NTT Communications

Cloud^{n}

LBA API Manual

Ver.2.0.0

Version	Date of Update	Revision
Ver.1.0	March 23, 2013	First edition created
Ver.1.0.2	August 13, 2013	Correction of typo
Ver.2.0.0	October 3, 2013	Modification of endpoints Addition of API following the support of the Cookie persistency function and the SSL authentication

Contents

1-1) Outlook of the Service

This manual describes the method of using Cloud^{n} Load Balancing Advanced(LBA).

Cloud^{n} Load Balancing Advanced (LBA) is a load distribution service that automatically distributes application traffic to two or more Cloud^{n} Compute virtual servers and is equivalent to Elastic Load Balancing (ELB) of AWS. By using Cloud^{n} Load Balancing Advanced, a great amount of traffic coming over the Internet can be efficiently processed with two or more Cloud^{n} Compute virtual servers in use, and it is possible to construct a scalable system that is not restricted by the performance of a single virtual server.

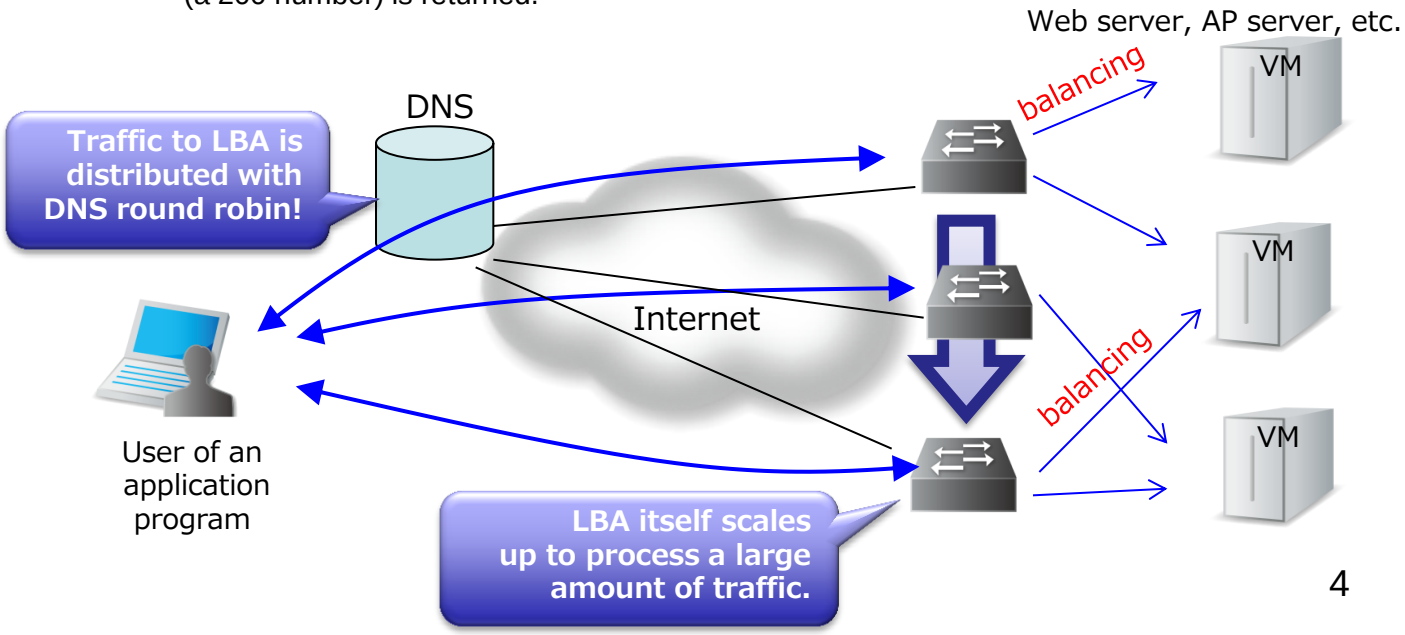
Some major functions available are as described below. Red letters indicate the functions newly added from version 2.

■Distribution of Application Traffic

- When a load balancer is created, a special virtual server, called load balancer instance (LBI), is created in the zone specified at the time of creation, and the application traffic (HTTP and HTTP) arriving the virtual server is distributed to the Cloud^{n} Compute virtual servers having been registered in advance.
- The number of LBI's automatically increases or decreases based on the number of average simultaneous connections.
- The type of load balance is layer 4 (TCP/SSL) and layer 7 (HTTP/HTTPS).
- The HTTP/HTTPS session from a client is terminated with LBI.
- By using Cookie, a session with a virtual server can be maintained.
- By registering the SSL certificate to the load balancer, SSL communications can be conducted from the client to the load balancer.

■Health Check

- The Cloud^{n} Load Balancing Advanced service executes a health check on the virtual servers where the load is distributed, and, if a virtual server should fail to respond correctly, the virtual server is excluded from the destination of load distribution.
- Health checks also of excluded virtual servers are continuously executed, and an excluded virtual server is added to the destination of load distribution when it normally responds.
- As default, the health check of a virtual server is conducted with port 80 by using the TCP protocol.
- When the HTTP/HTTPS protocol is used for a health check, an access is made to a specific URL path, and a judgment is made depending on whether a successful response (a 200 number) is returned.



1-2) What Should Be Prepared in Advance

To use Cloud^{n} AutoScaling, the following prerequisites need to be prepared.

☐ **Starting to Use the LBA Service**

From the Cloud^{n} portal, start using the LBA service. For the method of starting to use the service, see section 3-1), "Starting to Use the Service" in "Cloud^{n} Portal Operation Manual".

☐ **The API Access Key Common to the Cloud^{n} Service and the Secret Key**

From the Cloud^{n} Portal, confirm the API access key "Common to the Service" necessary to use LBA API and the secret key. For the method of confirmation, see section 3-3), "Managing the API Access Key and the Secret Key" in "Cloud^{n} Portal Operation Manual".

☐ **A Virtual Server Created on Compute (FLAT Type) where the LBA Service Is Applicable**

Prepare a virtual server (Linux系OS/CentOS, Ubuntu) created on Compute (FLAT type/East Japan).

For the method of creating a virtual server, see "Cloudⁿ Compute (FLAT Type) Operation Manual".

LBA service cannot be used from a virtual server on Compute (VLAN type).

2-1) The Format of API Requests

This service provides an API for creating or deleting a load balancer in the LBA service.

As an API is used, a resource can be directly processed from a program of the customer. In addition, this API is an API compatible with AmazonWebService Elastic Load Balancing (2012-06-01 Version). The API Server (endpoint) URL, the URL for the connection to use the service, is as shown below:

API server(endpoint) URL :

https://lba2-api.jp-e1.cloudn-service.com/

*** Note well that the endpoint was changed in October 2013.**
*** The load balancers created with the former endpoint cannot be used to have an access with the endpoint shown above.**

[The Format of API Requests]

An API request is sent in the Query API format as shown below. (If a command line rule provided by AmazonWebService is used, go on to Section 4.)

```
https://lba2-api.jp-e1.cloudn-service.com/?Action=DescribeLoadBalancers&Version=2012-06-01&SignatureVersion=2&SignatureMethod=HmacSHA256&Timestamp=2013-02-01T05%3A54%3A53.578Z&AWSAccessKeyId=<APIKey>&Signature=<Signature>
```

In the example above, a request to acquire load balancer information is shown.

