Deploy the Firewall Threat Defense Virtual on the Alibaba Cloud

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Overview

Alibaba Cloud is a public cloud environment. The Firewall Threat Defense Virtual runs as a guest in the Alibaba Cloud environment.

Alibaba Cloud Supported Instance Types and Threat Defense Virtual Versions

Firewall Threat Defense Virtual on Alibaba can use the following instance types:

Alibaba ECS Instance Type	Attributes		Maximum Interfaces Supported	Threat Defense Virtual Version
	vCPUs	Memory (GB)		
ecs.g5ne.xlarge	4	16	4	7.2 and later
ecs.g5ne.2xlarge	8	32	6	7.2 and later
ecs.g5ne.4xlarge	16	64	8	7.2 and later
ecs.c7.xlarge	4	8	4	7.2 and later
ecs.c7.2xlarge	8	16	8	7.2 and later
ecs.c7.4xlarge	16	32	16	7.2 and later
ecs.c7nex.xlarge	4	8	4	7.2 and later
ecs.c7nex.2xlarge	8	16	8	7.2 and later

Alibaba ECS Instance Type	Attributes		Maximum Interfaces Supported	Threat Defense Virtual Version
	vCPUs	Memory (GB)		
ecs.c7nex.4xlarge	16	32	16	7.2 and later
ecs.c8i.xlarge	4	8	4	10.1.0 and later
ecs.c8i.2xlarge	8	16	4	10.1.0 and later
ecs.c8i.4xlarge	16	32	8	10.1.0 and later
ecs.c8ine.xlarge	4	8	4	10.1.0 and later
ecs.c8ine.2xlarge	8	16	6	10.1.0 and later
ecs.c8ine.4xlarge	16	32	8	10.1.0 and later
ecs.c7nex.xlarge	4	8	4	10.1.0 and later
ecs.c7nex.2xlarge	8	16	6	10.1.0 and later
ecs.c7nex.4xlarge	16	32	8	10.1.0 and later
ecs.c9i.xlarge	4	8	4	10.1.0 and later
ecs.c9i.2xlarge	8	16	8	10.1.0 and later
ecs.c9i.4xlarge	16	32	8	10.1.0 and later

Note Firewall Threat Defense Virtual needs a minimum of four interfaces (ENIs) to support the instance.

Note We do not support resizing the instance type and deploying the Firewall Threat Defense Virtual. You can only deploy a Firewall Threat Defense Virtual with a different instance size through a new deployment.

Note

- By default, Threat Defense Virtual instances are deployed using UEFI mode.
- **Limitation**: Secure Boot functionality is not supported due to cloud limitation.
- Existing brownfield deployments can be upgraded to Version 10.0.0 without impact. Changing the boot mode after deployment is not supported.
- Threat Defense virtual maximum vCPU limit: Threat Defense virtual supports a maximum of 16 vCPUs. Instances exceeding this capacity are not supported. FTDvU (FTDv-Unlimited) is supported only on KVM, VMware, and AWS.
- Threat Defense virtual minimum vCPU requirement: Threat Defense virtual requires a minimum of 4 vCPUs. Instances with fewer than 4 vCPUs are not supported.

Network Requirement

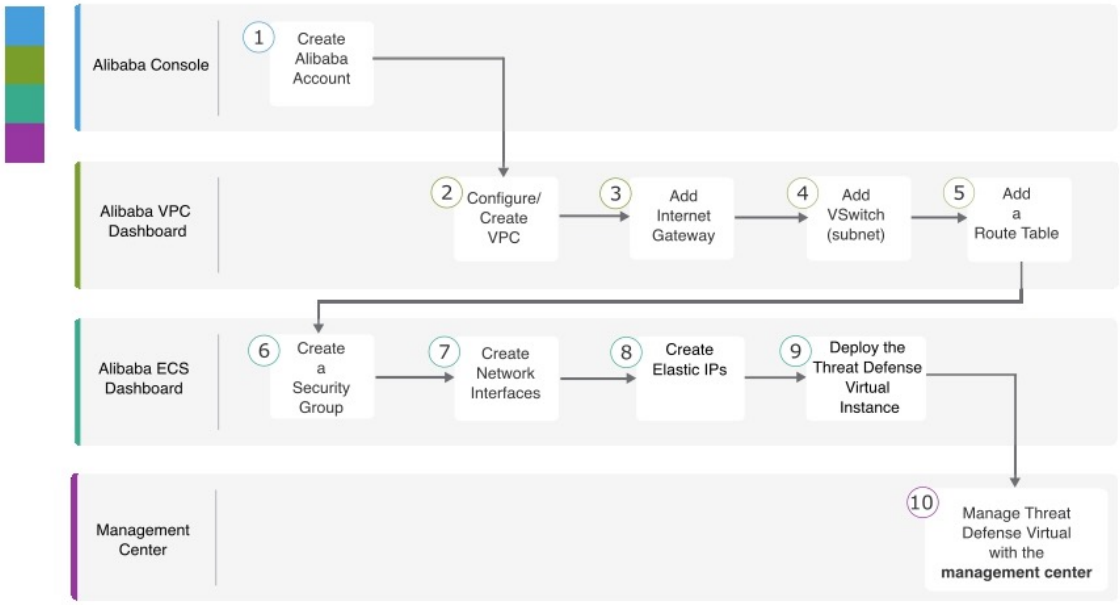
- You can create one VPC with four Vswitch (Subnet) for basic Firewall Threat Defense Virtual support.
- Management Vswitch must be available in the same zone in which instance is being deployed, otherwise, you have to create it.

