this build (6.1.0.838). The upgrade process in build 6.1.0.814 includes a step that flushes WAM data, and that process must be completed before upgrading to 6.1.0.838.

Upgrading to Rapid CIFS Plug-in 4.0.3.2 with Secure Connect

Secure Connect is comprised of a set of client and server components that create a resilient and secure communication channel for use by WAN-connected clients. The server components are installed and enabled by default during the installation of the QoreStor server. Starting with the Rapid CIFS plug-in version 4.0.3.2, the plug-in installer includes the option to install and enable Secure Connect.

i | **IMPORTANT:** Refer to the Known Issues section of this document for Rapid CIFS issues known to be present at the time of release.

If you have WAN-connected Rapid CIFS clients and choose to install Secure Connect, you can do so by following the steps below:

1. On the media server, map a network share to your CIFS-enabled container.
2. Download the plug-in installer from the website, as detailed previously.
3. Open a command prompt with the “Run as Administrator” option selected. To do this using the Windows Start menu, click **Start** → **All Programs** → **Accessories**. Right-click **Command Prompt** and select **Run as Administrator**.
This gives all the required privileges to install/copy the driver files to the Windows drivers folder.
4. Run `QuestRapidCIFS-4.0.3233.1.exe`.

5. When prompted, select **Install a Secure Connection** to install Secure Connect. Secure Connect ensures backups to QoreStor are completed in spite of slow or unreliable WAN connections. When selecting this option, you will be prompted for additional configuration information required to make Secure Connect function correctly.
6. At the **Configure Secure Connect** page, complete the dialog using the IP or fully qualified domain name (FQDN) of the QoreStor server and appropriate credentials. The user account used must have the CIFS role assigned.

i **NOTE:** The **Configure Secure Connect** operation is not supported for CIFS containers on DR Series appliances. DR Series appliances do not contain the required Secure Connect server component. This operation is available only for QoreStor instances. For CIFS containers on DR Series appliances, connect using the Rapid CIFS plug-in and the DR Series host name.

i **NOTE:** The value entered in the **Display Name** field must **not** match the hostname of the QoreStor server.

Upgrading to Rapid NFS Plug-in 4.0.3.3

Secure Connect is comprised of a set of client and server components that create a resilient and secure communication channel for use by WAN-connected clients. The server components are installed and enabled by default during the installation of the QoreStor server. Starting with the Rapid NFS plug-in version 4.0.3.3, the plug-in installation script includes the option to install and enable Secure Connect.

i **IMPORTANT:** This new plug-in supports:

- RHEL Linux and CentOS Linux 6 (when not using Secure Connect)
- RHEL Linux and CentOS Linux 7
- RHEL Linux and CentOS Linux 8
- SLES 11 (when not using Secure Connect)
- SLES 12
- SLES 15

If you have WAN-connected Rapid NFS clients and choose to install Secure Connect, you can do so by following the steps below:

1. Download `QuestRapidNFS-4.03310.0-x86_64.bin.gz` from the website.

2. Unzip the package.

```
unzip QuestRapidNFS-4.03310.0-x86_64.bin.gz
```

3. Assign execute bit to change the permission of the binary package:

```
chmod +x QuestRapidNFS-4.03310.0-x86_64.bin
```

4. Install the Rapid NFS package. Before installing, remove the stale NFS entry.

```
QuestRapidNFS-4.03310.0-x86_64.bin -install
```

5. Load the file system in user space (FUSE) module, if not already loaded:

```
modprobe fuse
```

6. Create a directory on the client. For example:

```
mkdir /mnt/backup
```

7. Mount Rapid NFS as a file system type using the mount command. For example:

```
mount -t rdnfs 10.0.0.1:/containers/backup/mnt/backup -o sc,user=backup_
user,password=<backup_user password>
```

If you do not wish to type the password in plan text do not include the “password” option and you will be prompted:

```
mount -t rdnfs 10.0.0.1:/containers/backup /mnt/backup -o sc,user=backup_user
Password:
```

If you are using a DMA that supports a marker, set the marker by using -o in the mount command. For example, if you wanted to set the CommVault marker (cv):

```
mount -t rdnfs 10.0.0.1:/containers/backup /mnt/backup -o marker=cv
```