An API request mainly includes the type and optional values of a command and consists of the following elements:

```
1. https://lba2-api.jp-e1.cloudn-service.com/
2. Action=DescribeLoadBalancers
3. Version=2012-06-01
4. SignatureVersion=2
5. SignatureMethod=HmacSHA256
6. Timestamp=2013-02-01T05%3A54%3A53.578Z
7. AWSAccessKeyId=<APIKey>
8. Signature=<Signature>
```

Line 1: API server/endpoint URL
Line 2: A command to the Cloud^{n} LBA
Line 3: An option and its value transferred to a command
Lines 4 to 8: Signature information

The procedure to add a signature to the description of a request is explained in the next and following sections.

2-2) Creating a Request

In order to guarantee the content of a request, a signature is added to an API request. A signature is created based on the description of the request (created on the basis of the elements in 1) by combining the user's SECRETKEY and the HMAC-SHA-256 hush algorithm.

The public key and the secret key necessary for using the service are distributed in advance. In this service, they are called APIKEY and SECRETKEY, respectively. Use the APIKEY and SECRETKEY that have been distributed in advance.

The following description explains the method of creating a signature and an HTTP request.

1

The command parameter of a request is to be created.

With an example of creating a request to acquire load balancer information, the command parameters are described.

Command (parameter)=key	Value (sample)=value
Action	DescribeLoadBalancers
Version	2012-06-01
SignatureVersion	2
SignatureMethod	HmacSHA256
Timestamp	2013-01-30T18%3A09%3A45Z
AWSAccessKeyId	<APIKEY>

Uppercase letters and lowercase letters are distinguished in the key specified.

As a timestamp key, the time of the issuance of a request is created in the iso8601 format.

For example, if the date and time is 2013-01-30 18:09:45, then 2013-01-30T18%3A09%3A45Z is the result.

For details of the parameters, see section 5, "LBA API Reference".

2-2) Creating a Request

In the next step, the signature is to be created.

2

The command parameters created in step 1 are sorted out in the ascending order by ASCII, and the values are URL-encoded. This process is executed to create a signature, and the description itself in the request is not sorted out. (It is not necessary for the description of a request to be sorted out.)

Command (parameter)=key	Value (sample)=value
AWSAccessKeyId	<APIKEY>
Action	DescribeLoadBalancers
SignatureMethod	HmacSHA256
SignatureVersion	2
Timestamp	2013-01-30T18%3A09%3A45Z
Version	2012-06-01

Note that the order of sorting is the ascending order by ASCII and is not the order of the alphabet.

3

The strings connecting each key and value in 2 with "=" are connected with "&", and the elements of the HTTP request are arranged to create a character string as a signature. The character string shown below is called "data" in this section.

GET◁

lba2-api.jp-e1.cloudn-service.com◁

/◁

AWSAccessKeyId=<APIKey>&Action=DescribeLoadBalancers&SignatureMethod=HmacSHA256&SignatureVersion=2&Timestamp=2013-01-30T18%3A09%3A45Z&Version=2012-06-01

Each of the elements to the "AWSAccessKeyId=..." query is separated by the return code (denoted with "◁" in the example above); but the elements are not separated by the return code and are formed in one line in the quarry part.

2-2) Creating a Request

4

A signature for the character string "data" created in step 3 is to be created based on HMAC-SHA256 and SECRETKEY and is to be encoded to Base64 so that the signature can be included in the HTTP request.

HMAC-SHA256:
A function of a library such as OpenSSL is used.
(Example: In the case of Ruby, "ruby-hmac(0.4.0)" of the gem library etc.)

SECRETKEY:
Use the secret key distributed from NTT Communications.

A Sample of a Signature by HMAC:
5df60c66d6715d33c5b49af3428c0cbb84918a0baa96c29f3b32670a742bdc29

A Sample of a Signature: (after encoding to Base64)
NWRmNjBjNjZkNjcxNWQzM2M1YjQ5YWYzNDI4YzBjYmI4NDkxOGEwYmFhOTZjMjlmM2IzMjY3MGE3NDJiZGMyOQ==

Use caution not to include a return code in the signature.

5

The signature is added to the description of the request, and the character string of the request is created. The value of the parameter is URL-encoded in advance. The description of the command and the parameters is expressed as key=value (value has been URL-encoded), and each parameter is connected with &." In the HTTP request, the items need not to be sorted.

```
Action=DescribeLoadBalancers&SignatureMethod=HmacSHA256&SignatureVersion=2&AWSAccessKeyId=<APIKEY>&Version=2012-06-01&Timestamp=2013-01-30T18%3A09%3A45Z&Signature=XfYMZtZxXTPFtJrzQowMu4SRiguqlsKfOzJnCnQr3Ck%3D
```

*Created without return codes

6

Based on the description of the created request, the GET request is executed in HTTPS. The endpoint of the Cloud^{n} LBA is https://lba2-api.jp-e1.cloudn-service.com.

```
GET /?Action=DescribeLoadBalancers&SignatureMethod=HmacSHA256&SignatureVersion=2&AWSAccessKeyId=<APIKEY>&Version=2012-06-01&Timestamp=2013-01-30T18%3A09%3A45Z&Signature=XfYMZtZxXTPFtJrzQowMu4SRiguqlsKfOzJnCnQr3Ck%3D
```

*Created without return codes

2-3) Checking a Response

1

When the request is successful, a response is returned in the xml format as shown below.

```
<DescribeLoadBalancersResponse xmlns="http://elasticloadbalancing.amazonaws.com/doc/2012-06-01/">
  <DescribeLoadBalancersResult>
    <LoadBalancerDescriptions>
      <member>
        ...
        <LoadBalancerName>lba_sample</LoadBalancerName>
        <CreatedTime>2013-01-04T01:29:25Z</CreatedTime>
        ...
  <ResponseMetadata>
    <RequestId>8c108443-b9c8-604b-467d-8a1fce082fe9</RequestId>
  </ResponseMetadata>
</DescribeLoadBalancersResponse>
```

This is a response in the case where a load balancer named "lba_sample" is created in advance. For the method of creating a load balancer, see section 3-1), "Creating a Load Balancer".

3-1) Creating a Load Balancer

The following description explains the method of creating a load balancer with a specific example.

1

Specify and create a request to create a load balancer as follows:

Action key･･･"CreateLoadBalancer"

LoadBalancerName key･･･The name of the load balancer

AvailabilityZones.member.N･･･The name of the availability zone

Listeners.member.N.Protocol･･･The name of the protocol of the load balancer

Listeners.member.N.LoadBalancerPort･･･The name of the port of the load balancer

Listeners.member.N.InstanceProtocol･･･The name of the protocol of the instance at the destination of the load distribution

Listeners.member.N.InstancePort･･･The name of the port of the instance at the destination of the load distribution

Command (parameter)=key	Value (sample)=value
Action	CreateLoadBalancer
LoadBalancerName	<LoadBalancerName>
AvailabilityZones.member.1	<AvailabilityZonesMemberName>
AvailabilityZones.member.2	<AvailabilityZonesMemberName>
Listeners.member.1.Protocol	HTTP
Listeners.member.1.LoadBalancerPort	80
Listeners.member.1.InstanceProtocol	HTTP
Listeners.member.1.InstancePort	80
SignatureMethod	HmacSHA256
Version	2012-06-01
Timestamp	2013-01-30T18%3A09%3A45Z
AWSAccessKeyId	<APIKEY>

For details of the parameters, see section 5, "LBA API Reference".

The ones that contain an N in the name of a key can specify two or more values.

For example, with AvailabilityZones.member.N, to specify two or more availability zones, the following lines are used:

AvailabilityZones.member.1=jp-e1a

AvailabilityZones.member.2=jp-e1b

3-1) Creating a Load Balancer

2

When the request is successful, the following response in the xml format is returned.

```
<CreateLoadBalancerResponse xmlns="http://elasticloadbalancing.amazonaws.com/doc/2012-06-01/">
  <CreateLoadBalancerResult>
    <DNSName>lba-test-123456789.lba.jp-e1.cloudn-service.com</DNSName>
  </CreateLoadBalancerResult>
  <ResponseMetadata>
    <RequestId>1efb303b-2567-6f9b-77f2-19bee674ec91</RequestId>
  </ResponseMetadata>
</CreateLoadBalancerResponse>
```

Check that the name of the DNS of the load balancer is shown in the <DNSName> tag.

