

JBM XML Lib, Doc Rev 1.

Including JBM XML Lib in your script

```
#!/usr/bin/perl

my $xmllib_path = '/etc/jbm/jbm_xmllib.pl';

# Make sure we can find the XML Lib file
if( -e $xmllib_path )
{
    require $xmllib_path;
    my $msg = "Loaded JBM XML Lib version v" . &xmlcfg_get_version. "\n";
    print $msg; &syslog( $msg );
}
else
{
    # Since we couldn't find JBM XML Lib, this script can't run
    print "Error: Couldn't find XML Lib at \"$xmllib_path\", exiting.\n";
    exit -1;
}
```

Configuring a Subsection

Example Use

For a simple example of how to use XML Lib to configure a subsystem, we will use the GAU Access configuration function.

```
my %gauaccess_settings = (
    action    => "apply",          # Recognized actions: "cfgonly", "save", "apply"
    method    => "https",         # HTTP or HTTPS
);
my $gauaccess_result = &xmlcfg_gauaccess( \%gauaccess_settings );
```

The `xmlcfg_gauaccess` function recognizes two arguments. First, like all `xmlcfg` functions, it requires an action to that it that it knows whether to just save or apply the configuration you set up. Secondly, we need to give an argument for "method", so that `xmlcfg_gauaccess` knows what GAU access method we want to configure, which could be either `http` or `https`.

Actions

Every subsection requires an **action** argument. XML Lib recognizes three different actions that tell it what steps to have the GAU perform for that subsystem.

cfgonly Changes the XML config file only. No backend/Linux subsystem change.

save Changes XML config file, *and Linux subsystem files*. Changes are **NOT** enacted. Ready for next reboot or a service restart.

apply Changes XML config, Linux subsystem files, *and makes the service immediately altered*. When the function returns, all of your changes **for that subsystem** should be in effect.

Adding Entries to a Subsection Table

Although most subsections are configured in a manner similar to the GAU Access function used in the previous example, some subsections also include configuration information in table form. For example, the firewall subsection allows you to configure multiple firewall rules of various types by adding entries to the table for each rule type. We'll use the masquerading table in this example.

```
my %xml_settings = (
  action   => "cfgonly",      # Recognized actions: "cfgonly", "save", "apply"
  osaddr   => "10.0.0.0/8",   # Source Address/Subnet
  intf     => "All Untrusted", # Interface on which rule applies
);
$xmlcfg_firewall_masq_add( \%xml_settings );
```

Clearing a Subsection Table

There is no way to delete a single entry from a table. Deleting an entry from a table requires clearing the entire table and re-adding any entries you'd like to save. An example (clearing blacklist table in firewall)

```
my $result = $xmlcfg_firewall_blacklist_clear( { action => "apply" } );
```

XML Lib Functions

xmlcfg_gauaccess

Description

Configure the GAU (web GUI) access settings

Example Code

```
my %xml_settings = (
  action   => "save"
  method   => "http",        # HTTP or HTTPS
  fap      => "newpass",    # New password for admin/root (full access user)
  cap      => "newpass",    # New password for gauser (controlled access user)
  lap      => "newpass",    # New password for techsup (limited access user)
);
$xmlcfg_gauaccess( \%xml_settings)
```

Options

Option Name	Description	Recognized Values
method	GAU Access Method	HTTP or HTTPS
fap	New password for admin/root (full access user)	Any string
cap	New password for gauser (controlled access user)	Any string
lap	New password for techsup (limited access user)	Any string

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_systime

Description

Configure the system time settings

Example Code

```
my %xml_settings = (
    action          => "apply"
    timezone        => "CST6DT",
    ntp             => "yes",          # Enable/Disable Network Time Protocol
    ntpghost        => "pool.ntp.org", # Server to fetch time from
    ntpinterval     => "2h",          # How often to connect to server
);
$xmlcfg_systime( \%xml_settings );
```

Options

Option Name	Description	Recognized Values
timezone	Timezone to use for local time	Any timezone in GNU TZ format (?http://twiki.org/cgi-bin/xtra/tzdatepick.html)
ntp	<u>Enable/Disable?</u> Network Time Protocol?	yes/no
ntpghost	Server to fetch time from if NTP is enabled	IP address/domain name
ntpinterval	Time sync interval if NTP is enabled	2h

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_dns

Description

Configure DNS server settings

Example Code

```
my %xml_settings = (
    action          => "apply"
    domain          => "jbmelectronics.com", # Domain of the network the unit is on
    primary         => "192.168.10.20",     # First DNS server
    backup1         => "208.67.20.20",     # Secondary DNS server
);
```

Error Codes

```

    backup2    => "4.2.2.2",           # Tertiary DNS server
);
&xmlcfg_dns( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
domain	Local network domain	domain name
primary	First DNS server	IP address
backup1	Secondary DNS server	IP address
backup2	Tertiary DNS server	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_dns_host_add

Description

Add a static host to the DNS server

Example Code

```

my %xml_settings = (
    action    => "apply"
    host      => "myhost",          # Host Name
    domain    => "example.com",    # Domain
    addr      => "192.168.1.50",   # IP Address of host
);
&xmlcfg_dns_host_add( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
host	Host Name	hostname
domain	Domain	domain name
addr	IP Address of host	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth0_alias_add

Description

Add an alias to the eth0 interface

Example Code

Example Code

```
my %xml_settings = (
    action      => "apply"
    subintnum   => "0",           # Sub-Interface Number (i.e. the number after : )
    ipaddr      => "10.10.10.10", # IP Address of the alias
    netmask     => "255.0.0.0",   # Netmask of the alias
);
$xmlcfg_eth0_alias_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
subintnum	Sub-Interface Number (i.e. the number after :)	integer
ipaddr	IP Address of the alias	IP address
netmask	Netmask of the alias	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth1_alias_add

Description

Add an alias to the eth1 interface

Example Code

```
my %xml_settings = (
    action      => "apply"
    subintnum   => "0",           # Sub-Interface Number (i.e. the number after : )
    ipaddr      => "10.10.10.10", # IP Address of the alias
    netmask     => "255.0.0.0",   # Netmask of the alias
);
$xmlcfg_eth1_alias_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
subintnum	Sub-Interface Number (i.e. the number after :)	integer
ipaddr	IP Address of the alias	IP address
netmask	Netmask of the alias	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth0_vlan_add

Description

Add a VLAN to the eth0 interface

Example Code

```
my %xml_settings = (
  action    => "apply"
  vlanid    => "101",          # Sub-Interface Number (i.e. the number after .)
  ipaddr    => "10.10.10.10",  # IP Address of the VLAN interface
  netmask   => "255.0.0.0",    # Netmask of the VLAN interace
);
$xmlcfg_eth0_vlan_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
vlanid	Sub-Interface Number (i.e. the number after .)	integer
ipaddr	IP Address of the VLAN interface	IP address
netmask	Netmask of the VLAN interace	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth1_vlan_add

Description

Add a VLAN to the eth1 interface

Example Code

```
my %xml_settings = (
  action    => "apply"
  vlanid    => "101",          # Sub-Interface Number (i.e. the number after .)
  ipaddr    => "10.10.10.10",  # IP Address of the VLAN interface
  netmask   => "255.0.0.0",    # Netmask of the VLAN interace
);
$xmlcfg_eth1_vlan_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
vlanid	Sub-Interface Number (i.e. the number after .)	integer
ipaddr	IP Address of the VLAN interface	IP address
netmask	Netmask of the VLAN interace	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth0

