

# ! " # \$ % & ' ( ) \* + # \$ \* & , & FreeBSD +- . , &- / 0 &\* 1 \$ ' - ' 2 Linux"

! " " # \$ % & ' (

) \$ # \$ \* # + , - . " \$ / 0 . \* " % 1 " % 2 . " \* 3 ( 4 5 6 \$ 0 # 7 # # 1 " % + # - 3 . " ' ( 6 # 6 " # 8 % - ' FreeBSD / # 3 9 1 # 8 % \$ . 3 . : Linux" 6 0 . \* " . 7 # ' / 0 # \* 8 ' " , \$ # 7 # , 0 # 8 " ( .

## 6 & + ' % E 1 4 5 '

1. ; 8 . * . " ' . . . . .	1
2. N \$ % " * % 0 \$ " % ( # 4 # 3 # 2 + % . . . . .	1
3. D % + . \$ 5 ' / # 0 \$ 5 : , 6 \$ % " # 8 + % / 0 # 7 0 % - - 8 FreeBSD . . . . .	2
4. R % 7 0 , 1 + % 6 ' 6 \$ . - 5 . . . . .	3
5. E % 6 \$ 0 # : + % 6 . \$ ' . . . . .	4
6. Firewall . . . . .	5
7. G 4 " # 8 3 . " ' . FreeBSD . . . . .	6
8. procfs : , HF 3 , " # " . 1 % 4 5 \$ . . . . .	6
9. C % 6 / 0 # 6 \$ 0 % " . " " 5 . + # - % " * 5 . . . . .	7
10. R % + 3 > 2 . " ' . . . . .	7

## 1. 3 \* ' + ' 4 5 '

; < \$ # - \* # + , - . " \$ . # 6 8 . = % > \$ 6 ( " . + # \$ # 0 5 . \$ . ? " ' 2 . 6 + ' . 0 % 1 3 ' 2 ' ( - . @ \* , FreeBSD ' Linux" , 2 \$ # 4 5 / # 3 9 1 # 8 % \$ . 3 ' Linux" 6 0 . \* " . 7 # ' / 0 # \* 8 ' " , \$ # 7 # , 0 # 8 " . : - # 7 3 ' 4 5 6 \$ 0 # # 1 " % + # - ' \$ 9 6 ( 6 # 6 " # 8 % - ' FreeBSD.

) \$ # \$ \* # + , - . " \$ / 0 . \* / # 3 % 7 % . \$ , 2 \$ # FreeBSD , @ . , 6 \$ % " # 8 3 . " % . A 3 ( / # 3 , 2 . " ' ( / # - # = ' / # / 0 # & . 6 6 , , 6 \$ % " # 8 + ' # 4 0 % \$ ' \$ . 6 9 + 7 3 % 8 . B 6 \$ % " # 8 + % FreeBSD C , + # 8 # \* 6 \$ 8 % FreeBSD.

## 2. 6 \$ 1 4 + 1 % \$ 4 1 . & 7 & - & 8 ) 1

D # 3 9 1 # 8 % \$ . 3 ' Linux" 2 % 6 \$ # , \* ' 8 3 (> \$ 6 ( , # 4 " % 0 , @ ' 8 , 2 \$ # Bash " . ( 8 3 ( . \$ 6 ( # 4 # 3 # 2 + # : / # , - # 3 2 % " ' > 8 FreeBSD. E % 6 % - # - \* . 3 . , Bash " . 8 + 3 > 2 F " 8 6 \$ % " \* % 0 \$ " , > , 6 \$ % " # 8 + , . ; - . 6 \$ # < \$ # 7 # ' 6 / # 3 9 1 , \$ 6 ( 6 # 8 - . 6 \$ ' - % ( 6 Bourne shell # 4 # 3 # 2 + % [sh\(1\)](#) 8 + % 2 . 6 \$ 8 . # 4 # 3 # 2 + ' / # 3 9 1 # 8 % \$ . 3 ( / # , - # 3 2 % " ' > . G 4 # 3 # 2 + % root Ñ < \$ # [tcsh\(1\)](#) / # , - # 3 2 % " ' > 8 FreeBSD 1 3 ' 4 # 3 . . 0 % " " ' ? 8 . 0 6 ' ( ? ' [sh\(1\)](#) 8 FreeBSD 1 4 ' / # 1 \* " . . . G 4 # 3 # 2 + % [sh\(1\)](#) # 2 . " 9 / # ? # @ % " % Bash , " # ' - . . \$ 7 # 0 % 1 \* # - . " 9 H ' : " % 4 # 0 8 # 1 - # @ " # 6 \$ . . I % + / 0 % 8 ' 3 # , 6 + 0 ' / \$ 5 , " % / ' 6 % " " 5 . \* 3 ( [sh\(1\)](#) , 4 , \* , \$ 0 % 4 # \$ % \$ 9 8 Bash , " # # 4 0 % \$ " # . " . 8 6 . 7 \* % 8 . 0 " # .