3-2) Registering a Virtual Server under a Load Balancer

The following description explains, with a specific example, the method of registering a virtual server separately created on Compute (East Japan Region) to the load balancer created in section 3-1).

1

The request to register an instance to the load balancer is specified and created as follows:

Action key･･･"RegisterInstancesWithLoadBalancer"

LoadBalancerName key･･･The name of the load balancer

Instances.member.N.InstanceId･･･The instance ID

Command (parameter)=key	Value (sample)=value
Action	RegisterInstancesWithLoadBalancer
LoadBalancerName	<LoadBalancerName>
Instances.member.1.InstanceId	<InstanceId>
Instances.member.2..InstanceId	<InstanceId>
SignatureMethod	HmacSHA256
Version	2012-06-01
Timestamp	2013-01-30T18%3A09%3A45Z
AWSAccessKeyId	<APIKEY>

For details of the parameters, see section 5, "LBA API Reference".

3-2) Registering a Virtual Server under a Load Balancer

2

When the request is successful, the following response in the xml format is returned.

```
<RegisterInstancesWithLoadBalancerResponse
xmlns="http://elasticloadbalancing.amazonaws.com/doc/2012-06-01/">
  <RegisterInstancesWithLoadBalancerResult>
    <Instances>
      <member>
        <InstanceId>7c9f2cb1-23bd-4458-b9c9-2c745269e91d</InstanceId>
      </member>
      <member>
        <InstanceId>5094567f-956e-40e5-ba82-a7b899513b04</InstanceId>
      </member>
    </Instances>
  </RegisterInstancesWithLoadBalancerResult>
  <ResponseMetadata>
    <RequestId>8911624b-e1ce-3198-6a52-0411a717c693</RequestId>
  </ResponseMetadata>
</RegisterInstancesWithLoadBalancerResponse>
```

Check that the instance ID is stored in the <InstanceId> tag.

3-3) Checking the Status of a Virtual Server under a Load Balancer

The following description explains, with a specific example" the method of checking the status of a virtual server registered under the load balancer in section 2-2).

1

Specify and create a request to check the status of an instance with the load balancer as follows:

Action key・・・"RegisterInstancesWithLoadBalancer"

LoadBalancerName key・・・The name of the load balancer

Instances.member.N.InstanceId・・・The instance ID

Command (parameter)=key	Value (sample)=value
Action	DescribeInstanceHealth
LoadBalancerName	<LoadBalancerName>
Instances.member.1.InstanceId	<InstanceId>
Instances.member. 2 .InstanceId	<InstanceId>
SignatureMethod	HmacSHA256
Version	2012-06-01
Timestamp	2013-01-30T18%3A09%3A45Z
AWSAccessKeyId	<APIKEY>

For details of the parameters, see section 5, "LBA API Reference".

3-3) Checking the Status of a Virtual Server under a Load Balancer

2

When the request is successful, the following response in the xml format is returned.

```
<DescribeInstanceHealthResponse xmlns="http://elasticloadbalancing.amazonaws.com/doc/2012-06-01/">
  <DescribeInstanceHealthResult>
    <InstanceStates>
      <member>
        <Description>N/A</Description>
        <InstanceId>7c9f2cb1-23bd-4458-b9c9-2c745269e91d</InstanceId>
        <State>InService</State>
        <ReasonCode>N/A</ReasonCode>
      </member>
      <member>
        <Description>N/A</Description>
        <InstanceId>5094567f-956e-40e5-ba82-a7b899513b04</InstanceId>
        <State>InService</State>
        <ReasonCode>N/A</ReasonCode>
      </member>
    </InstanceStates>
  </DescribeInstanceHealthResult>
  <ResponseMetadata>
    <RequestId>f982538e-4195-4302-adb3-1321e184b455</RequestId>
  </ResponseMetadata>
</DescribeInstanceHealthResponse>
```

Check that the <State> tag is "InService".

3-4) Deleting a Load Balancer

The following description explains the method of deleting a load balancer with a specific example.

1

Specify and create a request to delete a load balancer as follows:

Action key･･･"DeleteLoadBalancer"

LoadBalancerName key･･･The name of the load balancer

Command (parameter)=key	Value (sample)=value
Action	DeleteLoadBalancer
LoadBalancerName	<LoadBalancerName>
SignatureMethod	HmacSHA256
Version	2012-06-01
Timestamp	2013-01-30T18%3A09%3A45Z
AWSAccessKeyId	<APIKEY>

For details of the parameters, see section 5, "LBA API Reference".

2

When the request is successful, the following response in the xml format is returned.

```
<DeleteLoadBalancerResponse xmlns="http://elasticloadbalancing.amazonaws.com/doc/2012-06-01/">
  <DeleteLoadBalancerResult/>
  <ResponseMetadata>
    <RequestId>bd9a9e10-97ed-4d70-0852-9dfe9982758a</RequestId>
  </ResponseMetadata>
</DeleteLoadBalancerResponse>
```

4-1) Installing the CLI Tool

The Cloud^{n} LBA API is compatible with AmazonWebService; therefore, the Elastic Load Balancing API Tools ("ELB Tools" for short) that can use an API from the command line provided by AmazonWebService can be also used. The validation has been made in the following environment.

- CentOS release 6.2 (Final)
- ElasticLoadBalancing-1.0.17.0

1

Install openjdk that is necessary for the execution of the ELB Tools.

```
# su -
# yum install java-1.6.0-openjdk java-1.6.0-openjdk-devel
```

2

Install the CLI tool. From here, (the user's home directory)/elb_tools is used as the working directory.

```
$ export WORK=${HOME}/elb_tools
$ cd $WORK
$ wget http://ec2-downloads.s3.amazonaws.com/ElasticLoadBalancing.zip
$ unzip ElasticLoadBalancing.zip
```

3

Create the setting file ".aws_elb_credential" to describe the access key and so forth.

```
$ cd $WORK
$ vi .aws_elb_credential
$ cat .aws_elb_credential
AWSAccessKeyId=XXXXXXXXXXXXXXXXX
AWSSecretKey=YYYYYYYYYYYYYYYYYYY  (←Press the return key.)
```

Specify the Access Key ID of AWS to AWSAccessKeyId and the Secret Access Key of the Cloud^{n} to AWSSecretKey.

4

Set up the environmental variables.

```
$ export WORK=${HOME}/elb_tools
$ export JAVA_HOME=/usr/lib/jvm/jre
$ export AWS_ELB_HOME=${WORK}/ElasticLoadBalancing-1.0.17.0
$ export AWS_CREDENTIAL_FILE=${WORK}/.aws_elb_credential
$ export PATH=$PATH:${AWS_ELB_HOME}/bin
$ export AWS_ELB_URL=https://lba2-api.jp-e1.cloudn-service.com
```

4-2) Managing the Load Balancer with the CLI Tool

The following description explains, with a specific example, the method of management of the load balancer by using the CLI tool.

1

Create a load balancer named “cnlbatest”.

```
$ elb-create-lb cnlbatest ¥
  --availability-zones <ZONE_NAME> ¥
  --listener lb-port=80,instance-port=80,protocol=http,instance-protocol=http
```

"--availability-zones" is an option that specifies the location where the instance works.
"--listener" is an option that specifies the protocol, the number of the port watched by the front load balancer, and the port number of the destination of the backend distribution (a service executed by the instance).