It is also possible to use fstab entriest without the password option, this will prompt for the password the first time but will use the password hash for future mounts. With this it is possible to mount on boot without interrupting boot or prompting for a password:

```
10.0.0.1:/containers/backup /mnt/backup rdnfs sc,user=backup_
user,marker=cv,defaults,soft,netdev,intr 0 0
```

i | **NOTE:** If you want to do a mount on AIX, you must set the **nfs_use_reserved_ports** and **portcheck** parameters first. The parameters cannot be set to 0. For example: root@aixhost1 /
nfso -po portcheck=1 root@aixhost1 / # nfso -po nfs_use_reserved_ports=1

8. To ensure that the NFS container has the **insecure** option set, execute the command below on the QoreStor server:

```
/opt/qorestor/bin/connection --update --name nfs1 --type NFS --options
rw,insecure
```

Resolved issues

The following is a list of issues addressed in this release. For convenience, defects resolved in build 6.0.0.833 and 6.1.0.814 are also listed.

Table 1: Resolved issues in build 6.1.0.838

Issue ID	Resolved Issue
QS-6977	Fix memory leak during replication on migrated DR Series systems which could result in ocafsd crash.
QS-7709	Fix memory leak during replication which could result in ocafsd crash.
QS-7119	Replication from QoreStor to DR Series appliance fails with mismatch error.
QS-7121	When joining a domain via the QoreStor UI, the option to add a login group does not function.
QS-7462	QoreStor is unable to write files on NFS shares on Windows server.

Table 2: Resolved issues in build 6.1.0.833

Issue ID	Resolved Issue
QS-6742	Replication stopped because of an error due to race with cleaner.
QS-6759	After migrating a DR Series system to QoreStor, the Capacity Used value is displayed as 0.
QS-6803	Added documentation to address requirements for upgrading a previous DR Series appliance to QoreStor build 6.1.0.833. Refer to Upgrade notes for more information.
QS-6859	Updated cipher support to deprecate TLS v1.0 and v 1.1
QS-6861	Added QoreStor Menu options for managing qsservice and qsadmin user accounts.
QS-6960	qsservice and qsadmin commands have been modified to use system defaults when creating home directories.

Table 3: Resolved issues in build 6.1.0.814

Issue ID	Resolved Issue
QS-5220	Request: Add more detail to Network Interfaces page.
QS-5370	Fix core on aborting NDMP backups in case of socket error

Issue ID	Resolved Issue
QS-5879	Port DR fix for Fiber connection race condition in ocafsd
QS-6044	Removed http option for AWS connection
QS-6045	Implemented full avoid_dup option for QoreStor
QS-6206	Corrected formatting on Container Details page
QS-6207	Updated Cloud Tier "Need Help?" content to include additional cloud providers.
QS-6209	Improve visibility on graphs when viewing multiple variables with some colors repeating
QS-6266	Correct password reset in some special corner cases using qorestor admin password
QS-6403	When using the OST plug-in with Backup Exec, intermittent plvsrvr.exe crash as a result of error recovery in queue manipulation
QS-6410	When reading data with robocopy, memory consumption steadily increases and never comes back.
QS-6485	Updated cloud tier documentation to reflect inability to edit a file once stubbed.
QS-6538	QoreStor generating core dump when using policy manager
QS-6587	Cleaner Core during migration as a result of deleting cleaner stat file
QS-6589	
QS-6612	QoreStor becoming stuck in loop during optimized file system check.
QS-6682	Corrected core in secure connect code due to double free during error recovery
QS-6714	

Known issues

The issues below are known to exist in this release.