G\*"%+# Bash ' \*0,7' . #4#3#2+' \*#6\$, /" 5 \*3( , 6\$%" #8+' 2. 0. 1 I #33. +&' > /#0\$#8' /%+. \$#8  
FreeBSD.

D#63. , 6\$%" #8+' \*0,7#: #4#3#2+' ' 6/#391, :\$. chsh(1), 2\$#45 ' 1- ."' \$9 #4#3#2+,  
/#391#8%\$. 3( /# , - #32%" ' >. C. +#- . "\*" , . \$6( #6\$%8' \$9 #4#3#2+, /#391#8%\$. 3( root 4. 1  
' 1- . " . " ' : , /#6+#39+, #4#3#2+' , " . 8?#\*(=' . 8 4%1#8, > /#6\$%8+, , , 6\$%" %83' 8%>\$6( 8  
/usr/local/bin. ; 63, 2%. 8#1"' + "#8. "' ( /0#43. - 5 J: 3#8%( 6' 6\$. - %, 8 +#\$#0#: "%?#\*' \$6(  
/usr/local/bin, - #@. \$ 45\$9 " . 6- #" \$' 0#8%" %; ; %+#: 6' \$, %&' ' , root " . 4, \*. \$ \*#6\$, /%+ 68#: :  
#4#3#2+. /# , - #32%" ' >, 2\$# /#- . H%. \$ . - , 8#: \$' 8 6' 6\$. - , ' , 6\$0%" ' \$9 /0#43. - , .

### 3. 91) ' \$" 5 , &%\$" : (#\$14&\*) 1 , %&:%1; ; \*

## FreeBSD

FreeBSD /0. \*#6\$%83(. \$ \*8% - . \$#\*% , 6\$%" #8+' /0' 3#@. "' : : 4' "%0" 5. /%+. \$5 ' 6+#- /' 3' 0#8%" " 5. /#0\$5. I%\*@\*5: - . \$#\* ' - . . \$ 68# /0. ' - , = . 6\$8%:

!"#\$%&' (\$)' \* &

¥ K56\$0%( , 6\$%" #8+% /# 60%8" . "' > 6 +#- /' 3(&' . : +0, /" 5? /0' 3#@. "' : .

¥ E. \$0. 4, . \$ /#" ' - "%" ' ( \$#7#, +#+ +#- /' 3' 0#8%\$9 /0#70%- - "#. #4. 6/. 2. "' ..

¥ E. \$ " . #4?#\*' - #6\$' , 6\$%" %83' 8%\$9 +#- /' 3(\$#0.

+, %\* &

¥ ; #1- #@" #6\$9 "%6\$0#: +' /%0%- . \$0#8 , 6\$%" #8+' .

¥ L #7, \$ 45\$9 /0' - . " . " 5 /#391#8%\$. 396+' . /%\$2' .

M63' , 6\$%" #8+% /0' 3#@. "' ( " . \$0. 4, . \$ \*#/#3"' \$ . 39" #: 6#46\$8. " " #: "%6\$0#: +' ,  
\*#6\$%\$#2" # , 6\$%" #8' \$9 /%+. \$ . N#4' 0%: \$ . /#0\$, . 63' /0' 3#@. "' > \$0. 4, . \$6( ' 1- . " . " ' .  
/%0%- . \$0#8, 1%\*" " 5? 8 /%+. \$%? /# , - #32%" ' >. DO' " . #4?#\*' - #6\$' 6#46\$8. " " 5: /%+. \$  
- #@" # 6#40%\$9 ' 1 /#0\$#8 6 /#- # = 9> make package.