After the creation, the FQDN of the created load balancer is displayed. It takes a little time to complete the registration to the DNS.

2

Register the virtual server (instance) to distribute the load to the created load balancer. In this example, the ID's of the instances at the destination of distribution are “7eed2527-d1f7-497f-9f6e-ae69e0e1a8fb” and “65c3b304-09b8-4278-aa1b-dc967f1dde22”.

```
$ elb-register-instances-with-lb cnlbatest ¥
  --instances ¥
7eed2527-d1f7-497f-9f6e-ae69e0e1a8fb,65c3b304-09b8-4278-aa1b-dc967f1dde22
```

The instance ID of a virtual server can be checked from the Compute Console. Click on "Instance" in the left-side menu, select a server used as the destination of distribution from the list of virtual servers, and click on the "Details" tab. The "ID" can be checked in the bottom column.

4-2) Managing the Load Balancer with the CLI Tool

3

The information on the created load balancer is checked.

```
$ elb-describe-lbs cnlbatest ¥
  --headers --show-request --show-xml
```

4

The information on the instance at the destination of distribution is checked.

```
$ elb-describe-instance-health cnlbatest ¥
  --instances ¥
7eed2527-d1f7-497f-9f6e-ae69e0e1a8fb,65c3b304-09b8-4278-aa1b-dc967f1dde22 ¥
  --headers --show-request --show-xml
```

5

Delete the load balancer.

```
$ elb-delete-lb cnlbatest
```

5-1) LBA API List (Action)

The actions provided from this service are as listed below.

	Command	Description
Action	ApplySecurityGroupsToLoadBalancer	The security group created by the customer is applied to the load balancer. The load balancer created allows accesses to ports 80 and 443 as standard. To enable accesses to ports other than ports 80 and 443, apply, to this API, the security group of Compute with an access rule defined. <Note> After this API is executed, if the rule of the security group is changed, the change is not automatically reflected to the load balancer; therefore, execute and specify this API once again. <Note> The security group of Compute can be specified with CIDR or the account; only the specification with CIDR is valid in the case of LBA.
	ConfigureHealthCheck	The setting of the health check on the instance at the destination of load distribution is made. The Cloud^{n} Load Balancing Advanced service conduct health checks on the destination of load distribution, and, if a normal response should not be received, the service excludes the instance from the destination of load distribution. Health checks on the excluded instance is continuously conducted, and, when a normal response is received once again, the service adds the instance to the destination of load distribution. As default, health checks are conducted with the TCP protocol on port 80 of a virtual server. If health checks are conducted with the HTTP/HTTPS protocol, a specific URL path is accessed, and a judgment is made depending on whether a successful response (a 200 number) is returned. <Note> As default, the target is http://instance/index.html.
	CreateAppCookieStickinessPolicy (Added with Version 2)	The LBA issues cookie to maintain the session to a backend server. By applying the policy created with CreateAppCookieStickinessPolicy to the listener, the lifetime of the cookie issued by the load balancer can be matched with the life time of the cookie created by an application.

5-1) LBA API List (Action)

The actions provided from this service are as listed below.

	Command	Description
Action	CreateLBCookieStickinessPolicy (Added with Version 2)	The LBA issues cookie to maintain sessions to the backend server. The life time of this cookie is the same as the shortest one of the lifetimes specified by the browser (user agent) and the user. If the policy created with CreateLBCookieStickinessPolicy is applied to the listener, the load balancer uses this cookie for the management of which backend server instance each request is transferred to.
	CreateLoadBalancer	A new load balancer is created. After an API call is finished, a new load balancer is created. If it is possible to look for an IP address with the DNS name included in the response, then it is possible to use the load balancer.
	CreateLoadBalancerListeners	A new listener is created to the specified load balancer. If the port of the load balancer of the specified listener (LoadBalancerPort) does not exist, a new listener is created.
	CreateLoadBalancerPolicy (Added with Version 2)	Based on the policy type, a new policy that defines necessary attributes is created. This policy is maintained for each load balancer. Depending on the policy type, this can be applied to the listener of the front end and the backend server.
	DeleteLoadBalancer	The load balancer specified is deleted. If the load balancer is to be created once again, it is required to redo all the settings. The name of the DNS linked with the deleted load balancer cannot be used. Once the deletion is finished, the name and the linked DNS records are erased, and the traffic sent to the IP address is not redirected to the virtual server. Even if the load balancer with the same load balancer name is created, the same DNS name is not given. It is necessary to use the same account authority as the one that has created the load balancer. If the load balancer does not exist or is already erased, DeleteLoadBalancer is recognized as a success.
	DeleteLoadBalancerPolicy (Added with Version 2)	The policy is deleted from the load balancer. It is required that the specified policy is not valid to any listener.

5-1) LBA API List (Action)

The actions provided from this service are as listed below.

Action	Command	Description
	DeregisterInstancesFromLoadBalancer	The instance at the destination of load distribution is disconnected from the load balancer. Once the disconnection is finished, there is no traffic from the load balancer any more.
	DescribeInstanceHealth	The status of the specified instance at the destination of load distribution can be checked. <Note> It is necessary to use the same account authority as the one that has created the load balancer.
	DescribeLoadBalancerPolicies (Added with Version 2)	The detailed information on the policy is returned. If the name of the load balancer is specified, the list of the policy information created with respect to the load balancer is returned (if the policy name is specified, the information on the policy is returned). If the name of the load balancer is not specified, the list of the policy information on the sample is returned (if the policy name is specified, the information on the policy is returned). At the beginning of the name of a sample policy, LBASample- is added.
	DescribeLoadBalancerPolicyTypes (Added with Version 2)	The meta information on the load balancer policy defined with the LBA is returned. The policy type returned by this action is used to create a policy to be applied to the load balancer by the CreateLoadBalancerPolicy action.
	DescribeLoadBalancers	The detailed setting information on the specified load balancer can be checked. If the load balancer is not specified, the information on all load balancers can be acquired. <Note> It is necessary to use the same account authority as the one that has created the load balancer.
	DisableAvailabilityZonesForLoadBalancer	Among the AvailabilityZone linked with the load balancer, the specified AvailabilityZone is deleted. It is necessary that there is at least one AvailabilityZone registered to the load balancer. Once AvailabilityZone is deleted, traffic is not distributed to the instance at the destination of distribution included in the AvailabilityZone. If it is tried to delete AvailabilityZone not linked with the load balancer, no processing occurs.

5-1) LBA API List (Action)

The actions provided from this service are as listed below.

Action	Command	Description
	EnableAvailabilityZonesForLoadBalancer	AvailabilityZone of the load balancer is added. <Note> The AvailabilityZone to be added needs to be in the same region as the region where the load balancer is created.
	RegisterInstancesWithLoadBalancer	The instance at the destination of load distribution is added to the load balancer. Once the instance is added, the traffic from the load balancer is received. The instance included in AvailabilityZone not registered to the load balancer changes to the status of OutOfService. In this case, when AvailabilityZone is added to the load balancer, the status changes to InService. <Note> It is necessary to create the load balancer in advance in the case of this API. In addition, it is necessary to use the same account authority as the one that has created the load balancer.
	SetLoadBalancerPoliciesOfListener (Added with Version 2)	The policy is linked to the listener of the load balancer, is updated, or is invalidated.
	SetLoadBalancerListenerSSLCertificate (Added with Version 2)	With the listener to execute the SSL connection specified, the certificate to terminate the SSL is specified. If the certificate is already specified to the load balancer and the port at the destination of the connection, the certificate is replaced with the certificate specified here.
	UploadServerCertificateForLBA (Added with Version 2)	The server certificate, secret key, and intermediate certificate are uploaded. This is an API specific to LBA.
	DeleteServerCertificateForLBA (Added with Version 2)	The server certificate, secret key, and intermediate certificate having been uploaded are deleted. This is an API specific to LBA.
	ListServerCertificatesForLBA (Added with Version 2)	The list of the server certificates, secret keys, and intermediate certificates having been uploaded are acquired. This is an API specific to LBA.

