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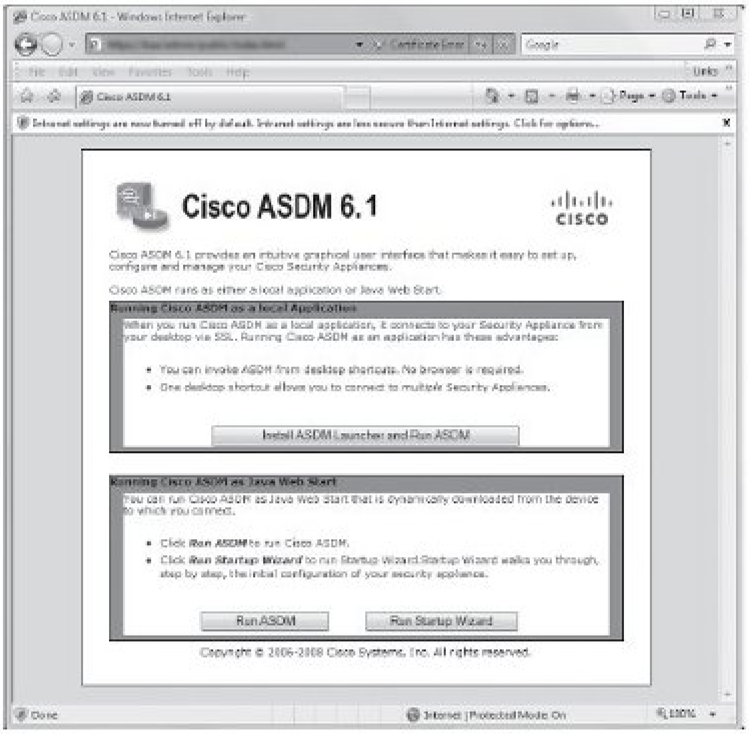
SSL VPN Configuration of a Cisco ASA 8.0

The Cisco® ASA family of devices are based on the Cisco® PIX platform (Figure 19); however they have been re-engineered and improved with feature rich functions. Included in the ASA Platform is IPSec VPN, SSL VPN, Web Portal and Secure Desktop facilities. The IPSec VPN functions are included for no extra charge; the remainder are chargeable options after version 7.0 of the ASA.

Configuration of the Cisco ASA can be either through the CLI (command line interface) using SSH or through the ASDM GUI interface. The ASDM client software for Windows and Mac OS nay be downloaded and installed by all features of the ASA are supported



Cisco ASDM 6.1 - Windows Internet Explorer

Cisco ASDM 6.1

Internet settings are now turned off by default. Intranet settings are less secure than Internet settings. Click for options...

Cisco ASDM 6.1

Cisco ASDM 6.1 provides an intuitive graphical user interface that makes it easy to set up, configure and manage your Cisco Security Appliances.

Cisco ASDM runs as either a local application or Java Web Start.

Running Cisco ASDM as a local Application

When you run Cisco ASDM as a local application, it connects to your Security Appliance from your desktop via SSL. Running Cisco ASDM as an application has these advantages:

- You can invoke ASDM from desktop shortcuts. No browser is required.
- One desktop shortcut allows you to connect to multiple Security Appliances.

Install ASDM Launcher and Run ASDM

Running Cisco ASDM as Java Web Start

You can run Cisco ASDM as Java Web Start that is dynamically downloaded from the device to which you connect.

- Click **Run ASDM** to run Cisco ASDM.
- Click **Run Startup Wizard** to run Startup Wizard.Startup Wizard walks you through, step by step, the initial configuration of your security appliance.