D#3" 5: 6/' 6#+ 86. ? \*#6\$, /" 5? /#0\$#8' /%+. \$#8 - #@" # "%: \$' 1\*. 69.

### 3.1. 91) ' \$"

D%+. \$5 Ñ <\$# /0. \*8%0' \$ . 39" # 6+#- /' 3' 0#8%" " 5. /0' 3#@. "' ( , <+8' 8%3. " \$5 J: 3#8 .deb 8  
6' 6\$. - %? " % #6" #8. Debian/Ubuntu ' J: 3#8 .rpm 8 6' 6\$. - %? " % #6" #8. Red Hat/Fedora.  
D%+. \$5 , 6\$%" %83' 8%>\$6( 6 /#- # = 9> pkg. E%/0' - . 0, 63. \*, > = %( +#- %" \*% , 6\$%" %83' 8%. \$  
Apache 2.4:

```
# pkg install apache24
```

A3( /#3, 2. "' ( \*#/#3"' \$ . 39" #: ' " J#0- %&' ' # /%+. \$%? #40%\$' \$ . 69 + 0%1\*. 3, 4.4  
C, +#8#\*6\$8% FreeBSD: O6/#391#8%" ' . pkg \*3( , /0%83. "' ( 4' "%0" 5- ' /%+. \$%- ' .

## 3.2. 9&%\$"

I #33. +&' ( /#0\$#8 FreeBSD Ñ <\$# "%4#0 Makefile ' /%\$2. : , 6/. &' %39" # %\*%/\$' 0#8%" " 5? \*3( , 6\$%" #8+' /0' 3#@. "' : ' 1 ' 6?#\*" #7# +#\*% 8 FreeBSD. DO' , 6\$%" #8+. /#0\$% 6' 6\$. - % 1%70, 1' \$ ' 6?#\*" 5: +#\*, /0' - . "' \$ ". #4?#\*" - 5. /%\$2' , 6+##- /' 3' 0, . \$ +#\* ' , 6\$%" #8' \$ /0' 3#@. "' . 8- . 6\$. 6 \$0. 4, . - 5- ' 1%8' 6' - #6\$(- ' .

I #33. +&' ( /#0\$#8, ' " #7\*" "%158%. - %( \*. 0. 8##- /#0\$#8, - #@. \$ 45\$9 , 6\$%" #83. " % 8 /usr/ports 6 /#- #=> 9> [Git](#). D#\*0#4" 5. ' " 6\$0, +&' ' /# , 6\$%" #8+. I #33. +&' ' /#0\$#8 - #@"# " : \$' 8 0%1\*. 3. 4.5.1 C, +#8#\*6\$8% FreeBSD.

A3( 64#0+' /#0\$% /.0.: \*' \$ . 8 .7# +%\$3#7 ' 1%/ , 6\$' \$ . /0#&. 66 64#0+' . ; 63. \*, > = . - /0' - . 0. , 6\$%" %83' 8%. \$6( Apache 2.4 ' 1 +#33. +&' ' /#0\$#8:

```
# cd /usr/ports/www/apache24
# make install clean
```

DO. ' - , = . 6\$8# ' 6/#391#8%"' ( /#0\$#8 \*3( , 6\$%" #8+' /0#70%- - "#7# #4. 6/. 2. "' ( 1%+3> 2%. \$6( 8 8#1- #@"#6\$' "%6\$0#: +' /%0%- . \$0#8 , 6\$%" #8+' . ; <\$#- /0' - . 0. , +%1%" #, 2\$# \$%+@. \*#3@. " 45\$9 , 6\$%" #83. " - #\*, 39 mod\_ldap:

```
# cd /usr/ports/www/apache24
# make WITH_LDAP="YES" install clean
```

G40\$' \$ . 69 + 0%1\*. 3, 06/#391#8%"' . +#33. +&' ' /#0\$#8 \*3( /#3, 2. "' ( \*#/#3"' \$ . 39" #: ' " J#0- %&' ' .

