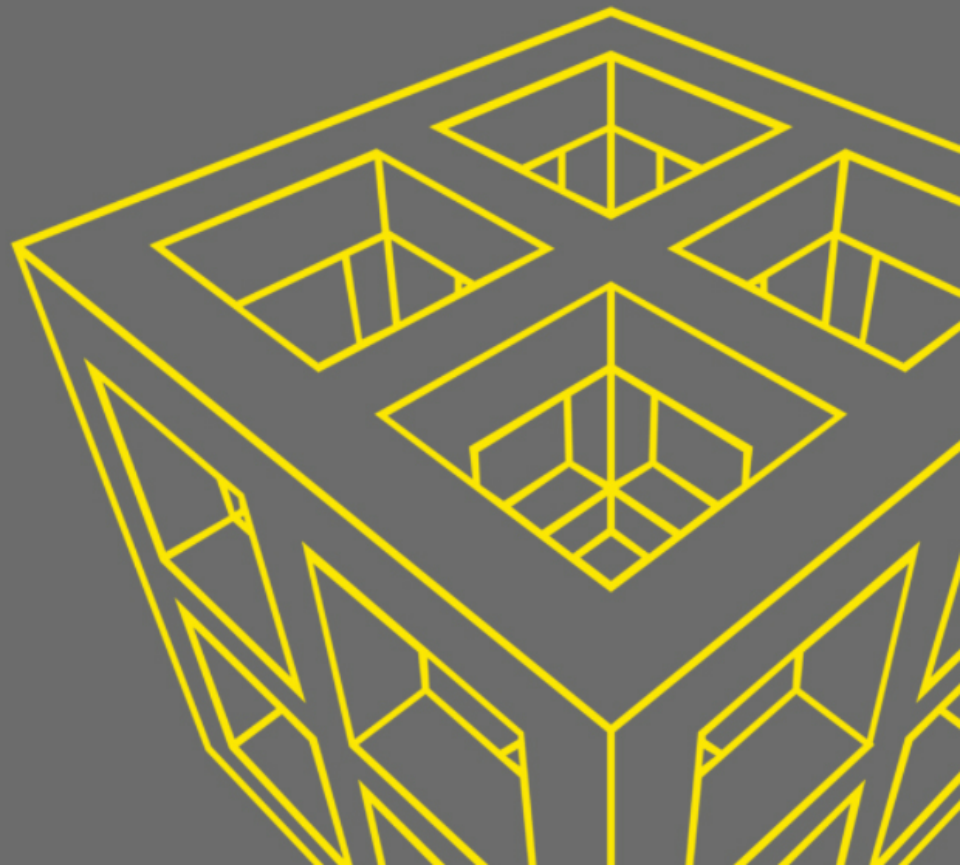




nxSCP



SCP Services





nxSCP

- Core SCP product launched in 2005
- nxSCP is built on an IP core with high-speed packet processing on standard x86 servers/VM's. can be deployed with a physical e1/t1/stm ss7 interface where required
- It has a full-featured service logic interface that supports all major SCP features
- Integrated internal announcement and IVR platform
- Has a SIP/IMS interface for use as a P-CSCF and can be used with the SRVCC gateway to support VOLTE networks.