Table 4: Known issues in this release

ID	Issue
QS-437 QS-438	When using multiple NetVault Backup Servers to access the same QoreStor Server, use storage group, container, and user names unique to each NetVault Backup server to avoid accidental deletions.
QS-627	After deleting a container and storage group, immediately creating a new container with the same name may fail. Workaround: This failure occurs because the old container is still in a delete_pending stage. To proceed with creating a new container, wait until the old container has been completely deleted via the QoreStor Cleaner run.
QS-1420	When executing the QoreStor uninstallation script, the script will report and continue if illegal options are entered.
QS-1446	If the QoreStor partition is not set to automount, and the QoreStor server is rebooted, the system appears to be operational but shows 0 physical capacity.
QS-1588	When running Optimized Duplication jobs in Backup Exec, the container quota is not enforced as it is for backup jobs.
QS-1670	For Linux clients, the full version number of RDA plug-ins is not displayed.
QS-1823	In some situations, the deduplication savings for a storage group shows as 100% before a backup has occurred. Once a backup has occurred, the deduplication savings will be displayed accurately.
QS-1980	When deleting a storage group, the Storage Group page will display timestamp data where the storage group entry used to appear. This occurs because the storage group is still in a delete_pending stage. Once the delete is completed and the UI refreshes, the timestamp will not longer appear.
QS-2236	When installing QoreStor, if a required port is unavailable the installation will continue and be considered successful, yet QoreStor will start in Maintenance Mode. Workaround: Ensure that all required ports are available to QoreStor.
QS-2242	When installing QoreStor, the filesystem selected for the QoreStor repository should not contain

ID	Issue
	data from other application or users. QoreStor must have exclusive access to the repository filesystem.
QS-2604	<p>If unregistered clients access QoreStor CIFS shares by mounting the share, the /var/log/messages will contain numerous host name/mismatch errors.</p> <p>Workaround: Unregistered clients need to be updated in DNS server manually.</p>
QS-2694	<p>When the system time on the QoreStor server is synchronized with the domain time, this may cause the system time to adjust backwards. If this occurs, system statistics (like read/write throughput statistics) will appear to be hung for an amount of time equal to the time adjustment.</p>
QS-3779	<p>When using Secure Connect with NetVault Backup in a multiple-machine configuration (NetVault server, NetVault client, QoreStor server), Secure Connect can respond to errors only for connections between the NetVault server and QoreStor or the NetVault client and QoreStor. Secure Connect does not address connections between the NetVault server and NetVault client.</p>
QS-4169	<p>When using the Linux exports http_proxy or https_proxy, no_proxy is also required for the watcher service to function correctly. Refer to "Accessing QoreStor" in the <i>QoreStor User Guide</i>.</p>
QS-5105	<p>Changes to a Cloud Tier Policy for inclusions or exclusions will not take effect until the QoreStor service has been restarted.</p>
QS-5438	<p>After performing a DR to QoreStor migration, network settings are reset to default.</p>
QS-5627	<p>The current error output of "rda --limit" without any argument incorrect suggests limits are enforced via Mbps (megabits per second) when the limit is actually in MBps (megabytes per second).</p>
QS-5629	<p>When configuring a custom graph, if you select a period for which there is no data, the graph will be blank and display "No Data Available"</p>
QS-5826	<p>When performing a DR to QoreStor migration, bonding modes and MTU settings are not</p>
QS-5891	<p>Rapid CIFS is not supported on Windows Server 2016 with secure boot enabled.</p>
QS-6291	<p>When using the latest version of the Rapid CIFS plug-in with Veeam Backup and Recovery, the configurations below are required:</p> <ul style="list-style-type: none"> • For the Backup Repository, change the Gateway Server option to The following server and enter the IP or hostname of the local machine. • For VMware Backup, the Gateway server should be changed from the Automatic selection to the Use the selected backup proxy servers only.
QS-6653	<p>OST MSI plugin reports a new version is already installed when installing an updated driver</p> <p>Workaround: Uninstall the OST driver before installing the newer driver</p>
QS-6662	<p>Replication add for AIR should fail if replication_traffic and encryption options used in the --add CLI.</p> <p>Both replication_traffic and encryption options are irrelevant to AIR and user should not be allowed to use them while adding AIR replication.</p>

ID	Issue
	Above parameters are restricted in --update CLI so similarly should be blocked in add CLI.
QS-6782	When installing Rapid CIFS on Windows 2008 R2, the installation deploys driver version 4.0.3207.1 , causing the version displayed by rcifsctl.exe driver -q to be different from the version in the Windows Programs and Features dialog. The functionality of Secure Connect is not changed.
QS-6803	Customers running QoreStor on a DR Series appliance must perform an intermediate upgrade to 6.1.0.814 before upgrading to 6.1.0.838.
QS-6808	<p>When configuring Backup Exec with CIFS shares using the display name, the steps below must be followed:</p> <ol style="list-style-type: none"> <li data-bbox="379 611 1358 667">1. In the command prompt, change directpries to the path C:\Program Files\Quest\Rapid CIFS. <li data-bbox="379 689 1070 712">2. Execute rdcifsctl.exe sc -d for disable a secure connection. <li data-bbox="379 734 1342 824">3. Configure storage in Backup Exec by specifying \displayname\container as network share. During this configuration all connections from Backup Exec to QoreStor are secured. <li data-bbox="379 846 1054 869">4. Execute rdcifsctl.exe sc -e to enable a secure connection.
QS-6860	During upgrade, the SMB config file is overwritten. Any manual changes to this file will be lost on upgrade.
QS-7029	When using Rapid NFS with Secure Connect, the NFS container must have insecure option set. This must be done via the command line. Refer to Upgrade notes for more information.