Description

Configure general network settings for eth0 interface

Example Code

```
my %xml_settings = (
  action      => "apply"
  enable      => "yes/no",      # Enable/Disabled the interface
  spddplx     => "auto",        # or 10Mbps/Half, 100Mbps/Full, 100Mbps/Half
  usedhcp     => "yes/no",      # Obtain your address through DHCP?
  default     => "yes/no",      # Be the default route for the unit?
  address     => "192.168.0.1", # IP of interface, ignored if using DHCP
  netmask     => "255.255.255.0", # Netmask of interface, ignored if using DHCP
  gateway     => "192.168.0.1", # Gateway for interface, ignored if using DHCP
  peerdns     => "yes/no",      # Use DNS from DHCP server?
);
$xmlcfg_eth0( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	<u>Enable/Disabled?</u> the interface	yes/no
spddplx	Interface speed and duplex setting	"auto", "10Mbps/Half", "100Mbps/Full", or "100Mbps/Half"
usedhcp	Obtain your address through DHCP?	yes/no
default	Be the default route for the unit?	yes/no
address	IP of interface, ignored if using DHCP	IP Address
netmask	Netmask of interface, ignored if using DHCP	IP Address
gateway	Gateway for interface, ignored if using DHCP	IP Address
peerdns	Use DNS from DHCP server?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_eth1

Description

Configure general network settings for eth1 interface

Example Code

```
my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",          # Enable/Disabled the interface
    spddplx    => "auto",            # or 10Mbps/Half, 100Mbps/Full, 100Mbps/Half
    usedhcp    => "yes/no",          # Obtain your address through DHCP?
    default    => "yes/no",          # Be the default route for the unit?
    address    => "192.168.0.1",     # IP of interface, ignored if using DHCP
    netmask    => "255.255.255.0",   # Netmask of interface, ignored if using DHCP
    gateway    => "192.168.0.1",     # Gateway for interface, ignored if using DHCP
    peerdns    => "yes/no",          # Use DNS from DHCP server?
);
$xmlcfg_eth1( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	<u>Enable/Disabled?</u> the interface	yes/no
spddplx	Interface speed and duplex setting	"auto", "10Mbps/Half", "100Mbps/Full", or "100Mbps/Half"
usedhcp	Obtain your address through DHCP?	yes/no
default	Be the default route for the unit?	yes/no
address	IP of interface, ignored if using DHCP	IP Address
netmask	Netmask of interface, ignored if using DHCP	IP Address
gateway	Gateway for interface, ignored if using DHCP	IP Address
peerdns	Use DNS from DHCP server?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

`xmlcfg_usb0`

Description

Configure general network settings for usb0 interface

Example Code

```
my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",          # Enable/Disabled the interface
    spddplx    => "auto",            # or 10Mbps/Half, 100Mbps/Full, 100Mbps/Half
    usedhcp    => "yes/no",          # Obtain your address through DHCP?
    default    => "yes/no",          # Be the default route for the unit?
    address    => "192.168.0.1",     # IP of interface, ignored if using DHCP
    netmask    => "255.255.255.0",   # Netmask of interface, ignored if using DHCP
    gateway    => "192.168.0.1",     # Gateway for interface, ignored if using DHCP
    peerdns    => "yes/no",          # Use DNS from DHCP server?
);
$xmlcfg_usb0( \%xml_settings);
```

Example Code

Options

Option Name	Description	Recognized Values
enable	<u>Enable/Disabled?</u> the interface	yes/no
spddplx	Interface speed and duplex setting	"auto", "10Mbs/Half", "100Mbs/Full", or "100Mbs/Half"
usedhcp	Obtain your address through DHCP?	yes/no
default	Be the default route for the unit?	yes/no
address	IP of interface, ignored if using DHCP	IP Address
netmask	Netmask of interface, ignored if using DHCP	IP Address
gateway	Gateway for interface, ignored if using DHCP	IP Address
peerdns	Use DNS from DHCP server?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_cellular

Description

Configure general cellular interface settings. **NOTE:** For activation/provisioning settings, see xmlcfg_provisioning

Example Code

```
my %xml_settings = (
  action      => "apply"
  carrier     => "12345678901", # Wireless Carrier for cell connection
  autodetect  => "yes/no",    # Autodetect cell modem?
  enable      => "yes/no",    # Enable cell modem?
  username    => "user",      # Username for cellular ppp connection
  password    => "secret",    # Password for cellular ppp connection
  advenble    => "yes/no",    # Set to yes to use any options below
  dialstring  => "ATDT#777",  # Custom dial string for ppp connection
  apn         => "myapn",     # Custom APN for cellular network
  conntype    => 'd',         # Connection behavior.
  rxidle      => "100",       # Maximum Receive Idle value, an integer between 30 and 1000
  holdoff     => "yes/no",    # Enable dial holdoff?
  holdofftime => 15,          # Length of dial holdoff timer, in minutes
  speed       => "auto",      # Cellular network speed.
  dodtimeout  => "300",       # Amount of idle time to wait before bringing down DoD connection
  dns         => "yes/no",    # Use DNS from cellular connection?
  dfltrte     => "yes/no",    # Make PPP connection default route?
);
&xmlcfg_cellular( \%xml_settings );
```

Options

Option Name	Description	Recognized Values
carrier		

	Wireless Carrier for cell connection	none alltel att bellmobility_cdma bellmobility_gsm centennial generic_cdma generic_gsm jasper_wireless rogers sprint suncom tmobile unice1_cdma unice1_gsm uscellular verizon vodafone custom
autodetect	Autodetect cell modem?	yes/no
enable	Enable cell modem?	yes/no
username	Username for cellular ppp connection	string
password	Password for cellular ppp connection	string
advenble	Set to yes to use any options below	yes/no
dialstring	Custom dial string for ppp connection	string
apn	Custom APN for cellular network	string
conntype	Connection behavior	'd' for On-Demand, 'p' for "Persistant"
rxidle	Maximum Receive Idle value	integer 30-1000
holdoff	Enable dial holdoff?	yes/no
holdofftime	Length of dial holdoff timer, in minutes	15,30,45,60
speed	Cellular network speed	"auto", "high", or "low"
dodtimeout	Amount of idle time in seconds to wait before bringing down DoD connection	integer
dns	Use DNS from cellular connection?	yes/no
dfltrte	Make PPP connection default route?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_cellular_atcmd_add

Description

Add an AT command to cellular interface dialing routine

Example Code

```
my %xml_settings = (
    action    => "apply",
    atcmd     => "AT+CSQ?" # An AT command to add
);
&xmlcfg_cellular_atcmd_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
atcmd	An AT command to add	string

Error Codes

Error Code Meaning

1	Missing or invalid action
---	---------------------------

xmlcfg_cellular_pppcmd_add

Description

Add a PPP command to cellular interface dialing routine

Example Code

```
my %xml_settings = (
    action      => "apply",
    pppcmd      => "novj"      # A PPP command to add
);
$xmlcfg_cellular_pppcmds_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
pppcmd	A PPP command to add	string

Error Codes

Error Code Meaning

1	Missing or invalid action
---	---------------------------

xmlcfg_provisioning

Description

Configure initial activation/provisioning settings for cellular interface

Example Code

```
my %xml_settings = (
    action      => "apply",
    carrier     => "sprint",      # Sprint or Verizon
    esn        => "12345678901",  # ESN of cell module
    synctime   => "yes/no",      # Get time from cell tower?
    mipmode    => "pref",        # Mobile IP Mode "pref" or "only"
    spcunlock  => "123456",
    provisiontype => "vison",
    ppperrthreshold => 10,
    timeinvision => 1440,
    mdn        => "1234567890",
    min        => "1234567890",
    nai        => "user\@my.realm.com",
```

Options

```

aaapass      => "secret",
hapass       => "secret",
homeip       => "1.2.3.4",
prihaip      => "5.6.7.8",
sechaip      => "1.1.1.1",
haspi        => "1234",
aaaspi       => "1234",
);
&xmlcfg_provisioning( \%xml_settings );

```

Options

Option Name	Description	Recognized Values
carrier	The carrier on which we should attempt to provision	"sprint" or "verizon"
esn	ESN of cell module	Eight digit hex number
synctime	Get time from cell tower?	yes/no
mipmode	Mobile IP Mode	"pref" or "only"
spcunlock	The SPC/MSL unlock code for the cellular device	six digit integer
provisiontype	(Sprint Only) Network to attempt to provision	"vison" or "datalink"
ppperrthreshold	Maximum number of errors before the unit should attempt to reset the cell modem	integer
timeinvision	(Sprint Only)	1440,
mdn	The MDN (ie phone number) of the device	10 digit integer
min	The MIN of the device	10 digit interger
nai	NAI User name	string, NOTE: Escape special characters according to PERL rules.
aaapass	AAA password	string
hapass	HA password	string
homeip	Home IP	IP Address
prihaip	Primary HA IP address	IP address
sechaip	Secondary HA IP address	IP address
haspi	HA SPI	Integer
aaaspi	AAA SPI	Integer
rbp	Roaming Band Preference	"automatic", "home", "roam", "autoa", "autob", "bonly", or "aonly"

