

**DCFabric SDN控制器**

**北向接口文档**

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# 文档修订记录

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **版本编号** | **修订原因** | **简要说明**  **（变更内容和变更范围）** | **日期** | **变更人** | **批准日期** | **批准人** |
| V1.0 | 创建 | 首次创建 | 2014-04-13 | 薛秋宝 |  |  |
| V1.1 | 增加 | 增加角色配置、meter表、group表等内容 | 2014-07-20 | 薛秋宝 |  |  |
| V1.2 | 增加 | 增加与openstack对接的接口 | 2014-09-17 | 薛秋宝 |  |  |
| V1.3.7 | 增加 | 增加多租户接口  增加静态流表修改接口  增加静态流表删除接口 | 2014-11-24 | 邓超 |  |  |
| V2.0.0 | 重构 | DCFabric代码重构 | 2015-2-28 | 邓超 |  |  |
| V2.0.1 | 修改 | DCFabric接口文档修正 | 2015-5-15 | 邓超 |  |  |
| V2.0.2 | 修改 | DCFabric接口文档修正 | 2015-5-24 | 赵良智 |  |  |
| V2.0.3 | 修改 | DCFabric接口文档修正 | 2018-7-03 | 杨才远 |  |  |

**修订原因：**创建；增加；修改；删除

# 文档审批信息

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **序号** | **审批人** | **角色** | **审批日期** | **签字** | **备注** |
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# 简介

## 编写目的

本文旨在辅助开发人员通过北向接口二次开发SDN控制器

## 读者对象

本文档预期读者包括：

* 数据中心SDN控制器开发项目管理和开发相关人员
* 系统需求组、系统架构组、系统设计组
* 管理员、运营维护人员

## 文档约定

本手册所有描述适用于x86架构64位CentOS 6.5版本或x86 GNOS系统，如非必须，用于部署数据中心SDN控制器的服务器不得有部署其他非OS自带的第三方服务，否则需要重新评估能否正常兼容安装本数据中心SDN控制器。本文下文中所描述的安装部署服务器均默认符合此约定。

如果使用本手册遇到问题请联系相关人员。

## 北向接口说明

接口方式： Restful接口

数据格式：JSON格式（暂不支持XML格式）

通信协议： HTTP

请求方法： GET、POST、PUT、DELETE

通信端口: 8081（默认为8081，控制器支持可配置）

例如：[GET] [http://192.168.52.80:8081/gn/switchinfo/json](http://10.8.1.168:8080/gn/switchinfo/json)

## 术语定义

|  |  |  |
| --- | --- | --- |
| **术语和缩写** | **全拼** | **解释** |
|  |  |  |
|  |  |  |

# 交换机信息

## 交换机信息查询

|  |  |
| --- | --- |
| URI | /gn/switchinfo/json |
| 请求方式 | GET |
| 请求报文 | N/A |
| 响应报文 | {  "switchInfo": [  {  "DPID": "交换机Datapath ID",  "inetAddr": "交换机连接地址",  "mfrDesc": "厂商信息",  "hwDesc": "硬件信息",  "swDesc": "软件信息",  "serialNum": "序列号",  "dpDesc": "datapath描述",  "buffers": "buffer个数",  "ports": [  {  "name": "名称",  "state": "状态",  "hwAddr": "硬件地址",  "portNo": "端口号",  "config": "端口配置bitmap",  "currentFeature": "Current features",  "advertisedFeatrues": "Features being advertised by the port",  "supportedFeatures": "Features supported by the port",  "peerFeatures": "Features advertised by peer"  }  ],  "openflow": "OpenFlow版本号",  "connectedSince": "连接建立时间"  }  ],  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 单个交换机信息查询

|  |  |
| --- | --- |
| URI | /gn/switch/json/xx:xx:xx:xx:xx:xx:xx:xx (交换机dpid) |
| 请求方式 | GET |
| 请求报文 | N/A |
| 响应报文 | {  "DPID": "交换机Datapath ID",  "inetAddr": "交换机连接地址",  "mfrDesc": "厂商信息",  "hwDesc": "硬件信息",  "swDesc": "软件信息",  "serialNum": "序列号",  "dpDesc": "datapath描述",  "buffers": "buffer个数",  "openflow": "OpenFlow版本号",  "connectedSince": "连接建立时间"    "retCode": "返回码",  "retMsg": "返回消息"  } |

# 拓扑管理

## 交换机拓扑查询

|  |  |
| --- | --- |
| URI | /gn/topo/links/json |
| 请求方式 | GET |
| 请求报文 | N/A |
| 响应报文 | {  "linkTopo": [  {  "srcDPID": "源交换机DPID",  "neighbors": [  {  "srcPort": "源交换机端口",  "dstDPID": "目的交换机DPID",  "dstPort": "目的交换机端口"  }  ]  }  ] ,  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 主机拓扑查询

|  |  |
| --- | --- |
| URI | /gn/topo/hosts/json |
| 请求方式 | GET |
| 请求报文 | N/A |
| 响应报文 | {  "hostTopo": [  {  "srcDPID": "源端DPID",  "ports": [  {  "portNo": "端口号",  "hosts": [  {  "hwAddr": "MAC地址",  "ipv4Addr": "IPv4地址",  "ipv6Addr": "IPv6地址"  }  ]  }  ],  "total": "总用户数"  }  ] ,  "retCode": "返回码",  "retMsg": "返回消息"  } |