Run ASDM   Run Startup Wizard

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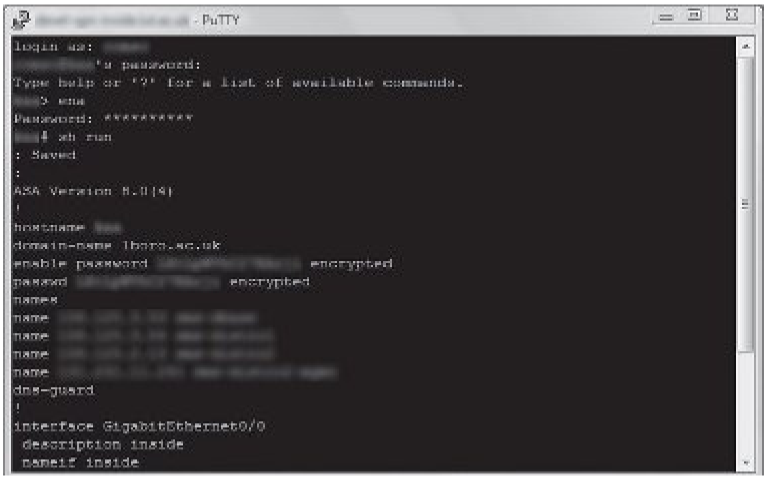
[1]

Figure 20. Cisco ASDM download and installation.

The CLI interface can be reached through the SSH protocol, typically using PuTTY under Windows (Figure 21) or SSH/Slogin on Unix/Linux Operating Systems.



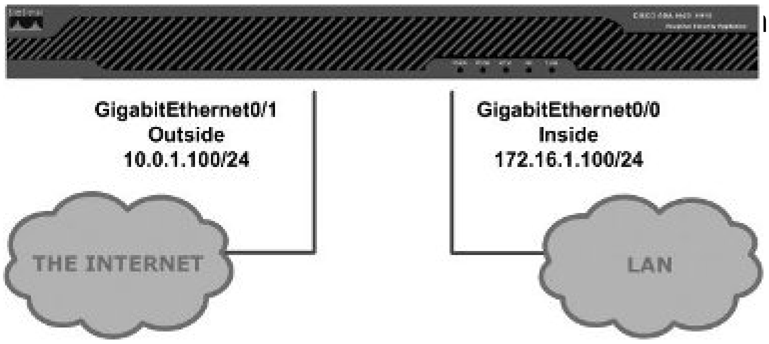
```
login as: [redacted]
[redacted]'s password:
Type help or '?' for a list of available commands.
[redacted]> ena
Password: **********
[redacted]# sh run
: Saved
:
ASA Version 8.0(4)
!
hostname [redacted]
domain-name lboro.ac.uk
enable password [redacted] encrypted
passwd [redacted] encrypted
names
name [redacted]
name [redacted]
name [redacted]
name [redacted]
dns-guard
!
interface GigabitEthernet0/0
 description inside
 nameif inside
```

[2]

Figure 21. Cisco ASA access through the CLI using PuTTY.

Configuration Example

ges and functions.



[3]

The following configuration example configures the Cisco ASA for IPSec and SSL VPN connectivity, and provides pointers to areas mentioned in the SSL VPN chapter.

1. Configure the interfaces on the ASA for connectivity on the organisational LAN. Security levels should be configured so the inside interface is a higher value than the outside. Add default routes:

```
interface GigabitEthernet0/0

description inside

nameif inside

security-level 100

ip address 172.16.1.100 255.255.255.0

!

route inside 172.16.0.0 255.255.0.0 172.16.1.1.1
route inside 192.168.1.0 255.255.255.0 172.16.1.1.1
```

2. Clear the ASA flash and upload new firmware images:

```
show flash:

erase flash:

copy tftp://<tftp Server>/asa803-6-k8.bin flash:

copy tftp://<tftp Server>/asdm-611.bin flash:
```

3. Configure the new images as the default boot images:

```
boot system disk0:/asa803-6-k8.bin

asdm image disk0:/asdm-611.bin

wr mem

reload
```

4. Configure the ASA with appropriate passwords:

```
enable password -password-

passwd -password-
```

5. Enable SSH on the inside interface:

```
crypto key generate rsa modulus 1024

ssh 172.16.0.0 255.255.0.0 inside

ssh 172.16.1.0 255.255.255.0 management

ssh timeout 5

ssh version 2
```