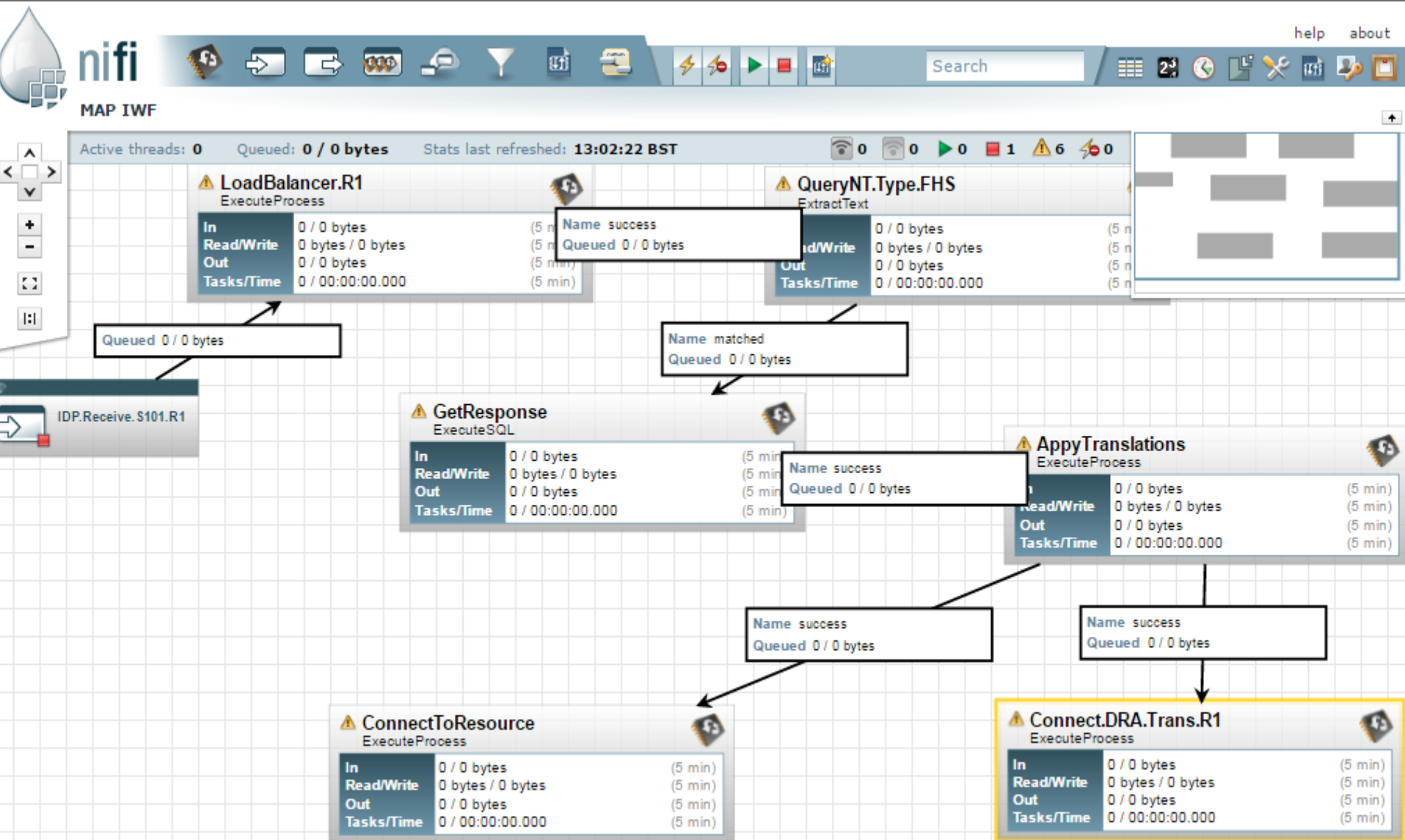
Features

- Supports
 - INAP CS1-4, CAMEL 1-4, WINS 1-2
 - CAMEL/INAP/WINS charging
 - Number Translation Services and L/MNP Services
 - Calling Card and PIN services
 - Bulk Voting/callin services
 - Supplementary Service and specialised service logic management
 - Point Code hiding/translation
 - Supports segregating multiple networks in separate tenants and tenant grouping for control and monitoring
 - Interface to SIP-based networks via IMS/CSCF
 - Q.752 message accounting
- Interfaces
 - SIGTRAN M2PA, M2UA, M3UA, SUA
 - Diameter Ro/Rf
 - SIP
 - OpenStack

Service Logic

- Service Logic is managed via the local SLEE component for all call flows
- There is a graphical interface to the SLEE which allow for drag and drop building of services and separate Service Information Blocks (SIB's).
- External Database services via query, REST API and HFS query
- External interfaces can be easily used in a block via simple HTTP API or external call.
- Service Logic can be tied to Service Key, Source and Destination routing information or any element of a call or session, i.e. CPC, CIC, Called/Calling party ...
- An example call flow is show below.

