

# OpenStack Compute

## Block Storage Attach/Detach Extension

(Nov 6, 2011)



## OpenStack Compute Block Storage Attach/Detach Extension

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This document is intended for software developers interested in using the Block Storage Attach/Detach Extension to the OpenStack Compute Application Programming Interface (API).

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# 1. About This Extension

Name	Block Storage Attach/Detach Extension
Namespace	<a href="http://docs.openstack.org/servers/api/ext/volume-attach/v1.0">http://docs.openstack.org/servers/api/ext/volume-attach/v1.0</a>
Alias	OS-BSAD
Contact	Gabe Westmaas < <a href="mailto:gabe.westmaas@rackspace.com">gabe.westmaas@rackspace.com</a> >
Status	ALPHA
Last Update	2011-11-06
Dependencies	OpenStack Compute API v1.1 (2011-09-08)
Doc Link (PDF)	<a href="http://docs.rackspacecloud.com/servers/api/ext/osbsad-20111105.pdf">http://docs.rackspacecloud.com/servers/api/ext/osbsad-20111105.pdf</a>
Doc Link (WADL)	<a href="http://docs.rackspacecloud.com/servers/api/ext/osbsad.wadl">http://docs.rackspacecloud.com/servers/api/ext/osbsad.wadl</a>
Short Description	Allows OpenStack Compute servers to attach and detach block storage volumes.

### Example 1.1. Extension Query Response: XML

```
<?xml version="1.0" encoding="UTF-8"?>

<extensions xmlns="http://docs.openstack.org/common/api/v1.0"
  xmlns:atom="http://www.w3.org/2005/Atom">
  <extension name="Block Storage Attach/Detach Extension"
    namespace="http://docs.openstack.org/servers/api/ext/volume-attach/
v1.0"
    alias="OS-BSAD" updated="2011-11-06T00:00:00Z">
    <description>
      Allows OpenStack Compute servers to attach and detach block
      storage volumes.
    </description>
    <atom:link rel="describedby" type="application/pdf"
      href="http://docs.rackspacecloud.com/servers/api/ext/
osbsad-20111105.pdf"/>
    <atom:link rel="describedby" type="application/vnd.sun.wadl+xml"
      href="http://docs.rackspacecloud.com/servers/api/ext/osbsad.wadl"/
  >
  </extension>
</extensions>
```

## Example 1.2. Extension Query Response: JSON

```
{
  "extensions": [
    {
      "name": "Block Storage Attach/Detach Extension",
      "namespace": "http://docs.openstack.org/servers/api/ext/
volume-attach/v1.0",
      "alias": "OS-BSAD",
      "updated": "2011-11-06T00:00:00Z",
      "description": "Allows OpenStack Compute servers to attach
and detach block storage volumes.",
      "links": [
        {
          "rel": "describedby",
          "type": "application/pdf",
          "href": "http://docs.rackspacecloud.com/servers/
api/ext/osbsad-20111105.pdf"
        },
        {
          "rel": "describedby",
          "type": "application/vnd.sun.wadl+xml",
          "href": "http://docs.rackspacecloud.com/servers/
api/ext/osbsad.wadl"
        }
      ]
    }
  ]
}
```

## 1.1. Document Change History

The most recent changes to this document are described below.

Revision Date	Summary of Changes
Nov 6, 2011	<ul style="list-style-type: none"><li>Initial release.</li></ul>



## 2. Summary of Changes

The extension allows OpenStack Compute servers to attach and detach block storage volumes.

### 2.1. New Headers

None.

### 2.2. New Faults

**Table 2.1. Fault Elements and Error Codes**

Fault Element	Associated Error Codes	Expected in All Requests?
OS-BSAD:volumeAttached	409	
OS-BSAD:attachNotAllowed	403	

The faults above extend directly from the base OpenStack Compute API Fault and do not add any new attributes.

