

# Apache CloudStack 4.1.0

CloudStack Nicira  
NVP Plugin 插件指南



Apache CloudStack

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Nicira NVP Plugin 插件指南

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# Nicira NVP插件

## 1.1. Nicira NVP Plugin介绍

The Nicira NVP plugin adds Nicira NVP as one of the available SDN implementations in CloudStack. With the plugin an existing Nicira NVP setup can be used by CloudStack to implement isolated guest networks and to provide additional services like routing and NAT.

## 1.2. Nicira NVP插件特色

The following table lists the CloudStack network services provided by the Nicira NVP Plugin.

表格 1.1. Supported Services

| Network Service    | CloudStack version | NVP version |
|--------------------|--------------------|-------------|
| Virtual Networking | >= 4.0             | >= 2.2.1    |
| Source NAT         | >= 4.1             | >= 3.0.1    |
| Static NAT         | >= 4.1             | >= 3.0.1    |
| Port Forwarding    | >= 4.1             | >= 3.0.1    |



### 注意

The Virtual Networking service was originally called 'Connectivity' in CloudStack 4.0

The following hypervisors are supported by the Nicira NVP Plugin.

表格 1.2. Supported Hypervisors

| Hypervisor | CloudStack version |
|------------|--------------------|
| XenServer  | >= 4.0             |
| KVM        | >= 4.1             |



### 注意

Please refer to the Nicira NVP configuration guide on how to prepare the hypervisors for Nicira NVP integration.

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# Configuring the Nicira NVP Plugin

## 2.1. 事前準備

在啓用Nicira NVP 插件前，請先設定 NVP Controller。請回顧

請先確定您已經準備好以下資訊：

- NVP Controller的IP位址
- 存取API的使用者名稱
- 存取API的密碼
- Transport Zone中，包含高層管理者的UUID，
- The UUID of the Gateway Service used to provide router and NAT services.



### 注意

The gateway service uuid is optional and is used for Layer 3 services only (SourceNat, StaticNat and PortForwarding)

## 2.2. Zone Configuration

CloudStack needs to have at least one physical network with the isolation method set to "STT". This network should be enabled for the Guest traffic type.



### 注意

The Guest traffic type should be configured with the traffic label that matches the name of the Integration Bridge on the hypervisor. See the Nicira NVP User Guide for more details on how to set this up in XenServer or KVM.

The screenshot shows the CloudStack interface for configuring the Physical Network of the MCCDZone. The breadcrumb navigation is Infrastructure > Zones > MCCDZone. There is a Refresh button in the top right. Below the breadcrumb is a navigation bar with tabs: Details, Compute and Storage, Physical Network (selected), Resources, System VMs, and Settings. The main content area displays a table with the following data:

| Name       | State   | Isolation method | Actions |
|------------|---------|------------------|---------|
| MCCD Mgmt  | Enabled | VLAN             | ✕       |
| MCCD Guest | Enabled | STT              | ✕       |

