

IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION

KAAVO INC.	)	
	)	
Plaintiff,	)	
	)	Civil Action No. 2:17-cv-485
v.	)	
	)	<b>JURY TRIAL DEMANDED</b>
HUAWEI TECHNOLOGIES USA INC.	)	
	)	
Defendant.	)	
_____	)	

**COMPLAINT**

For its Complaint, Plaintiff Kaavo Inc. ("Kaavo"), by and through the undersigned counsel, alleges as follows:

**THE PARTIES**

1. Kaavo is a Delaware corporation with a place of business at 9600 Great Hills Trail, Suite 150W, Austin, Texas 78759.
2. Defendant Huawei Technologies USA Inc. ("Defendant") is a Texas corporation with, upon information and belief, its headquarters located in Plano, Texas.

**JURISDICTION AND VENUE**

3. This action arises under the Patent Act, 35 U.S.C. § 1 *et seq.*
4. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338.
5. Upon information and belief, Defendant conducts substantial business in this forum, directly or through intermediaries, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses

of conduct and/or deriving substantial revenue from goods and services provided to individuals in this district.

6. Venue is proper in this district pursuant to §§ 1391(b), (c) and 1400(b).

### **BACKGROUND**

7. On May 26, 2015, United States Patent No. 9,043,751 (the "'751 patent"), entitled "Methods and Devices for Managing a Cloud Computing Environment," was duly and lawfully issued by the U.S. Patent and Trademark Office. A true and correct copy of the '751 patent is attached hereto as Exhibit A.

8. Kaavo is the assignee and owner of the right, title and interest in and to the '751 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them.

9. Kaavo is a cloud computing company that has invested substantial resources into the development and sale of software for automating the deployment and management of applications, workloads, and IT environments across public, private, and hybrid clouds.

10. Kaavo was founded in 2007 by enterprise IT veterans with experience in delivering and managing mission critical IT applications and business services. In recognition of its groundbreaking technological developments in the field of cloud computing, Kaavo has received accolades from leading industry sources such as Gartner, TechTarget, and InformationWeek.

11. Kaavo has invested a significant amount of financial and intellectual capital into the development of pioneering technologies such as the methods and devices for managing a cloud computing environment that are disclosed in the '751 patent.

12. Indeed, Kaavo's IMOD product currently utilizes the technology covered by the

'751 patent.

13. As third parties, such as Defendant, began using and offering to customers Kaavo's patented technology related to managing cloud computing environments without Kaavo's authorization or permission, Kaavo's business suffered through at least the loss of sales resulting from the violation of Kaavo's right to exclude others from using its patented technology.

14. The technologies recited in the claims of the '751 patent provide inventive concepts and do not claim an abstract idea. The inventive concepts of the '751 patent greatly enhance and facilitate the operation of cloud management computer systems through use of hardware and software. For example, software is deployed according to strict deployment rules based on provided provisioning information and using optimal cloud resources, thus improving the functioning of a cloud management computer system. Exh. A. at col. 14, ll. 9-13.

15. A key and inventive component of the '751 patent is the claimed management system, methods, and devices for managing a cloud computing environment for use by a software application to ensure reliability and optimal performance.

16. The technology claimed in the '751 patent does not preempt all ways for setting up and managing a computer environment. For example, the claims apply only to a specific type of computer environment: cloud computing. Further, independent claims, such as claims 11, 15 and 18, require making available to a software application, through provisioning information comprising types of servers to launch in each tier, geographic data, security requirement data, pricing preference data, and versioning data, two or more tiers of a cloud environment configurations based on an initialization event, and sending software application data to cause the software application to begin execution in the available tiers of the cloud computing

environment. Other independent claims, such as claims 1, 5 and 8 require making available to a software application, through provisioning information comprising types of servers to launch in each tier, geographic data, security requirement data, pricing preference data, and versioning data, an N-tier cloud environment configuration to be made available to a software application, wherein the cloud environment comprises a plurality of distinct cloud configurations, each cloud configuration provided by a unique cloud provider, based on an initialization event, and sending software application data to cause the software application to begin execution in the available tiers of the cloud computing environment. Applications running in a cloud environment need not be managed in these ways. For example, numerous combinations of provisioning information exist that may be used to initialize two or more tiers of a cloud environment configuration, such as one or more – but not all – of types of servers to launch in each tier, geographic data, security requirement data, pricing preference data, and versioning data.