Check with ssh <IP Address> -l pix

6. Configure other Interfaces and Routing:

```
interface GigabitEthernet0/1

description outside

no shutdown

nameif outsidesecurity-level 0
```

```
ip address 10.0.1.100 255.255.255.0
!
interface GigabitEthernet0/2
shutdown
no nameif
no security-level
no ip address
!
interface GigabitEthernet0/3
shutdown
no nameif
no security-level
no ip address
!
interface Management0/0
description management
no shutdown
nameif management
security-level 100
ip address 172.16.1.0 255.255.255.0
management-only
!
route outside 0.0.0.0 0.0.0.0 10.0.1.1.1
```

7. Configure DNS:

```
dns domain-lookup inside
dns server-group DefaultDNS
```

```
name-server <Primary DNS IP Address>

name-server <Secondary DNS IP Address>

name-server <Tertiary DNS IP Address>

domain-name camford.ac.uk

names

name <IP Address> <Static FQDN>

etc...

dns-guard
```

8. The ASA can categorise entities into object groups. Adding hostnames for entries within the configuration can make administration easier; in this example entries for Microsoft SMS Server are added:

```
object-group service MSRDP tcp

port-object eq 3389

object-group network SMS_Servers

network-object host sms-server1

network-object host sms-server2

network-object host sms-database
```

9. Create the Access Lists to support the security of the VPN/Firewall within the ACL:

```
access-list CAMFORD-NETBLOCKS-v1 standard permit 172.16.0.0 255.255.0.0

access-list CAMFORD-NETBLOCKS-v1 standard permit 192.168.1.0 255.255.255.0

access-list CAMFORD-NETBLOCKS-v1 standard deny any

access-list ANY-TO-ANY extended permit ip any any log critical

access-list CAMFORD-CENTRAL-SERVICES-v1 extended permit ip any 172.16.1.0 255.255.255.0

access-list CAMFORD-CENTRAL-SERVICES-v1 extended permit ip any 172.16.16.0 255.255.255.0

access-list CAMFORD-CENTRAL-SERVICES-v1 extended permit tcp any any eq ssh log alerts

access-list CAMFORD-CENTRAL-SERVICES-v1 extended permit tcp any any object-
```

```
group MSRDP log alerts
access-list inside_nat0_outbound extended permit ip any 172.16.154.0 255.255.254.0 log critical
access-list Split_Tunnel_List remark allow only our traffic
access-list Split_Tunnel_List standard permit 172.16.0.0 255.255.0.0
access-list Split_Tunnel_List standard permit 192.168.1.0 255.255.255.0
access-list CAMFORD_splitTunnelAcl standard permit 172.16.0.0 255.255.0.0
access-list CAMFORD_splitTunnelAcl standard permit 192.168.1.0255.255.255.0
access-list CAMFORD-NOSMS extended deny tcp any object-group SMS_Servers eq www log alerts
access-list CAMFORD-NOSMS extended deny tcp any object-group SMS_Servers eq https log alerts
```

10. Configure the logging options:

```
logging enable
logging timestamp
logging console critical
logging buffered warnings
logging trap informational
logging asdm informational
logging facility 16
logging device-id hostname
logging host inside <IP Address of SYSLOG Server>
```

11. Configure MTU size and ICMP:

```
mtu inside 1500
mtu outside 1500
mtu management 1500
icmp unreachable rate-limit 1 burst-size 1
icmp permit 172.16.0.0 255.255.0.0 inside
icmp permit 192.168.1.0 255.255.255.0 inside

icmp permit 10.0.1.0 255.255.255.0 outside
```

