



Release Notes for COS 3.16.1

First Published: October 6, 2017

Last Updated: October 13, 2017

These release notes describe the key features of Cisco Cloud Object Storage (COS) Release 3.16.1 and describe caveats and other issues for the release. For a list of caveats that apply to COS Release 3.16.1, see [Caveats, page 11](#).

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Introduction

Cisco Cloud Object Storage (COS) provides distributed, resilient, high-performance storage and retrieval of binary large object (blob) data. Object storage is distributed across a cluster of hardware systems, or nodes. The storage cluster is resilient against hard drive failure within a node and against node failure within a cluster. Nodes can be added to or removed from the cluster to adjust cluster capacity as needed.

COS has two primary interfaces for content management:

- The OpenStack Swift API, with enhancements to improve quality of service when accessing both large and small media objects
- The Fanout API for efficient storage of unique copies for fair-use compliance

As a managed service of the Cisco Virtualized Video Processing Controller (V2PC), COS is managed through the V2PC graphical web user interface (GUI), which uses REST APIs to simplify COS setup and management. COS also includes a command-line interface (CLI) for management of remote or programmatic content. In addition, COS provides authentication and authorization services using the OpenStack Swauth API.

Through its various management interfaces, COS provides access to large and small media objects, maintains high quality of service, supports cluster management, and coordinates the replication of data across sites to improve resiliency and optimize the physical location of stored data.

New Features

COS Release 3.16.1 adds the following new features and enhancements relative to COS 3.14.x:

- User-defined Network Interface Configuration.
- Rio GET batch copy with Range header
- V2PC Bare Metal Support
- Support for 10Gb management port
- Monitoring of multiple partitions per partition type
- Ingest Load Balancing
- CDE6032 single node with IOE
- Health Check API
- CMC-2 configuration support
- Other minor enhancements and bug fixes

Related Software Products

COS 3.16.1 is a member of the Cisco Virtualized Video Processing (V2P) product suite. As a managed service of V2P, COS and its content are managed through the V2PC GUI. Under V2PC orchestration, COS works with Cisco and third-party applications to provide complete media processing solutions. See the following documents for additional information:

- *Cisco Virtualized Video Processing Controller Deployment Guide*
- *Cisco Virtualized Video Processing Controller User Guide*
- *Cisco Cloud Object Storage Release 3.16.1 User Guide*
- *COS Rolling Update Service User Guide*

Feature Overview

[Table 1](#) provides an overview of the COS features. For full descriptions of these features, see the *Cisco Cloud Object Store Release 3.16.1 User Guide*.

Table 1 **Features Supported in COS Release 3.16.1**

Feature	Description
Cisco UCS and CDE Server Support	<ul style="list-style-type: none"> • COS Release 3.16.1 supports a variety of Cisco UCS and CDE server hardware models and configurations. For details, see Supported Hardware, page 7. • For UCS S3260 nodes without COS preinstalled, COS Release 3.16.1 provides a script to enable setup of one or two COS nodes on the S3260. • For CDE6032 nodes with COS already installed, COS provides a script to configure the CDE6032 for service after installation. A script is also provided for CDE6032 nodes that do not yet have COS installed.
Rolling Update Service (RUS)	<ul style="list-style-type: none"> • Along with the introduction of DEC (Server RAID) comes the need for a way to update COS on each node in a DEC cluster maintaining availability to the application data stored in the cluster. <p>RUS software manages the node-by-node update process so that data within the cluster is always available. For complete details, see the <i>Cisco COS Rolling Update Service User Guide</i>.</p>
COS Metadata Cluster (CMC)	<ul style="list-style-type: none"> • COS Release 3.16.1 uses a separate CMC for the metadata database. Moving the metadata from the COS nodes to a separate platform allows the metadata to grow without reducing the space available for object data on the COS nodes.
COS Lock Manager (CLM)	<ul style="list-style-type: none"> • The CLM runs on the CMC nodes for off-box configurations; it also runs on the COS nodes themselves for on-box configurations.
Automated Node Configuration	<ul style="list-style-type: none"> • A single configuration file for all COS nodes can be stored on an FTP or HTTP server, and then downloaded by the COS initialization routine (cosinit) during installation. • A single downloadable configuration file eliminates the need to configure nodes individually, whether manually or via the V2PC GUI. • COS 3.16.1 lets you specify the URL of a configuration file to be used at installation to automatically configure the node according to a predefined template.
Intel Preboot Execution Environment (PXE) Support	<ul style="list-style-type: none"> • PXE can be used to download a network bootstrap program (NBP) to remotely install a COS node over a network.