Product Licensing

QoreStor offers a backend capacity licensing model to allow for simple integration with other Quest Data Protection products.

- **Standalone license** - QoreStor is licensed by the amount of backend capacity required. Standalone licenses are available as either **perpetual** licenses (with no expiration), or **term** licenses, which expire after a specified period of time.

- **i** | **NOTE:** Term licenses are intended for specific customer use cases, i.e., licensing according to yearly billing cycles. A perpetual license is appropriate for most customers.

QoreStor licenses are additive, meaning that if you purchase a 5TB license now, and a 10TB license in the future, you will have 15TB total capacity.

- **i** | **NOTE:** Licenses for QoreStor are specific to the QoreStor server. When installing a license, the System ID for your QoreStor server is required. You can obtain the System ID with the command **system --show | grep "System ID"**

Evaluating QoreStor

QoreStor offers two methods for evaluation:

- **Default installation** - If no license is installed, QoreStor defaults to a no-cost, 1TB capacity installation supported by the QoreStor Community. This option requires no license and does not expire.
 - If a license is applied to a server running in this mode, the free 1TB is **not** added to the purchased license capacity.
 - When installed in Demo mode, the capacity is limited to 100GB.
- **Full capacity trial** - available on the Quest Software Trial site, which provides a 30-day evaluation license for up to 360TB and access to Quest Support. After the evaluation period has expired, the QoreStor server will operate in Manual Intervention mode until a license is applied. To use QoreStor beyond that time frame, you will need to purchase a perpetual standalone license.
 - If installed in Demo mode, the capacity is limited to 100GB
 - If a longer trial period is required, please contact Quest Sales.

If you have purchased a standalone license, you can install it using the **system --license** command, as described in the *QoreStor Command Line Reference Guide*.

- **i** | **NOTE:** When ordering a license, the System ID for your QoreStor server is required. You can obtain the System ID with the command **system --show | grep "System ID"**

Supported software and hardware

For a complete list of the supported hardware and software for QoreStor, see the *QoreStor Interoperability Guide*. You can download this guide by visiting: <http://support.quest.com/qorestor> and selecting your specific QoreStor version, which opens the product support page to view product documentation for your system.

Other information you may need

The following table lists the documentation available for QoreStor. The documents listed in this table are available on the Quest support website by selecting your specific QoreStor version at:

<http://support.quest.com/QoreStor>

Table 5: QoreStor documentation

Document	Description
QoreStor Installation Guide	Provides information on installation and operation requirements, supported platforms as well as procedures for installing QoreStor.
QoreStor User Guide	Provides information on configuring and using QoreStor.
QoreStor Release Notes	Provides the latest information about new features and known issues with a specific product release.
QoreStor Command Line Reference Guide	Provides information about managing QoreStor data backup and replication operations using the QoreStor command line interface (CLI).
QoreStor Interoperability Guide	Provides information on supported infrastructure components.
QoreStor Virtual Machine Deployment Guide	Provides information on deploying the QoreStor virtual machine on VMware ESX or Microsoft Hyper-V.
Additional whitepapers	Instructions and best practices for configuring additional Quest and third-party applications to work with QoreStor.

i **NOTE:** Check for the latest documentation updates and release notes at <http://support.quest.com/qorestor>. Read the release notes first because they contain the most recently documented information about known issues with a specific product release.

Information on compatible products

QoreStor offers direct integration with Quest Software's NetVault® Backup and vRanger®, as well as Veritas NetBackup and Backup Exec. For more information on those products refer to the documents below.

Table 6: Quest NetVault Backup documentation

Document	Description
NetVault Backup Installation	Provides information about installing and upgrading the NetVault Backup server and client software.