Related Documentation

For more information on instance types and their configuration, see Alibaba Cloud

End-to-End Procedure

See the following tasks to deploy the Firewall Threat Defense Virtual on your Alibaba.



	Workspace	Steps
1	Alibaba Console	https://marketplace.alibabacloud.com/.Create a user account in Alibaba console.
2	Alibaba VPC Dashboard	Creating the VPC, on page 7: Create and configure a VPC that is dedicated to your Alibaba account.
3	Alibaba VPC Dashboard	Adding the Internet Gateway, on page 8: Add an Internet gateway to connect your VPC to the Internet.
4	Alibaba VPC Dashboard	Adding vSwitch, on page 9: Add VSwitch (subnets) to your VPC.
5	Alibaba VPC Dashboard	Adding a Route Table, on page 9: Attach a route table to the gateway you configured for your VPC.

	Workspace	Steps
6	Alibaba ECS Dashboard	Creating a Security Group, on page 10: Create a security group with rules specifying allowed protocols, ports and source IP ranges.
7	Alibaba ECS Dashboard	Creating Network Interfaces, on page 11: Create network interfaces for the threat defense virtual using static IP addresses.
8	Alibaba ECS Dashboard	Creating Elastic IP Address, on page 11: Elastic IPs are reserved public IPs that are used for remote access to the threat defense virtual as well as other instances.
9	Management Center or Device Manager	Deploy the Threat Defense Virtual, on page 13: Deploy the threat defense virtual from the Alibaba portal.
10	Management Center	Manage threat defense virtual: • Managing the Firepower Threat Defense Virtual with the Firepower Management Center

Prerequisites

- An Alibaba account. You can create one at https://www.alibaba.com/.
- An SSH client (for example, PuTTY on Windows or Terminal on Macintosh) is required to access the Firewall Threat Defense Virtual console.
- A Cisco Smart Account. You can create one at Cisco Software Central https://software.cisco.com/.
- License the Firewall Threat Defense Virtual.
  - Configure all license entitlements for the security services from the Firewall Management Center Virtual.
  - See “Licensing the Secure Firewall System” in the Secure Firewall Management Center Configuration Guide for more information about how to manage licenses.
- Firewall Threat Defense Virtual interface requirements:
  - Management interfaces (1)—Used to connect the Firewall Threat Defense Virtual to the Firewall Management Center Virtual,
  - Second Interface is used for diagnostics; can’t be used for through traffic.

    In version 6.7 and later, you can optionally configure a data interface for FMC management instead of the Management interface. The Management interface is a prerequisite for data interface management, so you still need to configure it in your initial setup. FMC access from a data interface isn’t supported in High Availability deployments.

    For more information about configuring a data interface for FMC access, see the **configure network management-data-interface** command in the FTD command reference.

- Traffic interfaces (2)—Used to connect the Firewall Threat Defense Virtual to inside hosts and to the public network.

- Communication Paths:
  - Public and elastic IPs for access into the Firewall Threat Defense Virtual.

Supported Software Platforms

The Firewall Threat Defense Virtual Auto Scale solution is a software version agnostic and it is applicable to the Firewall Threat Defense Virtual devices managed by the management center. For information about Cisco software and hardware compatibility, including operating system and hosting environment requirements, see Cisco Secure Firewall Threat Defense Compatibility Guide.