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_keepalive

Description

Configure TCP keepalive settings

Example Code

```
my %xml_settings = (
    action      => "apply"
    timeout     => 3600,      # Timeout for keepalive. Should be an integer
    probes      => 4,        # How many times to probe. Should be an integer
    syntxto     => 65,      # SYN Tx Timeout. Should be an integer
);
&xmlcfg_keepalive( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
timeout	Timeout for keepalive in seconds	integer
probes	How many times to probe	integer
syntxto	SYN Tx timeout in seconds	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_pppoe

Description

Configure PPPoE? on network interface

Example Code

```
my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",   # Enable/Disable PPPoE
    intf        => "eth0",     # Which interface to run PPPoE daemon on
    username    => "admin",    # Username for PPPoE connection
    password    => "secret",   # Password for PPPoE connection
    peerdns     => "yes/no",   # Use DNS from PPPoE server?
    pridns      => "4.2.2.2",  # Primary DNS if not using DNS from PPPoE server
    secdns      => "1.2.3.4",  # Secondary DNS if not using DNS from PPPoE server
    dod         => "yes/no",   # Dial on Demand?
    dfltrte     => "yes/no",   # Be the default route for the unit?
);
&xmlcfg_pppoe( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	<u>Enable/Disable?</u> <u>PPPoE?</u>	yes/no
intf	Which interface to run <u>PPPoE?</u> daemon on	interface name
username	Username for <u>PPPoE?</u> connection	string
password	Password for <u>PPPoE?</u> connection	string
peerdns	Use DNS from <u>PPPoE?</u> server?	yes/no

Example Code

pridns	Primary DNS if not using DNS from <u>PPPoE?</u> server	IP address
secdns	Secondary DNS if not using DNS from <u>PPPoE?</u> server	IP address
dod	Dial on Demand?	yes/no
dfiltrte	Be the default route for the unit?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_staticroutes_add

Description

Add a static route

Example Code

```
my %xml_settings = (
  action    => "apply"
  intf      => "eth+",           # Interface of route
  routetype => "Host",          # Either "Host" or "Network"
  targetIP  => "192.168.10.10", # IP Address of route destination
  subnet    => "192.168.10.0",  # Subnet
  netmask   => "255.255.255.0", # Netmask for "Network" route type
  gtwy      => "192.168.10.1",  # IP Address of the gateway for network
  metric    => "0",             # Metric rating for route, lower is mean faster
);
&xmlcfg_staticroutes_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
intf	Network Interface of route	interface name
routetype	Type of route	"Host" or "Network"
targetIP	IP Address of route destination if host type	IP address
subnet	Subnet of route if network type	IP address
netmask	Netmask for "Network" route type	IP address
gtwy	IP Address of the gateway for network	IP address
metric	Metric rating for route, lower is mean faster	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_certmgr_certificates_add

Description

Add a security certificate to the certificate manager

Example Code

```
my %xml_settings = (
    action    => "apply"
    name      => "MyCertName",    # Name of the cert in the GUI. Alphanumeric only
    type      => "ipseccert",    # What kind of cert.
    file      => "my.cert.crt"    # The filename of the certificate.
);
&xmllcfg_certmgr_certificates_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
name	Name of the certificate in the GUI. Alphanumeric only	string
type	What kind of certificate?	ipseccert, ssl, ipseccert, ipseckey, ipsecca, sslvpn
file	The filename of the certificate. The GAU expects this cert to be stored in /etc/jbm/certificates and will make the necessary symlink in the actual directory based on cert type	my.cert.crt

Error Codes

Error Code Meaning

1	Missing or invalid action
2	Missing/invalid cert name
3	Missing/invalid cert type
4	Missing/invalid cert file name

xmllcfg_vpn_ipsec

Description

Configure general IPSEC VPN settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",    # Enable IPSEC?
    natt      => "yes/no",    # Enable NAT Traversal
    multi     => "yes/no",    # More than one IPSEC tunnel?
    wpppconnect => "restart",  # When Wireless PPP comes up
    wpppdisconnect => "stop", # When Wireless PPP goes down
    pppoeconnect => "restart", # When PPPoE comes up
    pppoedisconnect => "stop", # When PPPoE goes down
    pppdialconnect => "restart", # When Dial PPP comes up
    pppdialdisconnect => "stop", # When Dial PPP goes down
);
```

Description

```
&xmllcfg_vpn_ipsec( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable IPSEC?	yes/no
natt	Enable NAT Traversal	yes/no
multi	More than one IPSEC tunnel?	yes/no

The following options tell IPSEC what to do when the interface # makes/loses a connection.

wppconnect	When Wireless PPP comes up	"restart", "stop", or "nothing"
wppdisconnect	When Wireless PPP goes down	"restart", "stop", or "nothing"
pppoeconnect	When <u>PPPoE?</u> comes up	"restart", "stop", or "nothing"
pppoeddisconnect	When <u>PPPoE?</u> goes down	"restart", "stop", or "nothing"
pppdialconnect	When Dial PPP comes up	"restart", "stop", or "nothing"
pppdialdisconnect	When Dial PPP goes down	"restart", "stop", or "nothing"

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_vpn_ipsec_add

Description

Add an IPSEC VPN connection

Example Code

```
my %xml_settings = (
  action      => "apply"
  enable      => "yes/no",      # Enable this IP in IP tunnel?
  name        => "MyIPSECTunnel", # Name for this IPSEC tunnel
  aggrmode    => "yes/no",      # Enable Aggressive ISAKMP mode?
  plenc       => "aes",         # Phase 1 encryption (aes,aes256,des,3des)
  plauth      => "md5",         # Phase 1 authentication (md5,sha1)
  pldhg       => "modp1024",    # Phase 1 DH Group (none, modp768/1024/1536/2048)
  plsatime    => "60",         # Phase 1 ISAKMP Time (in minutes)
  encmethod   => "psk",        # Set to psk to enable psk mode
  psk         => "xxx",        # Required if encmethod => "psk"
  leftid      => "",           # Left or "Local" peer ID
  rightid     => "",           # Right or "Remote" peer ID
  p2enc       => "aes",         # Phase 2 encryption (aes,aes256,des,3des)
  p2auth      => "md5",         # Phase 2 authentication (md5,sha1)
  p2satime    => "480",        # Phase 2 ISAKMP Time (in minutes)
  pfs         => "yes/no",     # Enabled Perfect Forward Secrecy?
  dpd         => "restart",     # Dead Peer Detection Action (restart,hold)
  dpdintvl    => "30",         # Dead Peer Detection Interval (in seconds)
  dpdtimeout  => "60",         # Dead Peer Detection Timeout (in seconds)
  leftip      => "1.2.3.4",     # Local Public IP Address
  leftnexthop => "172.16.0.10", # Local Gateway IP Address
  leftsubnet  => "172.16.0.0/24", # Local Private Subnet(s)
```