The following API's are out of the scope of the support:

AttachLoadBalancerToSubnets
DetachLoadBalancerFromSubnets
SetLoadBalancerPoliciesForBackendServer

5-2) LBA API List (Data Type)

The data types used in this service are as listed below.

Data Types	Command
	ApplySecurityGroupsToLoadBalancerResult ConfigureHealthCheckResult CreateAppCookieStickinessPolicy Result CreateLBCookieStickinessPolicyResult CreateLoadBalancerListenersResult CreateLoadBalancerResult DeleteLoadBalancerListenersResult DeleteLoadBalancerResult DeregisterInstancesFromLoadBalancerResult DescribeInstanceHealthResult DescribeLoadBalancerPoliciesResult DescribeLoadBalancerPolicyTypesResult DescribeLoadBalancersResult DisableAvailabilityZonesForLoadBalancerResult EnableAvailabilityZonesForLoadBalancerResult RegisterInstancesWithLoadBalancerResult SetLoadBalancerPoliciesOfListenerResult SetLoadBalancerListenerSSLCertificateResult UploadServerCertificateForLBAResult DeleteServerCertificateForLBAResult ListServerCertificatesForLBAResult BackendServerDescription HealthCheck Instance InstanceState Listener ListenerDescription LoadBalancerDescription SourceSecurityGroup Policies PolicieAttribute PolicyAttributeDescription PolicyDescription PolicyTypeDescription PolicyAttributeTypeDescription AppCookieStickinessPolicy LBCookieStickinessPolicy ServerCertificateMetadata

5-3) LBA API Common Information

The API Server (End Point) provided from this service is as follows.

API server(endpoint) URL :

https://lba2-api.jp-e1.cloudn-service.com/

*** Note well that the endpoint was changed in October 2013.**
*** The load balancers created with the former endpoint cannot be used to have an access with the endpoint shown above.**

The table blow shows the formats used with the Query API Request of Cloud^{n} Load Balancing Advanced.

Common Parameters		
Parameter Name	Description	Required
Action	The action to be executed Default : None Type : String	Yes
AuthParams	Not supported	No
AWSAccessKeyId	The Access Key ID necessary for the authentication of the request is specified. Default : None Type : String	Yes
Expires	Not supported	No
SecurityToken	Not supported	No
Signature	The signature on the request. For the method of creating a signature, see the documents for the developers of service. Default : None Type : String	Yes
SignatureMethod	The hush algorithm of the signature on a request Default : None Valid Values : HmacSHA256 | HmacSHA1 Type : String	Yes
SignatureVersion	The version of the signature on a request. If signature version 4 is used, specify LBA to service_name and jp-e1 to region in the case of the Kanto Region (FLAT). Default : None Valid Values : 2 or 4 Type : String	Yes
Timestamp	The date and time when the request is issued. The format of expression is "YYYY-MM-DDThh:mm:ssZ", conforming to ISO8601. Default : None Type : String	Yes
Version	The API version in use Default : None Valid Values : 2012-06-01 Type : String	Yes

5-4) LBA API (Action)

ApplySecurityGroupsToLoadBalancer

Synopsis	The security group created by the customer is applied to the load balancer. The load balancer created allows accesses to ports 80 and 443 as standard. To enable accesses to ports other than ports 80 and 443, apply, to this API, the security group of Compute with an access rule defined. <Note> After this API is executed, if the rule of the security group is changed, the change is not automatically reflected to the load balancer; therefore, execute and specify this API once again. <Note> The security group of Compute can be specified with CIDR or the account; only the specification with CIDR is valid in the case of LBA.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "ApplySecurityGroupsToLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes
SecurityGroups.member.N	The security group ID to be applied (the security group ID of Compute) Type : String list	Yes

Response	
Data Type	ApplySecurityGroupsToLoadBalancerResult

Response Elements	
Parameter Name	Description
SecurityGroups	The security group ID applied (the security group ID of Compute) Type : String list

5-4) LBA API (Action)

ConfigureHealthCheck

Synopsis	The setting of the health check on the instance at the destination of load distribution is made. The Cloudn Load Balancing Advanced service conduct health checks on the destination of load distribution, and, if a normal response should not be received, the service excludes the instance from the destination of load distribution. Health checks on the excluded instance is continuously conducted, and, when a normal response is received once again, the service adds the instance to the destination of load distribution. As the method of heath checks, the HTTP/HTTPS protocol is used to have an access to a specific URL path, and a judgment is made depending on whether a successful response (a 200 number) is returned. As default, health checks are conducted with the TCP protocol on port 80 of a virtual server. If health checks are conducted with the HTTP/HTTPS protocol, a specific URL path is accessed, and a judgment is made depending on whether a successful response (a 200 number) is returned. <Note> As default, the target is http://instance/index.html.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "ConfigureHealthCheck" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
HealthCheck	The health check setting to be applied Type : See HealthCheck.	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	ConfigureHealthCheckResult

Response Elements	
Parameter Name	Description
HealthCheck	The health check setting after the control Type : See HealthCheck.

5-4) LBA API (Action)

CreateAppCookieStickinessPolicy (Added with Version 2)

Synopsis	The LBA issues cookie to maintain the session to a backend server. By applying the policy created with CreateAppCookieStickinessPolicy to the listener, the lifetime of the cookie issued by the load balancer can be matched with the life time of the cookie created by an application. ・If a new application cookie is inserted, the load balancer inserts a new stickiness cookie. ・If an application cookie is deleted, the load balancer deletes a stickiness cookie. This policy can be linked only with the HTTP/HTTPS listener. <Note> ・The application needs to send the two of the cookie created by the application and the coolie created by the load balancer (name: CLOUDNLBA). ・LBCookieStickinessPolicy cannot be used simultaneously.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "CreateAppCookieStickinessPolicy " is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
CookieName	The name of the cookie created by the application Type : String	Yes
LoadBalancerName	The name of the load balancer Type : String	Yes
PolicyName	The name of the policy to be created The name needs to be unique in the load balancer of the target of creation. Type: String	Yes

Response	
Data Type	CreateAppCookieStickinessPolicy Result

5-4) LBA API (Action)

CreateLBCookieStickinessPolicy (Added with Version 2)

Synopsis	The LBA issues cookie to maintain sessions to the backend server. The life time of this cookie is the same as the shortest one of the lifetimes specified by the browser (user agent) and the user. If the policy created with CreateLBCookieStickinessPolicy is applied to the listener, the load balancer uses this cookie for the management of which backend server instance each request is transferred to. When the load balancer receives a request, it checks at the beginning whether this cookie is found in this request. If the cookie is found, the request is transferred to the application server indicated with the cookie. If the cookie is not found, the request is transferred based on the balancing algorithm of the load balancer. At this time, the load balancer inserts a cookie in the response and returns it. This policy can be linked only to the HTTP/HTTPS listener. <Note> ・In the case of LBA, it is not possible to make longer the expiration time of the cookie issued by the load balancer than the life time of the browser (user agent). ・AppCookeiStikinessPolicy cannot be used simultaneously.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "CreateLBCookieStickinessPolicy" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
CookieExpirationPeriod	The expiration time of the cookie (second) The life time of this cookie is the shortest one of the lifetime of the browser (user agent) and the duration specified by the user. Type: Long	No
LoadBalancerName	The name of the load balancer Type: String	Yes
PolicyName	The name of the policy to be created The name needs to be unique in the load balancers at the destination of creation Type: String	Yes