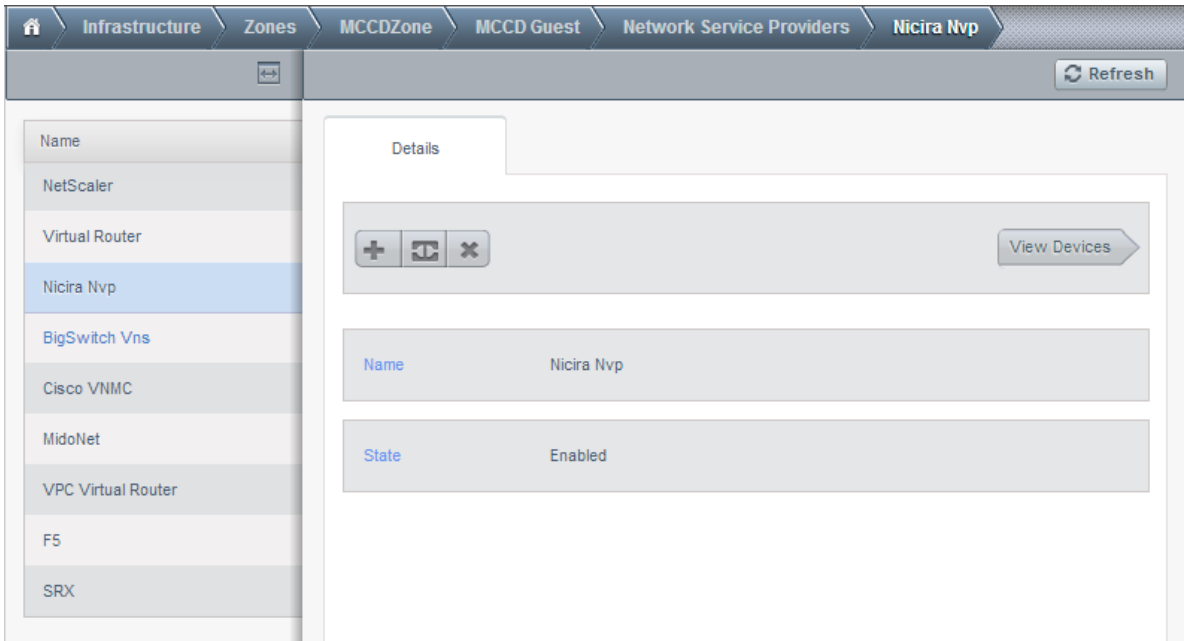
### 2.3. 啓用服務提供者

The Nicira NVP provider is disabled by default. Navigate to the "Network Service Providers" configuration of the physical network with the STT isolation type. Navigate to the Nicira