Example Code

```

rightip      => "5.6.7.8",      # Remote Public IP Address
rightnexthop=> "10.0.0.1",     # Remote Gateway IP Address
rightsubnet => "10.0.0.0/8",   # Remote Private Subnet(s)
);
&xmllcfg_vpn_ipsec_add( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
enable	Enable this IPSEC tunnel?	yes/no
name	Name for this IPSEC tunnel	string
aggrmode	Enable Aggressive ISAKMP mode?	yes/no
p1enc	Phase 1 encryption)	aes,aes256,des,3des
p1auth	Phase 1 authentication	md5,sha1
p1dhg	Phase 1 DH Group	none, modp768/1024/1536/2048
p1satime	Phase 1 ISAKMP Time (in minutes)	integer
encmethod	Set to psk to enable psk mode	psk
psk	Required if encmethod "psk"	string
leftid	Left or "Local" peer ID	string
rightid	Right or "Remote" peer ID	string
p2enc	Phase 2 encryption	aes,aes256,des,3des
p2auth	Phase 2 authentication	md5,sha1
p2satime	Phase 2 ISAKMP Time (in minutes)	integer
pfs	Enabled Perfect Forward Secrecy?	yes/no
dpd	Dead Peer Detection Action	restart,hold
dpdintvl	Dead Peer Detection Interval (in seconds)	integer
dpdtimeout	Dead Peer Detection Timeout (in seconds)	integer
leftip	Local Public IP Address	y
leftnexthop	Local Gateway IP Address	IP address
leftsubnet	Local Private Subnet(s)	Subnet in CIDR format
rightip	Remote Public IP Address	IP address
rightnexthop	Remote Gateway IP Address	IP address
rightsubnet	Remote Private Subnet(s)	Netmask in CIDR format

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_vpn_gre_add

Description

Add a GRE VPN tunnel

Example Code

Example Code

```

my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",           # Enable this GRE tunnel?
    name        => "MyTunnel",         # Name of this GRE tunnel
    localip     => "192.168.10.1",     # Optional address to limit tunnel connections to
    localnet    => "192.168.10.0/24",  # Local, private GRE network/mask
    remoteip    => "10.1.2.3",         # IP address for endpoint of this tunnel
    remotenet   => "10.0.0.0/8",      # Remote, private GRE network/mask
    ikey        => "1",                # Optional Inbound key. Either number or IP
    okey        => "2",                # Optional Outbound key. Either number or IP
    ttl         => 64,                 # Time To Live, an integer
    usemulticast => "yes/no",         # Enable multicast on this tunnel?
    usearp      => "yes/no",         # Use ARP on this tunnels?
    onboot      => "yes/no",         # Start tunnel on device boot up?
);
&xmllcfg_vpn_gre_add( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
enable	Enable this GRE tunnel?	yes/no
name	Name of this GRE tunnel	string
localip	Optional address to limit tunnel connections to	IP address
localnet	Local, private GRE network/mask	Subnet in CIDR format
remoteip	IP address for endpoint of this tunnel	IP address
remotenet	Remote, private GRE network/mask	Subnet in CIDR format
ikey	Optional Inbound key	Integer or IP
okey	Optional Outbound key	Integer or IP
ttl	Time To Live	integer
usemulticast	Enable multicast on this tunnel?	yes/no
usearp	Use ARP on this tunnels?	yes/no
onboot	Start tunnel on device boot up?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_vpn_ipip_add

Description

Add an IP in IP tunnel

Example Code

```

my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",           # Enable this IP in IP tunnel?
    localip     => "192.168.10.1",     # Optional address to limit tunnel connections to

```

Example Code

```

localnet    => "192.168.10.0/24", # Local, private IP in IP network/mask
remoteip    => "10.1.2.3",       # IP address for endpoint of this tunnel
remotenet   => "10.0.0.0/8",    # Remote, private IP in IP network/mask
ttl         => 64,              # Time To Live, an integer
onboot      => "yes/no",        # Start tunnel on device boot up?
);
&xmllcfg_vpn_ipip_add( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
enable	Enable this IP in IP tunnel?	yes/no
localip	Optional address to limit tunnel connections to	IP address
localnet	Local, private IP in IP network/mask	Subnet in CIDR format
remoteip	IP address for endpoint of this tunnel	IP address
remotenet	Remote, private IP in IP network/mask	Subnet in CIDR format
ttl	Time To Live	integer
onboot	Start tunnel on device boot up?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_dhcpserver

Description

Configure DHCP server settings **WARNING:** To ensure that your configuration is saved properly, make sure you configure and apply changes to your interfaces before you configure a DHCP server to run on one of them. Failure to do so could result in an invalid configuration.

Example Code

```

my %xml_settings = (
  action      => apply,
  weisdns     => "yes/no",           # Are we the DNS server for the network?
  domainname  => "domain.example.com", # Domain Name of network to serve DHCP
  dns1        => "192.168.10.40",    # Primary DNS server to lookup names
  dns2        => "4.2.2.2",          # Secondary DNS server to lookup names
  deflease    => 14400,              # Default lease time for a DHCP offer
  minlease    => 3600,               # Minimum lease time for a DHCP offer
  maxlease    => 86400,              # Maximum lease time for a DHCP offer
  eth0_enable => "yes/no",
  eth0_saddr  => "192.168.0.100",
  eth0_eaddr  => "192.168.0.200",
  eth1_enable => "yes/no",
  eth1_saddr  => "192.168.1.100",
  eth1_eaddr  => "192.168.1.200",
  usb0_enable => "yes/no",
  usb0_saddr  => "192.168.111.100",
  usb0_eaddr  => "192.168.111.200",
  wifi_enable => "yes/no",
  wifi_saddr  => "192.168.10.100",

```

```
wifi_eaddr => "192.168.10.200",
);
&xmllcfg_dhcpserver(\%xml_settings);
```

Options

Option Name	Description	Recognized Values
weisdns	Are we the DNS server for the network?	yes/no
domainname	Domain Name of network to serve DHCP	domain.example.com
dns1	Primary DNS server to lookup names	IP address
dns2	Secondary DNS server to lookup names	IP address
deflease	Default lease time for a DHCP offer in seconds	14400
minlease	Minimum lease time for a DHCP offer in seconds	3600
maxlease	Maximum lease time for a DHCP offer in seconds	86400
eth0_enable	Enable DHCP on eth0?	yes/no
eth0_saddr	The address to start serving from on that interface	IP address
eth0_eaddr	The last address to serve on that interface	IP address
eth1_enable	Enable DHCP on eth1?	yes/no
eth1_saddr	The address to start serving from on that interface	IP address
eth1_eaddr	The last address to serve on that interface	IP address
wifi_enable	Enable DHCP on wifi?	yes/no
wifi_saddr	The address to start serving from on that interface	IP address
wifi_eaddr	The last address to serve on that interface	IP address
usb_enable	Enable DHCP on usb?	yes/no
usb_saddr	The address to start serving from on that interface	IP address
usb_eaddr	The last address to serve on that interface	IP address

Error Codes

Error Code	Meaning
1	Missing or invalid action

2 means invalid DHCP server parameters

xmlcfg_dhcprelay

Description

Configure DHCP Relay settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",      # Enable DHCP Relay service?
    onboot    => "yes/no",      # Start DHCP at boot time?
);
$xmlcfg_dhcprelay( \%xml_settings );
```

Options

Option Name	Description	Recognized Values
enable	Enable DHCP Relay service?	yes/no
onboot	Start DHCP at boot time?	yes/no

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_dhcprelay_intf_add

Description

Add an interface to the DHCP Relay service

Example Code

```
my %xml_settings = (
    action    => "apply"
    intf      => "eth0",      # An interface that DHCP Relay should use
);
$xmlcfg_dhcprelay_intf_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
intf	An interface that DHCP Relay should use	interface name

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_dhcprelay_rmtsrvrs_add

Description

Add a remote server to DHCP relay service

Example Code

```
my %xml_settings = (
    action    => "apply"
    rmtsrvr   => "192.168.10.100", # A remote server to forward DHCP to/from
);
$xmlcfg_dhcprelay_rmtsrvrs_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
rmtsrvr	A remote server to forward DHCP to/from	IP address

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_dyndns

Description

Configure Dynamic DNS Service settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",           # Enable DynDNS service
    username  => "user",             # Username for DynDNS service
    password  => "secret",           # Password for DynDNS service
    intf      => "ppp0",             # Inteface to monitor for IP changes
    host      => "myhosthame.com",   # Hostname to update with IP changes
    svctype   => "dyndns",           # Type of service to use.
    server    => "dyndns.org",       # Server to connect to for DynDNS services
    request   => "/nic/update",      # Server Request URI Path
    partner   => "none",             # Partner DNS. For EasyDNS only
    conntype  => "http",             # For TZO only
);
$xmlcfg_dyndns( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable DynDNS service	yes/no
username	Username for DynDNS service	string
password	Password for DynDNS service	string
intf	Interface to monitor for IP changes	interface name
host	Hostname to update with IP changes	domain name
svctype	Type of service to use	Partial list includes: dyndns, easydns, gnudip, zoneedit, tzo
server	Server to connect to for DynDNS services	IP address or domain name
request	Server Request URI Path	file path as string
partner	Partner DNS. For EasyDNS only	string
conntype	For TZO only	string