Table 1 **Features Supported in COS Release 3.16.1 (continued)**

Feature	Description
Improved TCP Transmission	<ul style="list-style-type: none"> • COS 3.16.1 includes optimizations to improve TCP transmit performance.
Small Object Support	<ul style="list-style-type: none"> • For cloud DVR and similar applications, COS 3.16.1 provides Small Object Support to efficiently manage storage of many small files representing media segments.
Fanout Compaction	<ul style="list-style-type: none"> • COS 3.16.1 adds support for compaction of fanout objects to reclaim disk space when copies of a fanout object are deleted before the entire fanout object has been deleted.
V2PC GUI	<ul style="list-style-type: none"> • Lets you quickly and easily access many COS 3.16.1 deployment, monitoring, and alarm functions. • Displays storage, network bandwidth, session count, and alarms for individual COS disks, nodes, services, and interfaces. • Includes a graphical display of deployment statistics and trends related to disk, service, and interface status. • Supports configuration of COS node service interface from the GUI. • Supports setting of resiliency policies on a per-cluster basis from the GUI.
V2PC GUI Enhancements	<ul style="list-style-type: none"> • The V2PC GUI has been enhanced to support SLA reporting, alarms and events, COS-VMR load balancing, resiliency groups, and CMC management. • Adjustable SLA reporting thresholds determine the level of Warning and Critical Error messages appearing in the V2PC GUI alarms page. • A Fanout API auth profile for a COS cluster can be configured through the V2PC GUI as well as through the CLI. Previously, the GUI only supported configuring a SWAUTH auth profile.
COS Node Telemetry Forwarding	<ul style="list-style-type: none"> • COS 3.16.1 supports the ability to configure forwarding of log events and statistics to an Elasticsearch instance or Cisco Zeus account for centralized log management and statistical analysis.
High Availability (HA)	<ul style="list-style-type: none"> • COS supports HA as implemented in V2PC, providing redundancy for V2PC VMs. V2PC uses both Cisco and third-party components to support HA.
Swauth API	<ul style="list-style-type: none"> • Simple Auth Service API for authentication of Swift operations. • Based on Swauth Open-Source Middleware API. • Used to manage accounts, users and account service endpoints.

Table 1 **Features Supported in COS Release 3.16.1 (continued)**


Feature	Description
Swift Object Store API	<ul style="list-style-type: none"> • An implementation of a subset of the continually evolving OpenStack Swift API. • Command executions are authenticated using auth tokens provided by Swauth service. • Used to create and manage containers and objects for persistent storage in a COS cluster. • Supports archiving of content from Cisco or ARRIS recorders using DataDirect Networks (DDN) Web Object Scaler (WOS) archive objects.
Fanout API	<ul style="list-style-type: none"> • COS 3.16.1 includes support for a Fanout API to enable interactions with other Cisco and third-party applications orchestrated through V2PC.
Object Store Metadata Resiliency	<ul style="list-style-type: none"> • Metadata resiliency is provided by a distributed and replicated Cassandra document database stored on a separate CMC. • Manual administrative intervention is required on CMC node failure.
Object Store Data Resiliency	<ul style="list-style-type: none"> • Data is resilient to both hard drive and COS node failures. • Local Erasure Coding (LEC), or local COS node data resiliency, is provided by local software RAID. LEC is enabled by default and is configured for two drive failures. We recommend this configuration for resiliency. • Distributed erasure coding (DEC) provides data resiliency across nodes, protecting stored content from loss due to node failure. • COS also supports mirroring of local hard drives as an option. However, LEC is enabled by default, and is the generally recommended choice. <p data-bbox="836 1360 873 1402"></p> <p data-bbox="836 1409 1513 1472">Note <u>When configuring local mirroring for resiliency, we recommend using no more than one local mirror copy.</u></p> <ul style="list-style-type: none"> • Supports configuration of mixed resiliency policies (local erasure with remote mirroring) via the GUI. • Alarms are available for loss of storage.