Response	
Data Type	CreateLBCookieStickinessPolicyResult

5-4) LBA API (Action)

CreateLoadBalancer

Synopsis	A new load balancer is created. After an API call is finished, a new load balancer is created. If it is possible to look for an IP address with the DNS name included in the response, then it is possible to use the load balancer. *If load is distributed to the destinations in different zones, the zone names need to be explicitly specified to AvailabilityZones. *If ports 80 and 443 are specified as the ports to the load balancer, they cannot be used until ApplySecurityGroupsToLoadBalancer is executed. *If InstanceProtocol is omitted with the listener, the following protocol is applied: - If the protocol is HTTP or HTTPS, then HTTP - If the protocol TCP or SSL, then TCP *As for the health check, the following is applied as default: <HealthCheck> <Interval>30</Interval> <Target>TCP:80</Target> <HealthyThreshold>10</HealthyThreshold> <Timeout>5</Timeout> <UnhealthyThreshold>2</UnhealthyThreshold> </HealthCheck>

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "CreateLoadBalancer" is specified.
Header	None
Body	None

To be continued on the next page

5-4) LBA API (Action)

CreateLoadBalancer

Continuing from the previous page

Request Parameters		
Parameter Name	Description	Required
AvailabilityZones.member.N	The name of the zone of the load balancer It is necessary to specify the same zone as the instance at the destination of load distribution. Transfer is not executed to the instances other than the instance of AvailabilityZones specified here. Type : String list	Yes
Listeners.member.N	Listener (the port and protocol accepted by the load balancer and the port and protocol at the destination of load distribution) Type : Listener list (See Listener.)	Yes
LoadBalancerName	The name of the load balancer Type : String	Yes
Scheme	Not supported No need to specify Type : String	No
SecurityGroups.members.N	The security Group ID provided to the load balancer (the security group ID of CloudStack) If a port other than 80 or 443 is used as the access port to the load balancer, it is required to specify the security groups that are allowed to have the same access. Type : String list	No
Subnets.member.N	Not supported No need to specify Type : String list	No

Response	
Data Type	CreateLoadBalancerResult

Response Elements	
Parameter Name	Description
DNSName	The name of the DNS of the load balancer Type : String

5-4) LBA API (Action)

CreateLoadBalancerListeners

Synopsis	A new listener is created to the specified load balancer. If the port of the load balancer of the specified listener (LoadBalancerPort) does not exist, a new listener is created.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "CreateLoadBalancerListeners" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
Listeners.member.N	Listener Type : Listener list (See Listener.)	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	CreateLoadBalancerListenersResult

5-4) LBA API (Action)

CreateLoadBalancerPolicy

Synopsis	Based on the policy type, a new policy with necessary attributes specified is created. This policy is maintained for each load balancer. Depending on the policy type, it is possible to apply it to the backend server.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "CreateLoadBalancerPolicy" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer where the created policy is assigned Type : String	Yes
PolicyAttributes.member.N	The attributes of the policy to be created Type : String list	No
PolicyName	The name of the policy to be created. It is necessary that the policy name is unique to each load balancer. Type: String	Yes
PolicyTypeName	The policy type as the base of the policy to be created The policy type can be checked with DescribeLoadBalancerPolicyTypes API. However, the encryption settings with SSLNegotiationPolicyType cannot be made with LBA. Type: String	Yes

Response	
Data Type	CreateLoadBalancerPolicyResult

5-4) LBA API (Action)

DeleteLoadBalancer

Synopsis	The load balancer specified is deleted. If the load balancer is to be created once again, it is required to redo all the settings. The name of the DNS linked with the deleted load balancer cannot be used. Once the deletion is finished, the name and the linked DNS records are erased, and the traffic sent to the IP address is not redirected to the virtual server. Even if the load balancer with the same load balancer name is created, the same DNS name is not given. It is necessary to use the same account authority as the one that has created the load balancer. If the load balancer does not exist or is already erased, DeleteLoadBalancer is recognized as a success. *The IP address of the deleted load balancer is reused for other virtual servers.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DeleteLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	DeleteLoadBalancerResult

5-4) LBA API (Action)

DeleteLoadBalancerListeners

Synopsis	The listener to the port specified from the load balancer is deleted.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DeleteLoadBalancerListeners" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerPorts.member.N	The port number of the listener to be deleted (LoadBalancerPort) Type : Interger list	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	DeleteLoadBalancerListenersResult

5-4) LBA API (Action)

DeleteLoadBalancerPolicy

Synopsis	The policy is deleted from the load balancer. The specified policy needs to be not valid to any listener.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DeleteLoadBalancerPolicy" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer of the target of the control Type : String	Yes
PolicyNames.member.N	The name of the policy crated to the load balancer or the name of the LBA sample policy Type: String list	No
PolicyName	The policy name to be deleted Type: String	Yes

Response	
Data Type	DeleteLoadBalancerPolicyrResult

5-4) LBA API (Action)

DeregisterInstancesFromLoadBalancer

Synopsis	The instance at the destination of load distribution is disconnected from the load balancer. Once the disconnection is finished, there is no traffic from the load balancer any more.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DeregisterInstancesFromLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
Instances.member.N	The instance at the destination of load distribution to be deleted Type : Instance list (See Instance.)	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	DeregisterInstancesFromLoadBalancerResult

Response Elements	
Parameter Name	Description
Instance	The instance of load distribution after the deletion Type : Instance list (See Instance.)

5-4) LBA API (Action)

DescribeInstanceHealth

Synopsis	The status of the instance at the destination of the specified load distribution can be checked. <Note> It is necessary to use the same account authority as the one that has created the load balancer.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DescribeInstanceHealth" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
Instances.member.N	The instance at the destination of load distribution Type : Instance list (See Instance,)	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	DescribeInstanceHealthResult

Response Elements	
Parameter Name	Description
InstanceStates	The status of the instance as the destination of load distribution. Type : InstanceState list (See InstanceState.)

5-4) LBA API (Action)

DescribeLoadBalancerPolicies (Added with Version 2)

Synopsis	The detailed information on the policy is returned. If the name of the load balancer is specified, the list of the policy information created with respect to the load balancer is returned (if the policy name is specified, the information on the policy is returned). If the name of the load balancer is not specified, the list of the policy information on the sample is returned (if the policy name is specified, the information on the policy is returned). At the beginning of the name of a sample policy, LBASample- is added.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DescribeLoadBalancerPolicies" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer where the policy to be created is assigned Type: String	Yes
PolicyNames.member.N	The name of the policy created with the load balancer or the name of the LBA sample policy Type: String list	No

Response	
Data Type	DescribeLoadBalancerPoliciesrResult

Response Elements	
Parameter Name	Description
PolicyDescriptions	The list of policy information Type: PolicyDescription list (See PolicyDescription.)