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall

Description

Configure general firewall settings

Example Code

```
my %xml_settings = (
    action      => "apply",    # Action
    enable      => "y/n",      # Enable firewall
    ping        => "y/n",      # Allow ping packets by default?
    pingwlname  => "default",   # ping wlname
    ssh         => "y/n",      # Allow SSH connections by default?
    sshwlname   => "default",   # ssh wlname
    telnet      => "y/n",      # Allow Telnet connections by default?
    telnetwlname => "default",  # telnet wlname
    modbus      => "y/n",      # Allow Modbus connections by default?
    modbuswlname => "default",  # modbus wlname
    gau         => "y/n",      # Allow GAU connections by default?
    gauwlname   => "default",   # gau wlname
    snmp        => "y/n",      # Allow SNMP connections by default?
    snmpwlname  => "default",   # ping wlname
);
&xmlcfg_firewall( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
-------------	-------------	-------------------

enable	Enable firewall	yes/no
ping	Allow ping packets by default?	yes/no
pingwlname	ping whitelist name?	default
ssh	Allow SSH connections by default?	yes/no
sshwlname	ssh whitelist name?	default
telnet	Allow Telnet connections by default?	yes/no
telnetwlname	telnet whitelist name?	default
ipsec	Allow IPSEC connections by default?	yes/no
natt	Allow NAT Traversal?	yes/no
modbus	Allow Modbus connections by default?	yes/no
modbuswlname	modbus whitelist name?	default
gau	Allow GAU connections by default?	yes/no
gawwlname	gau whitelist name?	default
snmp	Allow SNMP connections by default?	yes/no
snmpwlname	snmp whitelist name?	default

Error Codes

Error Code Meaning

1	Missing or invalid action
2	Missing/invalid ping whitelist
3	Missing/invalid ssh whitelist
4	Missing/invalid telnet whitelist
5	Missing/invalid modbus whitelist
6	Missing/invalid gau whitelist
7	Missing/invalid snmp whitelist

xmlcfg_firewall_redir_add

Description

Add a redirect (ie port forward) rule to the firewall

Example Code

```
my %xml_settings = (
    action      => "apply"
    odport     => 1234,          # Original Destination Port 1-65535 (required)
    intf       => "All Untrusted", # Interface name (default: All Untrusted)
    ndaddr     => "192.168.8.16", # New IP Address (default: 127.0.0.1)
    ndport     => 22,          # New Destination Port Number 1-65535 (default: odport)
    proto      => "TCP",      # or "UDP" (default: TCP)
    osaddr     => "0.0.0.0/0", # Source IP Address/Network (default: 0.0.0.0/0)
    whitelist  => "wl_name",  # Source IP whitelist (default: default whitelist)
);
$xmlcfg_firewall_redir_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
odport	Original Destination Port (required)	Integer 1-65535
intf	Interface name (default: All Untrusted)	interface name
ndaddr	New IP Address (default: 127.0.0.1)	IP address
ndport	New Destination Port Number (default: odport)	Integer 1-65535
proto	Protocol of rule	TCP or UDP
osaddr	Source IP <u>Address/Network?</u> (default: 0.0.0.0/0)	Subnet in CIDR format
whitelist	Source IP whitelist (default: default whitelist)	string

Error Codes

Error Code Meaning

1	Missing or invalid action
2	Missing/invalid odport
3	Unrecognized whitelist name

xmlcfg_firewall_trustedintfs_add

Description

Add an interface to the trusted interface list

Example Code

```
my %xml_settings = (
    action    => "apply"
    intf      => "eth0", # The interface to add to the trusted list
);
$xmlcfg_firewall_trustedintfs_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
intf	The interface to add to the trusted list	interface name

Error Codes

Error Code Meaning

1	Missing or invalid action
---	---------------------------

xmlcfg_firewall_untrustedintfs_add

Description

Add an interface to the untrusted interface list

Example Code

```
my %xml_settings = (
    action    => "apply"
    intf      => "ppp+", # The interface to add to the untrusted list
);
$xmlcfg_firewall_untrustedintfs_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
intf	The interface to add to the untrusted list	interface name

Error Codes

Error Code Meaning

1 Missing or invalid action

`xmlcfg_firewall_allow_add`

Description

Add an allow (ie service access) rule to the firewall

Example Code

```
my %xml_settings = (
    action    => "apply"
    sport     => "7785",          # Start Port 1-65535 (required)
    eport     => "8875",          # Ending Port 1-65535 (default: sport)
    intf      => "All Untrusted", # Interface name (default: All Untrusted)
    proto     => "TCP",           # or "UDP" (default: TCP )
    whitelist => "wl_name",      # Source IP whitelist (default: default whitelist)
);
$xmlcfg_firewall_allow_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
sport	Start Port(required)	integer 1-65535
eport	Ending Port (default: sport)	integer 1-65535
intf	Interface name (default: All Untrusted)	an interface name
proto	Protocol of rule	TCP or UDP
whitelist	Source IP whitelist (default: default whitelist)	string

Error Codes

Error Code Meaning

1 Missing or invalid action

2 Missing/invalid sport

3 Unrecognized whitelist name

Example Code

xmlcfg_firewall_nat_add

Description

Add a NAT rule to the firewall

Example Code

```
my %xml_settings = (
  action      => "apply"
  odaddr      => "0.0.0.0",      # Original Destination Address
  ndaddr      => "192.168.10.1", # New Destination Address
  proto       => "TCP"          # Protocol of connection (TCP,UDP)
  osaddr      => "0.0.0.0"      # Source IP Address
);
$xmlcfg_firewall_nat_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
odaddr	Original Destination <u>Address/Subnet?</u>	Subnet in CIDR format
ndaddr	New Destination Address	IP address
proto	Protocol of connection	TCP or UDP
osaddr	Source IP <u>Address/Subnet?</u>	Subnet in CIDR format

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall_blacklist_add

Description

Add a blacklist rule to the firewall

Example Code

```
my %xml_settings = (
  action      => "apply"
  subnet      => "50.0.0.0/8",  # Subnet to blacklist
);
$xmlcfg_firewall_blacklist_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
subnet	Subnet to blacklist	Subet in CIDR format

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall_dmz_add

Description

Add a DMZ rule to the firewall

Example Code

```
my %xml_settings = (
    action    => "apply"
    intf      => "All Untrusted", # Interface
    ndaddr    => "172.16.10.10",  # The address of the DMZ Host
    osaddr    => "0.0.0.0/0",    # Source Address/Subnet
);
$xmlcfg_firewall_dmz_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
intf	Interface of rule	interface name
ndaddr	The address of the DMZ Host	IP address
osaddr	Source <u>Address/Subnet?</u>	Subnet in CIDR format

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall_masq_add

Description

Add a masquerade rule to the firewall

Example Code

```
my %xml_settings = (
    action    => "apply"
    osaddr    => "10.0.0.0/8",    # Source Address/Subnet
    intf      => "All Untrusted", # Interface
);
$xmlcfg_firewall_masq_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
osaddr	Source <u>Address/Subnet?</u>	Subnet in CIDR format

intf Interface of rule interface name

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall_filter_add

Description

Add a filter rule to the firewall

Example Code

```
my %xml_settings = (
    action      => "apply"
    iintf       => "eth1",      # Inbound Interface (default: All Trusted)
    ointf       => "eth0",      # Outbound Interface (default: All Trusted)
    odaddr      => "10.1.1.1",  # Destination Address (required)
    whitelist   => "wl_name",   # Source IP whitelist (default: default whitelist)
);
&xmlcfg_firewall_filter_add( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
iintf	Inbound Interface (default: All Trusted)	interface name
ointf	Outbound Interface (default: All Trusted)	interface name
odaddr	Destination Address (required)	IP address
whitelist	Source IP whitelist (default: default whitelist)	string