- The Firewall Management Center Virtual Compatibility Guide table lists the compatibility and virtual hosting environment requirements for the Firewall Management Center Virtual on Alibaba.
- The Cisco Secure Firewall Threat Defense Compatibility Guide table lists the compatibility and virtual hosting environment requirements for the Firewall Threat Defense Virtual on Alibaba.

Guidelines and Limitations

Supported Features

- Basic Product Bringup
- Day-0 Configuration
- SSH using Public Key or Password.
- Alibaba UI Console to access Firewall Threat Defense Virtual for any debugging purpose.
- Alibaba UI Stop/Restart
- Instance Type Supported: ecs.g5ne.xlarge, ecs.g5ne.2xlarge, and ecs.g5ne.4xlarge.
- Hyperthreading
- Bring Your Own License (BYOL) License Support.

Performance Tiers for Firewall Threat Defense Virtual Smart Licensing

The supports performance-tiered licensing that provides different throughput levels and VPN connection limits based on deployment requirements.

Table 1: Licensed Feature Limits Based on Entitlement

Performance Tier	Device Specifications (Core/RAM)	Rate Limit	RA VPN Session Limit
FTDv5, 100Mbps	4 core/8 GB	100Mbps	50
FTDv10, 1Gbps	4 core/8 GB	1Gbps	250

Performance Tier	Device Specifications (Core/RAM)	Rate Limit	RA VPN Session Limit
FTDv20, 3Gbps	4 core/8 GB	3Gbps	250
FTDv30, 5Gbps	8 core/16 GB	5Gbps	250
FTDv50, 10Gbps	12 core/24 GB	10Gbps	750
FTDv, 16Gbps	16 core/34 GB	16Gbps	10,000

- BYOL (Bring Your Own License) using a Cisco Smart License Account.

See the "Licensing the Threat Defense Virtual System" chapter in the *Threat Defense Virtual Management Center Configuration* for guidelines when licensing your Firewall Threat Defense Virtual device.

Performance Optimizations

To achieve the best performance out of the Firewall Threat Defense Virtual, you can make adjustments to the both the VM and the host. See Virtualization Tuning and Optimization on Alibaba Cloud for more information.

Receive Side Scaling—The Firewall Threat Defense Virtual supports Receive Side Scaling (RSS), which is a technology utilized by network adapters to distribute network receive traffic to multiple processor cores. Supported on Version 7.0 and later. See Multiple RX Queues for Receive Side Scaling (RSS) for more information.

Deployment

The Threat Defense virtual instance running Version 7.4.3 or later carries out several initialization tasks during its first boot, which causes the console to become available after about five minutes. This delay is normal. If the device is powered off within approximately two minutes of the first boot, important initialization steps may be interrupted, possibly leading to incomplete setup and unexpected behavior.

To resolve this issue, you must reinstall the virtual platform with a new image.

Unsupported Features

- FDM
- High Availability Functionality
- Autoscale
- IPv6
- SR-IOV

Limitations

- Transparent, inline, and passive modes are not supported in version 7.2 release.
- East-West Traffic is not supported in Alibaba.
- Jumbo Frames is not supported as its availability is limited to a few instance types from Alibaba. For more information, see Alibaba Cloud.

Note Firewall Threat Defense Virtual must have four interfaces to launch.

Licensing

- BYOL (Bring Your Own License) using a Cisco Smart License Account is supported.

Upgrade Restrictions and Limitations

Revert upgrade restrictions

Caution Reverting an upgrade is not supported.

Ensure that you take a backup before upgrading. After upgrading to Threat Defense Virtual 10.0.0, you cannot roll back to a previous software version. To return to an earlier version, you must redeploy the Management Center.

Configuring Policies and Device Settings

After you install Firewall Threat Defense Virtual and add the device to a Firewall Management Center Virtual, you can use the Firewall Management Center Virtual user interface to configure device management settings for Firewall Threat Defense Virtual running on Alibaba. You can configure and apply access control policies and other related policies to manage traffic using your Firewall Threat Defense Virtual instance.

The security policy controls the services provided by the Firewall Threat Defense Virtual, such as Next Generation IPS filtering and application filtering. You configure the security policy on the Firewall Threat Defense Virtual using the Firewall Management Center Virtual. For information about how to configure the security policy, see the *Secure Firewall Configuration Guide* or the online help in Firewall Management Center Virtual.