12. Configure IP Address Local Pool and NAT:

```
ip local pool CAMFORD-LOCAL-POOL-v1 172.16.150.20-172.16.151.253 mask 255.255.254.0

nat (inside) 0 access-list inside_nat0_outbound

nat (inside) 0 0.0.0.0 0.0.0.0

static (inside,outside) 0.0.0.0 0.0.0.0 netmask 0.0.0.0
```

13. Configure the ASA Timeout values:

```
timeout xlate 3:00:00

timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02

timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00

timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00

timeout uauth 0:05:00 absolute
```

14. Configure LDAP Attribute Map, to map LDAP attributes to meaningful names:

```
ldap attribute-map AD-Group-Mapping

map-name memberOf IETF-Radius-Class

map-value memberOf CN=maths,OU=groups,OU=SCIENCE,DC=camford,DC=ac,DC=uk mathsstaff
```

15. Configure Dynamic Access Policies to be applied depending on LDAP attributes:

```
dynamic-access-policy-record DfltAccessPolicy

network-acl CAMFORD-CENTRAL-SERVICES-v1

network-acl CAMFORD-NOSMS

dynamic-access-policy-record CAMFORD-DAP-MATHSSTAFF-v1

network-acl CAMFORD-MATHSSTAFF-v1

network-acl CAMFORD-CENTRAL-SERVICES-v1

network-acl CAMFORD-NOSMS
```

16. Enable WebServer:

```
http server enable

http 0.0.0.0 0.0.0.0 outside

http 172.16.0.0 255.255.0.0 inside

http 172.16.1.0 255.255.255.0 management

http redirect outside 80

http redirect inside 80
```

17. Configure SNMP:

```
snmp-server host inside <SNMP Monitoring IP> community public version 2c

snmp-server host inside <SNMP Monitoring IP> community public version 2csnmp-server location <LOCATION>

snmp-server contact <EMAIL>

snmp-server community <COMMUNITY>

snmp-server enable traps snmp authentication linkup linkdown coldstart
```

18. Crypto Map configuration is entirely dependent on the cryptography features required. The cryptomap command in the Cisco ASA allows the configuration of the cryptography features outlined in section 5.5.4 with specific reference to FIPS 140-2 Compliance.

19. IDS: Configure the basic, built-in IDS code:

```
threat-detection basic-threat

threat-detection statistics
```

20. NTP:

```
ntp server <IP of Server1> source inside prefer

ntp server <IP of Server2> source inside
```

21. WebVPN Configuration can be implemented in as little as eight stages. Section 8.2 explores web-based portals in more detail:

```
webvpn

enable outside

http-proxy <Web Proxy IP> 3128
```

```
https-proxy <Web Proxy IP> 3128
svc enable
smart-tunnel list "RDP_SSH" "PuTTY" "putty.exe"
smart-tunnel list "RDP_SSH" "MSRDP" "mstsc.exe"
```

22. Configure the default VPN Group Policy:

```
group-policy DfltGrpPolicy attributes
downtime messages etc. NOT the AUP!
wins-server value <WINS IP – If Required>
dns-server value <DNS Server1> <DNS Server2>
vpn-tunnel-protocol IPSec l2tp-ipsec svc webvpn
password-storage enable
ip-comp enable
re-xauth enable
pfs enable
ipsec-udp enable
split-tunnel-policy tunnelspecified
split-tunnel-network-list value Split_Tunnel_List
default-domain value camford.ac.uk
secure-unit-authentication enable
user-authentication enable
user-authentication-idle-timeout none
backup-servers clear-client-config
address-pools value CAMFORD-LOCAL-POOL-v1
webvpn
url-list value Camford
smart-tunnel enable RDP_SSH
```

```
file-entry disable
file-browsing disable
```