Table 1 Features Supported in COS Release 3.16.1 (continued)

Feature	Description
Resiliency Groups	<ul style="list-style-type: none"> • COS now defines each COS node as a member of a <i>resiliency group</i>, a subdivision of a cluster that provides striping for distributed erasure coding (DEC). Resiliency groups reduce communication overhead between servers by keeping traffic within a resiliency group. Once defined, resiliency groups are maintained as part of cluster and site management, and are transparent to the operator. <p>Each cluster has an associated Cassandra cluster, and a target resiliency that can be met using DEC or mirroring.</p>
Management Interface Bonding	<ul style="list-style-type: none"> • Supports defining two node management interface ports as a primary-backup pair.
Service Load Balancing	<ul style="list-style-type: none"> • COS cluster load balancing is provided by DNS round-robin of a FQDN to multiple physical IPv4 addresses hosted by COS nodes. • Optimal load balancing is provided by extensions to the Swift API through the implementation of HTTP redirect. • Remote smoothing facilitates load balancing by moving content to a new node when it is added to a cluster.
VMR-to-COS Load Balancing	<ul style="list-style-type: none"> • VMR to COS IP discovery and load balancing enables rapid updating of the service directory catalog to reflect changes to VMR-COS interface availability.
Ingest Load Balancing	<p>Ingest load balancing is used for clusters that are configured with multiple resiliency group, and determines which resiliency group hosts the ingest data. This can be done in two ways:</p> <ol style="list-style-type: none"> 1. Proxy Redirect – where the server receiving the ingest request processes the incoming data and sends the corresponding data and parity stripes to servers in the target resilience group. 2. HTTP Redirect – where the server receiving the ingest request redirects the client to resend the request to a server in the target resilience group. <p>The client ingest request will indicate whether or not HTTP redirect is supported; and for the cases where HTTP redirect is not supported, proxy redirect will be used.</p>
COS Cluster Support	<ul style="list-style-type: none"> • Each COS application instance can have one or more clusters created to service that application instance. • Each cluster can have its own asset redundancy policy, shared by all COS nodes that are members of that cluster. • If a cluster is disabled, all member COS nodes will have their interfaces removed from the DNS. Likewise, when a cluster is enabled, all member node interfaces will be added back to the DNS.

Table 1 *Features Supported in COS Release 3.16.1 (continued)*

Feature	Description
COS AIC Client Management	<ul style="list-style-type: none"> The COS application instance controller (AIC) Client process is monitored by the monit process that runs on each COS node, and if not running, is restarted. The COS AIC Client process creates a PID file that is added to the monit script so it can be monitored and restarted. Command-line scripts support stopping and restarting the AIC Client process manually, bypassing the normal automatic restart process.
Node Decommissioning Paused for Maintenance Mode	<ul style="list-style-type: none"> If a node is in the process of being decommissioned and any node in its cluster is placed in Maintenance mode, the decommissioning process is paused.

Supported Hardware

COS Supported Hardware

[Table 1-2](#) lists the Cisco hardware models and firmware that fully supports the installation of COS Release 3.16.1.



Note

COS Release 3.16.1 has been tested on the hardware models and firmware listed in [Table 1-2](#). It is recommended that you use the specified firmware with the hardware models listed.