## 4. <1:%(0) 1 #5#\$' ; "

L" #7' . \*' 6\$0' 4, \$' 85 Linux" ' 6/#391, >\$ 6' 6\$. - , ' "' &' %3' 1%&' ' SysV, \$#7\*% +%+ FreeBSD ' 6/#391, . \$ \$0%\*' &' # " " 5: BSD-6\$' 39 [init\(8\)](#). ; BSD-6\$' 3. [init\(8\)](#) " . \$ , 0#8" . : 1%/ , 6+% (run-levels), ' J%: 3 /etc/inittab #6, \$6\$8, . \$ . ; - . 6\$# <\$#7# 1%/ , 6+ 6' 6\$. - 5 , /0%83(. \$6( 6&. "%0' (- ' [rc\(8\)](#). DO' 1%70, 1+. 6' 6\$. - 5 /etc/rc 2' \$%. \$ /etc/rc.conf ' /etc/defaults/rc.conf, 2\$#45 #/0. \*. 3' \$9, +%+' . 63, @45 \*#3@" 5 45\$9 1%/ , = . " 5. B+%1%" " 5. 63, @45 1%\$. - 1%/ , 6+%>\$6( / , \$ . - 85/#3" . "' ( 6##\$8. \$6\$8, >= ' ? 6&. "%0' . 8 ' "' &' %3' 1%&' ' , 0%6/#3#@. " " 5? 8 /etc/rc.d/ ' /usr/local/etc/rc.d. ) \$' 6&. "%0' ' %"#3#7' 2" 5 6&. "%0' (- , 0%6/#3#@. " " 5- 8 /etc/init.d/ 8 6' 6\$. - %? Linux" .

N+0' /\$5, 0%6/#3#@. " " 5. 8 /etc/rc.d/, /0. \*"#1"%2. " 5 \*3( /0' 3#@. "' : , 8?#\*(=' ? 8 "4%1#8, >" 6' 6\$. - , , \$%+' ? +%+ [cron\(8\)](#), [sshd\(8\)](#) ' [syslog\(3\)](#). N+0' /\$5 8 /usr/local/etc/rc.d/ /0. \*"#1"%2. " 5 \*3( /#391#8%\$. 396+' ? /0' 3#@. "' : , \$%+' ? +%+ Apache ' Squid.

D#6+#39+, FreeBSD 0%10%4%\$58%. \$6( +%+ /#3" #&. " "%( #/. 0%&' # " "%( 6' 6\$. - %, /#391#8%\$. 396+' . /0' 3#@. "' ( " . 62' \$%>\$6( 2%6\$9> Ç4%1#8#: È 6' 6\$. - 5. D#391#8%\$. 396+' . /0' 3#@. "' ( #452" # , 6\$%" %83' 8%>\$6( 6 /#- #=> 9> [D#+. \\$#8 ' 3' D#0\\$#8](#). P\$#45 #\$. 3' \$9' ? # \$ 4%1#8#: 6' 6\$. - 5, /#391#8%\$. 396+' . /0' 3#@. "' ( , 6\$%" %83' 8%>\$6( 8 /usr/local/. Q%+' -

```
#40%1#- , ' 6/#3" (. - 5. J%: 35 /#391#8%$. 396+' ? /0' 3#@. "' : "%?#*( $6( 8 /usr/local/bin/,
+#" J' 7, 0%&' #" " 5. J%: 35 Ñ 8 /usr/local/etc/' $%+ *%3...
```

```
N. 08' 65 8+3>2%>$6( /, $. - *#4%83. "' ( 6##$8. $6$8, >=.: 1%/ ' 6' 8 J%: 3 /etc/rc.conf.
N' 6$. - " 5. /%0%- . $05 /# , - #32%" ' > "%?#*( $6( 8 J%: 3. /etc/defaults/rc.conf, % "%6$0#: +' /#
, - #32%" ' > /. 0. #/0. *. 3(>$6( /%0%- . $0%- ' ' 1 J%: 3% /etc/rc.conf. D#*0#4" .. # *#6$, /" 5?
/%0%- . $0%? - #@"# , 1"%$9 8 rc.conf(5). DO' , 6$%" #8+. *#/#3" ' $. 39" 5? /0' 3#@. "' :
#1"%+#- 9$. 69 6 6##4=. "' . - , 6$%" #8+' , 2$#45 #/0. *. 3' $9, +%+ 8+3>2' $9 68(1%" " 5.
6. 08' 65.
```

```
N3. *, >= ' . 1%/ ' 6' 8 /etc/rc.conf 8+3>2%>$ sshd(8), %+$' 8' 0, >$ Apache 2.4 ' , +%158%>$, 2$#
Apache *#3@. " 1%/ , 6+%$96( 6 SSL.
```

```
# enable SSHD
sshd_enable="YES"
# enable Apache with SSL
apache24_enable="YES"
apache24_flags="-DSSL"
```

```
D#63. 8+3>2. "' ( 63, @45 8 /etc/rc.conf . F - #@"# 1%/ , 6$' $9 4. 1 / . 0. 1%70, 1+' 6' 6$. - 5:
```

```
# service sshd start
# service apache24 start
```

```
M63' 63, @4% ". 453% 8+3>2. "%, . F - #@"# 1%/ , 6$' $9 ' 1 +- %" *"#: 6$0#+' 6 /#- #- = 9>
onstart:
```

```
# service sshd onstart
```