Creating the VPC

A virtual private cloud (VPC) is a virtual network dedicated to your Alibaba account. It is logically isolated from other virtual networks in the Alibaba cloud. You can launch your Alibaba Cloud resources, such as the Management Center Virtual and the Threat Defense Virtual instances, into your VPC. You can configure your VPC; you can select its IP address range, create VSwitches (subnets), and configure route tables, network gateways, and security settings.

Procedure

Step 1 Log into https://www.alibabacloud.com and choose your region.

Alibaba Cloud is divided into multiple regions that are isolated from each other. The region is displayed in the upper right corner of your screen. Resources in one region do not appear in another region. Check periodically to make sure you are in the intended region.

Step 2 Click **Products > VPC**.

Step 3 Click **VPC Dashboard > Your VPCs**.

Step 4 Click **Create VPC**.

Step 5 Enter the following in the **Create VPC** dialog box:

a) A user-defined **Name tag** to identify the VPC.

b) An **IPv4 CIDR block** of IP addresses. CIDR (Classless Inter-Domain Routing) notation is a compact representation of an IP address and its associated routing prefix. For example, 10.0.0.0/24.

c) Select the **IPv4 CIDR block** as **Alibaba Cloud-provided IPv4 CIDR block** to enable IPv4 in the Virtual Private Cloud.

d) A **Tenancy setting** of default to ensure that instances launched in this VPC use the tenancy attribute specified at launch.

Step 6 Click **OK** to create your VPC.

What to do next

Add an Internet gateway to your VPC as described in the next section.

Adding the Internet Gateway

You can add an Internet gateway (NAT Gateway) to connect your VPC to the Internet. You can route traffic for IP addresses outside your VPC to the Internet gateway.

Before You Begin

- Create a VPC for your Threat Defense Virtual instances.

Procedure

Step 1 Click **Products** > **VPC**.

Step 2 Click **VPC Dashboard** > **Internet Gateways**, and then click **Create Internet Gateway**.

Step 3 Enter a user-defined **Name tag** to identify the gateway and click **OK** to create the gateway.

Step 4 Select the gateway created in the previous step.

Step 5 Click **Bind to VPC**and select the VPC you created previously.

Step 6 Click **OK** to bind the gateway to your VPC.

By default, the instances launched in the VPC cannot communicate with the Internet until a NAT Gateway is created and bound to the VPC.

What to do next

Add VSwitch (subnets) to your VPC as described in the next section.

Adding vSwitch

You can segment the IP address range of your VPC that the Threat Defense Virtual instances can be attached to. You can create vSwitch (subnets) to group instances according to security and operational needs. For the Threat Defense Virtual you need to create a vSwitch for management as well as VSwitches for traffic.

Before You Begin

- Create four VPCs for your Threat Defense Virtual instances. As mentioned in creating VPC section.
- Add one vSwitch (subnet) for each VPC.

Procedure

Step 1 Click **Products** > **VPC**.

Step 2 Click **VPC Dashboard** > **VSwitches**, and then click **Click vSwitch**.

Step 3 Enter the following in the **Create vSwitch** dialog box:

a) A user-defined **Name tag** to identify the vSwitch.
b) A **VPC** to use for this vSwitch.
c) The **Zone** where this vSwitch will reside. Select **No Preference** to let Alibaba Cloud select the zone.
d) A **CIDR block** of IP addresses (IPv4). The range of IP addresses in the vSwitch must be a subset of the range of IP addresses in the VPC. Block sizes must be between a /16 network mask and a /28 network mask. The size of the vSwitch can equal the size of the VPC.

Step 4 Click **OK** to create your vSwitch.

Step 5 Repeat for as many vSwitchs' required. Create a separate vSwitch for management traffic and create as many vSwitchs' as needed for data traffic.

What to do next

Add a route table to your VPC as described in the next section.

Adding a Route Table

You can attach a route table to the gateway you configured for your VPC. You can also associate multiple subnets with a single route table, but a subnet can be associated with only one route table at a time.

Procedure

Step 1 Click **Products** > **VPC**.

Step 2 Click **VPC Dashboard** > **Route Tables**, and then click **Create Route**.

Step 3 Enter a user-defined **Name tag** to identify the route table.

Step 4 Select the **VPC** from the drop-down list that will use this route table.

Step 5 Click **OK** to create your route table.

Step 6 Select the route table that you created.

Step 7 Click the **Routes** tab to display the route information in the details pane.

Step 8 Click **Edit**, then click **Add another route**.

a) In the **Destination** column, enter **0.0.0.0/0**for all IPv4 traffic.

b) In the **Target** column, select your gateway.