Table 1-2 *COS 3.16.1 Supported Hardware*

Product Name	Storage Bundle	Configuration Supported	Max HDD Capacity	Max Total Storage	SSDs Used by OS and COS	Intel Xeon CPU	Recommended Firmware
Cisco CDE6032 (UCS C3K)	4U6	Single Node	56 x 10 TB	560 TB	2 x 480 GB	E5-2695 v4	HUU 2.0(13e) and HUU 3.0(1c)
Cisco CDE6032 (UCS C3K)	4U5	Dual Node	56 x 10 TB	560 TB	4 x 480 GB	E5-2695 v4	HUU 2.0(13e) and HUU 3.0(1c)
Cisco CDE6032 (UCS C3K)	4U3	Dual Node	56 x 6 TB	336 TB	4 x 480 GB	E5-2620 v4	HUU 2.0(13e) and HUU 3.0(1c)
Cisco CDE6032 (UCS C3K)	4U5	Dual Node	56 x 10 TB	560 TB	4 x 480 GB	E5-2620 v4	HUU 2.0(13e) and HUU 3.0(1c)
Cisco CDE6032 (UCS C3K-IOE)	4U8	Single Node	56 x 8 TB	560 TB	2 x 480 GB	E5-2680 v4	HUU 3.0(1a and 1c)

Table 1-2 *COS 3.16.1 Supported Hardware*

Product Name	Storage Bundle	Configuration Supported	Max HDD Capacity	Max Total Storage	SSDs Used by OS and COS	Intel Xeon CPU	Recommended Firmware
Cisco UCS S3260	4U6	Single Node	56 x 10 TB	560 TB	2 x 480 GB	E5-2695 v2	HUU 2.0(13e)
Cisco UCS S3260	4U5	Dual Node	56 x 10 TB	560 TB	4 x 480 GB	E5-2695 v2	HUU 2.0(13e)
Cisco UCS S3260	4U4	Single Node	56 x 6 TB	336 TB	2 x 480 GB	E5-2695 v2	HUU 2.0(13e)
Cisco UCS S3260	4U3	Dual Node	56 x 6 TB	336 TB	4 x 480 GB	E5-2695 v2	HUU 2.0(13e)
Cisco UCS S3260	4U3	Single Node	28 x 6 TB	168 TB	2 x 480 GB	E5-2695 v2	HUU 2.0(13e)
Cisco UCS C3160	4U2	Single Node	54 x 6 TB	324 TB	2 x 400 GB	E5-2695 v2	HUU 2.0(6d)
Cisco UCS C3160	4U1	Single Node	54 x 4 TB	216 TB	2 x 400 GB	E5-2695 v2	HUU 2.0(6d)
Cisco CDE465	4R4	Single Node	36 x 6 TB	216 TB	2 x 480 GB	E5-2670 v3	HUU 1.0CDEd
Cisco UCSC-C3K-IOE-4U8	4U8	Single Node	56 x 8 TB		12 x 64 GB	E5-2680v4	HUU 3.0(3a)

For information about installing the hardware, see the following:

- *Cisco UCS S3260 Storage Server Installation and Service Guide*
- *Cisco UCS C3160 Rack Server Installation and Service Guide*
- *Cisco Content Delivery Engine 465 Hardware Installation Guide*

CMC Supported Hardware

The following CMC hardware is supported in Release 3.14.1 and later.

Product Name	Max DB Capacity	Max Total Storage	SSDs Used by OS and CMC	Intel Xeon CPU
Cisco UCS C220M4 (CMC1)	6 x 1.6TB – Raid10	4.8TB	2 x 1.6TB – \ Riad1	E5-2695v3
Cisco UCS C220M4* (CMC2)	5 x 960GB - JBOD	4.8TB	2 x 120GB – \ Raid1	E5-2630v4

* The UCS C220M4 CMC systems - The Cisco UCS C220 M4 Rack Server is the most versatile, high-density, general-purpose enterprise infrastructure and application server in the industry today. It delivers world-record performance for a wide range of enterprise workloads, including virtualization, collaboration, and bare-metal applications.

The C220 M4 (CMC1) is a 1RU server. When configured for COS CMC, the CMC1 includes the following:

- 2 x 1.6TB solid-state drives (SSDs) in RAID1, for operating system and CMC installation.
- 6 x 1.6TB solid-state drives (SSDs) in RAID10, 4.8TB total storage for Database.
- One system I/O controller providing a total of two 10 GbE ports.