Error Codes

Error Code Meaning

1 Missing or invalid action

2 Missing/invalid odaddr

3 Unrecognized whitelist name

xmlcfg_firewall_whitelist_add

Description

Add a whitelist to the firewall

Example Code

```
my %xml_settings = (
    action      => "apply",
    name        => "WhitelistName",  # Name of whitelist. Used when referring to list in other firewall
    subnet     => "10.1.1.1",      # Subnet to add to whitelist.
);
&xmlcfg_firewall_whitelist_add( \%xml_settings);
```

Options

Options

Option Name	Description	Recognized Values
name	Name of whitelist. Used when referring to list in other firewall settings	string
subnet	Subnet to add to whitelist. To assign multiple subnets to a whitelist, add each subnet individually, but use the same name each time	IP address or subnet in CIDR form

Error Codes

Error Code Meaning

- 1 Missing or invalid action
- 2 name or subnet is missing

xmlcfg_firewall_whitelist_clear

Description

Clear the whitelist to default state

Example Code

```
my %xml_settings = (
    action      => "apply",
    defaultsubnet => "0.0.0.0/0"      # (3.12 and higher) Optional, default subnet list to use in default
);
$xmlcfg_firewall_whitelist_clear( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
defaultsubnet	(3.12 and higher) Optional, default subnet list to use in default whitelist. CIDR notation, semicolon separated	string

Error Codes

Error Code Meaning

- 1 Missing or invalid action

xmlcfg_oob_add

Description

Add an Out-of-band management port

Example Code

```
my %xml_settings = (
    action      => "apply",
    intf        => "ttyS1",          # The serial interface to run oob on
    speed       => "115200",        # Speed of serial TTY
);
```

Options

```

bits           => "8",           # Bits used by serial protocol, usually 8
parity        => "n",           # n is even parity, o is odd parity, usually n
stopbits      => "1",           # Number of stop bits, usually 1
port          => "4001",        # TCP Port that OOB should bind to
useciscoaph   => "yes",        # Use Cisco APH?
localbind     => "no",         # Only bind to localhost (127.0.0.1) interface?
telnetservermode => "yLFN",    # Cisco preferred is yLFN and recommended setting.
&xmlcfg_oob_add( \%xml_settings );

```

Options

Option Name	Description	Recognized Values
intf	The serial interface to run oob on	ttyS[0-9]
speed	Speed of serial TTY	integer, most common speed recognized
bits	Bits used by serial protocol, usually 8	integer
parity	n is even parity, o is odd parity, usually n	n or o
stopbits	Number of stop bits, usually 1	integer
port	TCP Port that OOB should bind to	integer 1-65535
useciscoaph	Use Cisco APH?	yes/no
localbind	Only bind to localhost (127.0.0.1) interface?	yes/no
telnetservermode	Mode for telnet server. Some devices requirement special operating modes. Cisco preferred is yLFN and is recommended setting.	n (Disabled)
y (Basic TELNET Server)		
yLF (Basic + drop LF)		
yLFN (Basic + drop LF & NULL (Cisco Preferred))		
yLFNH (Basic + drop LF & NULL/HIGH)		
yCR (Basic + drop CR)		
yCRN (Basic + drop CR & NULL)		
yCRNH (Basic + drop CR & NULL/HIGH)		

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_firewall_enable_whitelist

Description

Allow a service through the firewall but only to whitelisted IPs?

Example Code

```

my %xml_settings = (
    action    => "apply"
    name      => "WhitelistName",    # Name of whitelist to use when restricting access
    service   => "ping",            # Service to allow
);
&xmlcfg_firewall_enable_whitelist( \%xml_settings);

```

Example Code

Options

Option Name	Description	Recognized Values
name	Name of whitelist to use when restricting access	<u>WhitelistName?</u>
service	Service to allow to whitelisted IP address	ping, telnet, ssh, or gau

Error Codes

Error Code Meaning

1	Missing or invalid action
2	Argument for service type is missing or unrecognized
3	Missing argument for whitelist name
4	Unrecognized whitelist name

xmlcfg_firewall_disable_whitelist

Description

Disallow access to a service from whitelist through the firewall

Example Code

```
my %xml_settings = (
    action    => "apply"
    name      => "WhitelistName",      # Name of whitelist to use when restricting access
    service   => "telnet"              # Service to disallow
);
$xmlcfg_firewall_enable_ping_whitelist( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
name	Name of whitelist to use when restricting access	<u>WhitelistName?</u>
service	Service to disallow to whitelisted IP address	ping, telnet, ssh, or gau

Error Codes

Error Code Meaning

1	Missing or invalid action
2	Argument for service type is missing or unrecognized

xmlcfg_gmuclient

Description

Configure GMU client settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",              # Enable GMU checkin client?
);
```

Options

```

priservaddr    => "www.mygmu.com",    # Primary GMU server
secservaddr    => "backup.mygmu.com", # Secondary GMU Server
useaddr        => "both",          # Which server(s) to send checkins to
ainterval     => "480",           # How often to check in, in minutes
einterval     => "30",            # How long to wait after a failed checkin
accessmeth    => "http",          # or https for an encrypted connection
servport      => "18080",         # Port to connect to on GMU server
secservport   => "18081",         # Secure port to connect to on GMU server (if using HTTPS for
bindintf      => "None",          # Use eth0/eth1/ppp0 to force updates over that interface
rapidcheckin  => "0",            # How long to wait between rapid updates. 0 is disabled
);
&xmllcfg_gmuclient( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
enable	Enable GMU checkin client?	yes/no
priservaddr	Primary GMU server	IP address or domain name
secservaddr	Secondary GMU Server	IP address or domain name
useaddr	Which server(s) to send checkins to	"pri"(mary only), "sec"(ondary only), "both", or "error" (fallback to sec on pri fail)
ainterval	How often to check in, in minutes	integer
einterval	How long in minutes to wait before retrying a failed checkin	integer
accessmeth	Method to use when contacting GMU server	http or https
servport	Port to connect to on GMU server	integer 1-65535
secservport	Secure port to connect to on GMU server (if using HTTPS for checkins)	integer 1-65535
bindintf	Use eth0/eth1/ppp0 to force updates over that interface, "None" to use default interface	interface name or "None"
rapidcheckin	How long to wait between rapid updates. 0 is disabled	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_syslog

Description

Configure system logging settings

Example Code

```

my %xml_settings = (
  action    => "apply"
  maxlines  => "230",      # How many lines to allow before rotating
  rmtlog    => "yes/no",   # Use a remote syslog server?
);

```

Example Code

```

    rmthost    => "log.com",    # Hostname/IP of remote syslog server if enabled
);
&xmllcfg_syslog( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
maxlines	How many lines to allow before rotating	integer
rmtlog	Use a remote syslog server?	yes/no
rmthost	Hostname/IP of remote syslog server if enabled	IP address or domain name

Error Codes

Error Code Meaning

1 Missing or invalid action

xmllcfg_sshserver

Description

Configure SSH server settings

Example Code

```

my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",    # Enable SSH server
    advanced    => "yes/no",    # Use advanced options? Should be yes if you use any options below here
    listenaddr  => "0.0.0.0",    # Address to bind daemon to
    listenport  => "22",        # Port to accept connections on. Default is 22
    protocol    => "Multiple",   # or "Version 1" or "Version 2". Which SSH version to use
    gracetime   => "30",        # How long to allow a connection to be up before login
    maxstartups => "10",        # How many concurrent connections allowed?
    rootlogin   => "yes/no",    # Allow the root superuser to log in over SSH?
);
&xmllcfg_sshserver( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
enable	Enable SSH server	yes/no
advanced	Use advanced options? Should be yes if you use any options below here	yes/no
listenaddr	Address to bind daemon to	IP address
listenport	Port to accept connections on. Default is 22	integer 1-65535
protocol	Which SSH version to use	"Version 1", "Version 2", or "Multiple"
gracetime	How long in seconds to allow a connection to be open before login	integer
maxstartups	How many concurrent connections allowed?	integer
rootlogin	Allow the root superuser to log in over SSH?	yes/no