## 5. = 1#\$%&2) 1 #' \$5

```
; - . 6$# #4= . 7# ' *." $' J' +%$#0% ethX, +$#05: ' 6/#391, . $6( 8 Linux" *3( #4#1"%2. "' (
6. $. 8#7# ' " $. 0J. : 6%, FreeBSD ' 6/#391, . $ ' - ( *0%: 8. 0% 6 /#63. *, >= ' - 2' 63#- .
N3. *, >= ' : 858#* ' 1 ifconfig(8) /#+%158%. $ *8% 6. $. 85? ' " $. 0J. : 6% Intel" Pro 1000 (em0 '
em1):
```

```
% ifconfig
em0: flags=8843<UP, BROADCAST, RUNNING, SIMPLEX, MULTICAST> mtu 1500
É options=b<RXCSUM, TXCSUM, VLAN_MTU>
É inet 10.10.10.100 netmask 0xffffffff broadcast 10.10.10.255
É ether 00:50:56:a7:70:b2
É media: Ethernet autoselect (1000baseTX <full-duplex>)
É status: active
em1: flags=8843<UP, BROADCAST, RUNNING, SIMPLEX, MULTICAST> mtu 1500
É options=b<RXCSUM, TXCSUM, VLAN_MTU>
```

```

É      inet 192.168.10.222 netmask 0xffffffff broadcast 192.168.10.255
É      ether 00:50:56:a7:03:2b
É      media: Ethernet autoselect (1000baseTX <full-duplex>)
É      status: active

```

IP-\*0.6 - #@\$ 45\$9 "%1"%2. " ' "\$.0J.: 6, 6 /#- #- 9> [ifconfig\(8\)](#). P\$#45 "%6\$0#: +' 6#?0%" (3' 69 /#63. /.0.1%70, 1+', +#" J' 7,0%&' ( IP \*#3@"% 45\$9 , +%1%"% 8 /etc/rc.conf. N3. \*, >= ' . 1%/' 6' 8/etc/rc.conf 1%\*%> \$ ' - ( ?#6\$%, IP-\*0.6 ' H3>1 /# , - #32%" ' > :

```

hostname="server1.example.com"
ifconfig_em0="inet 10.10.10.100 netmask 255.255.255.0"
default_router="10.10.10.1"

```

O6/#391, : \$. 63. \*, >= ' . 1%/' 6' \*3( "%6\$0#: +' ' "\$.0J.: 6% 2.0.1 DHCP:

```

hostname="server1.example.com"
ifconfig_em0="DHCP"

```

## 6. Firewall

FreeBSD " . ' 6/#391, . \$ Linux` IPTABLES \*3( 68#.7# - .@6. \$. 8#7# <+0%"% . ; - .6\$# <\$#7# FreeBSD /0. \*3%7%. \$ 854#0 ' 1 \$OF? - .@6. \$. 85? <+0%" #8 "% , 0#8" . (\*0%:

¥ [PF](#)

¥ [IPFILTER](#)

¥ [IPFW](#)

PF 0%10%4#\$%" /0#. +\$#- OpenBSD ' /#0\$' 0#8%" 8 FreeBSD. PF 453 6#1\*" +%+ 1%- . "% \*3( IPFILTER, ' .7# 6' "\$%+6' 6 6?#@ 6 6' "\$%+6' 6#- IPFILTER. PF - #@\$ ' 6/#391#8%\$96( 6#8- .6\$" # 6 [altq\(4\)](#) \*3( #4. 6/. 2. "' ( J, "+&' : QoS.