The C220 M4 (CMC2) is a 1RU server. When configured for COS CMC, the CMC2 includes the following:

- 2 x 120GB solid-state drives (SSDs) in RAID1, for operating system and CMC installation.
- 5 x 960GB solid-state drives (SSDs) in JBOD, 4.8TB total storage for Database.
- One system I/O controller providing a total of two 10 GbE ports.

Notes on Cisco CDE6032 Support

COS 3.16.1 supports and comes pre-installed on the Cisco CDE6032, a variant of the UCS S3260 Storage Server that is optimized for COS and related media applications. The CDE6032 includes updated server nodes, uses four 480 GB SSD drives in a hardware RAID configuration as a boot drive, and ships with 560 TB of storage, the maximum currently available for this hardware platform.



Note

Although COS 3.16.1 is pre-installed on the CDE6032, a post-installation script still must be run after installing the hardware. See the *Cisco Cloud Object Storage Release 3.16.1 User Guide* for details.

Notes on Cisco UCS S3260 Support

This release continues support for several UCS S3260 (formerly C3260) configurations. The S3260 platform supports up to two compute nodes and up to 56 storage disks per chassis.

- COS 3.16.1 provides a pre-installation script to enable setup of one or two COS nodes on a UCS S3260 before proceeding with installation of COS software on each COS node configured.
 - If a single node is configured, we recommend using the node with either 28 or 56 disks installed.
 - If two nodes are configured, we recommend installing all 56 disks. The pre-installation script will assign 28 disks to each node.



Note

The pre-installation script is run only once for initial hardware configuration. After that, COS can be reinstalled or upgraded and data or system drives replaced without re-executing the script.

- Following installation, you must select one of three available storage bundles for each node during `cosinit`:
 - UCS S3260 4U6 (56 disks per node): Select this bundle if you configured a single COS node with 56 x 10 TB disks each.
 - UCS S3260 4U5 (28 disks per node): Select this bundle if you configured a dual COS node setup with 28 x 10 TB disks each.
 - UCS S3260 4U4 (56 disks per node): Select this bundle if you configured a single COS node with 56 x 6 TB disks.
 - UCS S3260 4U3 (28 disks per node): Select this bundle if you configured a single COS node with 28 disks installed, or a dual COS node setup with 28 x 6 TB disks each.



Note

Knowing which storage bundle is configured allows the system to more accurately report disk issues, such as bad or missing disks, after the node is up and running.

- In a dual node setup, the V2PC web GUI displays the status of only those disks assigned to a particular node:
 - Node1 will list Cisco Disk 01-28.
 - Node2 will list Cisco Disk 29-56.
- On each COS node, eth0 and eth1 are bonded to a bond0 management interface. This differs from the UCS-C3160, where eth0 and eth3 are bonded to a bond0 management interface.

For full details, see **Deploying COS** in the *Cloud Object Storage Release 3.16.1 User Guide*.

System Requirements

COS 3.16.1 operates as a managed service of Cisco V2PC, and COS and its content are managed through the V2PC GUI. For details, see the *Cisco Cloud Object Storage Release 3.16.1 User Guide*.



Note

COS 3.16.1 has been tested for compatibility with V2PC Release 3.3.2, available on www.cisco.com. The posted cisco-cos application required for integration with V2PC is cisco-cos-bundle-316.1.112.tar. Later releases of COS are expected to be compatible with later versions of V2PC and cos-app. Contact Cisco for the latest compatibility information.

Supported Environments

COS 3.16.1 supports a Swift and Swauth API environment, and also supports an HTTP-based API for cluster management.

Installation

Although pre-installed on the CDE6032, COS 3.16.1 must be installed on other compatible UCS or CDE hardware. COS software is provided for installation as a downloadable ISO image that includes the base (CentOS) distribution of Linux along with all of the additional RPM packages needed by a COS node. For installation instructions, see the *Cisco Cloud Object Store Release 3.16.1 User Guide*.