Example Code

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_sslclient

Description

Configure general SSL client connection settings

Example Code

```
my %xml_settings = (
    action          => "apply"
    enablessl       => "yes/no",
    activityloglevel => "Full",
    wait4connection => "0",
    idletimeout     => "1440",
    advancesetup    => "yes/no",
    bindacceptintf  => "ppp0",
    bindoutgoingintf => "ppp0",
    ciphers         => "RC4-MD5:RC4-SHA2:SSLv3",
    certfile        => "/home/httpd/certfile.pem",
    sslkeepalive    => "None/All/Accept/Local/Remote",
);
&xmlcfg_sslclient( \%xml_settings);
```

Options

Option Name Description Recognized Values

enablessl	yes/no	
activityloglevel	Full	
wait4connection	0	
idletimeout	1440	
advancesetup	yes/no	
bindacceptintf	ppp0	
bindoutgoingintf	ppp0	
ciphers	RC4-MD5:RC4-SHA2:SSLv3	
certfile	/home/httpd/certfile.pem	
sslkeepalive	<u>None/All/Accept/Local/Remote?</u>	

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_sslserver

Description

Configure general SSL server connection settings

Example Code

```

my %xml_settings = (
    action          => "apply"
    enablessl       => "yes/no",
    activityloglevel => "Full",
    wait4connection => "0",
    idletimeout     => "1440",
    advancesetup    => "yes/no",
    bindacceptintf  => "ppp0",
    bindoutgoingintf => "ppp0",
    ciphers         => "RC4-MD5:RC4-SHA2:SSLv3",
    certfile        => "/home/httpd/certfile.pem",
    sslkeepalive   => "None/All/Accept/Local/Remote",
);
$xmlcfg_sslserver( \%xml_settings);

```

Options

Option Name Description Recognized Values

enablessl	yes/no	
activityloglevel	Full	
wait4connection	0	
idletimeout	1440	
advancesetup	yes/no	
bindacceptintf	ppp0	
bindoutgoingintf	ppp0	
ciphers	RC4-MD5:RC4-SHA2:SSLv3	
certfile	/home/httpd/certfile.pem	
sslkeepalive	<u>None/All/Accept/Local/Remote?</u>	

Error Codes

Error Code Meaning

1	Missing or invalid action
---	---------------------------

`xmlcfg_telnetserver`

Description

Configure telnet server settings

Example Code

```

my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",    # Enable Telnet server?
);

```

Description

```
&xmlcfg_telnetserver( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable Telnet server?	yes/no

Error Codes

Error Code Meaning

1	Missing or invalid action
---	---------------------------

xmlcfg_dmzhost

Description

Configure up a DMZ host in the firewall

Example Code

```
my %xml_settings = (
  action      => "apply",
  enable      => "yes/no",
  internalintf => "eth1",
  hostaddr    => "192.168.0.2",
  ipsec       => "yes/no",
  icmp        => "yes/no",
  telnet      => "yes/no",
  telnetport  => "2023",
  ssh         => "yes/no",
  sshport     => "2022",
  gau         => "yes/no",
  gmu         => "yes/no",
);
&xmlcfg_dmzhost( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable		yes/no
internalintf	interface name	
hostaddr	IP address	
ipsec		yes/no
icmp		yes/no
telnet		yes/no
telnetport	2023	
ssh		yes/no
sshport	2022	
gau		yes/no
gmu		yes/no

Example Code

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_ipfallback

Description

Configure IP fallback settings

Example Code

```
my %xml_settings = (
  action    => "apply"
  enable    => "yes/no",    # Enable IP Fallback?
  pintf     => "ppp0",      # Primary Interface
  pcmd      => "None",      # Primary interface external command script
  sintf     => "eth0",      # Secondary Interface
  scmd      => "None",      # Secondary interface external command script
  usegw     => "yes/no",    # Use Gateway?
  testip    => "1.2.3.4",   # Primary Test IP address
  interval  => "30",        # How long between connectivity tests
  testpkts  => "5",         # How many packets to send in test
  lostpkts  => "2",         # How many lost packets to accept before considering connection failed
  debug     => "0",        # Debug level for IP Fallback
);
&xmlcfg_ipfallback( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable IP Fallback?	yes/no
pintf	Primary Interface	interface name
pcmd	Primary interface external command script (default: None)	string
sintf	Secondary Interface	interface name
scmd	Secondary interface external command script	string
usegw	Use Gateway?	yes/no
testip	Primary Test IP address	IP address
interval	How long between connectivity tests	integer
testpkts	How many packets to send in test	integer
lostpkts	How many lost packets to accept before considering connection failed	integer
debug	Debug level for IP Fallback	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_iptrans

Description

Configure IP Transparency settings

Example Code

```
my %xml_settings = (
  action      => "apply"
  enable      => "yes/no",           # Enable IP Transparency?
  internalintf => "eth1",           # Which interface to treat as internal?
  dhcpseable  => "yes/no",           # Enable DHCP server?
  dhcpsubnet  => "yes/no",           # y if calculated, n if point to point
  dhcpleasetime => "14400",          # Default lease time for DHCP offers
  macfilter   => "00:11:22:33:44:55", # If given, allow only the given MACs
  telnet      => "yes/no",           # Allow telnet access to device?
  telnetport  => "2023",             # Which port to allow telnet on
  ssh         => "yes/no",           # Allow SSH access to device?
  sshport     => "2022",             # Which port to allow SSH on
  gau         => "yes/no",           # Allow access to GAU utility?
  gmu         => "yes/no",           # Allow access to GMU utility?
  oobenable   => "yes/no",           # Enable Out-Of-Band redirect?
  oobport     => "202",              # Port to redirect OOB requests to
  prenable    => "yes/no",           # Enable Port redirecting?
  rtenable    => "yes/no",           # Enable Traffic restrictions?
  rtmode      => "only",             # Mode for traffic restrictions
);
&xmlcfg_iptrans( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable IP Transparency?	yes/no
internalintf	Which interface to treat as internal?	interface name
dhcpseable	Enable DHCP server?	yes/no
dhcpsubnet	y if calculated, n if point to point	yes/no
dhcpleasetime	Default lease time for DHCP offers in seconds	integer
macfilter	If given, allow only the given <u>MACs</u>	MAC address in AA:BB:CC:DD:EE:FF format
telnet	Allow telnet access to device?	yes/no
telnetport	Which port to allow telnet on	integer 1-65535
ssh	Allow SSH access to device?	yes/no
sshport	Which port to allow SSH on	integer 1-65535
gau	Allow access to GAU utility?	yes/no
gmu	Allow access to GMU utility?	yes/no
oobenable	Enable Out-Of-Band redirect?	yes/no
oobport	Port to redirect OOB requests to	integer 1-65535
prenable	Enable Port redirecting?	yes/no
rtenable	Enable Traffic restrictions?	yes/no