NVP provider and press the "Enable Provider" button.



注意

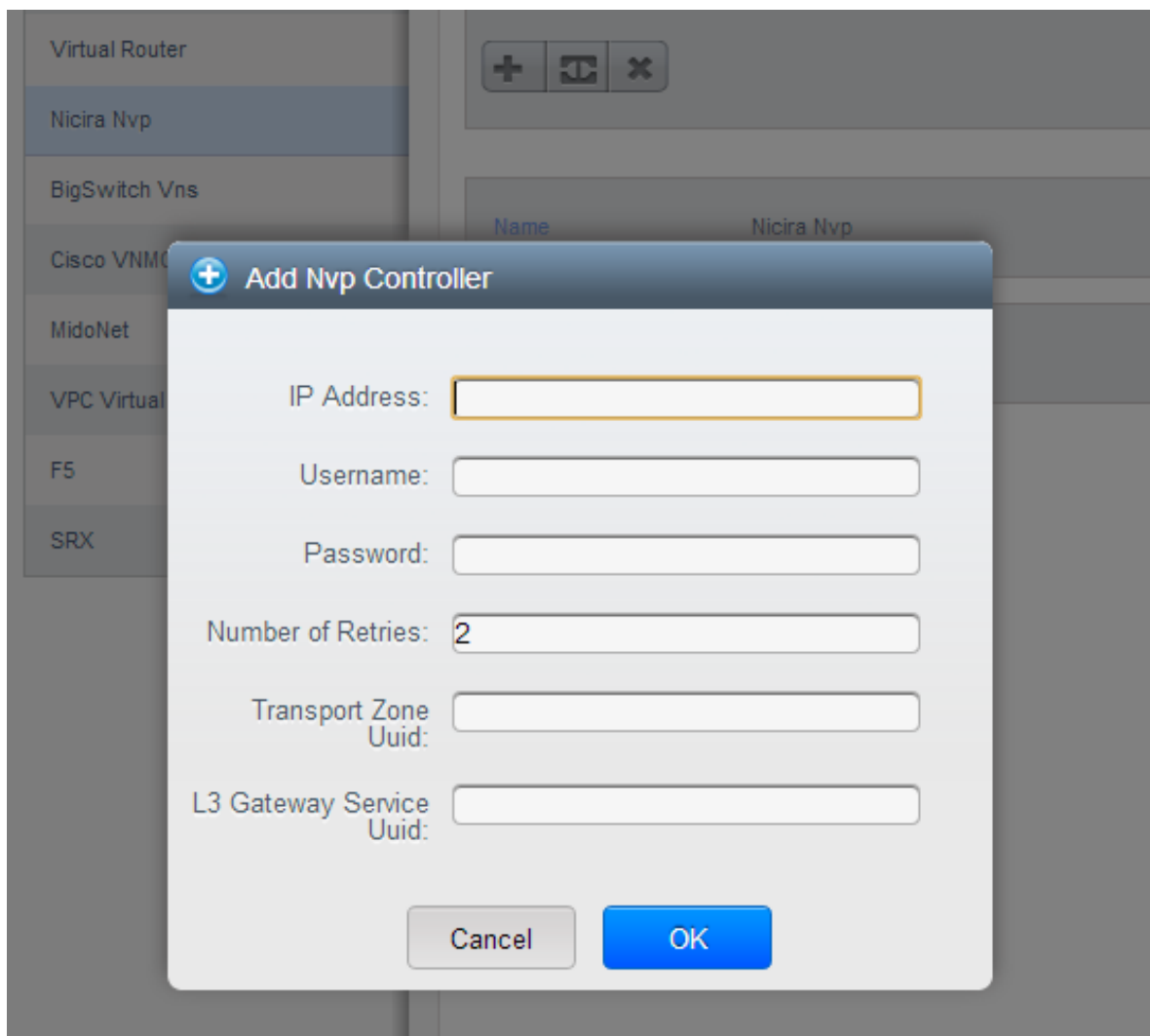
CloudStack 4.0 does not have the UI interface to configure the Nicira NVP plugin. Configuration needs to be done using the API directly.