17. Defendant can set up and manage computer environments without infringing the '751 patent. For example, the prior art cited on the face of the '751 patent, including, but not limited to, U.S. Published Patent Application No. 2007/0233698, entitled "Distributed Computing System Having Autonomic Deployment of Virtual Machine Disk Images" and U.S. Published Patent Application No. 2010/0042670, entitled "Integrated Development Engine for a Cloud Computing Environment," remains available for practice by the Defendant, and the '751 patent claims do not preempt practice of those prior art methods.

18. The '751 patent claims cannot be practiced by a human alone and there exists no human analogue to the methods claimed in the '751 patent. The claims are specifically directed to management of a cloud computing environment – a thing that exists only in the context of computers.

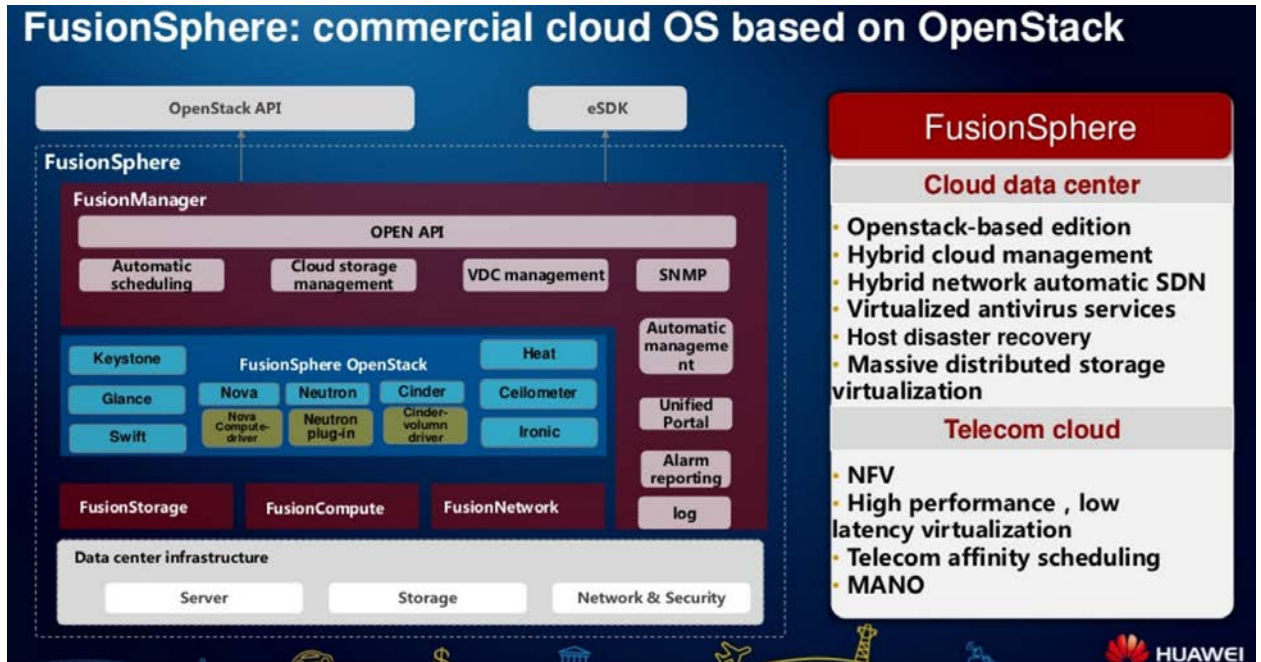
19. The dependent claims of the '751 patent add additional limitations demonstrating that they are also not directed to any abstract ideas, contain inventive concepts, and do not preempt all ways of setting up and managing computer environments. Defendant can set up and manage computer environments without infringing any of these claims.

**COUNT I – INFRINGEMENT OF U.S. PATENT NO. 9,043,751**

20. Kaavo repeats and realleges the allegations of paragraphs 1 through 19 as if fully set forth herein.

21. Without license or authorization and in violation of 35 U.S.C. § 271(a), Defendant has infringed and continues to infringe the '751 patent by making, using, importing, offering for sale, and/or selling methods and systems for initializing and managing a cloud computing environment for use by a software application, including, but not limited to Huawei FusionSphere ("FusionSphere"), which are covered by one or more claims of the '751 patent, such as, but not limited to, claim 11.

22. More specifically, FusionSphere is a non-transitory computer readable medium having computer usable program code executable to perform operations. It sends, by a computer system, an initialization event based on provisioning information in a single file, the initialization event causing two or more tiers of a cloud environment configuration to be made available to a software application.



[http://www.slideshare.net/openstack\\_kr/openstack-day-in-korea-2015-track-32-h](http://www.slideshare.net/openstack_kr/openstack-day-in-korea-2015-track-32-h) ("Slides") at slide 8 of 26 (last accessed June 6, 2017).

