计算机网络课程设计总结报告

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# 实验三 网络访问服务器

## cgi脚本代码:

**Checkin.cgi**

#!/bin/sh

# http协议要求的头

echo "Content-type: text/plain"

echo ""

#

if [ "$REQUEST\_METHOD" = "GET" ] ; then

echo GET is not expected without https

exit # 要求使用POST方法，而不是GET

fi

#

echo "<html><head>"

#echo '<meta http-equiv="refresh" content="3; url=http://www.sdu.edu.cn/">'

echo "</head><body>"

echo "<pre>"

# 浏览器的IP地址

ip=$REMOTE\_ADDR

OIFS="$IFS"

IFS=\& # 使用'&'为分隔符（原来默认是空格、制表或新行）

read user passwd inout # 从stdin中读取form中的字段

IFS="$OIFS"

user=${user#username=} # 把开始的前缀'username='去掉

passwd=${passwd#password=} #

inout=${inout#inout=} #

echo "user, passwd and your ip is: $user $passwd $ip"

userconf='/etc/nasuser.list' # 否在/etc/$.conf中

grepstr="grep $userconf -e $user | grep $passwd" # | grep $ip"

userline=`$grepstr`

if [ -z "$userline" ] ; then

echo "invalid user" # 无效登录，退出

exit

fi

echo ok

echo "" #

#exit

if [ ${ip:4:1} == ":" ] ; then # 构造ip6tables命令 (没有nat怎么办？)

iptcmd1="/sbin/ip6tables -D FORWARD -s $ip/128 -j ACCEPT"

iptcmd2="/sbin/ip6tables -I FORWARD -s $ip/128 -j ACCEPT"

iptcmd3="/sbin/ip6tables -D FORWARD -d $ip/128 -j ACCEPT"

iptcmd4="/sbin/ip6tables -I FORWARD -d $ip/128 -j ACCEPT"

else

# 构造iptables命令

iptcmd1="/sbin/iptables -t nat -D PREROUTING -s $ip/32 -j ACCEPT"

iptcmd2="/sbin/iptables -t nat -I PREROUTING -s $ip/32 -j ACCEPT"

iptcmd3="/sbin/iptables -t filter -D FORWARD -s $ip/32 -o eth0 -j ACCEPT"

iptcmd4="/sbin/iptables -t filter -I FORWARD -s $ip/32 -o eth0 -j ACCEPT"

fi

echo 'before: ipv4'

/sbin/iptables --list -n | grep all

/sbin/iptables --list -n -t nat | grep all

echo 'before: ipv6'

/sbin/ip6tables --list -n | grep all

/sbin/ip6tables --list -n -t nat | grep all

echo ""

echo "action:"

echo $iptcmd1

res=`$iptcmd1`

echo $iptcmd3

res=`$iptcmd3`

if [ $inout == "I" ] ; then

echo $iptcmd2

res=`$iptcmd2`

echo $iptcmd4

res=`$iptcmd4`

fi

echo ""

echo 'after: ipv4'

/sbin/iptables --list -n | grep all

/sbin/iptables --list -n -t nat | grep all

echo 'after: ipv6'

/sbin/ip6tables --list -n | grep all

/sbin/ip6tables --list -n -t nat | grep all

#cat /etc/nasuser.list

echo "</pre>"

if [ $inout == "I" ] ; then

echo "<font color=red> <strong>如果出现某些可能的BUG，请关闭浏览器窗口并重新打开即可。</strong>"

fi

echo "</body></html>"

exit

### (1)网络结构和网卡配置

外网网卡接口eth0，能访问互联网。

内网网卡接口eth1，对内网提供DHCP和NAT服务。

cat /etc/network/interfaces

allow-hotplug eth0

iface eth0 inet static

address 211.87.235.73

netmask 255.255.255.0

gateway 211.87.235.1

dns-nameservers 202.194.15.12

#

allow-hotplug eth1

iface eth1 inet static

address 10.1.1.1

netmask 255.255.255.0

内网上用一个XP做测试机。

### (2)安装和配置DHCPD

aptitude install udhcpd

vi /etc/udhcpd.conf

start 10.1.1.2

end 10.1.1.254

interface eth1

option subnet 255.255.255.0

option router 10.1.1.1

option dns 202.194.15.12

/etc/init.d/dhcdbd restart

# --or--

/etc/init.d/udhcpd restart

### (3)开启NAT功能

echo 1 > /proc/sys/net/ipv4/ip\_forward

iptables -t nat -A POSTROUTING -s 10.1.0.0/16 -o eth0 -j MASQUERADE

iptables -t nat -D POSTROUTING -s 10.1.0.0/16 -o eth0 -j MASQUERADE

### (4)NAS访问控制

cat /etc/rc.local

…

echo 1 > /proc/sys/net/ipv4/ip\_forward

iptables -t filter -A FORWARD -s 10.1.0.0/16 -d 202.194.15.12/32 -j ACCEPT

iptables -t filter -A FORWARD -s 10.1.0.0/16 -o eth0 -j REJECT

iptables -t nat -A PREROUTING -s 10.1.0.0/16 -p tcp -j DNAT --to 10.1.1.1

iptables -t nat -A POSTROUTING -s 10.1.0.0/16 -o eth0 -j MASQUERADE

#iptables -t nat -I PREROUTING -s 10.x.y.z/32 -j ACCEPT

#iptables -t filter -I FORWARD -s 10.x.y.z/32 -o eth0 -j ACCEPT

取消全部iptable规则的命令：

iptables -t nat -F

iptables -t filter -F

iptables -t mangle -F

### （5）准备登录页面

aptitude install apache2

vi /var/www/index.html

<html><head>

<meta http-equiv="refresh" content="0; url=http://10.1.1.1/login.htm">

</head>

<body><h1>It works!</h1></body>

</html>

cat /var/www/login.htm

## （6）登录处理

## /cgi-bin/checkin.cgi(/usr/lib/cgi-bin)

chmod +s `which iptables`

chmod +x /usr/lib/cgi-bin/checkin.cgi

准备用户及其口令：

cat /etc/nasuser.list

cngi passwd

user1 passwd

user2 passwd

user3 passwd

## 网页代码：

**Index.html**

<html><head>

<meta http-equiv="refresh" content="0; url=http://10.1.1.1/login.htm">

</head>

<body><h1>It works!</h1></body>

</html>

**Login.html**

<html><title>请登录</title><body>

<form name=form1 method=post action="/cgi-bin/checkin.cgi">

<br>

用户名：<INPUT TYPE="text" NAME="username" value="user1">

<br><br>

口　令：<INPUT TYPE="password" NAME="password" value="passwd">

<br><br>

<INPUT type="radio" CHECKED value="I" name=inout><LABEL>登录</LABEL>

<INPUT type="radio" value="D" name=inout><LABEL>注销</LABEL>

<br><br>

　　　　<INPUT TYPE="submit" VALUE="提　交">

</form>

<br>

<a href="http://[2001:da8:7001:18::10.1.1.1]/login.htm">IPv6登录(testing)</a>

</body></html>

**Redir.html**

<html><head>

<meta http-equiv="refresh" content="0; url=http://10.1.1.1/login.htm">

</head>

<body>wait 0 second...<br>稍候。。。</body>

</html>