23. Configure the VPN Tunnel Groups:

```
tunnel-group DefaultRAGroup general-attributes
address-pool CAMFORD-LOCAL-POOL-v1
authentication-server-group CAMFORD-AD-v1
strip-realm
tunnel-group DefaultRAGroup webvpn-attributes
nbns-server <WINS Server> timeout 2 retry 2
nbns-server <WINS Server2> timeout 2 retry 2
tunnel-group DefaultRAGroup ipsec-attributes
pre-shared-key <SHARED SECRET>
tunnel-group DefaultWEBVPNGroup general-attributes
address-pool CAMFORD-LOCAL-POOL-v1
authentication-server-group CAMFORD-AD-v1
strip-realm
tunnel-group DefaultWEBVPNGroup webvpn-attributescustomization CAMFORD-HOMEPAGEv1
nbns-server <WINS Server> timeout 2 retry 2
nbns-server <WINS Server2> timeout 2 retry 2
group-alias Default enable
tunnel-group DefaultWEBVPNGroup ipsec-attributes
pre-shared-key <SHARED SECRET>
address-pool CAMFORD-POOL-v1
authentication-server-group CAMFORD-AD-v1
strip-realm
tunnel-group CAMFORD type remote-access
```

```
tunnel-group CAMFORD general-attributes
address-pool CAMFORD-LOCAL-POOL-v1
authentication-server-group CAMFORD-AD-v1
default-group-policy CAMFORD
tunnel-group CAMFORD ipsec-attributes
pre-shared-key <SHARED SECRET>
```

24. Configure a default Class Map for inspection:

```
class-map inspection_default
match default-inspection-traffic
```

25. Configure an inspection Policy Map:

```
policy-map type inspect dns preset_dns_map
parameters
message-length maximum 512
policy-map global_policy
class inspection_default
inspect dns preset_dns_map
inspect ftp
inspect h323 h225
inspect h323 ras
inspect netbios
inspect rsh
inspect rtsp
inspect skinny
inspect esmtp
inspect sqlnet
inspect sunrpc
inspect tftp
inspect sip
inspect xdmcp
policy-map type inspect dns migrated_dns_map_1
parameters
message-length maximum 512
```

26. Configure TACAS+ and default usernames if required:

```
aaa-server CAMFORD-TACACS-v1 protocol tacacs+
reactivation-mode timed
max-failed-attempts 5
aaa-server CAMFORD-TACACS-v1 host <TACACS SERVER1>
key <SHARED SECRET>
aaa-server CAMFORD-TACACS-v1 host <TACACS SERVER2>
key <SHARED SECRET>
aaa authentication enable console CAMFORD-TACACS-v1 LOCAL
aaa authentication http console CAMFORD-TACACS-v1 LOCAL
aaa authentication ssh console CAMFORD-TACACS-v1 LOCAL
aaa authentication serial console CAMFORD-TACACS-v1 LOCAL
aaa accounting enable console CAMFORD-TACACS-v1
aaa accounting serial console CAMFORD-TACACS-v1
aaa accounting ssh console CAMFORD-TACACS-v1
aaa accounting command CAMFORD-TACACS-v1
aaa authorization exec authentication-server
aaa authorization command CAMFORD-TACACS-v1 LOCAL
```

To verify that the device is in communication with the AAA server use the following command:

```
show aaa-server
```

27. Configure Active Directory LDAP authentication:aaa-server CAMFORD-AD-v1 protocol ldap

```
aaa-server CAMFORD-AD-v1 host <Domain Controller 1>

ldap-base-dn DC=camford,DC=ac,DC=uk

ldap-scope subtree

ldap-naming-attribute sAMAccountName

ldap-login-password <PASSWORD>

ldap-login-dn <Role Based AD Account>

server-type microsoft

ldap-attribute-map AD-Group-Mapping

aaa-server CAMFORD-AD-v1 host <Domain Controller 2>

ldap-base-dn DC=camford,DC=ac,DC=uk

ldap-scope subtree

ldap-naming-attribute sAMAccountName

ldap-login-password <PASSWORD>

ldap-login-dn <Role Based AD Account>

server-type microsoft

ldap-attribute-map AD-Group-Mapping

aaa-server CAMFORD-AD-v1 host <Domain Controller 3>

ldap-base-dn DC=camford,DC=ac,DC=uk

ldap-scope subtree

ldap-naming-attribute sAMAccountName

ldap-login-password <PASSWORD>

ldap-login-dn <Role Based AD Account>

server-type microsoft

ldap-attribute-map AD-Group-Mapping
```