5-4) LBA API (Action)

DescribeLoadBalancerPolicyTypes (Added with Version 2)

Synopsis	The meta information on the load balancer policy defined with the LBA is returned. The policy type returned by this action is used to create a policy to be applied to the load balancer by the CreateLoadBalancerPolicy action.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DescribeLoadBalancerPolicyTypes" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
PolicyTypeNames.member.N	The name of the policy type If this is omitted, the policy type defined with LBA is returned. Type: String list	No

Response	
Data Type	DescribeLoadBalancerPoliciesTypesResult

Response Elements	
Parameter Name	Description
PolicyTypeDescriptions	The information on the policy type specified If the policy type is not specified, all policy types defined with LBA are returned. Type: PolicyTypeDescription list

5-4) LBA API (Action)

DescribeLoadBalancers

Synopsis	The detailed setting information on the specified load balancer can be confirmed. If no load balancer is specified, the information on all load balancers can be collected. <Note> The same account authority as the one that has created the load balancer needs to be used.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DescribeLoadBalancers" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerNames.member.N	The name of the load balancer as the target of the control Type : String list	Yes
Marker	Not supported No need to specify Type : String	No

Response	
Data Type	DescribeLoadBalancersResult

Response Elements	
Parameter Name	Description
LoadBalancerDescriptions	The information on the load balancer Type : LoadBalancerDescription list (See LoadBalancerDescription.)
NextMarker	Not supported Type : String

5-4) LBA API (Action)

DisableAvailabilityZonesForLoadBalancer

Synopsis	Among the AvailabilityZone linked with the load balancer, the specified AvailabilityZone is deleted. It is necessary that there is at least one AvailabilityZone registered to the load balancer. Once AvailabilityZone is deleted, traffic is not distributed to the instance at the destination of distribution included in the AvailabilityZone. If it is tried to delete AvailabilityZone not linked with the load balancer, no processing occurs.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DisableAvailabilityZonesForLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
AvailabilityZones.member.N	The AvailabilityZone to be deleted Type : String list	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	DisableAvailabilityZonesForLoadBalancerResult

Response Elements	
Parameter Name	Description
AvailabilityZones	AvailabilityZone after the control Type : String list

5-4) LBA API (Action)

EnableAvailabilityZonesForLoadBalancer

Synopsis	AvailabilityZone of the load balancer is added. <Note> The AvailabilityZone to be added needs to be in the same region as the region where the load balancer is created.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "EnableAvailabilityZonesForLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
AvailabilityZones.member.N	AvailabilityZone to be added Type : String list	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	EnableAvailabilityAZonesForLoadBalancerResult

Response Elements	
Parameter Name	Description
AvailabilityZones	AvailabilityZone after the control Type : String list

5-4) LBA API (Action)

RegisterInstancesWithLoadBalancer

Synopsis	The instance at the destination of load distribution is added to the load balancer. Once an instance is added, the traffic from the load balancer is received. The instance included in AvailabilityZone not registered to the load balancer returns to the status of OutOfService. In this case, when AvailabilityZone is added to the load balancer, the virtual server returns to the status of InService. <Note> The load balancer needs to be created in advance in case of this API. In addition, it is necessary to use the same account authority as the one that has created the load balancer.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "RegisterInstancesWithLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
Instances.member.N	The instance at the target of load distribution Type : Instance list (See Instance,)	Yes
LoadBalancerName	The name of the load balancer as the target of the control Type : String	Yes

Response	
Data Type	RegisterInstancesWithLoadBalancerResult

Response Elements	
Parameter Name	Description
Instances	The instance at the destination of load distribution after the control Type : See Instance,

5-4) LBA API (Action)

SetLoadBalancerPoliciesOfListener (Added with Version 2)

Synopsis	The policy is linked, refreshed, or invalidated with respect to the listener of the load balancer.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "SetLoadBalancerListenerSSLCertificate" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer of the target of the control Type : String	Yes
LoadBalancerPort	The port number for the external objects of the load balancer where the policy is applied Type: Integer	Yes
PolicyNames.member.N	The name of the policy to be linked with the listener If a void list is specified, the policy currently specified from the listener is deleted. Type: String list	Yes

Response	
Data Type	SetLoadBalancerPoliciesOfListenerResult

5-4) LBA API (Action)

SetLoadBalancerListenerSSLCertificate (Added with Version 2)

Synopsis	The listener to conduct the SSL connection is specified, and the certificate for terminating the SSL is specified. When the certificate is already specified with the load balancer and the port at the destination of the setting, it is replaced with the certificate specified here.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "ApplySecurityGroupsToLoadBalancer" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
LoadBalancerName	The name of the load balancer where the created policy is assigned Type: String	Yes
LoadBalancerPort	The port number for the external objects of the load balancer where the policy is applied Type: Integer	Yes
SSLCertificateId	The name of the resource of the certificate to be specified The name of the resource acquired at the time of registration of the server certificate in advance (UploadServerCertificateForLBA) is specified. Type: String	Yes

Response	
Data Type	SetLoadBalancerListenerSSLCertificateResult

5-4) LBA API (Action)

UploadServerCertificateForLBA (Added with Version 2)

Synopsis	The server certificate, secret key, and intermediate certificate are uploaded. When the SSL is terminated with the load balancer, it is necessary to upload the certificate and so forth with this API in advance. This is an API specific to LBA.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "UploadServerCertificateForLBA" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
CertificateBody	The certificate of the public key of the PEM enforced format Type: String	Yes
CertificateChain	Intermediate certificate Connect the certificate of the public key of the PEM enforced format. Type: String	No
Path	Not supported	No
PrivateKey	The secret key of the PEM encode format Type: String	Yes
ServerCertificateName	The name of the certificate of the server Type: String	Yes

Response	
Data Type	UploadServerCertificateForLBAResult

Response Elements	
Parameter Name	Description
ServerCertificateMetadata	The information on the uploaded certificate (excluding the certificate, intermediate certificate, and secret key) Type: ServerCertificateMetadata

5-4) LBA API (Action)

DeleteServerCertificateForLBA (Added with Version 2)

Synopsis	The uploaded server certificate, secret key, and intermediate certificate are deleted. This is an API specific to LBA.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "DeleteServerCertificateForLBA" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
ServerCertificateName	The name of the certificate to deleted Type: String	Yes

Response	
Data Type	DeleteServerCertificateForLBAResult

5-4) LBA API (Action)

ListServerCertificatesForLBA (Added with Version 2)

Synopsis	The list of the server certificates, secret keys, and intermediate certificates having been uploaded are acquired. This is an API specific to LBA.

Request	
Request Method	GET
Path,Parameters, etc	The parameters described in "Common Parameters" and the following "Request Parameters" are specified. *As for the action, "ListServerCertificatesForLBA" is specified.
Header	None
Body	None

Request Parameters		
Parameter Name	Description	Required
Marker	Not supported	No
MaxItems	Not supported	No
PathPrefix	Not supported	No

Response	
Data Type	ListServerCertificatesForLBAResult

Response Elements	
Parameter Name	Description
IsTruncated	Always false Type: Boolean
Marker	Not supported (always void data)
ServerCertificateMetadataList	The list of certificates Type: ServerCertificateMetadata

5-5) LBA API (Data Type)

BackendServerDescription

Synopsis	The data type that indicates the information on the instance at the destination of load distribution. This is used as a response of DescribeLoadBalancers.

Contents		
Parameter Name	Description	Required
InstancePort	The port number of the instance at the destination of load distribution Type : Integer	No
PolicyNames	The name of the policy Type : String list	No

5-5) LBA API (Data Type)

HealthCheck

Synopsis	The data type that indicates the setting of the health check.

Contents		
Parameter Name	Description	Required
HealthyThreshold	The number of continuous successes of alive monitoring until the instance at the destination of load distribution is judged to be healthy Type : Integer	Yes
Interval	The interval of monitoring of alive monitoring (second) Type : Interger	Yes
Target	The target of alive monitoring HTTP and HTTPS are supported. Example of setting: HTTP:80/index.html Type : String	Yes
Timeout	The timeout of alive monitoring Type : Integer	Yes
UnhealthyThreshold	The number of continuous failures of alive monitoring until the instance at the destination of load distribution is judged to be unhealthy Type : Integer	Yes

5-5) LBA API (Data Type)

Instance

Synopsis	This is the data type that indicates the instance.

Contents		
Parameter Name	Description	Required
InstanceId	The ID of the instance Type : String	No

5-5) LBA API (Data Type)

InstanceState

Synopsis	This is the data type that indicates the status of the instance.