Step 9 Click **Save**.

What to do next

Create a security group as described in the next section.

Creating a Security Group

You can create a security group with rules specifying allowed protocols, ports and source IP ranges. Multiple security groups can be created with different rules which you can assign to each instance.

Procedure

Step 1 Click **Products** > **ECS**.

Step 2 Click **ECS Dashboard** > **Security Groups**.

Step 3 Click **Create Security Group**.

Step 4 Enter the following in the **Create Security Group** dialog box:

a) A user-defined **Security Group Name** to identify the security group.

b) A **Description** for this security group.

c) The **VPC** associated with this security group.

Step 5 Configure **Security Group Rules**:

a) Click the **Inbound Rules** tab, then click **Add Rule**.

Note HTTPS and SSH access is required to manage the Management Center Virtual from outside Alibaba. You should specify the Source IP addresses accordingly. Also, if you are configuring both the Management Center Virtual and Threat Defense Virtual within the Alibaba VPC, you should allow the private IP management subnet access.

b) Click the **Outbound Rules** tab, then click **Add Rule** to add a rule for outbound traffic, or leave the defaults of **All traffic** (for **Type**) and **Anywhere** (for **Destination**).

Step 6 Click **Create** to create your security group.

What to do next

Create network interfaces as described in the next section.

Creating Network Interfaces

You can create network interfaces for the Threat Defense Virtual using static IP addresses (IPv4) or DHCP. Create network interfaces (external and internal) as needed for your particular deployment.

Procedure

Step 1 Click **Services** > **Elastic Network Interface**.

Step 2 Click **Network Interfaces**.

Step 3 Click **Create Network Interface**.

Step 4 Enter the following in the **Create Network Interface** dialog box:

a) A optional user-defined **Description** for the network interface.

b) Select a **vSwitch** from the drop-down list. Make sure to select the vSwitch of the VPC where you want to create the Threat Defense Virtual instance.

c) Enter a **Private IP** address. You can use a static IP address (IPv4) or Auto-generate (DHCP).

d) Select one or more **Security groups**. Make sure the security group has all the required ports open.

Step 5 Click **Create network interface** to create your network interface.

Step 6 Select the network interface that you just created.

Step 7 Right-click and select **Modify Source/Dest. Check**.

Step 8 Uncheck the **Enable** check box under **Source/destination check** and click **Save**.

What to do next

Create elastic IP addresses as described in the next section.

Creating Elastic IP Address

When an instance is created, a public IP address is associated with the instance. That public IP address (IPv4) changes automatically when you STOP and START the instance. To resolve this issue, assign a persistent public IP address to the instance using Elastic IP addressing. Elastic IP address is a reserved public IP address that are used for remotely accessing the Firewall Threat Defense Virtual as well as other instances.

Procedure

Step 1 Click **Products** > **Elastic Compute Service**.

Step 2 In the **Elastic Compute Service** dashboard, click **Elastic IP** from the left-hand menu.

Step 3 Click **Allocate Elastic IP Address**.

Step 4 Configure EIP settings:

a) Choose the **Region** where you want to allocate the EIP.
b) Select the desired bandwidth plan for the EIP. For example, BYOL or Subscription.
c) Specify the bandwidth amount required.
d) Review your selections and click **OK** to allocate the EIP.

Step 5 Associate the EIP with an instance:

a) After EIP allocation, go to the **Elastic IP** section in the **Elastic Compute Service** dashboard.
b) Find the EIP you created and click **Associate**.
c) Choose the ECS instance you want to associate with the EIP and click **OK**.

Step 6 Ensure that the EIP is now listed under the associated ECS instance and verify its connectivity.

What to do next

Deploy the Firewall Threat Defense Virtual as described in the next section.

Configuring Alibaba Environment

To deploy the Firewall Threat Defense Virtual on Alibaba you need to configure an Alibaba VPC with your deployment-specific requirements and settings. In most situations a setup wizard can guide you through your setup. Alibaba provides online documentation where you can find useful information about the services ranging from introductions to advanced features. For more information, see Alibaba Cloud Documentation.

The Firewall Threat Defense Virtual deployment requires four network virtual private cloud (VPC) which you must create prior to deploying the Firewall Threat Defense Virtual.

The four networks VPCs are:

- Management VPC for the management subnet.
- Diagnostic VPC for the diagnostic subnet.
- Inside VPC for the inside subnet.
- Outside VPC for the outside subnet.