Document	Description
Guide	
NetVault Backup Administration Guide	Describes how to configure and use NetVault Backup to protect your data. This document also provides information on configuring QoreStor repositories and migrating NetVault SmartDisk data to the new QoreStor repository.
NetVault Backup Release Notes	Provides the latest information about new features and known issues with a specific product release.

i **NOTE:** See the complete NetVault Backup documentation at <https://support.quest.com/netvault-backup>.

Table 7: Quest vRanger documentation

Document	Description
vRanger Installation/Upgrade Guide	This document provides information on supported platforms, system requirements, and instructions on installing and upgrading vRanger.
vRanger User Guide	This document provides information and procedures on configuring and using vRanger to protect virtual and physical environments.
vRanger Release Notes	This document details the issues resolved in this release, the known issues as of this release, and the third party components in vRanger.

i **NOTE:** See the complete vRanger documentation at <https://support.quest.com/vranger>.

Table 8: Veritas documentation

Document	Description
Veritas NetBackup	For information on Veritas NetBackup, refer to the NetBackup product documentation .
Veritas Backup Exec	For information on Veritas Backup Exec, refer to the Backup Exec product documentation .

About us

Quest provides software solutions for the rapidly-changing world of enterprise IT. We help simplify the challenges caused by data explosion, cloud expansion, hybrid datacenters, security threats, and regulatory requirements. We are a global provider to 130,000 companies across 100 countries, including 95% of the Fortune 500 and 90% of the Global 1000. Since 1987, we have built a portfolio of solutions that now includes database management, data protection, identity and access management, Microsoft platform management, and unified endpoint management. With Quest, organizations spend less time on IT administration and more time on business innovation. For more information, visit www.quest.com.

Contacting Quest

For sales or other inquiries, visit www.quest.com/contact.

Technical support resources

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at <https://support.quest.com>.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to-videos
- Engage in community discussions
- Chat with support engineers online
- View services to assist you with your product

Third party components

This product contains the following third-party components. For third-party license information, and copies of third party licenses not reproduced below, go to <https://www.quest.com/legal/license-agreements.aspx>.

Source code for components marked with an asterisk (*) is available at <https://opensource.quest.com/>. For items marked with a †, a copy of the license can be found at [The MIT License \(MIT\)](#)

Component	License	Notes
@angular/common 7.2.10 [†]	MIT	Copyright (c) 2015 Cameron Spear
@angular/compiler 7.2.10 [†]	MIT	Copyright (c) 2010-2019 Google LLC. http://angular.io/license
@angular/core 7.2.10 [†]	MIT	Copyright (c) 2010-2019 Google LLC. http://angular.io/license
@angular/forms 7.2.10 [†]	MIT	Copyright Google Inc. All Rights Reserved.
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@angular/platform-browser-dynamic 7.2.10 [†]	MIT	Copyright Google Inc. All Rights Reserved.
@angular/router 7.2.10 [†]	MIT	Copyright Google Inc. All Rights Reserved.
Angular/animations 7.2.12 [†]	MIT	Copyright Google Inc. All Rights Reserved.
angular/cdk 7.3.7 [†]	MIT	Copyright Google Inc. All Rights Reserved.
angular2-clipboard 11	MIT 1.0	Copyright (c) 2016 Sam Lin
angular2-jwt 0.2.3 [†]	MIT 1.0	Copyright (c) 2017 Auth0 Inc.
Angular-jwt 1.0 [†]	MIT 1.0	Copyright (c) 2017 Auth0 Inc.
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bzip2‡	BSD Simple	
C++ REST SDK 1.0	MIT 1.0	Copyright (c) Microsoft Corporation
cli v1.20.0‡	MIT 1.0	Copyright (c) 2016 Jeremy Saenz & Contributors
core-js 2.6.5‡	MIT	Copyright (c) 2014-2016 Denis Pushkarev
Crypto-Go v0.0.0-20181203042331-505ab145d0a9‡	BSD-Crypto-Go 1.0	Copyright (c) 2009 The Go Authors. All rights reserved.
cURL 7.57.0‡	MIT	Copyright (c) 1996 - 2016, Daniel Stenberg, <daniel@haxx.se>, and many contributors, see the THANKS file.
D3 3‡	BSD 3-	Copyright (c) 2013, Michael Bostock All rights reserved.

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