



## 常用网络命令

# 常用网络工具

- ping
- Tracert
- Route
- ipconfig
- ✓ ARP
- ✓ Nbtstat
- ✓ Pathping
- ✓ net

# Ping简介

- **原理**：源站点向目的站点发送ICMP request报文,目的主机收到后回icmp repaly 报文.这么就验证了两个接点之间IP的可达性.
- **功能**：用ping 来判断两个接点在网络层的连通性.

# Ping使用措施

## 其他参数:

Ping -n 连续ping N个包

Ping -t 连续地Ping直到人为地中断,ctrl+breack临时终止Ping命令  
查看目前的统计成果,而ctrl+c则是中断命令的执行

Ping -l 指定每个ping 报文的所携带的数据部分字节数

```
C:\>ping -l 3000 -n 2 10.15.50.1
```

```
Pinging 10.15.50.1 with 3000 bytes of data
```

```
Reply from 10.15.50.1: bytes=3000 time=321ms TTL=123
```

```
Reply from 10.15.50.1: bytes=3000 time=297ms TTL=123
```

```
Ping statistics for 10.15.50.1:
```

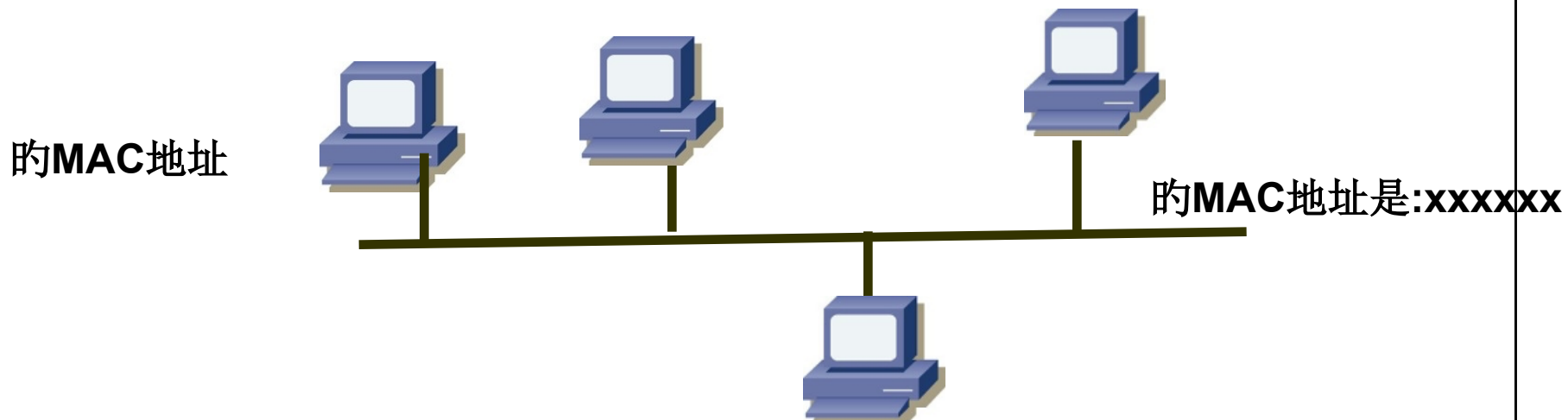
```
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 297ms, Maximum = 321ms, Average = 309ms
```

# ARP 地址解析协议

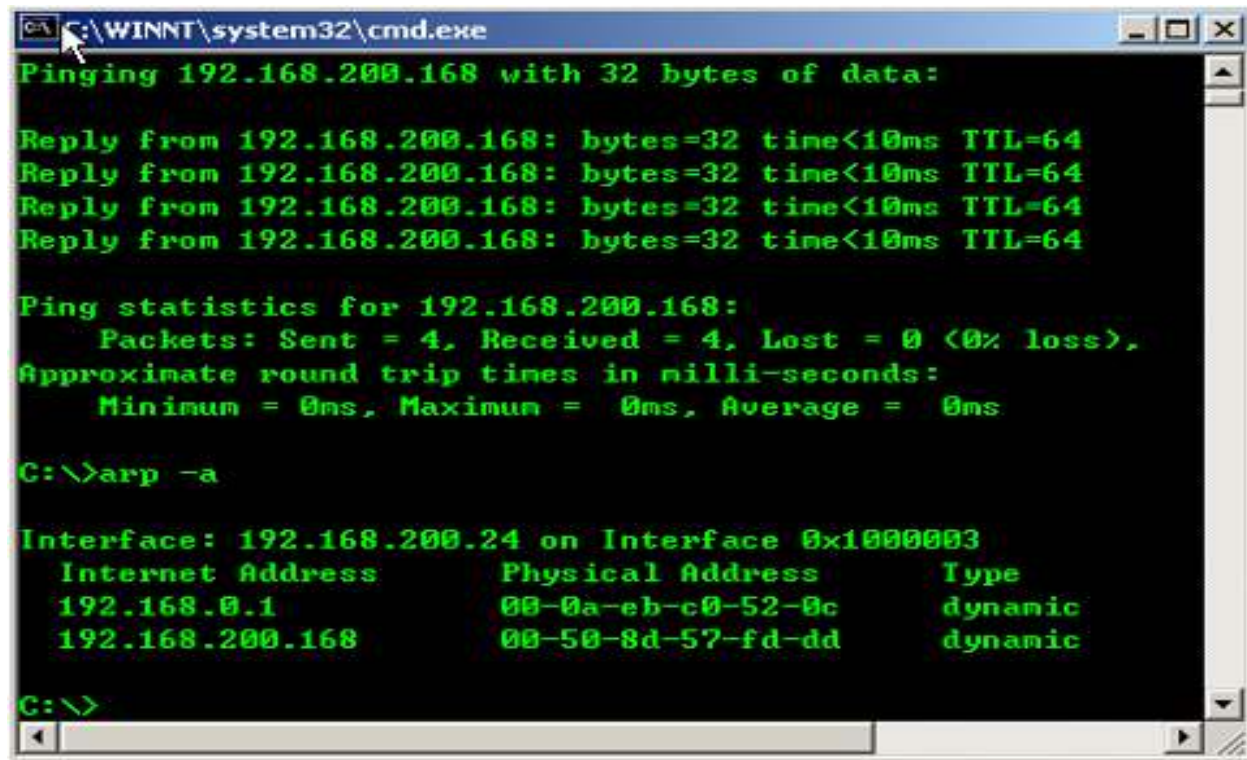
- **原理:**arp即地址解析协议,用于实现第三层到第二层地址的转换IP → MAC
- **功能:**显示和修改IP地址与MAC地址的之间映射.



