OpenStack Compute

Block Storage Attach/Detach Extension

(Nov 6, 2011)

OpenStack Compute Block Storage Attach/Detach Extension

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	http://docs.openstack.org/servers/api/ext/volume-attach/v1.0
Alias	OS-BSAD
Contact	Gabe Westmaas `<gabe.westmaas@rackspace.com>`
Status	ALPHA
Last Update	2011-11-06
Dependencies	OpenStack Compute API v1.1 (2011-09-08)
Doc Link (PDF)	http://docs.rackspacecloud.com/servers/api/ext/ osbsad-20111105.pdf
Doc Link (WADL)	http://docs.rackspacecloud.com/servers/api/ext/osbsad.wadl
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

```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 desrcibed below.

Revision Date	Summary of Changes
Nov 6, 2011	• Initial release.

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
POST	`/{tenantId}/servers/{serverId}/` `action`	Attach a volume to the specified server.
POST	`/{tenantId}/servers/{serverId}/` `action`	Detach a volume from the specified server.

2.4.1. Attach a Volume

Verb	URI	Description
POST	/{tenantId}/servers/{serverId}/ action	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	`/{tenantId}/servers/{serverId}/` `action`	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
<?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": "e4d909c290d0fb1ca068ffaddf22cbd0",
        "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"
                    }
                ]
            }
}
```