#### Example 2.1. Fault Response, volumeAttached: XML

```
<os-bsad:volumeAttached
  xmlns:os-bsad="http://docs.openstack.org/servers/api/ext/volume-attach/v1.
0"
  xmlns="http://docs.openstack.org/compute/api/v1.1"
  code="409">
  <message>Fault!</message>
  <details>Error Details...</details>
</os-bsad:volumeAttached>
```

#### Example 2.2. Fault Response, volumeAttached: JSON

```
{
  "OS-BSAD:volumeAttached" : {
    "code" : 409,
    "message" : "Fault!",
    "details" : "Error Details..."
  }
}
```

## 2.3. New Resources

None.

## 2.4. New Actions

This extensin adds the following server actions.

Verb	URI	Description
<b>POST</b>	<code>/ {tenantId} /servers/ {serverId} / action</code>	Attach a volume to the specified server.
<b>POST</b>	<code>/ {tenantId} /servers/ {serverId} / action</code>	Detach a volume from the specified server.

## 2.4.1. Attach a Volume

Verb	URI	Description
POST	<code>/ {tenantId} /servers/ {serverId} /action</code>	Attach a volume to the specified server.

Normal Response Code(s): 202

Error Response Code(s): computeFault (400, 500, ...), serviceUnavailable (503), unauthorized (401), forbidden (403), badRequest (400), badMethod (405), overLimit (413), itemNotFound (404), badMediaType (415), buildInProgress (409), volumeAttached (409), attachNotAllowed (403)

Status Transition: AVAILABLE → OS-BSAD:ATTACHING → AVAILABLE  
 AVAILABLE → OS-BSAD:ATTACHING → ERROR (on error)

The attach function attaches a storage volume to the specified server. If the volume is already attached, the operation will fail with a RS-CBS:volumeAttached (409) fault. A response of RS-CBS:attachNotAllowed (403) indicates that the server lacks privileges to attach the volume.

**Table 2.2. Attach a Volume Request Parameters**

Name	Style	Type	Description
tenantId	template	String	A unique identifier for the tenant who owns the resource.
serverId	template	String	A unique identifier for the server.

### Example 2.3. Attach a Volume Request: XML

```
<?xml version="1.0" encoding="UTF-8"?>
<attach-volume
  xmlns="http://docs.openstack.org/servers/api/ext/volume-attach/v1.0"
  href="https://cbs.api.rackspacecloud.com/12934/volumes/
f346f12e-0fa4-11e1-9b13-8770fd1fda6b"/>
```

### Example 2.4. Attach a Volume Request: JSON

```
{
  "OS-BSAD:attach-volume" : {
    "href" : "https://cbs.api.rackspacecloud.com/12934/volumes/
f346f12e-0fa4-11e1-9b13-8770fd1fda6b"
  }
}
```

This operation does not return a response body.

## 2.4.2. Detach a Volume

Verb	URI	Description
POST	<code>/ {tenantId} /servers/ {serverId} /action</code>	Detach a volume from the specified server.

Normal Response Code(s): 202

Error Response Code(s): computeFault (400, 500, ...), serviceUnavailable (503), unauthorized (401), forbidden (403), badRequest (400), badMethod (405), overLimit (413), itemNotFound (404), badMediaType (415), buildInProgress (409)

Status Transition: AVAILABLE → OS-BSAD:DETACHING → AVAILABLE  
 AVAILABLE → OS-BSAD:DETACHING → ERROR (on error)

The detach function detaches a storage volume from the specified server. The volume should be synced and unmounted before the detach operation to avoid data loss.

**Table 2.3. Detach a Volume Request Parameters**

Name	Style	Type	Description
tenantId	template	String	A unique identifier for the tenant who owns the resource.
serverId	template	String	A unique identifier for the server.