For greater control over your Alibaba setup, the following sections offer a guide to your VPC and EC2 configurations prior to launching the Firewall Threat Defense Virtual instances:

Before You Begin

- Create your Alibaba Cloud account.

Deploy the Threat Defense Virtual

Procedure

Step 1 Go to https://marketplace.alibabacloud.com/ and search for **`Cisco Firepower NGFW Virtual (NGFWv) - BYOL`** offering to deploy the Firewall Threat Defense Virtual.

Note Alibaba is divided into multiple regions that are isolated from each other. The region is displayed in the upper right corner of your window. Resources in one region do not appear in another region. Check periodically to make sure you are in the intended region.

Step 2 Click the offering link to open **Cisco Firepower NGFW Virtual (NGFWv) - BYOL** page.

Step 3 Click **Choose Your Plan**. You will be redirected to the **Elastic Compute Service** page.

Step 4 Enter the following details in the **Custom Launch** section.

- **Billing Method**: As per requirement.

  Note The billing method is for infrastructure on the Alibaba Cloud, which you can select according to your requirement.

- **Region**: As per requirement.
- **Network and Zone**: Select a VPC and management vSwitch, which you have previously created, from the drop-down list or use the **Create VPC** and **Create vSwitch** links to create newly.

Step 5 Move to the **Instances and Images** page.

Under the **All Instance Types** section, perform the following:

- **Instance**: Select any of the following supported instance type - **ecs.g5ne.xlarge**, **ecs.g5ne.2xlarge**, or **ecs.g5ne.4xlarge**.
- **Image**: The latest Firewall Threat Defense Virtual marketplace version is displayed in the **Marketplace Image REC** section.
  a. Click **Reselect Image**. The Alibaba Cloud Marketplace Image dialog box is displayed with Firewall Threat Defense Virtual image details you are deploying.
  b. Choose the Firewall Threat Defense Virtual version from the drop-down list and click **Select**.

Step 6 Move to the **Storage** section. Retain the default values and proceed.

Step 7 Move to the **Bandwidth and Security Groups** section and perform the following:

- **ENI**

- **Security Group**: Choose the appropriate security group.
- **Primary ENI**: Enter the primary interface, which is the management vSwitch, as selected in the **Network and Zone** field.
- **Secondary ENI**: Choose the secondary interface from the **Existing Secondary Interface** drop-down list or create a new secondary interface by selecting the required vSwitch.

Note During instance launch phase, an instance can be deployed with *two* interfaces and the other *two* interfaces can be attached after deployment from ECS console.

- **Key Pair**: Select an existing key pair from the drop-down list or create a new key pair.

Step 8 Move to the **Advance Settings** and perform the following:

- **Instance Name**: Name of the instance as suitable.
- **User Data**: Provide the Day-0 configuration as per the requirement (Do not choose the **Enter Base64 Encoded iInformation** check box).

Sample Day-0 Configuration to manage Threat Defense Virtual using the Management Center:

```
{
"AdminPassword": "<your_password>",
"Hostname": "<your_hostname>",
"ManageLocally": "No",
"FmcIp":  "<IP address of FMC>",
"FmcRegKey":"<registration_passkey>",
"FmcNatId":"<NAT_ID_if_required>"
}
```

Note If you do not provide any password in the Day-0 configuration, the default password will be the instance ID of the Firewall Threat Defense Virtual as seen on Alibaba Console or CLI.

Step 9 Accept the **ECS Terms of Service** and click **Create Order**.
Firewall Threat Defense Virtual is launched with *two* interfaces and you can view them on ECS console.

Note To complete the boot process, you must configure the Firewall Threat Defense Virtual with *four* interfaces.

Step 10 To configure the Firewall Threat Defense Virtual with two other interfaces, perform the following:

a) On the Alibaba Cloud, go to **Elastic Compute Service**.
b) Click **Elastic Network Interface** under **Network & Security** on the left pane.
c) Search for the traffic interface that is previously created.
d) Select the check box corresponding to a traffic interface, and click **Bind to Instance**. The **Bind to Instance** dialog box is displayed.

e) Enter the Firewall Threat Defense Virtual name in the **Instance** field.
f) Click **Confirm** to configure it as **eth2** interface for your instance.
g) Repeat **Step c** through **Step f** to configure **eth3** interface for your Firewall Threat Defense Virtual.

Step 11 Click **ECS Dashboard** > **Instances**.

Step 12 You should be able to register your Threat Defense Virtual to the Management Center Virtual after it finishes booting up.