# ARP使用措施

常用参数:

Arp -a :显示全部的ARP表项. 例



```
C:\WINNT\system32\cmd.exe
Pinging 192.168.200.168 with 32 bytes of data:

Reply from 192.168.200.168: bytes=32 time<10ms TTL=64
Reply from 192.168.200.168: bytes=32 time<10ms TTL=64
Reply from 192.168.200.168: bytes=32 time<10ms TTL=64
Reply from 192.168.200.168: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.200.168:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>arp -a

Interface: 192.168.200.24 on Interface 0x1000003
    Internet Address      Physical Address      Type
    192.168.0.1           00-0a-eb-c0-52-0c    dynamic
    192.168.200.168       00-50-8d-57-fd-dd    dynamic

C:\>
```

# ARP使用措施

## 其他参数:

Arp -s:在ARP缓存中添加一条统计.

```
C:\>Arp -s 126.13.156.2 02-e0-fc-fe-01-b9
```

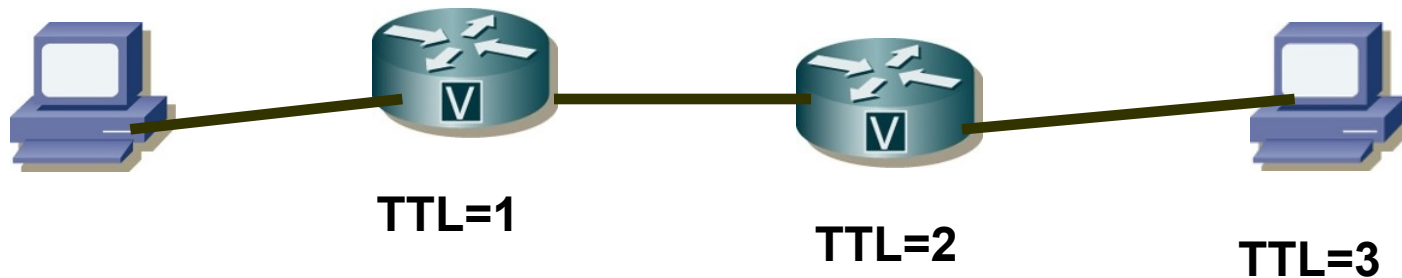
Arp -d:在ARP缓存中删除一条统计.

Arp -g:显示全部的表项

```
C:\>Arp -g
```

# Tracert 简介

- **原理:**tracert 是为了探测源节点到目的节点之间数据报文经过的途径.
- **功能:**探索两个节点的路由.





# Tracert使用措施

## 常用参数

```
c:\>tracert ip_address
```

```
C:\>tracert 10.15.50.1
```

```
Tracing route to 10.15.50.1
```

```
over a maximum of 30 hops:
```

|   |        |        |        |                     |
|---|--------|--------|--------|---------------------|
| 1 | 3 ms   | 2 ms   | 2 ms   | 10.110.40.1         |
| 2 | 14 ms  | 6 ms   | 3 ms   | 10.110.0.64         |
| 3 | 3 ms   | 4 ms   | 5 ms   | 10.110.7.254        |
| 4 | 157 ms | 219 ms | 209 ms | 10.3.0.177          |
| 5 | 222 ms | 204 ms | 128 ms | 129.9.181.254       |
| 6 | 151 ms | 194 ms | 167 ms | KJY-FS [10.15.50.1] |

```
Trace complete.
```

# Route简介

- **原理:** 路由是IP层的关键问题,路由表是TCP/IP协议栈所必须的关键数据构造,是IP选路的唯一根据.
- **功能:**route命令是操作, 维护路由表的主要工具.

