

使用SNMP，如何添加，修改和去除在Catalyst的VLANs

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[简介](#)

使用简单网络管理协议(SNMP)的本文描述如何创建和删除在Cisco Catalyst交换机的VLAN。它如何也描述添加端口对与SNMP的VLAN。

[先决条件](#)

[要求](#)

在您使用本文档中的信息前，请保证您了解：

- ifTable和IfIndex如何工作
- VLAN如何在思科Catalyst交换机工作
- 如何查看关于思科Catalyst交换机的VLAN信息
- SNMP一般用途获得，设置，并且走命令

[组件](#)

本文是为运行正常Catalyst OS或Catalyst IOS支持IF-MIB、CISCO-VTP-MIB和CISCO-VLAN-

MEMBERSHIP-MIB的Catalyst交换机。本文档中的信息基于以下软件和硬件版本：

- 运行CatIOS 12.0(5)WC5a的Catalyst 3524XL
- NET-SNMP在<http://www.net-snmp.org/>的版本5.0.6联机

本文档中的信息都是基于特定实验室环境中的设备创建的。本文档中使用的所有设备最初均采用原始（默认）配置。如果在真实网络工作，在您使用所有命令前请确保您了解任何命令潜在影响。

[规则](#)

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

[背景](#)

[MIB变量的详细信息—包括对象标识符\(OIDs\)](#)

1.3.6.1.4.1.9.9.46.1.3.1.1.2 (CISCO-VTP-MIB)

vtpVlanState OBJECT-TYPE

```
SYNTAX      INTEGER { operational(1),
                    suspended(2),
                    mtuTooBigForDevice(3),
                    mtuTooBigForTrunk(4) }
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION "The state of this VLAN.

The state 'mtuTooBigForDevice' indicates that this device cannot participate in this VLAN because the VLAN's MTU is larger than the device can support.

The state 'mtuTooBigForTrunk' indicates that while this VLAN's MTU is supported by this device, it is too large for one or more of the device's trunk ports."

```
::= { vtpVlanEntry 2 }
```

1.3.6.1.4.1.9.9.46.1.4.1.1.1 (CISCO-VTP-MIB)

vtpVlanEditOperation OBJECT-TYPE