### Example 2.5. Detach a Volume Request: XML

```
<?xml version="1.0" encoding="UTF-8"?>

<detach-volume
  xmlns="http://docs.openstack.org/servers/api/ext/volume-attach/v1.0"
  href="https://cbs.api.rackspacecloud.com/12934/volumes/00426eee-0fa5-11e1-a56e-dbed44d02223"/>
```

### Example 2.6. Detach a Volume Request: JSON

```
{
  "OS-BSAD:detach-volume" : {
    "href" : "https://cbs.api.rackspacecloud.com/12934/volumes/00426eee-0fa5-11e1-a56e-dbed44d02223"
  }
}
```

This operation does not return a response body.

## 2.5. Changes to the OpenStack Compute Specification

A server has the capability to list mounted volumes. This affects List Servers (4.1.1) and Get Server Details (4.1.3). An example of a server with mounted volumes is illustrated below.

## Example 2.7. Server Details Response: XML

```
<?xml version="1.0" encoding="UTF-8"?>
<server xmlns="http://docs.openstack.org/compute/api/v1.1"
  xmlns:atom="http://www.w3.org/2005/Atom"
  id="52415800-8b69-11e0-9b19-734f000004d2"
  tenantId="1234" userId="5678"
  name="sample-server" status="BUILD"
  updated="2010-10-10T12:00:00Z" created="2010-08-10T12:00:00Z"
  progress="60" hostId="e4d909c290d0fb1ca068ffaddf22cbd0"
  accessIPv4="67.23.10.132"
  accessIPv6="::babe:67.23.10.132">
  <image id="52415800-8b69-11e0-9b19-734f6f006e54">
    <atom:link
      rel="self"
      href="http://servers.api.openstack.org/v1.1/1234/images/
52415800-8b69-11e0-9b19-734f6f006e54"/>
    <atom:link
      rel="bookmark"
      href="http://servers.api.openstack.org/1234/images/
52415800-8b69-11e0-9b19-734f6f006e54"/>
  </image>
  <flavor id="52415800-8b69-11e0-9b19-734f216543fd">
    <atom:link
      rel="self"
      href="http://servers.api.openstack.org/v1.1/1234/flavors/
52415800-8b69-11e0-9b19-734f216543fd"/>
    <atom:link
      rel="bookmark"
      href="http://servers.api.openstack.org/1234/flavors/
52415800-8b69-11e0-9b19-734f216543fd"/>
  </flavor>
  <metadata>
    <meta key="Server Label">Web Head 1</meta>
    <meta key="Image Version">2.1</meta>
  </metadata>
  <addresses>
    <network id="public">
      <ip version="4" addr="67.23.10.132"/>
      <ip version="6" addr="::babe:67.23.10.132"/>
      <ip version="4" addr="67.23.10.131"/>
      <ip version="6" addr="::babe:4317:0A83"/>
    </network>
    <network id="private">
      <ip version="4" addr="10.176.42.16"/>
      <ip version="6" addr="::babe:10.176.42.16"/>
    </network>
  </addresses>
  <volumes xmlns="http://docs.openstack.org/servers/api/ext/volume-attach/
v1.0">
    <volume id="636b0b58-0f40-11e1-8d92-fb520ad3fe9d">
      <atom:link
        rel="self"
        href="http://volumes.api.openstack.org/v1.1/1234/volumes/
636b0b58-0f40-11e1-8d92-fb520ad3fe9d"/>
      <atom:link
        rel="bookmark"
        href="http://volumes.api.openstack.org/1234/volumes/
636b0b58-0f40-11e1-8d92-fb520ad3fe9d"/>
    </volume>
```

```

    <volume id="72071c06-0f40-11e1-9723-b7109e1127cd">
      <atom:link
        rel="self"
        href="http://volumes.api.openstack.org/v1.1/1234/volumes/
72071c06-0f40-11e1-9723-b7109e1127cd"/>
      <atom:link
        rel="bookmark"
        href="http://volumes.api.openstack.org/1234/volumes/
72071c06-0f40-11e1-9723-b7109e1127cd"/>
    </volume>
  </volumes>
  <atom:link
    rel="self"
    href="http://servers.api.openstack.org/v1.1/1234/servers/
52415800-8b69-11e0-9b19-734f000004d2"/>
  <atom:link
    rel="bookmark"
    href="http://servers.api.openstack.org/1234/servers/
52415800-8b69-11e0-9b19-734f000004d2"/>
</server>