28. The Cisco ASA requires an SSL VPN license to allow more than two SSL VPN sessions:

1. Go to: http://www.cisco.com/go/license [4]

2. Enter the SSL VPN Product Authorisation Key (PAK) found on the License Claim Certificate.

3. Select [All Done]

4. Enter Serial Number from a ‘sh ver | include Number’ [Submit]

5. [Submit]

6. Once Registration is complete, await email confirmation.

7. ciscoasa(config)# activation-key [key from email]

29. Once the VPN has been configured the Network Connect AnyConnect Images need to be uploaded:

1. Start the ASDM and connect to the ASA

2. Configuration -> Remote Access VPN -> Network (Client) Access -> AnyConnect Connection Profiles

3. Select Access Interfaces: Enable Cisco AnyConnect VPN Client

4. Upload an AnyConnect Image

5. Configuration -> Remote Access VPN -> Network (Client) Access -> Advanced -> SSL VPN -> Client Settings

6. Click +Add

7. anyconnect-win-2.3.0185-k9.pkg

8. anyconnect-macosx-i386-2.3.0185-k9.pkg

9. anyconnect-macosx-powerpc-2.3.185-k9.pkg

10. anyconnect-linux-2.3.185-k9.pkg

30. The ASA can have a number of Client-Server Plugins for the Web-based VPN portal:

1. Start the ASDM and connect to the ASA

2. Configuration -> Remote Access VPN -> Clientless SSL VPN Access -> Portal -> Client-Server Plug-ins

3. Click +Import

4. Plug-in Name: RDP

5. Remote Server tftp://<SERVER>/ASA/ASAPlugin/rdp-plugin.080130.jar

6. Click +Import

7. Plug-in Name: SSH,Telnet

8. Remote Server tftp://<SERVER>/ASA/ASAPlugin/ssh-plugin.jar

9. Click +Import

10. Plug-in Name: SSH,Telnet

11. Remote Server tftp://<SERVER>/ASA/ASAPlugin/vnc-plugin.080130.jar

28. Finally Miscellaneous configuration:pager lines 24

ftp mode passive

arp timeout 14400

no failover

no vpn-addr-assign aaa

no vpn-addr-assign dhcp

telnet timeout 5

console timeout 0

l2tp tunnel hello 30

service-policy global_policy global

prompt hostname context

no asdm history enable

Further Documentation

Cisco provides more detailed documentation at the following locations:

- Command Line Configuration Guide (v8.0): http://www.cisco.com/en/US/docs/security/asa/asa80/configuration/guide/asa80cfg.pdf [5]
- ASDM User Guide (v6.0): http://www.cisco.com/en/US/docs/security/asa/asa80/asdm60/user/guide/asdmug.pdf [6]
- SSL VPN Certificates: http://www.cisco.com/warp/public/471/asa_8.x_3rdpartyvendorcert.pdf [7]

Source URL: https://community-stg.jisc.ac.uk/library/advisory-services/ssl-vpn-configuration-cisco-asa-80

Links
[1] http://community.ja.net/system/files/images/tg-vpn-20.jpg

[2] http://community.ja.net/system/files/images/tg-vpn-21.jpg
[3] http://community.ja.net/system/files/images/tg-vpn-22.jpg
[4] http://www.cisco.com/go/license
[5] http://www.cisco.com/en/US/docs/security/asa/asa80/configuration/guide/asa80cfg.pdf
[6] http://www.cisco.com/en/US/docs/security/asa/asa80/asdm60/user/guide/asdmug.pdf
[7] http://www.cisco.com/warp/public/471/asa_8.x_3rdpartyvendorcert.pdf