Crash Partition Location

When installed on a UCS C3160, COS Release 3.5.1 created a crash partition on one of the SSDs at the rear of the chassis. With COS 3.16.1, the location of the crash partition depends on the node hardware, as follows:

- When installed on a UCS S3260 (formerly C3260), COS 3.16.1 creates a crash partition along with other system partitions on the software RAID SSDs at the rear of the chassis.
- When installed on a UCS C3160, COS 3.16.1 creates a crash partition along with other system partitions on the RAID system drives, which are the SSDs in chassis slots 55 and 56.

These locations assume a new installation and not an upgrade.

Starting CServer

When starting CServer for the first time, enter the command **service cserver start** at the CLI prompt as shown in the following example:

```
[cos-node@ root]# service cserver start
```



Caution

Starting CServer using the command **service cserver start -C** (or **-c**) results in removal of all content previously stored on the drives in the node. Do not add the **-C** (or **-c**) option unless you intend to wipe all existing content from the drives.



Note

When CServer starts for the first time, an error message similar to “WARNING: unrecognized cpu, using system TSCs per second” may appear on the console. This issue has been observed on UCS S3260 nodes, but does not indicate a problem and can be safely ignored.

Caveats

Caveats describe unexpected behavior in COS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only selected severity 3 caveats are included in the caveats document.

Caveat numbers and brief descriptions for Cisco COS Release 3.16.1 releases are listed in this section.

Open Caveats

Open Caveats for Cisco COS Release 3.16.1

[Table 3](#) lists the open issues in the COS 3.16.1 release.

Bug details are displayed in the [Bug Search](#).

Table 3 *Open Caveats in COS 3.16.1 Release*

Bug ID	Description
CSCuv96300	All nodes need to be up and running before a new node can be added
CSCvc01757	Small object garbage collection compaction might leave behind orphan GOID
CSCvc52182	V2PC GUI: GUI may be stuck if click between links too quickly
CSCvc58210	High Cassandra CPU utilization during SWIFT API stress/load testing
CSCvd07284	RUS: rush: show clusters does not display latest info and not in sync with v2pc
CSCve17712	aic-client modification for the metadata lost issue
CSCve19989	V2PC CMC-AICC: old IP should be removed when the cmcinit changes the IP address of a CMC node
CSCve29105	Metadata in CMC node is not cleared after all COS nodes are deleted
CSCvf27830	[V2PC CMC] cmc-aic-client crashed when its reconnection request exceeds the max number
CSCvg07582	CMC Nodes lost Cassandra DB data after upgrade and reboot

Table 3 Open Caveats in COS 3.16.1 Release (continued)

Bug ID	Description
CSCvg13612	AIC script causing over-writes of replication factor
CSCvg03834	cos deletion failed with 500 error
CSCvg06153	V2PC Platform: unable to log on V2PC GUI
CSCvg08440	2PC Platform: v2p-ui request cannot be received by SM
CSCvg04248	V2PC-Platform: Failover of zookeeper service
CSCvg15165	cmc-aic-client: Replication factor is wrong if register CMC nodes without waiting
CSCvg10689	Goliath: local smoothing stuck SOGC running when disk IO is high
CSCvg12066	Goliath: DNS didn't update correctly by V2PC after power down 2 COS nodes
CSCvg17300	V2PC cmc_aicc: user should clear all the data before register cmc node to new cluster

Resolved Caveats

Resolved Caveats for Cisco COS Release 3.16.1

Table 4 lists the fixed issues in the COS 3.16.1 release.

Bug details are displayed in the [Bug Search](#).

Table 4 Resolved Caveats in COS 3.16.1 Release

Bug ID	Description
CSCvf14624	KDB BUG: soft lockup - stuck for 67s! [swapper:0]
CSCvf27837	[V2PC CMC] CmcNodeServiceDown alarm raised but all services are up
CSCvf28343	Log partition monitor: CMC fault status is incorrect
CSCvf28381	Log partition monitor: COS fault status is incorrect
CSCvf28928	V2PC still displays old COS version after all nodes are updated to newer version by RUS
CSCvf29550	COS Lock Manager is affected when the management server goes down
CSCvf35251	KDB Kernel panic - not syncing: Attempted to kill init!
CSCvf43155	BulkDelete deletes all indices without specifying individual indices or using ":all"
CSCvf50123	Memory leaking after half day's longevity
CSCvd80961	Cassandra should restart when it crashes (self healing)
CSCvg12369	cos/cmc-aic-client needs to remove the clear DB action when cos/cmc node join/leave cluster

Accessing Bug Search Tool

This section explains how to use the Bug Search tool to search for a specific bug or to search for all bugs in a release.