## 4.2 Application Template Orchestration

Administrators can orchestrate complex, multi-tier applications using a graphical application template editor. A tested application template can be used to publish a service catalog.

An application template is a combination of VM templates, software packages, scaling groups, and script resources, enabling rapid application instance deployment. Administrators drag the software packages and scripts to a VM template when editing an application template. When creating the VM during application deployment, the system automatically uploads and executes the scripts in the VM template.

Huawei FusionSphere 5.1: Technical White Paper on Advanced Operation Functions at p. 14 (available at <http://e.huawei.com/us/marketing-material/onLineView?MaterialID={BED0EBCE-612F-4319-8FD3-03FBFE66F403}>) (last accessed June 6, 2017).

## Architecture

For this first blog post, lets begin by seeing how we would architect your typical 3-tier webapp.

Mike Metral, I Have A Cloud...Now What? - Part 1: Building a 3-tier Webapp (available at <https://developer.rackspace.com/blog/i-have-a-cloud-dot-dot-dot-now-what-part-1-building-a-3-tier-webapp/> (last accessed June 6, 2017)).

## Enabling Orchestration

With the architecture laid out, we now focus on how to coordinate & construct our stack. We can organize & orchestrate the provisioning of the cloud infrastructure through [Rackspace's Cloud Orchestration](#) aka the Heat project from OpenStack. By doing so, we can leverage capabilities which allow for a self-configuration of the web services, in a repeatable fashion, that also allows for expansion further down the road.

Orchestration for our stack is described using the YAML format, and as an example, we'll examine a snippet of the template used to create the Encoder's stack in the Rackspace Public Cloud. The full template can be found at <http://git.io/MEpetw>.

```
resources:
  frontend_server:
    type: "Rackspace::Cloud::Server"
    properties:
      flavor: 2 GB Performance
      image: { get_param: image }
      name: { get_param: frontend_server_name }
      user_data:
        str_replace:
          template: |
            #!/bin/bash
            apt-get update && apt-get install curl -y
            curl -skS -L https://raw.githubusercontent.com/metral/touchstone/%branch%/encoder/server_userdata/frontend.sh | sudo bash /dev/stdin %webapp_ip% %branch%
        params:
          "%webapp_ip%": { get_attr: [ webapp_server, privateIPv4 ] }
          "%branch%": { get_param: branch }

  webapp_server:
    type: "Rackspace::Cloud::Server"
    properties:
      flavor: 2 GB Performance
      image: { get_param: image }
      name: { get_param: webapp_server_name }
      user_data:
        str_replace:
          template: |
            #!/bin/bash
            apt-get update && apt-get install curl -y
            curl -skS -L https://raw.githubusercontent.com/metral/touchstone/%branch%/encoder/server_userdata/webapp.sh | sudo bash /dev/stdin %rax_username% %rax_apikey% %data_master_ip% %mysql_pass% %use_snet% %branch%
        params:
          "%rax_username%": { get_param: rax_username }
          "%rax_apikey%": { get_param: rax_apikey }
          "%data_master_ip%": { get_attr: [ data_master_server, privateIPv4 ] }
    }

  "%mysql_pass%": { get_param: mysql_pass }
  "%use_snet%": { get_param: use_snet }
  "%branch%": { get_param: branch }
```

*Id.*

## A.14 Creating an Application Template

### Scenarios

An application template is a service model that combines logical components, including VMs and network resources, based on the configured relationship. You can use an application template to create VMs in batches and rapidly deploy application instances.

On FusionManager, create an application template on the design panel.

### Prerequisites

- You have logged in to FusionSphere OpenStack Management Console and switched to the “Services > Application Templates” page.
- You have planned the application service model.

### Procedure

**步骤1** On the “Application Templates” page, click “Create” .  
The “Create Application Template” page is displayed.

**步骤2** Configure template information.  
The following information needs to be configured:

- “Name”
- “Icon”
- “Description”

**步骤3** Configure template content.  
Edit the template content in compliance with OpenStack standards. For more information, visit the OpenStack official website <http://docs.openstack.org/developer/heat/>.