```
SYNTAX      INTEGER { none(1),
                    copy(2),
                    apply(3),
                    release(4),
                    restartTimer(5)
                    }
```

MAX-ACCESS read-create

STATUS current

DESCRIPTION "This object always has the value 'none' when read. When written, each value causes the appropriate action:

'copy' - causes the creation of rows in the vtpVlanEditTable exactly corresponding to the current global VLAN information for this management domain. If the Edit Buffer (for this management domain) is not currently empty, a copy operation fails. A successful copy operation starts the deadman-timer.

'apply' - first performs a consistent check on the the modified information contained in the Edit Buffer, and if consistent, then tries to instanciate the modified information as the new global VLAN information. Note that an empty Edit Buffer (for the management domain) would always result in an inconsistency since the default VLANs are required to be present.

'release' - flushes the Edit Buffer (for this management domain), clears the Owner information, and aborts the deadman-timer. A release is generated automatically if the deadman-timer ever expires.

'restartTimer' - restarts the deadman-timer.

'none' - no operation is performed."

::= { vtpEditControlEntry 1 }

1.3.6.1.4.1.9.9.46.1.4.1.1.3 (CISCO-VTP-MIB)

vtpVlanEditBufferOwner OBJECT-TYPE

SYNTAX OwnerString

MAX-ACCESS read-create

STATUS current

DESCRIPTION "The management station which is currently using the Edit Buffer for this management domain. When the Edit Buffer for a management domain is not currently in use, the value of this object is the zero-length string. Note that it is also the zero-length string if a manager fails to set this object when invoking a copy operation."

::= { vtpEditControlEntry 3 }

1.3.6.1.4.1.9.9.46.1.4.2.1.11 (CISCO-VTP-MIB)

vtpVlanEditRowStatus OBJECT-TYPE

SYNTAX RowStatus

1:active

2:notInService

3:notReady

4:createAndGo

5:createAndWait

6:destroy

MAX-ACCESS read-create

STATUS current

DESCRIPTION "The status of this row. Any and all columnar objects in an existing row can be modified irrespective of the status of the row.

A row is not qualified for activation until instances of at least its vtpVlanEditType, vtpVlanEditName and vtpVlanEditDot10Said columns have appropriate values.

The management station should endeavor to make all rows consistent in the table before 'apply'ing the buffer. An inconsistent entry in the table will cause the entire buffer to be rejected with the vtpVlanApplyStatus object set to the appropriate error value."

::= { vtpVlanEditEntry 11 }

1.3.6.1.4.1.9.9.46.1.4.2.1.3.1.48 (CISCO-VTP-MIB)

vtpVlanEditType OBJECT-TYPE

SYNTAX VlanType

MAX-ACCESS read-create

STATUS current
DESCRIPTION "The type which this VLAN would have.
An implementation may restrict access to this object."
DEFVAL { ethernet }
::= { vtpVlanEditEntry 3 }

1.3.6.1.4.1.9.9.46.1.4.2.1.4.1.48 (CISCO-VTP-MIB)

vtpVlanEditName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..32))
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The name which this VLAN would have. This name would be
used as the ELAN-name for an ATM LAN-Emulation segment of
this VLAN.

An implementation may restrict access to this object."
::= { vtpVlanEditEntry 4 }

1.3.6.1.4.1.9.9.46.1.4.2.1.6.1.48 (CISCO-VTP-MIB)

vtpVlanEditDot10Said OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (4))
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The value of the 802.10 SAID field which would be used for
this VLAN.

An implementation may restrict access to this object."
::= { vtpVlanEditEntry 6 }

1.3.6.1.4.1.9.9.46.1.4.1.1.2.1 (CISCO-VTP-MIB)

vtpVlanApplyStatus OBJECT-TYPE
SYNTAX INTEGER { inProgress(1),
succeeded(2),
configNumberError(3),
inconsistentEdit(4),
tooBig(5),
localNVStoreFail(6),
remoteNVStoreFail(7),
editBufferEmpty(8),
someOtherError(9)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The current status of an 'apply' operation to instantiate
the Edit Buffer as the new global VLAN information (for this
management domain). If no apply is currently active, the
status represented is that of the most recently completed
apply. The possible values are:

inProgress - 'apply' operation in progress;

succeeded - the 'apply' was successful (this value is
also used when no apply has been invoked since the
last time the local system restarted);

configNumberError - the apply failed because the value of
vtpVlanEditConfigRevNumber was less or equal to
the value of current value of
managementDomainConfigRevNumber;

inconsistentEdit - the apply failed because the modified

```

information was not self-consistent;

tooBig - the apply failed because the modified
information was too large to fit in this VTP
Server's non-volatile storage location;

localNVStoreFail - the apply failed in trying to store
the new information in a local non-volatile
storage location;

remoteNVStoreFail - the apply failed in trying to store
the new information in a remote non-volatile
storage location;

editBufferEmpty - the apply failed because the Edit
Buffer was empty (for this management domain).

someOtherError - the apply failed for some other reason
(e.g., insufficient memory)."
 ::= { vtpEditControlEntry 2 }

```

1.3.6.1.4.1.9.9.68.1.2.2.1.2 (CISCO-VLAN-MEMBERSHIP-MIB)

```

vmVlan OBJECT-TYPE
    SYNTAX      INTEGER(0..4095)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The VLAN id of the VLAN the port is assigned to
        when vmVlanType is set to static or dynamic.
        This object is not instantiated if not applicable.

        The value may be 0 if the port is not assigned
        to a VLAN.

        If vmVlanType is static, the port is always
        assigned to a VLAN and the object may not be
        set to 0.

        If vmVlanType is dynamic the object's value is
        0 if the port is currently not assigned to a VLAN.
        In addition, the object may be set to 0 only."
    ::= { vmMembershipEntry 2 }

```

[添加VLAN到有SNMP的Cisco Catalyst交换机](#)

[逐步指导](#)

在如下所示的示例中，VLAN11被添加到交换机：

1. 为了检查哪些VLAN在交换机当前配置，请发出在vtpVlanState OID的一snmpwalk：注意：在OID的最后编号是VLAN号。

```

snmpwalk -c public crumpy vtpVlanState
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1
.1 : INTEGER: operational
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1
.48 : INTEGER: operational
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1

```

```
.1002 : INTEGER: operational
```

2. 如果版本由另一个NMS工作站或设备，是在使用中的请验证。如果看到此消息，版本不是在使用中的：MIB：

```
snmpwalk -c public crumpy vtpVlanEditTable
no MIB objects contained under subtree.
```

3. 版本不是在使用中的，因此开始编辑是安全的。设置vtpVlanEditOperation为复制状态(整数2)。这允许您创建VLAN。

