

NGX for SIP: Platform Overview

Overview

Cibertec's *NGX Platform for SIP* is a collection of embedded components designed for efficient packet acquisition and SIP VoIP protocol analysis. Signaling information is extracted from the network packets and processed to generate Call Detail Records which are saved to an external SQL database. Optionally it can also block calls in real time based on a set of predefined rules or on-demand.

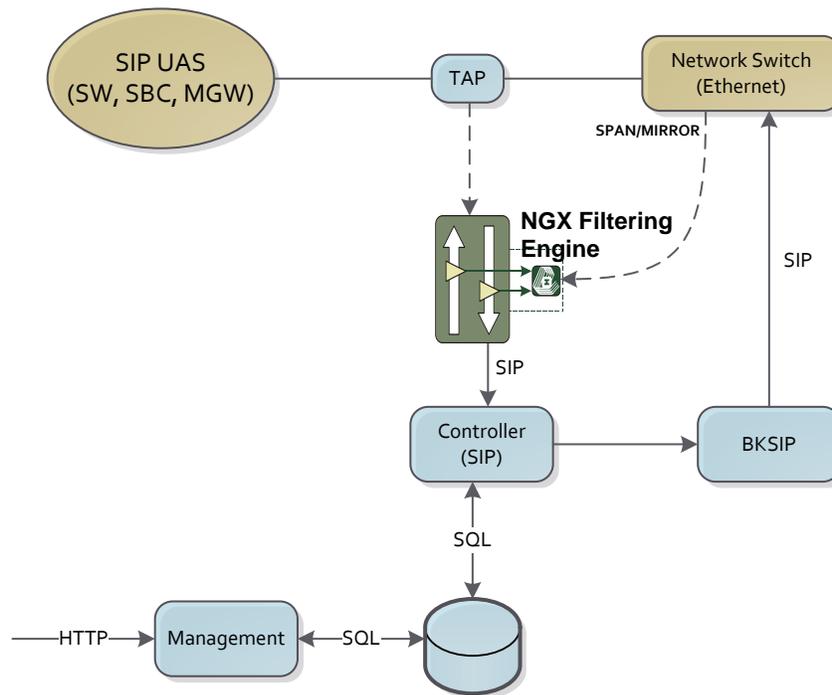


Image 1: NGX Platform for SIP Architecture

Operation

The SIP network packets are acquired via a network TAP or by port mirror at the switch level. These packets are captured at wire-speed rate by the network interfaces in *NGX Filtering Engine* which drops undesired flows and then sends the rest to *NGX Controller for SIP* for analysis and processing.

The resulting information is then saved to a SQL database in the form of Call Detail Records available for further analysis by the user using the web management application.

Optionally, the *NGX BKSIP* module can be added to the system to allow for the real-time blocking of calls based on a set of pre-defined rules configured from the web management application.

Network Architecture

One of the key concepts used by the *NGX Platform for SIP* is that of a SIP Network Route: a logical relationship between two SIP Nodes.

A SIP Node represents each SIP network device that takes part in a SIP signaling flow, such as a soft-switch or a session border controller.

Each SIP Node itself is assigned a set of SIP signaling endpoints, which are tuples composed of *<IP address, IP port, IP transport protocol>*.