FusionSphere V100R005C10: Administrator Guide (Cloud Data Center) at p. 993 (available at <http://support.huawei.com/enterprise/docinforeader.action?contentId=DOC1000089651&idPath=7919749|7919788|9856606|9823560> (last accessed June 6, 2017)). It subsequently sends, by the computer system, software application data to the cloud environment configuration, which, upon receipt, causes the software application to begin execution in the available tiers of the cloud environment configuration.



```
heat_template_version: 2015-04-30

description: Simple template to deploy a single compute instance

resources:
  my_instance:
    type: OS::Nova::Server
    properties:
      key_name: my_key
      image: F18-x86_64-cfntools
      flavor: m1.small
```

Heat Orchestration Template (HOT) Guide ("HOT Guide") (available at [http://docs.openstack.org/developer/heat/template\\_guide/hot\\_guide.html](http://docs.openstack.org/developer/heat/template_guide/hot_guide.html) (last accessed June 6, 2017)). The provisioning information comprises types of servers to launch in each tier, geographic data, security requirement data, pricing preference data, and versioning data.

```
heat_template_version: 2015-04-30

description: Simple template to deploy a single compute instance

resources:
  my_instance:
    type: OS::Nova::Server
    properties:
      key_name: my_key
      image: F18-x86_64-cfntools
      flavor: m1.small
```

*Id.*

```

1  heat_template_version: 2015-10-15
2
3  description: Sample Nova Host Aggregate template
4
5  parameters:
6    host_aggregate_name:
7      type: string
8      description: Nova host aggregate name
9    availability_zone_name:
10     type: string
11     description: Nova availability zone name
12  hosts:
13     type: comma_delimited_list
14     description: Nova host name list
15  metadata:
16     type: json
17     description: Arbitrary key/value metadata

```

<https://github.com/openstack/heat->

[templates/blob/1e6015d4b223dbf4991e6496090392e07fd39f2b/hot/nova/host\\_aggregate.yaml](https://github.com/openstack/heat-templates/blob/1e6015d4b223dbf4991e6496090392e07fd39f2b/hot/nova/host_aggregate.yaml)

(last accessed June 6, 2017).

## 5.1. HEAT TEMPLATES

The director uses Heat Orchestration Templates (HOT) as a template format for its Overcloud deployment plan. Templates in HOT format are mostly expressed in YAML format. The purpose of a template is to define and create a *stack*, which is a collection of resources that Heat creates and the configuration per resources. Resources are objects in OpenStack and can include compute resources, network configuration, security groups, scaling rules, and custom resources.

<https://access.redhat.com/documentation/en->

[US/Red\\_Hat\\_Enterprise\\_Linux\\_OpenStack\\_Platform/7/html/Director\\_Installation\\_and\\_Usage/c](https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux_OpenStack_Platform/7/html/Director_Installation_and_Usage/c)

[hap-Understanding\\_Heat\\_Templates.html](https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux_OpenStack_Platform/7/html/Director_Installation_and_Usage/c/hap-Understanding_Heat_Templates.html) (last accessed June 6, 2017).

## Resources

The `resources` section of your template defines the items that will be created by Heat when you deploy from your template. This may include storage, networks, ports, routers, security groups, firewall rules, or any other of the [many available resources](#).

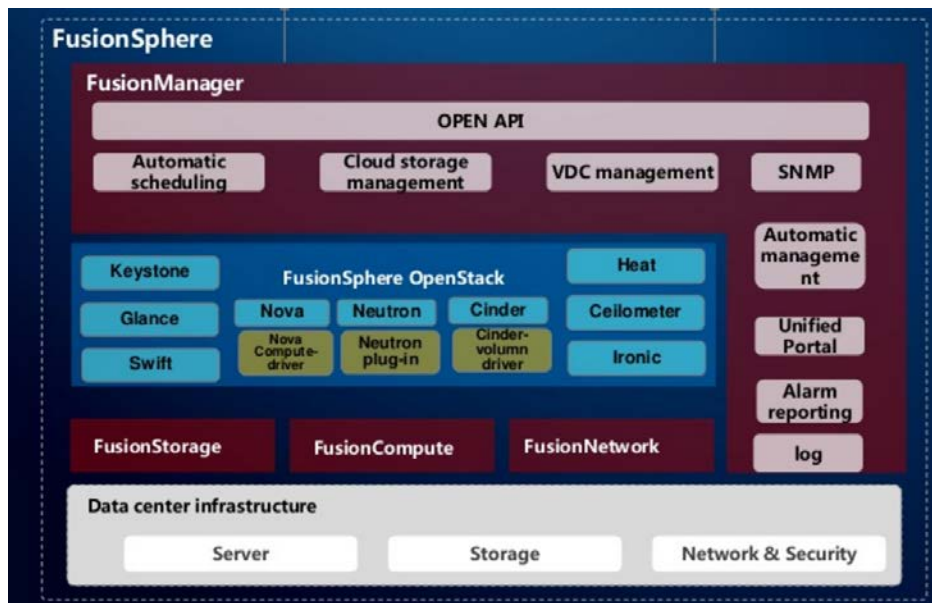
An Introduction to OpenStack Heat (available at <http://blog.oddbit.com/2013/12/06/an-introduction-to-openstack-heat> (last accessed June 6, 2017)).