```
snmpset -c private crumpy vtpVlanEditOperation.1 integer 2
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpEditControlTable.vtpEditControlEntry.
vtpVlanEditOperation.1 : INTEGER: copy
```

4. 为了使当前所有者编辑权限可视，您能设置所有者，当您发出命令时，vtpVlanEditBufferOwner。

```
snmpset -c private crumpy vtpVlanEditBufferOwner.1 octetstring "Gerald"
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpEditControlTable.vtpEditControlEntry.
vtpVlanEditBufferOwner.1 : OCTET STRING- (ascii): Gerald
```

5. 此示例显示如何验证表存在：

```
snmpwalk -c public crumpy vtpVlanEditTable
vtpVlanEditState.1.1 : INTEGER: operational
vtpVlanEditState.1.2 : INTEGER: operational
vtpVlanEditState.1.3 : INTEGER: operational
..
```

6. 此示例是VLAN11并且显示您如何创建行和设置类型和名称：

```
snmpset -c private crumpy vtpVlanEditRowStatus.1.11 integer 4
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpVlanEditTable.vtpVlanEditEntry.vtpVla
nEditRowStatus.1.11 : INTEGER: createAndGo
```

```
snmpset -c private crumpy vtpVlanEditType.1.11 integer 1
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpVlanEditTable.vtpVlanEditEntry.vtpVla
nEditType.1.11 : INTEGER: ethernet
```

```
snmpset -c private crumpy vtpVlanEditName.1.11 octetstring "test_11_gerald"
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpVlanEditTable.vtpVlanEditEntry.vtpVla
nEditName.1.11 : DISPLAY STRING- (ascii): test_11_gerald
```

7. 设置vtpVlanEditDot10Said。这是VLAN号+ 100000翻译对十六进制。此示例创建VLAN11，因此vtpVlanEditDot10Said应该是：11 + 100000 = 100011 ->十六进制：000186AB

```
snmpset -c private crumpy vtpVlanEditDot10Said.1.11 octetstringhex 000186AB
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpVlanEditTable.vtpVlanEditEntry.vtpVlanEditDot10Said.1.11 : OCTET STRING- (hex): length = 4
0: 00 01 86 ab -- -- -- -- -- -- -- -- -- -- .....
```

8. 当您有创建的VLAN 11时，您必须应用修改。再请使用vtpVlanEditOperation OID。这次使用应用确认设置：

```
snmpset -c private crumpy vtpVlanEditOperation.1 integer 3
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpEditControlTable.vtpEditControlEntry.vtpVlanEditOperation.1 : INTEGER: apply
```

9. 验证VLAN顺利地创建。请使用OID `vtpVlanApplyStatus`。请检查进程，直到状态读：

```
snmpget -c public crumpy vtpVlanApplyStatus.1
vtpVlanApplyStatus.1 : INTEGER: inProgress
snmpget -c public crumpy vtpVlanApplyStatus.1
vtpVlanApplyStatus.1 : INTEGER: inProgress
snmpget -c public crumpy vtpVlanApplyStatus.1
vtpVlanApplyStatus.1 : INTEGER: succeeded
```

10. 上一操作是做修改和发布权限，以便其他用户能从他们的NMS添加，修改或者删除VLAN。

```
snmpset -c private crumpy vtpVlanEditOperation.1 integer 4
vtpVlanEditOperation.1 : INTEGER: release
```

11. 验证缓冲区是空的：

```
snmpwalk -c public crumpy vtpVlanEditTable
no MIB objects contained under subtree.
```

12. 验证VLAN11在交换机创建有CLI命令`show VLAN`的或有`snmpwalk`的：

```
snmpwalk -c public crumpy vtpVlanState
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.1 : INTEGER: operational
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.11 : INTEGER: operational
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.48 : INTEGER: operational
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.1002 : INTEGER: operational
...
```

添加VLAN到有SNMP的Cisco Catalyst交换机

一个步骤说明

这一步骤进程使用OID编号而不是OID名称类似上一个逐步进程。请参阅[MIB详细信息](#)关于转换。此示例创建VLAN 6：

```
snmpset -c private crumpy 1.3.6.1.4.1.9.9.46.1.4.1.1.1.1 integer 2
1.3.6.1.4.1.9.9.46.1.4.1.1.3.1 octetstring "gcober"
```