### 2.4. Device Management

In CloudStack a Nicira NVP setup is considered a "device" that can be added and removed from a physical network. To complete the configuration of the Nicira NVP plugin a device needs to be added to the physical network. Press the "Add NVP Controller" button on the provider panel and enter the configuration details.



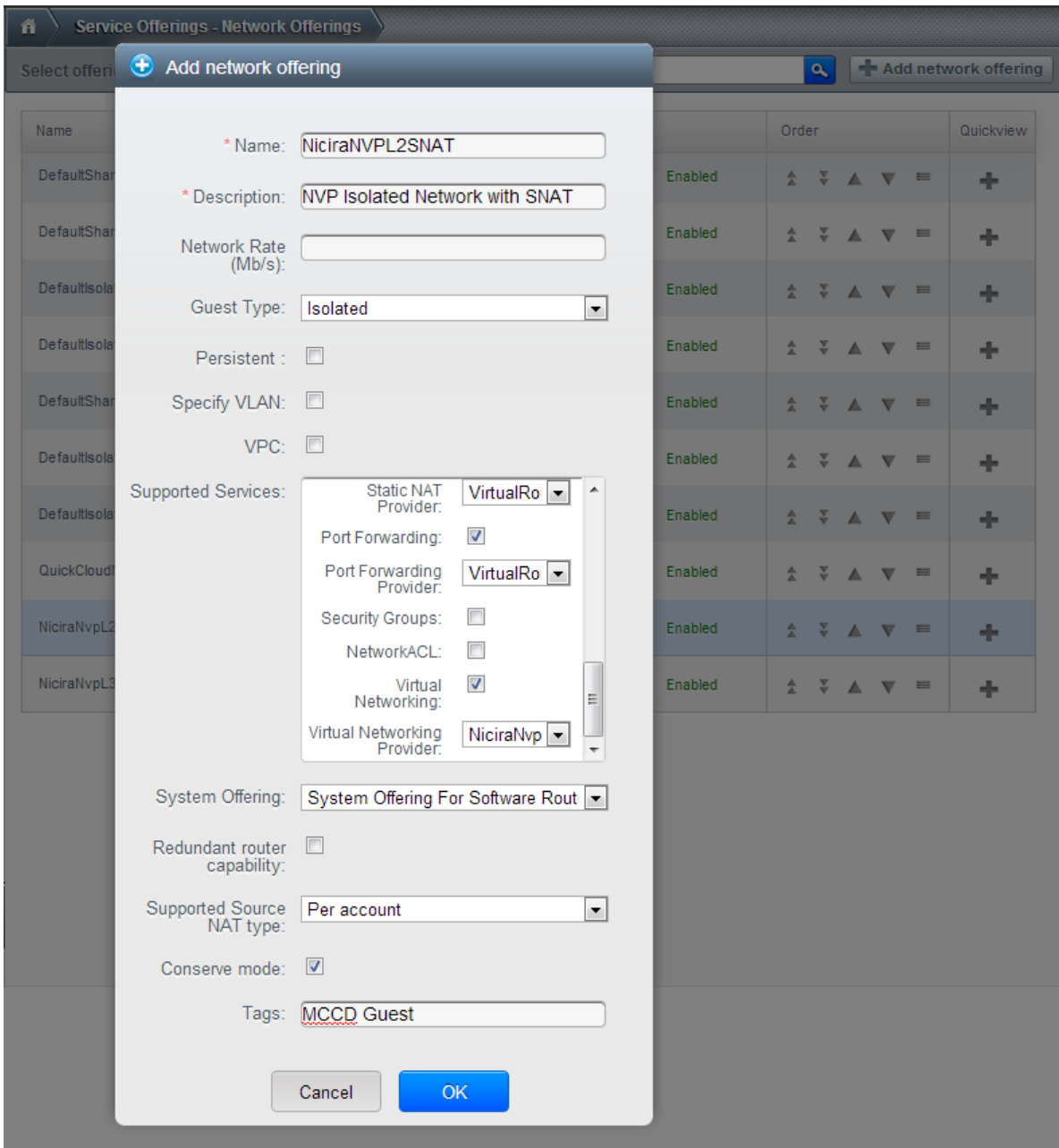


## 2.5. Network Offerings

Using the Nicira NVP plugin requires a network offering with Virtual Networking enabled and configured to use the NiciraNvp element. Typical use cases combine services from the Virtual Router appliance and the Nicira NVP plugin.

表格 2.1. Isolated network offering with regular services from the Virtual Router.

| Service            | Provider      |
|--------------------|---------------|
| VPN                | VirtualRouter |
| DHCP               | VirtualRouter |
| DNS                | VirtualRouter |
| Firewall           | VirtualRouter |
| Load Balancer      | VirtualRouter |
| User Data          | VirtualRouter |
| Source NAT         | VirtualRouter |
| Static NAT         | VirtualRouter |
| Post Forwarding    | VirtualRouter |
| Virtual Networking | NiciraNVP     |



**注意**

The tag in the network offering should be set to the name of the physical network with the NVP provider.

Isolated network with network services. The virtual router is still required to provide network services like dns and dhcp.

表格 2.2. Isolated network offering with network services

| Service | Provider      |
|---------|---------------|
| DHCP    | VirtualRouter |
| DNS     | VirtualRouter |

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| Service            | Provider      |
|--------------------|---------------|
| User Data          | VirtualRouter |
| Source NAT         | NiciraNVP     |
| Static NAT         | NiciraNVP     |
| Post Forwarding    | NiciraNVP     |
| Virtual Networking | NiciraNVP     |



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# Using the Nicira NVP plugin with VPC

## 3.1. Supported VPC features

The Nicira NVP plugin supports CloudStack VPC to a certain extent. Starting with CloudStack version 4.1 VPCs can be deployed using NVP isolated networks.