Contents		
Parameter Name	Description	
Description	The information on the instance Type : String	No
InstanceId	The ID of the instance Type : String	No
ReasonCode	The information on the trouble of the instance Type : String	No
State	The current status of the instance Either of InService and OutOfService Type : String	No

5-5) LBA API (Data Type)

Listener

Synopsis	This is the data type that indicates the listener.

Contents		
Parameter Name	Description	Required
InstancePort	The number of the port of the instance at the destination of load distribution This cannot be changed until the load balancer is deleted. Type : Integer	Yes
InstanceProtocol	The name of the protocol of the instance at the destination of load distribution Either of HTTP and HTTPS is specified. Type : String	No
LoadBalancerPort	The number of the port of the load balancer Type : Integer	Yes
Protocol	The name of the protocol of the load balancer Either of HTTP and HTTPS is specified. Type : String	Yes
SSLCertificateId	The name of the certificate of SSL Type : String	No

5-5) LBA API (Data Type)

ListenerDescription

Synopsis	This is the data type that indicates the listener.

Contents		
Parameter Name	Description	Required
Listener	Listener Type : See Listener.	No
PolicyNames	The name of the policy Type : String list	No

5-5) LBA API (Data Type)

LoadBalancerDescription

Synopsis	This is the data type that indicates the result of DescribeLoadBalancers.

Contents		
Parameter Name	Description	Required
AvailabilityZones	The information on AvailabilityZone Type : String list	No
BackendServerDescriptions	The information on the instance as the destination of load distribution Type : BackendServerDescription list (See BackendServerDescription.)	No
CanonicalHostedZoneName	The name of HostedZone of the load balancer registered to the Cloud^{n} DNS Type : String	No
CanonicalHostedZoneNameID	HostedZoneID of the load balancer registered with the Cloud^{n} DNS Type : String	No
CreatedTime	The date and time of creation of the load balancer Type : Date Time	No
DNSName	The name of the DNS of the load balancer Type : String	No
HealthCheck	The information on the health check Type : See HealthCheck.	No
Instances	The information on the instance Type : Instance list (See Instance.)	No
ListenerDescriptions	The information on the listener Type : ListenerDescription list (See ListenerDescription)	No
LoadBalancerName	The name of the load balancer Type : String	No
Policies	Policy Type : See Policies.	No
Scheme	The type of LB Only Internet-facing is specifiable. Type : String	No
SecurityGroups	The security group applied to the load balancer (the security group ID of CloudStack) Type : String list	No
SourceSecutrityGroup	One of the security groups registered to the load balancer Type : See SourceSecurityGroup.	No
subnet	Not supported Type : String list	No
VPCId	Not supported Type : String	No

5-5) LBA API (Data Type)

SourceSecurityGroup

Synopsis	This is the data type that indicates the name of the security group of one of the instances registered to the load balancer. This is the security group of Compute.

Contents		
Parameter Name	Description	Required
GroupName	The name of the security group Type : String	No
OwnerAlias	The owner of the security group Type : String	No

5-5) LBA API (Data Type)

Policies

Synopsis	This is the data type that indicates Policies.

Contents

Parameter Name	Description	Required
AppCookieStickinessPolicies	The list of AppCookieStickinessPolicy crated with CreateAppCookieStickinessPolicy Type: AppCookieStickinessPolicy list	No
LBCookieStickinessPolicies	The list of LBCookieStickinessPolicy created with CreateAppCookieStickinessPolicy Type: LBCookieStickinessPolicy list	No
OtherPolicies	The list of the names of the policies other than maintaining sessions Type: String list	No

5-5) LBA API (Data Type)

PoliciesAttribute

Synopsis	This is the data type that indicates PolicyAttribute. The attributes and the values corresponding to a policy are included.

Contents

Parameter Name	Description	Required
AttributeName	The name of the attribute in relation to the policy Type: String	No
AttributeValue	The value of the attribute in relation to the policy Type: String	No

5-5) LBA API (Data Type)

PoliciesAttributeDescription

Synopsis	This is the data type that indicates PolicyAttributeDescription. This is used when the attribute of a policy and the attribute values are output.

Contents		
Parameter Name	Description	Required
AttributeName	The name of the attribute of the policy Type: String	No
AttributeValue	The value of the attribute of the policy Type: String	No

5-5) LBA API (Data Type)

PolicyDescription

Synopsis	This is the data type that indicates PolicyDescription.

Contents

Parameter Name	Description	Required
PolicyAttributeDescriptions	The list of the information on the attribute of the policy Type: PolicyAttributeDescription list	No
PolicyName	The name of the policy linked with the load balancer Type: String	No
PolicyTypeName	The name of the policy type linked with the load balancer Type: String	No

5-5) LBA API (Data Type)

PolicyTypeDescription

Synopsis	This is the data type that indicates PolicyTypeDescription.

Contents		
Parameter Name	Description	Required
Description	Description of the policy type Type: String	No
PolicyAttributeTypeDescriptions	The information on the attribute of the policy defined with LBA Type: PolicyAttributeTypeDescription list	No
PolicyTypeName	The name of the policy type Type: String	No

5-5) LBA API (Data Type)

PolicyAttributeTypeDescription

Synopsis	This is the data type that indicates PolicyAttributeTypeDescription. The value of the attribute specifiable at the time of creation of a policy is shown. If SSLNegotiationPolicyType is specified, the encryption used with SSL can be checked. (However, it is not possible to change the encryption used with SSL by specifying SSLNegotiationPolicyType in the case of LBA.) The unit of CookieExpirationPeriod of LBCookieStickinessPolicyType is second.

Contents

Parameter Name	Description	Required
AttributeName	The name of the attribute in relation to the policy type Type: String	No
AttributeType	The type of attribute (Boolean, Integer, and so forth) Type: String	No
Cardinality	The number of attribute values The following are valid: ・ONE : Required to specify a single value ・ZERO_OR_ONE(0..1) : Possible to specify zero or one value ・ZERO_OR_MORE(0..*) : Arbitrary (zero or larger, possible to specify two or more) ・ONE_OR_MORE(1..*0) : Required (zero or larger, possible to specify two or more) Type: String	No
DefaultValue	The default value of the attribute Type: String	No
Description	The description of the attribute Type: String	No

5-5) LBA API (Data Type)

AppCookieStickinessPolicy

Synopsis	This is the data type that indicates AppCookieStickinessPolicy.

Contents		
Parameter Name	Description	Required
CookieName	The name of the application cookie used for maintaining sessions Type: String	No
PolicyName	The name of the policy It is necessary that the name is unique in this load balancer. Type: String	No

5-5) LBA API (Data Type)

LBCookieStickinessPolicy

Synopsis	This is the data type that indicates LBCookieStickinessPolicy.

Contents		
Parameter Name	Description	Required
CookieExpirationPeriod	The expiration period of the cookie (second) The life time of this cookie is the same as the shortest one of the lifetimes specified by the browser (user agent) and the user. Type: Long	No
PolicyName	The name of the created policy The name needs to be unique in this load balancer. Type: String	No

5-5) LBA API (Data Type)

ServerCertificateMetadata

Synopsis	The data type that indicates the server certificate.

Contents

Parameter Name	Description	Required
Arn	The name of the resource that indicates the server certificate Type: String	Yes
Path	Not supported Type: String	No
ServerCertificateId	The name of the resource that indicates the server certificate (the same value as Arn) Type: String	Yes
ServerCertificateName	・The name of the certificate specified by the user Type: String	Yes
UploadDate	The time when the server certificate is uploaded The for of expression is "YYYY-MM-DDThh:mm:ssZ", conforming to ISO8601. Type: DateTime	No