)\$#\$ /0' - .0 1%/' 6' PF 0%10. H%. \$ 8?#\*(= ' : SSH:

```

pass in on $ext_if inet proto tcp from any to ($ext_if) port 22

```

IPFILTER Ñ <\$# /0' 3#@. "' . \*3( - .@6. \$. 8#7# <+0%"% , 0%10%4#\$%" "#. A#00. "#- C' \*#- . G" # ". (83(. \$6( 6/. &' J' 2" 5- \*3( FreeBSD ' 453# /#0\$' 0#8%" # "% ". 6+#39+# #/.0%&' #" " 5? 6' 6\$. - , 8+3>2%( NetBSD, OpenBSD, SunOS, HP/UX ' Solaris.

N' " \$%+6' 6 IPFILTER \*3( 0%10. H. "' ( 8?#\*(= . 7# SSH:

```

pass in on $ext_if proto tcp from any to any port = 22

```

IPFW `~ <$# - . @6. $. 8#: <+0%", 0%10%4#$%" " 5: ' /#**.0@' 8%. - 5: FreeBSD. G" - #@. $ 45$9`  
`' 6/#391#8%" 6#8- .6$"# 6 dummynet(4) *3( #4.6/.2." ' ( 8#1- #@"#6$.: , /0%83." ' (`  
`$0%J' +#- ' ' - '$%&' ' 0%13' 2" 5? $' /#8 6. $. 85? 6#. *' ". ' : .`

`N' " $%+6' 6 IPFW *3( 0%10. H. "' ( 8?#*( = . 7# SSH 4, *. $ 63. *, >= ' - :`

```
ipfw add allow tcp from any to me 22 in via $ext_if
```

## 7. > 74&\* - ' 45' FreeBSD

`N, = .6$8, . $ *8% - . $#%# #4"#83." ' ( 6' 6$. - 5 FreeBSD: ' 1 ' 6?#*" #7# +#%" ' 3' 4' "%0" 5.`  
`#4"#83." ' (`

`G4"#83." ' . ' 1 ' 6?#*" #7# +#%" Ñ <$# "%' 4#3. . 63#@" 5: - . $#* #4"#83." ' (, "# #"`  
`/0. *#6$%83(. $ "%' 4#39H, > 7' 4+#6$9. D0#&. 66 8+3> 2%. $ 6' "?0#" ' 1%&' > 3#+%39"#: +#/' '`  
`' 6?#*" #7# +#%" FreeBSD 6 0. /#1' $#0' . - FreeBSD Git. D#63. $#7# +%+ 3#+%39" 5: ' 6?#*" 5:`  
`+#* #4"#83F", - #@"# 6+#+- /' 3' 0#8%$9 "#8, > 8. 06' > (*0% ' /#391#8%$. 396+#7#`  
`/0#6$0%" 6$8%.`

`A8#' 2" 5. #4"#83." ' ( ("%#3#7' 2" 5 ' 6/#391#8%" ' > yum ' 3' apt-get *3( #4"#83." ' ( 6' 6$. - 5`  
`Linux" . ; FreeBSD, freebsd-update\(8\) - #@. $ 45$9 ' 6/#391#8%" *3( /#3, 2." ' ( ' ,6$%" #8+'`  
`" #85? *8#' 2" 5? #4"#83." ' : . ) $' #4"#83." ' ( - #7, $ 45$9 1%/3%" ' 0#8%" 5 6 /#- # = 9>`  
`cron\(8\).`