```

### Example 2.8. Server Details Response: JSON

```

{
  "server": {
    "id": "52415800-8b69-11e0-9b19-734f000004d2",
    "tenantId": "1234",
    "userId": "5678",
    "name": "sample-server",
    "updated": "2010-10-10T12:00:00Z",
    "created": "2010-08-10T12:00:00Z",
    "hostId": "e4d909c290d0fblca068ffaddf22cbd0",
    "accessIPv4": "67.23.10.132",
    "accessIPv6": "::babe:67.23.10.132",
    "status": "BUILD",
    "progress": 60,
    "image": {
      "id": "52415800-8b69-11e0-9b19-734f6f006e54",
      "links": [
        {
          "rel": "self",
          "href": "http://servers.api.openstack.org/v1.1/1234/
images/52415800-8b69-11e0-9b19-734f6f006e54"
        },
        {
          "rel": "bookmark",
          "href": "http://servers.api.openstack.org/1234/images/
52415800-8b69-11e0-9b19-734f6f006e54"
        }
      ]
    },
    "flavor": {
      "id": "52415800-8b69-11e0-9b19-734f216543fd",
      "links": [
        {
          "rel": "self",
          "href": "http://servers.api.openstack.org/v1.1/1234/
flavors/52415800-8b69-11e0-9b19-734f216543fd"
        },
        {

```

```

        "rel": "bookmark",
        "href": "http://servers.api.openstack.org/1234/flavors/
52415800-8b69-11e0-9b19-734f216543fd"
    }
    ],
    },
    "addresses": {
        "public" : [
            {
                "version": 4,
                "addr": "67.23.10.132"
            },
            {
                "version": 6,
                "addr": "::babe:67.23.10.132"
            },
            {
                "version": 4,
                "addr": "67.23.10.131"
            },
            {
                "version": 6,
                "addr": "::babe:4317:0A83"
            }
        ],
        "private" : [
            {
                "version": 4,
                "addr": "10.176.42.16"
            },
            {
                "version": 6,
                "addr": "::babe:10.176.42.16"
            }
        ]
    },
    "metadata": {
        "Server Label": "Web Head 1",
        "Image Version": "2.1"
    },
    "OS-BSAD:volumes" : [
        {
            "id" : "636b0b58-0f40-11e1-8d92-fb520ad3fe9d",
            "links" : [
                {
                    "rel" : "self",
                    "href" : "http://volumes.api.openstack.org/v1.1/1234/
volumes/636b0b58-0f40-11e1-8d92-fb520ad3fe9d"
                },
                {
                    "rel" : "bookmark",
                    "href" : "http://volumes.api.openstack.org/1234/
volumes/636b0b58-0f40-11e1-8d92-fb520ad3fe9d"
                }
            ]
        },
        {
            "id" : "72071c06-0f40-11e1-9723-b7109e1127cd",
            "links" : [
                {

```

```
        "rel" : "self",
        "href" : "http://volumes.api.openstack.org/v1.1/1234/
volumes/72071c06-0f40-11e1-9723-b7109e1127cd"
    },
    {
        "rel" : "bookmark",
        "href" : "http://volumes.api.openstack.org/1234/
volumes/72071c06-0f40-11e1-9723-b7109e1127cd"
    }
]
},
"links": [
    {
        "rel": "self",
        "href": "http://servers.api.openstack.org/v1.1/1234/servers/
52415800-8b69-11e0-9b19-734f000004d2"
    },
    {
        "rel": "bookmark",
        "href": "http://servers.api.openstack.org/1234/servers/
52415800-8b69-11e0-9b19-734f000004d2"
    }
]
}
}
```