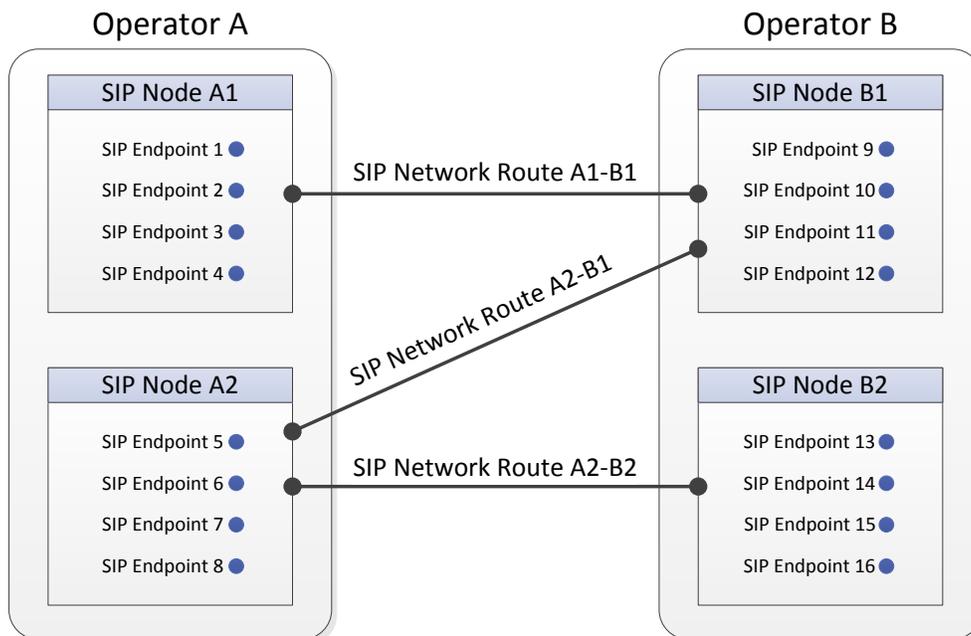


Image 2: SIP Network Architecture diagram

Packet Acquisition

There are several ways of acquiring packets from the wire; several factors are involved in choosing the right option. The options are:

- *Passive Network TAP*: passive, unpowered, non-intrusive, in-line monitoring of a fiber optic link. It splits the optical signal in order to provide the *NGX Filtering Engine* a copy of the link being monitored.
- *Regeneration Network TAP*: non-intrusive, in-line monitoring of a fiber optic link. This device splits the optical signal once before duplicating and regenerating the monitor signal sent to the *NGX Filtering Engine*.
- *Port Mirror from Switch*: when the characteristics of the optical link to be monitored are not suitable for passive monitoring, such as when the signal is already too weak, an Ethernet switch with port mirroring capabilities can be placed in-line in order to obtain a copy of the signal and send it aggregated in a single link to *NGX Filtering Engine*.

Components

NGX Filtering Engine

A Linux-based embedded network device capable of real-time filtering and analyzing of network packets at wire-speed rate. Easily configurable via embedded HTTP Control Panel.

Packets are filtered based on a set of SIP signaling endpoints configured from the web management application.

Multiple port configurations are available that suit the needs of any monitoring application.

NGX Controller for SIP

Linux-based computer application able to collect and analyze the protocol information of the calls passing thru each of the SIP Network Routes configured from the web management application.

It provides output of Call Detailed Records to any SQL-based database supporting ODBC. Easily configurable via embedded HTTP Control Panel.

NGX BKSIP

Linux-based computer application that executes the call blocking requests received from *NGX Controller for SIP*.

The call blocking is done at a SIP signaling protocol level, making it brand agnostic.

NGX Management System

A suite of Linux-based embedded applications that provides centralized configuration, monitoring and reporting capabilities for the *NGX Platform*.

It supports health monitoring of all the components deployed within the platform, with optional SNMP connector for third party monitoring systems.

The user interface can be accessed using any major browser supporting HTML and JavaScript.

Each *NGX Platform for SIP* deployment requires an instance of the *Management System*.

Software Licensing

The *NGX Management System* is licensed by deployment, with an optional SNMP plugin license for interfacing with third-party network monitoring systems.

At platform-level SIP signaling endpoint license packages are provided which can then be assigned to the different components of the system from the web management application.

The *NGX Filtering Engine* is licensed by the amount of capture interfaces in use.

The *NGX Controller for SIP* is licensed by the amount of simultaneous calls (attempts + established) enabled to process.

The *NGX BKSIP* license specifies the amount of SIP Signaling Routes enabled for call disconnection.