!

```
DO' ' 6/#391#8%" ' ' cron\(8\) *3( /3%" ' 0#8%" ' ( #4"#83." ' : ' 6/#391, : $.
```

```
freebsd-update cron 8 crontab\(1\), 2$#45 6" ' 1' $9 8. 0#($#6$9 #*" #80. - . " #7#
```

```
6+%2' 8%" ' ( #4"#83." ' : 4#39H' - +#3' 2.6$8#- - %H' " :
```

```
0 3 * * * root /usr/sbin/freebsd-update cron
```

`A3( /#3, 2." ' ( *#/#3" ' $ .39" #: ' " J#0- %&' ' #4 #4"#83." ' (? ' 6?#*" #7# +#%" ' 4' "%0" 5?`  
`#4"#83." ' (? #40#$' $.69 + 73%8. #4 #4"#83." ' (? 8 C, +#8#*6$8. FreeBSD.`

## 8. procfs: (? @- , 4& 4' 017" \$

`; ". +#$#05? *' 6$0' 4, $' 8%? Linux" - #@"# /#6- #$. $9 J%: 3 /proc/sys/net/ipv4/ip_forward,`  
`2$#45 #/0. *. 3' $9, 8+3> 2." % 3' IP-- %0H0, $' 1%&' ( . ; FreeBSD 8- .6$# <$#7# ' 6/#391, . $6(`  
`sysctl\(8\) *3( /0#6- #$.0 <$#7# ' *0, 7' ? 6' 6$. - " 5? /%0%- . $0#8.`

`E%/0' - .0, ' 6/#391, : $. 63. *, >=, > +#- %" *, , 2$#45 #/0. *. 3' $9, 8+3> 2." % 3' IP-`  
`/ .0. %*0.6%&' ( 8 6' 6$. - . FreeBSD:`

```
% sysctl net.inet.ip.forwarding
net.inet.ip.forwarding: 0
```

O6/#391, : \$. -a \*3( 858#\*% 86. ? 6' 6\$. - " 5? "%6\$0#. +:

```
% sysctl -a | more
```

M63' /0' 3#@. "' > \$0. 4, . \$6( procfs, \*#4%89\$. 63. \*, > = , > 1%/' 69 8 /etc/fstab:

```
proc /proc procfs rw,noauto 0 0
```

A#4%83. "' . noauto /0. \*#80%\$' \$ %8\$#- %\$' 2. 6+#. - # " \$' 0#8%" ' . /proc /0' 1%70, 1+..

P\$#45 /#\*+3>2' \$9 J%: 3#8, > 6' 6\$. - , 4. 1 / . 0. 1%70, 1+' :

```
# mount /proc
```

## 9. A1#, %&#\$%14' 44" ' ) &; 14+"

E. +#\$#05. <+8' 8%3. " \$5 0%/0#6\$0%" F" " 5? +#- %" \* /0' 8. \*. " 5 "' @. :

B&; 14+1 Linux (Red Hat/Debian)	C) *5*1- ' 4\$ FreeBSD	= 10418' 45'
yum install package / apt-get install package	pkg install package	B6\$%" #8' \$9 /%+. \$ ' 1 , *%3F" " #7# 0. /#1' \$#0' (
rpm -ivh package / dpkg -i package	pkg add package	B6\$%" #8' \$9 3#+%39" 5: /%+. \$
rpm -qa / dpkg -l	pkg info	N/' 6#+ , 6\$%" #83. " " 5? /%+. \$#8
lspci	pci conf	D. 0. 2' 63' \$9 , 6\$0#: 6\$8% PCI
lsmode	kl dstat	D. 0. 2' 63' \$9 1%70, @. " " 5. - #*, 3' (*0%
modprobe	kl dload / kl dunload	R%70, 1+%/8570, 1+% - #*, 3. : (*0%
strace	truss	Q0%66' 0#8+% 6' 6\$. - " 5? 851#8#8

## 10. <1) - D8' 45'

) \$#\$ \*#+, - . " \$ /0. \*#6\$%8' 3 #41#0 FreeBSD. A3( 4#3.. \*. \$%39" #7# ' 1, 2. "' ( <\$' ? \$. - , % \$%+@. - " #7' ? \*0, 7' ?, ". 0%66- #80. " " 5? 8 \*% " #- \*#+, - . " \$., #40%\$' \$. 69 + C, +#8#\*6\$8, FreeBSD.