GENEXIS

ALWAYS CONNECTED

GeneOS - README FIRST

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Document information

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Summary

This document provides details of how to perform minimal steps to install a GeneOS-based residential gateway. This will allow you to evaluate, configure and use the residential gateway.

Audience

This document should be read by anyone wishing to install a GeneOS-based residential gateway for sample or lab evaluation.

Introduction

GeneOS-based products are designed to be managed and configured by network operators and service providers. As such the end user is not provided with Internet or other active services until the network operator has performed initial configuration via the WAN interface, nor is the end user able to configure functionality beyond that typically required by residential end users. All end user functionality is configurable via the GUI which is, by default, available from the LAN side only.

Initial configuration may be delivered using various zero touch methods, including TR-069.

For ease of explanation, this document will describe how to perform initial configuration using the Command Line Interface, but the operations performed here can also be addressed using other supported management methods, i.e. TR-069 and GAPS.

Support

Further support, including access to additional documentation, is available from the Genexis Support team.

GeneOS Access

Operator access is enabled on default WAN interface (untagged VLAN1) only. One may access the CLI via SSH, from the WAN. Using the CLI username "operator", and password "operator", one may securely connect to the device over SSH, and then proceed to perform minimal configuration based upon your needs and environment.

Secure Shell Access.

```
Hostname$ ssh operator@<ipaddr>
Password: <operator>
geneos#
```

Minimal Configuration

Internet Service

Untagged Internet Service

At its simplest the only required step is to enable end-user access to the Internet service. GeneOS uses native (untagged) VLAN1 by default. This interface uses DHCP by default. Please refer to the GeneOS Command Line Reference Guide [CLIG] for further details.

1. Define a routing rule for the LAN clients, so traffic is routed from the LAN to the Internet service interface.

```
geneos# configure terminal
geneos(config)# ip rule source-interface lan destination-interface vlan1
geneos(config)# end
```

After the new configuration has been applied, which takes a few seconds, devices connected to the LAN interfaces will be able to access the WAN via the default upstream interface (untagged vlan1).

VLAN tagged Internet Service

If a tagged upstream interface is to be used instead of the default upstream interface, then this must also be configured. The steps are as follows:-

1. Create the new upstream interface. Please refer to the GeneOS Command Line Reference Guide [CLIG] for further details.

```
geneos# configure terminal
geneos(config)# interface vlan100
geneos(config-if-vlan)# ip address dhcp
geneos(config-if-vlan)# exit
```

2. Make the new interface a member of upstream physical port

```
geneos(config)# interface wan
geneos(config-if-wan)# vlan member 1,100
geneos(config-if-wan)# vlan untagged 1
geneos(config-if-wan)# exit
```

3. Define a routing rule for the LAN clients, so traffic is routed to that interface.

```
geneos(config)# ip rule source-interface lan destination-interface vlan100
geneos(config)# end
```

End user devices on the LAN will now be able to access the Internet service via vlan100.

Management Interface

The above examples use a single upstream interface. This is ideal for operators who wish to deliver all services, including management over a single interface, but this is not recommended as it is better to separate service traffic as this allows better security and appropriate prioritisation of traffic. For those operators who wish to operate their management service on a separate service interface, details of how to achieve this are shown below.

VLAN tagged Management Service

If a tagged upstream interface is to be used, then this must also be configured. The steps are as follows:-

1. Create the upstream interface.

```
geneos# configure terminal
geneos(config)# interface vlan200
geneos(config-if-vlan)# ip address dhcp
geneos(config-if-vlan)# exit
```

2. Make the new interface a member of upstream physical port

```
geneos(config)# interface wan
geneos(config-if-wan)# vlan member 1,200
geneos(config-if-wan)# vlan untagged 1
geneos(config-if-wan)# exit
```

3. Define this interface as the one which should be used by management traffic sourced by the device, e.g. NTP, CWMP (TR-069) etc.

```
geneos(config)# management source-interface vlan200
geneos(config)# exit
```

Voice Service Interface

For those operators who wish to provide voice services over a separate interface, details are provided below.