## 15. MEASURE CLOUD RESOURCES

Telemetry measures cloud resources in OpenStack. It collects data related to billing. Currently, this metering service is available through only the `ceilometer` command-line client.

<https://access.redhat.com/documentation/en->

[US/Red\\_Hat\\_Enterprise\\_Linux\\_OpenStack\\_Platform/5/html/End\\_User\\_Guide/ceilometer\\_cli\\_commands.html](https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux_OpenStack_Platform/5/html/End_User_Guide/ceilometer_cli_commands.html) (last accessed June 6, 2017).



Slides at slide 8 of 26.

Table 3-9 ceilometer-collector configuration items

Service	Template	Configuration Item	Meaning and Value	Default Value	Remarks
Ceilometer	ceilometer-collector	os_auth_url	URL used to access the Keystone service	https://identity.azl.dcl.domamname.com:443/identity-admin/v2.0	Dynamic change is supported. The value is changed based on the actual Keystone service address.

\* \* \* \* \*

		dispatcher	Mode for processing the data collected by Ceilometer  The default value is database (writing the data into a database). The optional value also includes http_billing, (externally sending the data to the external billing service module).	database	The default value is database.
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FusionSphere OpenStack V100R006C00: Configuration Item Description at pp. 29-31 (available at <http://support.huawei.com/enterprise/docinforeader.action?contentId=DOC1000116978&idpath=7919749%7C7919788%7C9856606%7C21462752%7C21100528> (last accessed June 6, 2017)).

**Abstract:**

In the first issue of the **FusionSphere Dissection** series, we mentioned that OpenStack provides various services. What on earth are they? Let's find out in this issue.

Before getting into the details of what these services are, let's first have a quick look at the OpenStack release development history.

<http://support.huawei.com/enterprise/thread-303477.html> (last accessed June 6, 2017).

Metering	Ceilometer	Collects almost all events that occur inside the OpenStack system as a data basis for other related services, such as monitoring and billing.
----------	------------	---

*Id.*

```
heat_template_version: 2015-04-30

description: Simple template to deploy a single compute instance

resources:
  my_instance:
    type: OS::Nova::Server
    properties:
      key_name: my_key
      image: F18-x86_64-cfntools
      flavor: m1.small
```

HOT Guide.

## 3 Application Template Creation

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FusionSphere provides a graphical user interface (GUI) for creating application templates. This GUI allows users to perform application instance management functions.

On this GUI, users can edit the templates, save the changes, and verify whether an application template is valid in real time. FusionSphere also supports template design in CloudFormation (CFN) format, as shown in Figure 3-1.

Huawei FusionSphere 5.1: Technical White Paper on Virtual Application at p. 7 (available at <http://e.huawei.com/us/marketing-material/onlineview?materialid=%7B9802d33b-2718-48ee-9ba5-2d3ebd3ce1bc%7D> (last accessed June 6, 2017)).

23. Kaavo is entitled to recover from Defendant the damages sustained by Kaavo as a result of Defendant's infringement of the '751 patent in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

24. Defendant's use of Kaavo's patented technology to build and profit from its own cloud computing businesses has caused, is causing and will continue to cause Kaavo irreparable harm unless enjoined by this Court.

**JURY DEMAND**

Kaavo hereby demands a trial by jury on all issues so triable.

**PRAYER FOR RELIEF**

WHEREFORE, Kaavo requests that this Court enter judgment against Defendant as follows:

- A. An adjudication that Defendant has infringed the '751 patent;
- B. A permanent injunction enjoining Defendant and its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert or participation with it, from making, using, offering to sell, or selling in the United States or importing into the United States any devices, methods or systems that infringe any claim of the '751 patent, or contributing to or inducing the same by others;
- C. An award of damages to be paid by Defendant adequate to compensate Kaavo for Defendant's past infringement of the '751 patent and any continuing or future infringement through the date such judgment is entered, including interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;
- D. A declaration that this case is exceptional under 35 U.S.C. § 285, and an award of Kaavo's reasonable attorneys' fees; and
- E. An award to Kaavo of such further relief at law or in equity as the Court deems just and proper.

Dated: June 7, 2017

STAMOULIS & WEINBLATT LLC

*/s/ Richard C. Weinblatt*

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