# Flow表管理

参数取值说明：

|  |  |  |
| --- | --- | --- |
| **参数** | **参数说明** | **取值说明** |
| type | Group类型 | All, Select, Indirect, FF |
| ethType | 以太网类型 | ARP, IPV4, IPV6, MPLS, VLAN, |
| ipProto | IP协议类型 | TCP, UDP, ICMP |
| arpOp | ARP协议类型 | Request, Reply |
|  |  |  |

## 查询所有流表

|  |  |
| --- | --- |
| URI | /gn/flows/all/json |
| 请求方式 | GET |
| 请求报文 | {  } |
| 响应报文 | {  " switchFlowEntries ": [  {  "DPID": "交换机Datapath ID",  "flowEntries": [  {  "uuid": "流表唯一标识",  "creater": "创建者",  "createTime": "创建时间",  "tableId": "表号[Default: 0]",  "idleTimeout": "空闲超时时间[Default: 200]",  "hardTimeout": "硬性超时时间[Default: 200]",  "priority": "优先级",  "match": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": " ARP目的IP",  "arpSha": " ARP发送方MAC ",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  },  "instruction": {  "applyAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "writeAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "clearAction": "表示清空所有Action[无需赋值]",  "gotoTable": "table ID",  "meter": "计量表ID"  }  }  ]  }  ]  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 删除所有流表

|  |  |
| --- | --- |
| URI | /gn/flows/all/json |
| 请求方式 | DELETE |
| 请求报文 | {  "DPID": "交换机Datapath ID"  } |
| 响应报文 | {  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 查询单个交换机流表

|  |  |
| --- | --- |
| URI | /gn/flow/json/xx:xx:xx:xx:xx:xx:xx:xx (xx:xx:xx:xx:xx:xx:xx:xx为交换机DPID) |
| 请求方式 | GET |
| 请求报文 | {  } |
| 响应报文 | {  " switchFlowEntries ": [  {  "DPID": "交换机Datapath ID",  "flowEntries": [  {  "uuid": "流表唯一标识",  "creater": "创建者",  "createTime": "创建时间",  "tableId": "表号[Default: 0]",  "idleTimeout": "空闲超时时间[Default: 200]",  "hardTimeout": "硬性超时时间[Default: 200]",  "priority": "优先级",  "match": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": " ARP目的IP",  "arpSha": " ARP发送方MAC ",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  },  "instruction": {  "applyAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "writeAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "clearAction": "表示清空所有Action[无需赋值]",  "gotoTable": "table ID",  "meter": "计量表ID"  }  }  ]  }  ]  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 新增流表

|  |  |
| --- | --- |
| URI | /gn/flow/json |
| 请求方式 | POST |
| 请求报文 | {  "DPID": "交换机Datapath ID",  "tableId": "表号[Default: 0]",  "idleTimeout": "空闲超时时间[Default: 200]",  "hardTimeout": "硬性超时时间[Default: 200]",  "priority": "优先级",  "match": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  },  "instruction": {  "applyAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "writeAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "clearAction": "表示清空所有Action[无需赋值]",  "gotoTable": "table ID",  "meter": "计量表ID"  }  } |
| 响应报文 | {  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 修改流表

|  |  |
| --- | --- |
| URI | /gn/flow/json |
| 请求方式 | PUT |
| 请求报文 | {  "DPID": "交换机Datapath ID",  "uuid": "流表唯一标识",  "instruction": {  "applyAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "writeAction": {  "output": "转出端口",  "pushVlan": "加VLAN标签",  "popVlan": "去VLAN标签",  "pushMpls": "加MPLS标签",  "popMpls": "去MPLS标签",  "group": "Group表ID",  "setField": {  "inport": "入口",  "ethDst": "以太网目的MAC",  "ethSrc": "以太网源MAC",  "ethType": "以太网类型",  "vlanId": "VLAN ID",  "vlanPcp": "VLAN优先级",  "ipDscp": "DSCP",  "ipEcn": "ECN",  "ipProto": "IP协议类型",  "ipv4Src": "ipv4源IP",  "ipv4Dst": "ipv4目的IP",  "tcpSrc": "TCP源端口",  "tcpDst": "TCP目的端口",  "udpSrc": "UDP源端口",  "udpDst": "UDP目的端口",  "arpOp": "ARP协议类型",  "arpSpa": "ARP发送方IP",  "arpTpa": "ARP发送方MAC",  "arpSha": "ARP目的IP",  "arpTha": "ARP目的MAC",  "mplsLabel": "MPLS标签"  }  },  "clearAction": "表示清空所有Action[无需赋值]",  "gotoTable": "table ID",  "meter": "计量表ID"  }  } |
| 响应报文 | {  "retCode": "返回码",  "retMsg": "返回消息"  } |

## 删除流表

|  |  |
| --- | --- |
| URI | /gn/flow/json |
| 请求方式 | DELETE |
| 请求报文 | {  "DPID": "交换机Datapath ID",  "uuid": "流表唯一标识"  } |
| 响应报文 | {  "retCode": "返回码",  "retMsg": "返回消息"  } |

# 流量统计

## 查询所有路径状态信息

|  |  |
| --- | --- |
| URI | /gn/path/status/json |
| 请求方式 | GET |
| 请求报文 | {  } |
| 响应报文 | {  "pathStatus": [  {  "srcDPID": "源端DPID",  "dstDPID": "目的DPID",  "status": "链路带宽使用情况"  }  ]  "retCode": "返回码",  "retMsg": "返回消息"  } |