It is not possible to use a Nicira NVP Logical Router for as a VPC Router

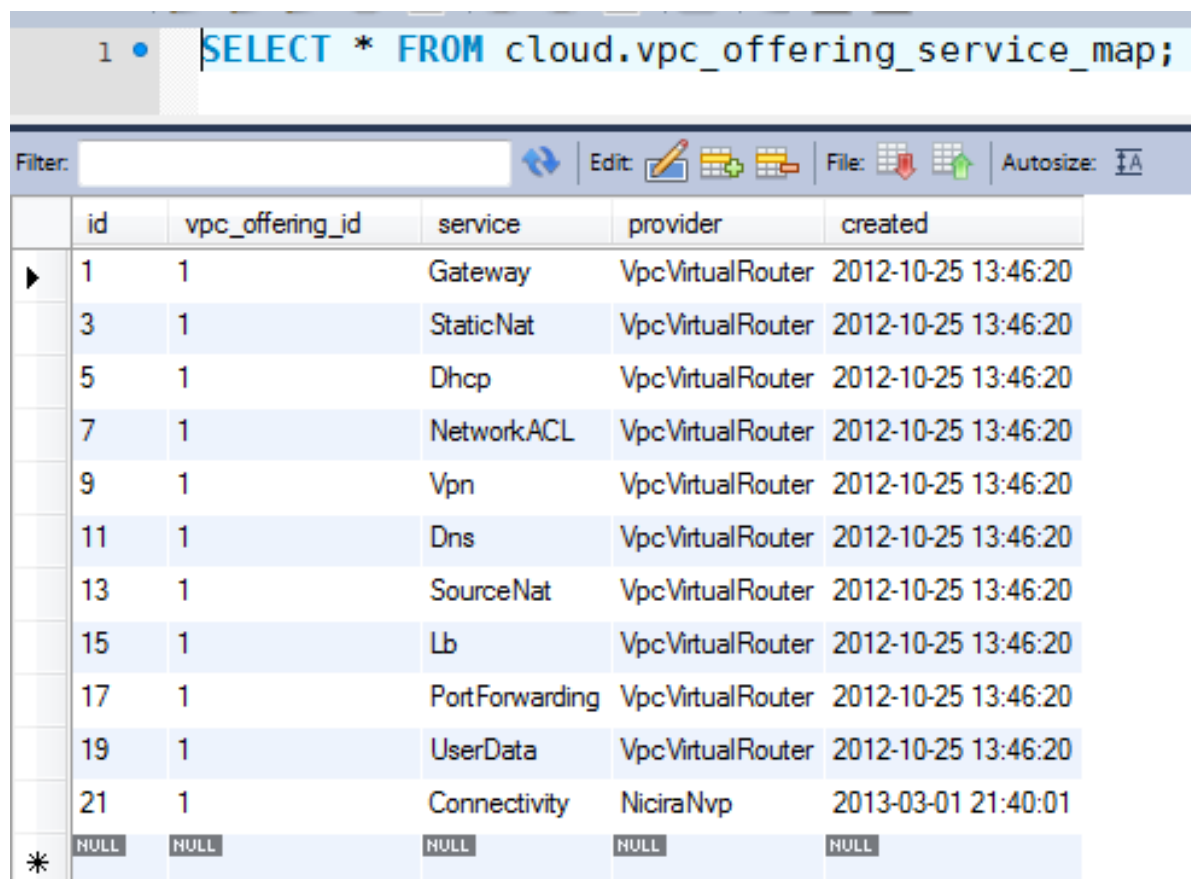
It is not possible to connect a private gateway using a Nicira NVP Logical Switch

## 3.2. VPC Offering with Nicira NVP

To allow a VPC to use the Nicira NVP plugin to provision networks, a new VPC offering needs to be created which allows the Virtual Networking service to be implemented by NiciraNVP.

This is not currently possible with the UI. The API does provide the proper calls to create a VPC offering with Virtual Networking enabled. However due to a limitation in the 4.1 API it is not possible to select the provider for this network service. To configure the VPC offering with the NiciraNVP provider edit the database table 'vpc\_offering\_service\_map' and change the provider to NiciraNvp for the service 'Connectivity'

It is also possible to update the default VPC offering by adding a row to the 'vpc\_offering\_service\_map' with service 'Connectivity' and provider 'NiciraNvp'