rtmode Mode for traffic restrictions none, only, in, or out

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_pppdialbkup

Description

Configure PPP Dial Backup settings

Example Code

```
my %xml_settings = (
    action      => "apply"
    enable      => "yes/no",      # Enable PPP dial backup?
    ttyport     => "/dev/ttyS3",  # Which port the modem is on
    dialstring  => "8004897781",  # Phone number to dial
    username    => "itsme",      # Username for ISP
    password    => "supersecret", # Password for ISP
    dialondemand => "yes/no",    # Y for dial on demand, N for persistant
    usedefroute => "yes/no",    # Use peer as default route?
    dodidletimeout => "300",    # How long in seconds a connection is allowed to remain 'idle'
    advancesetup => "yes/no",    # Y if using any options below here, n otherwise
    rxidletimeout => "600",    # How long to wait before closing a connection
    modem       => "yes/no",    # Y enables DTR and CD lines
    crtscts     => "yes/no",    # Y enables hardware flow control using RTS/CTS
    modemspkr   => "yes/no",    # Enable modem speaker?
    customATstring => "ATD&",  # Optional custom initialization string for modem
);
&xmlcfg_pppdialbkup( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable PPP dial backup?	yes/no
ttyport	Which port the modem is on	/dev/ttyS[0-9]
dialstring	Phone number to dial	phone number - no spaces, dashes, etc
username	Username for ISP	string
password	Password for ISP	string
dialondemand	Y for dial on demand, N for persistant	yes/no
usedefroute	Use peer as default route?	yes/no
dodidletimeout	How long in seconds a connection is allowed to remain 'idle' before closing if DoD is enabled	integer
advancesetup	Y if using any options below here, n otherwise	yes/no
rxidletimeout	How long to wait, in seconds since receiving a packet before closing a connection	integer
modem	Y enables DTR and CD lines	yes/no

crtsets	Y enables hardware flow control using RTS/CTS	yes/no
modemspkr	Enable modem speaker?	yes/no
customATstring	Optional custom initialization string for modem	AT commands

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_vrrp

Description

Configure general VRRP settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",    # Enable VRRP?
    intf      => "eth0",      # Internal Interface that VRRP should use for communication
    mac       => "yes/no",    # Use VRRP on virtual MAC addresses?
    ipaddr    => "1.2.3.4",    # IP Address of virtual server
    gid       => "501",        # VRRP Group ID
    priority  => "17",        # VRRP Priority
    ninterval => "1440",      # VRRP Peer notification interval, in seconds
);
&xmlcfg_vrrp( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable VRRP?	yes/no
intf	Internal Interface that VRRP should use for communication	interface name
mac	Use VRRP on virtual MAC addresses?	yes/no
ipaddr	IP Address of virtual server	IP address
gid	VRRP Group ID	integer
priority	VRRP Priority	integer
ninterval	VRRP Peer notification interval, in seconds	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_gps

Description

Configure GPS settings

Example Code

```

my %xml_settings = (
    action => "apply"
    datasrc => "cell",           # GPS data source (cell or tty)
    ttyport => "ttyS1",        # TTY connected to GPS if data source is tty
    lrm    => "2.0",           # Lockdown Radius Multiplier
    ma     => "200",           # Minimum accuracy in feet
    flr    => "20",            # Fixed Lockdown Radius in feet
    nvi    => "30",            # Number of Violations to Ignore before action
    vgp    => "60",            # Violation Grace Period in seconds (<= 60)
    mlod   => "120",           # Maximum Loss-of-data Time in seconds
    va     => "reportonly",    # Violation Action.
    rve    => "200",           # Required Valid Entries
    drt    => "1500",          # Distance Reporting Threshold in feet
    rucv   => "n",             # Require User Cleared Violations?
    sps    => "4800",          # Serial Port Speed
    mlog   => "600",           # Maximum Number of Log Entries
    rnsv   => "2",             # Required Number of Satellites for Valid signal (50 - 2000)
    ibp    => "0",             # Number of outlier points to discard
    si     => "10",            # Log Update Interval
);
$xmlcfg_gps( \%xml_settings);

```

Options

Option Name	Description	Recognized Values
datasrc	GPS data source	cell or tty
ttyport	TTY connected to GPS if data source is tty	ttyS[0-9], ttyUSB[0-9]
lrm	Lockdown Radius Multiplier	float
ma	Minimum accuracy in feet	integer
flr	Fixed Lockdown Radius in feet	integer
nvi	Number of Violations to Ignore before action	integer
vgp	Violation Grace Period in seconds (60)	integer
mlod	Maximum Loss-of-data Time in seconds	integer
va	Violation Action	reportonly, blockall, blocknetwork, custom
rve	Required Valid Entries	integer
drt	Distance Reporting Threshold in feet	integer
rucv	Require User Cleared Violations?	yes/no
sps	Serial Port Speed	integer
mlog	Maximum Number of Log Entries	integer
rnsv	Required Number of Satellites for Valid signal	integer 50 - 2000
ibp	Number of outlier points to discard	integer
si	Log Update Interval	integer

Error Codes

Error Code Meaning

1 Missing or invalid action

xmlcfg_snmpagent

Description

Configure SNMP Agent settings

Example Code

```
my %xml_settings = (
    action    => "apply"
    enable    => "yes/no",      # Enable SNMP agent?
    community => "SOMESTRING", # The community string to use for authentication
);
&xmlcfg_snmpagent( \%xml_settings);
```

Options

Option Name	Description	Recognized Values
enable	Enable SNMP agent?	yes/no
community	The community string to use for authentication between the SNMP agent and manager. Alpha-number strings are supported. NOTE: must match on both ends of connection	string

Error Codes

Error Code Meaning

1 Missing or invalid action

XML Lib Changelog

Date	Version	Notes
13/03/15	1.34	corrected documentation to be correct with the function name changing from xmlcfg_certmgr_add to xmlcfg_certmgr_certificates_add so that it matches the pl on the device
08/17/12	1.33	Added wlname and whitelist to firewall general settings ping, ssh, telnet, modbus, gau and snmp rules
12/13/10	1.28	Added missing quote in commit_xml_change()
11/30/10	1.27	Added VLAN add/clear functions for eth0 and eth1 (xmlcfg_eth0/1_vlan_add/clear)
11/20/10	1.26	Converted vrrp function to support new table format. xmlcfg_vrrp is still available, but it is just a wrapper to xmlcfg_vrrp_add. xmlcfg_vrrp_clear is also available
11/05/10	1.25	Updated the gauaccess password options to work with the new gauaccess2 subsystem. This allows us to use XML to import passwords with needing to know the current password or keeping the passwords in plaintext after they are applied
10/27/10	1.24	Added xmlcfg_certmgr_add/clear for certificate management. The user is still responsible for getting the cert into /etc/jbm/certificates, but they can use these functions to add the certificate to the GAU.
10/27/10	1.23	Reorganized commit_xml_change. Remove all reference to die builtin so that XML lib will not abort execution unexpectedly on errors. Will also try to put some information about the error into jbmxml.lib.err if it encounters a problem
10/8/10	1.22	Added new password change options to xmlcfg_gauaccess

- 10/7/10 1.21 Fixed bug that caused `xmlcfg_firewall_filter_add` to always use default whitelist even if a different whitelist was specified
- 10/6/10 1.20 Added necessary `amchanged=y` option for `gauaccess` settings. Previously the change would get saved to the XML, but the GAU would not apply the change
- 10/1/10 1.19 Added `routermode` to `iptrans` section
- 9/2/10 1.18 Fixed bug created when SNMP agent support was added that prevented the GAU access function from working correctly
- 8/5/10 1.17 Added support for OOB management settings (`xmlcfg_oob_add`, `xmlcfg_oob_clear`)
- 6/24/10 1.16 Added `xmlcfg_snmpagent` for configured the SNMP agent on the unit. Also added `snmp` option to firewall general settings.
- 5/10/10 1.15 Turned on `advenable` for the cellular subsection so that options get parsed correctly by the GAU when doing an `apply/save`
- 4/15/10 1.14 Added optional `netmask` argument for `xmlcfg_dhcpserver`
- 4/12/10 1.13 minor change of the `usb dhcp vars`
- 4/2/10 1.12 Added `wifi`, `usb` sections to `dhcp server`.
Updated `dhcp server` function to use values from `ifcfg-<dev>` to calculate network and broadcast addresses.
Added `xmlcfg_usb0` function to change network settings for `usb ethernet device`.
Allow blank `gateway` field in network settings functions.
- 3/16/10 1.11 Updated firewall functions for `allow/redirect/filter` to use new `whitelist` option.
Added defaults for missing firewall options so that XML gets written correctly.
Added `USER_NAME` env variable to support GAU user authentication
- 3/11/10 1.10 Added support for creating whitelists in firewall
- 12/10/09 1.09 Added support for changing GPS settings
- 11/25/09 1.08 Added missing option for MAC filter to IP trans
- 8/12/09 1.07 Fix problem that was causing `config.xml` to be written to wrong location when using the `cfgonly` option
- 8/11/09 1.06 Fixed bug in `xmlcfg_dhcpserver` that prevented the secondary DNS server from being written correctly.
- 6/16/09 1.05 Changed `xmlcfg_eth0/1` to accept empty string for `gateway`.
Rewrote comment for `xmlcfg_gmuclient` to explain `useaddr` option more clearly.
- 5/14/09 1.041 Fixed typo in DHCP server subsystem that prevented settings from being applied correctly.