# route 使用措施

## 常用参数:

Route print 查看路由表.

```
C:\>route print
```

```
-----  
Interface List
```

```
0x1 ..... MS TCP Loopback interface  
0x1000003 ...00 0d 61 94 b8 33 ..... NDIS 5.0 driver  
  
-----  
-----
```

```
Active Routes:
```

| Network Destination | Netmask         | Gateway        | Interface      | Metric |
|---------------------|-----------------|----------------|----------------|--------|
| 0.0.0.0             | 0.0.0.0         | 192.168.0.1    | 192.168.200.24 | 1      |
| 127.0.0.0           | 255.0.0.0       | 127.0.0.1      | 127.0.0.1      | 1      |
| 192.168.0.0         | 255.255.0.0     | 192.168.200.24 | 192.168.200.24 | 1      |
| 192.168.200.24      | 255.255.255.255 | 127.0.0.1      | 127.0.0.1      | 1      |
| 192.168.200.255     | 255.255.255.255 | 192.168.200.24 | 192.168.200.24 | 1      |
| 224.0.0.0           | 224.0.0.0       | 192.168.200.24 | 192.168.200.24 | 1      |
| 255.255.255.255     | 255.255.255.255 | 192.168.200.24 | 192.168.200.24 | 1      |

```
Default Gateway: 192.168.0.1  
-----
```

```
Persistent Routes:
```

```
None
```

# route 使用措施

Route add 增长一条路由统计.

```
C:\>route add 1.1.0.0 mask 255.255.0.0 10.110.41.20 metric 3
```

```
C:\>route print
```

Active Routes:

| Network Address | Netmask         | Gateway Address | Interface     | Metric |
|-----------------|-----------------|-----------------|---------------|--------|
| 0.0.0.0         | 0.0.0.0         | 10.110.40.1     | 10.110.45.249 | 1      |
| 1.1.0.0         | 255.255.0.0     | 10.110.41.20    | 10.110.45.249 | 3      |
| 10.110.40.0     | 255.255.248.0   | 10.110.45.249   | 10.110.45.249 | 1      |
| 10.110.45.249   | 255.255.255.255 | 127.0.0.1       | 127.0.0.1     | 1      |
| 10.255.255.255  | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |
| 127.0.0.0       | 255.0.0.0       | 127.0.0.1       | 127.0.0.1     | 1      |
| 224.0.0.0       | 224.0.0.0       | 10.110.45.249   | 10.110.45.249 | 1      |
| 255.255.255.255 | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |

# route 使用措施

Route delete 删除一条路由统计.

```
C:\>route print
```

```
Active Routes:
```

| Network Address | Netmask         | Gateway Address | Interface     | Metric |
|-----------------|-----------------|-----------------|---------------|--------|
| 0.0.0.0         | 0.0.0.0         | 10.110.40.1     | 10.110.45.249 | 1      |
| 10.110.40.0     | 255.255.248.0   | 10.110.45.249   | 10.110.45.249 | 1      |
| 10.110.45.249   | 255.255.255.255 | 127.0.0.1       | 127.0.0.1     | 1      |
| 10.255.255.255  | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |
| 127.0.0.0       | 255.0.0.0       | 127.0.0.1       | 127.0.0.1     | 1      |
| 224.0.0.0       | 224.0.0.0       | 10.110.45.249   | 10.110.45.249 | 1      |
| 255.255.255.255 | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |

# route 使用措施

Route -p add 永久地增长一条路由统计(重起后不丢失)

```
C:\>route -p add 1.1.1.1 mask 255.255.255.255 10.110.41.20 metric 4
```

```
C:\>route print
```

```
Active Routes:
```

| Network Address | Netmask         | Gateway Address | Interface     | Metric |
|-----------------|-----------------|-----------------|---------------|--------|
| 0.0.0.0         | 0.0.0.0         | 10.110.40.1     | 10.110.45.249 | 1      |
| 1.1.1.1         | 255.255.255.255 | 10.110.41.20    | 10.110.45.249 | 4      |
| 10.110.40.0     | 255.255.248.0   | 10.110.45.249   | 10.110.45.249 | 1      |
| 10.110.45.249   | 255.255.255.255 | 127.0.0.1       | 127.0.0.1     | 1      |
| 10.255.255.255  | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |
| 127.0.0.0       | 255.0.0.0       | 127.0.0.1       | 127.0.0.1     | 1      |
| 224.0.0.0       | 224.0.0.0       | 10.110.45.249   | 10.110.45.249 | 1      |
| 255.255.255.255 | 255.255.255.255 | 10.110.45.249   | 10.110.45.249 | 1      |

# Nbtstat 命令简介

**Nbtstat**：是处理 NetBIOS 名称解析问题的有用工具。能够使用 **nbtstat** 命令删除或改正预加载的项目

**NETBIOS**名字分两种类型：

唯一名(UNIQUE)和组名(GROUP)。唯一名很好了解，就是说在同一子网上要独一无二；而组名的作用是能够实现多播数据通讯。

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