```
snmpset -c private gooroo 1.3.6.1.4.1.9.9.46.1.4.2.1.11.1.6 integer 4
1.3.6.1.4.1.9.9.46.1.4.2.1.3.1.6 integer 1 1.3.6.1.4.1.9.9.46.1.4.2.1.4.1.6 octetstring "vlan6"
1.3.6.1.4.1.9.9.46.1.4.2.1.6.1.6 octetstringhex 000186A6 1.3.6.1.4.1.9.9.46.1.4.1.1.1.1 integer 3
```

```
snmpset -c private gooroo 1.3.6.1.4.1.9.9.46.1.4.1.1.1.1 integer 4
```

```
snmpwalk -c public crumpy 1.3.6.1.4.1.9.9.46.1.3.1.1.2
```

```
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.1 :  
INTEGER: operational  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.6 :  
INTEGER: operational  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1.11 :  
INTEGER: operational
```

注意：某些SNMP版本要求您在OID前使用a (。)在SNMP SET命令。

[删除从Cisco Catalyst交换机的VLAN有SNMP的](#)

[逐步指导](#)

在本例中VLAN 48从交换机删除。参考[添加VLAN到有SNMP的思科Catalyst](#)欲知更多信息。您删除VLAN和那个的此部分之间的差异您添加VLAN的地方是您使用**毁坏**而不是**CreateAndGo**命令 **vtpVlanEditRowStatus** :

1. 发出命令删除VLAN 48 :

```
snmpset -c private crumpy vtpVlanEditOperation.1 integer 2  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpEditControlTable.vtpEditControlEntry.  
vtpVlanEditOperation.1 : INTEGER: copy  
snmpset -c private crumpy vtpVlanEditRowStatus.1.48 integer 6  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanEdit.vtpVlanEditTable.vtpVlanEditEntry.vtpVla  
nEditRowStatus.1.48 : INTEGER: destroy
```

2. 要验证VLAN 48删除，请使用**vtpVlanState**或**show VLAN**在CLI :

```
snmpwalk -c public crumpy vtpVlanState  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1  
.1 : INTEGER: operational  
cisco.ciscoMgmt.ciscoVtpMIB.vtpMIBObjects.vlanInfo.vtpVlanTable.vtpVlanEntry.vtpVlanState.1  
.1002 : INTEGER: operational  
...
```

[添加端口到在Cisco Catalyst交换机的VLAN有SNMP的](#)

此示例如何显示添加端口快速以太网0/5到VLAN 48。

1. 要验证的IfIndex快速Eth 0/5有，请发出**ifDescr snmpwalk** :

```
snmpwalk -c public crumpy ifDescr  
...  
interfaces.ifTable.ifEntry.ifDescr.6 : DISPLAY STRING- (ascii): FastEthernet0/5  
...
```

2. 因为您知道端口快速Eth 0/5有IfIndex 6，请添加端口到VLAN 48 :

```
snmpset -c private crumpy vmVlan.6 integer 48
```



```

1    default                                active    Fa0/1, Fa0/2, Fa0/4, Fa0/5,
                                           Fa0/6, Fa0/7, Fa0/8, Fa0/9,
                                           Fa0/10, Fa0/11, Fa0/12, Fa0/13,
                                           Fa0/14, Fa0/15, Fa0/16, Fa0/17,
                                           Fa0/18, Fa0/19, Fa0/20, Fa0/21,
                                           Fa0/22, Fa0/23, Fa0/24, Gi0/1,
                                           Gi0/2
48   VLAN0048                              active    Fa0/3

```

在更改以后：

```

crumpy#sh vlan
VLAN Name                                Status    Ports
-----
1    default                                active    Fa0/1, Fa0/2, Fa0/3, Fa0/4,
                                           Fa0/5, Fa0/6, Fa0/7, Fa0/8,
                                           Fa0/9, Fa0/10, Fa0/11, Fa0/12,
                                           Fa0/13, Fa0/14, Fa0/15, Fa0/16,
                                           Fa0/17, Fa0/18, Fa0/19, Fa0/20,
                                           Fa0/21, Fa0/22, Fa0/23, Fa0/24,
                                           Gi0/1, Gi0/2
48   VLAN0048                              active

```

注意： 您能做其他变动，例如VLAN名称，所有者和更多。欲了解更详细的信息参考整个MIB在OID。

[相关信息](#)

- [技术支持 - Cisco Systems](#)