-
- Step 1** Go to <https://tools.cisco.com/bugsearch/>.
- Step 2** At the Log In screen, enter your registered Cisco.com username and password; then, click **Log In**. The Bug Search page opens.



Note If you do not have a Cisco.com username and password, you can register for them at <http://tools.cisco.com/RPF/register/register.do>.

- Step 3** To search for a specific bug, enter the bug ID in the Search For field, and press **Enter**.
- Step 4** To search for bugs in the current release, specify the following criteria:
- Select the **Model/SW Family** Product Category drop-down list box, then enter **Cisco Videoscape Distribution Suite for Television** or select the name from the **Select from list** option.
 - Select **Cisco Videoscape Distribution Suite for Television** from the list that displays.
 - The **Cloud Object Store** type displays in the Software Type drop-down list box.
 - Releases: 3.16.1.
 - Advanced Filter Options—Define custom criteria for an advanced search by selecting an appropriate value from the drop-down lists by choosing either one Filter or multiple filters from the available categories. After each selection, the results page will automatically load below the filters pane. If you select multiple filters, it behaves like an AND condition.
 - Modified Date—Select one of these options to filter bugs: **Last Week**, **Last 30 days**, **Last 6 months**, **Last year**, or **All**.
 - Status—Select **Fixed**, **Open**, **Other**, or **Terminated**.

Select **Fixed** to view fixed bugs. To filter fixed bugs, uncheck the Fixed check box and select the appropriate suboption (Resolved or Verified) that appears below the Fixed check box.

Select **Open** to view all open bugs. To filter the open bugs, uncheck the Open check box and select the appropriate suboptions that appear below the Open check box.

Select **Other** to view any bugs that are duplicates of another bug.

Select **Terminated** to view terminated bugs. To filter terminated bugs, uncheck the Terminated check box and select the appropriate suboption (Closed, Junked, or Unreproducible) that appears below the Terminated check box. Select multiple options as required.
 - Severity—Select the severity level:
 - 1: Catastrophic.
 - 2: Severe
 - 3: Moderate
 - 4: Minor
 - 5: Cosmetic
 - 6: Enhancement

- Rating—Select the bug’s quality rating: **5 Stars** (excellent), **4 or more Stars** (good), **3 or more Stars** (medium), **2 or more Stars** (moderate), **1 or more Stars** (poor), or **No Stars**.
- Support Cases—Select whether the bug **Has Support Cases** or **No Support Cases**.
- Bug Type—Select whether the bug is **Employee Visible & Customer Visible** or **Customer Visible Only**.

Step 5 The Bug Toolkit displays the list of bugs based on the specified search criteria.

Step 6 You can save or email the current search by clicking their respective option.

If you have any problems using the Bug Search tool, log into the Technical Support website at <http://www.cisco.com/cisco/web/support/index.html> or contact the Cisco Technical Assistance Center (TAC).

Related Documentation

Refer to the following documents for additional information about COS 3.16.1:

- *Cisco Cloud Object Storage Release 3.16.1 User Guide*
- *Cisco Cloud Object Storage Release 3.16.1 API Guide*
- *Cisco Cloud Object Storage Release 3.16.1 Troubleshooting Guide*
- *Open Source Used in COS 3.16.1*
- *Cisco COS Rolling Update Service User Guide*

The entire COS software documentation suite is available on Cisco.com at:

<http://www.cisco.com/c/en/us/support/video/cloud-object-storage/tsd-products-support-series-home.html>

Obtain Documentation and Submit a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What’s New in Cisco Product Documentation*.

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