The screenshot shows a database query tool interface. At the top, a SQL query is entered: `SELECT * FROM cloud.vpc_offering_service_map;`. Below the query, there is a toolbar with icons for Filter, Edit, File, and Autosize. The main area displays a table with the following data:

|   | id   | vpc_offering_id | service        | provider         | created             |
|---|------|-----------------|----------------|------------------|---------------------|
| ▶ | 1    | 1               | Gateway        | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 3    | 1               | StaticNat      | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 5    | 1               | Dhcp           | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 7    | 1               | NetworkACL     | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 9    | 1               | Vpn            | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 11   | 1               | Dns            | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 13   | 1               | SourceNat      | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 15   | 1               | Lb             | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 17   | 1               | PortForwarding | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 19   | 1               | UserData       | VpcVirtualRouter | 2012-10-25 13:46:20 |
|   | 21   | 1               | Connectivity   | NiciraNvp        | 2013-03-01 21:40:01 |
| * | NULL | NULL            | NULL           | NULL             | NULL                |



注意

When creating a new VPC offering please note that the UI does not allow you to select a VPC offering yet. The VPC needs to be created using the API with the offering UUID.

### 3.3. VPC Network Offerings

The VPC needs specific network offerings with the VPC flag enabled. Otherwise these network offerings are identical to regular network offerings. To allow VPC networks with a Nicira NVP isolated network the offerings need to support the Virtual Networking service with the NiciraNVP provider.

In a typical configuration two network offerings need to be created. One with the loadbalancing service enabled and one without loadbalancing.

表格 3.1. VPC Network Offering with Loadbalancing

| Service            | Provider         |
|--------------------|------------------|
| VPN                | VpcVirtualRouter |
| DHCP               | VpcVirtualRouter |
| DNS                | VpcVirtualRouter |
| Load Balancer      | VpcVirtualRouter |
| User Data          | VpcVirtualRouter |
| Source NAT         | VpcVirtualRouter |
| Static NAT         | VpcVirtualRouter |
| Post Forwarding    | VpcVirtualRouter |
| NetworkACL         | VpcVirtualRouter |
| Virtual Networking | NiciraNVP        |

# Nicira NVP插件疑難雜症

## 4.1. UUID相關文件

插件維持多個CloudStack 資料庫的引用到建立在NVP Controller物件

每個訪客網路會有自己的廣播形式，設定在 Lswitch。如果網路在"Implemented"狀態，廣播URI會得到邏輯交換器的UUID

連結到其中一個邏輯交換器的Nics，會有自己的邏輯交換通訊埠UUID，列在nicira\_nvp\_nic\_map表



### 注意

所有建在 NVP Controller的裝置，會有標籤連結到擁有者的網域帳戶，此字串可以用來搜尋NVP Controller中的物件

## 4.2. 資料庫表格

以下表格是為Nicira NVP插件而加到雲端資料庫

表格 4.1. nicira\_nvp\_nic\_map

|                   |   |
|-------------------|---|
| id                | auto incrementing id  |
| logicalswitch     | uuid of the logical switch this port is connected to          |
| logicalswitchport | uuid of the logical switch port for this nic                  |
| nic               | the CloudStack uuid for this nic, reference to the nics table |

表格 4.2. external\_nicira\_nvp\_devices

|                     |   |
|---------------------|---|
| id                  | auto incrementing id                                      |
| uuid                | UUID identifying this device                              |
| physical_network_id | the physical network this device is configured on         |
| provider_name       | NiciraNVP   |
| device_name         | display name for this device                              |
| host_id             | reference to the host table with the device configuration |

表格 4.3. nicira\_nvp\_router\_map

|                    |  |
|--------------------|--|
| id                 | auto incrementing id                       |
| logicalrouter_uuid | uuid of the logical router                 |
| network_id         | id of the network this router is linked to |



注意

`nicira_nvp_router_map` is only available in CloudStack 4.1 and above



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## 附錄 A. 修訂記錄

修訂 0-0      Wed Oct 03 2012      Hugo Trippaers [hugo@apache.org](mailto:hugo@apache.org)  
文件為NVP Plugin 4.0.0-incubating 版本製作

修訂 1-0      Wed May 22 2013      Hugo Trippaers [hugo@apache.org](mailto:hugo@apache.org)  
Documentation updated for CloudStack 4.1.0