VLAN tagged Voice Service

If a tagged upstream interface is to be used, then this must also be configured. The steps are as follows:-

1. Create the upstream interface.

```
geneos# configure terminal
geneos(config)# interface vlan300
geneos(config-if-vlan)# ip address dhcp
geneos(config-if-vlan)# exit
```

2. Make the new interface a member of upstream physical port

```
geneos(config)# interface wan
geneos(config-if-wan)# vlan member 1,300
geneos(config-if-wan)# vlan untagged 1
geneos(config-if-wan)# exit
```

3. Bind the voice service signaling and media to the defined interface

```
geneos(config)# voice
geneos(config-voice)# country nl
geneos(config-voice)# voip signaling source-interface vlan300
geneos(config-voice)# voip media source-interface vlan300
geneos(config-voice)# exit
```

4. Define location and settings for the SIP operator for each line. Minimal settings are shown here, for details of further configuration options, please refer to the Command Line Reference Guide [CLIG].

```
geneos(config)# voice line 1
geneos(config-voice-line)# sip proxy voice.example.com
geneos(config-voice-line)# sip domain mydomain
geneos(config-voice-line)# sip username 5551234 password 5R$1D46
geneos(config-voice-line)# sip phone-number 5551234
geneos(config-voice-line)# exit
```

Repeat for line 2 as needed.

Wireless

Regulatory Domain Configuration

IEEE802.11 wireless operates in the unlicensed 2.4GHz and 5.0GHz bands. Operation is subject to regulations which are regulatory domain dependent. The regulatory domains are either national or super-national, e.g. ETSI or FCC for European Union or North American countries respectively. The regulatory domain determines the channels which may be used in each band, and also the permissible maximum transmit power.

It is the responsibility of the operator to correctly configure the country of operation of the CPE to ensure compliant operation. Failure to do so, may result in regulatory body sanctions against the operator. The steps to configure the wireless domain are shown below.

1. Configuration of the wireless domain.

```
geneos# configure terminal
geneos(config)# wlan country gb
geneos(config)# exit
```

Security

Interface Security

GeneOS implements a default ACL for the default upstream interface, however it is imperative that Internet facing interfaces are secured appropriately for the precise operator environment. It is the operator's responsibility to define and implement an appropriate configuration to ensure this. GeneOS provides extensive access control list (ACL) support, details of which can be found in the Command Line Reference Guide [CLIG].

A minimal ACL which allows SSH and CWMP connection request access is shown below. The source option can be used to limit the accepted sources to a minimised subset of hosts, e.g. the NOC or support centre.

```
geneos# configure terminal
geneos(config)# ip access-list mgmt
geneos(config-acl)# permit tcp source 10.1.0.0/24 destination any port 22
geneos(config-acl)# permit tcp source 10.1.0.0/24 destination any port 8082
geneos(config-acl)# permit icmp source 10.1.0.0/24 destination any echo
geneos(config-acl)# exit

geneos(config)# interface vlan100
geneos(config-if-vlan)# ip access-group mgmt in
geneos(config-if-vlan)# end
geneos#
```

Voice Service

In order to protect voice services from third party message injection, e.g. SIP scanners, it is strongly recommended that suitable ACLs be defined to limit the potential SIP signalling endpoints.

A minimal ACL which allows SIP signaling connection requests is shown below. The source option can be used to limit the accepted sources to a minimised subset of hosts, e.g. the SIP service proxies and gateways.

```
geneos# configure terminal
geneos(config)# ip access-list voice
geneos(config-acl)# permit udp source 10.2.0.0/24 destination any port 5060-5061
geneos(config-acl)# exit

geneos(config)# interface vlan200
geneos(config-if-vlan)# ip access-group voice in
geneos(config-if-vlan)# end
geneos#
```

References

[RN] GeneOS Release Notes. Provides an overview of the GeneOS Release, new features and known issues.

[CLIG] GeneOS Command Line Reference Guide. Provides a guide for the CLI command syntax and operation.