Service Logic Example



Service Logic

- In this example the Number Translation service queries directly to the Database via cached data queries.
- Additional routing rules can then be loaded as service logic sub scripts by individual customers for routing rules like time of day routing, queueing and announcement selection.
- The customer can edit and create their own subscripts without affecting other customers or the general operational scripts.

OAM



- OAM activities are controlled via web-base GUI's with a set of configurable dashboards for managing configuration, alarming and statistics. Message accounting files can be requested and downloaded from here as well
- Alarms and statistics can also be forwarded to other systems – via SNMP for alarms and via an XML/JSON message for statistics.
- Deployment can also be managed via a range of third-party tools that support the OpenStack deployment protocols
- All ss7 and IP messages can additionally be configured to be sent over IP to a network station where they can be saved or reviewed in Wireshark
- CDR's are collated and written in the required format from the distributed events DB's
- Tenants and users are assigned access via login over SSH/HTTPS and the system administrator has control over view, write and execute access for each user and user group



Configuration

- The gateway has an associated EMS which can be configured to manage multiple gateways. This contains the service logic definitions and the central provisioning database as well as providing real-time statistics and monitoring services.
- The configuration tool is a webmin client that allows for all major elements of the gateway to be configured remotely and backed up/copied or restored as required. Access administration for the configuration screens is either via ACL on the EMS or via separately configured users and user groups with individually assigned access rights. A sample configuration screen is shown below

The screenshot shows the Webmin 1.560 web interface running on a CentOS Linux 5.6 system, accessed via Mozilla Firefox. The browser address bar shows the URL `http://218.206.205.22:10000/`. The interface is divided into a left sidebar with navigation links and a main content area for configuration.

Left Sidebar:

- Login: root
- Webmin
- System
- Servers
 - Apache Webserver
 - Fetchmail Mail Retrieval
 - Procmail Mail Filter
 - Read User Mail
 - SSH Server
 - Sendmail Mail Server
 - base7 57170-S SIGTRAN Server
- Others
 - Networking
 - Hardware
 - Cluster
 - Un-used Modules
- Search:
- View Module's Logs
- System Information
- Refresh Modules
- Logout

Main Content Area:

SIP Section:

- No Use of Regex Mappings Inbound: ☒ No ☐ Yes
- No Use of Regex Mapping Outbound: ☒ No ☐ Yes
- SIP Release Cause Mapping: ETSI
- Outbound NOA for Calling Party: 3
- Outbound NOA for CalledParty: 3
- Timer for valid INVITE dialog whe processing 300 list:
- Subaddress Substitution: ☒ No ☐ Yes
- Prefix for P-Assert-Identity: ☒ None
- Map to CLIP/R: ☒ No ☐ Yes
- SIP Mapping Type: Dynamic
- SNMP Target IP Addresses:
- SIP Heartbeat Timer: 0
- SIP Heartbeat Failure Count: 2
- SIP Min CallID: 5000
- SIP Max CallID: 2000000
- SIP Resend Timer:
- SIP Max Resend:
- SIP Set QoS: ☒ No ☐ Yes

MGCP Section:

- MGCP Local IP: 10.97.176.122
- MGCP Local Port: 2427
- MGCP Transport: ☒ UDP ☐ TCP ☐ SCTP
- Remote List Primary MGCP Peers: 10.97.176.123:2427

Subscriber Databases

Subscribers and services can be provisioned using the REST API or via the web GUI interface. The subscriber interface also allows an open registration where subscribers are dynamically configured on registration/Location Update.. The REST API can also be configured to pull configuration data from the central network if required so that service and subscriber data can be automatically updated from the central registry.

An example web GUI screen is shown below

Activation

1 Define page size

Add new Refresh Quick search

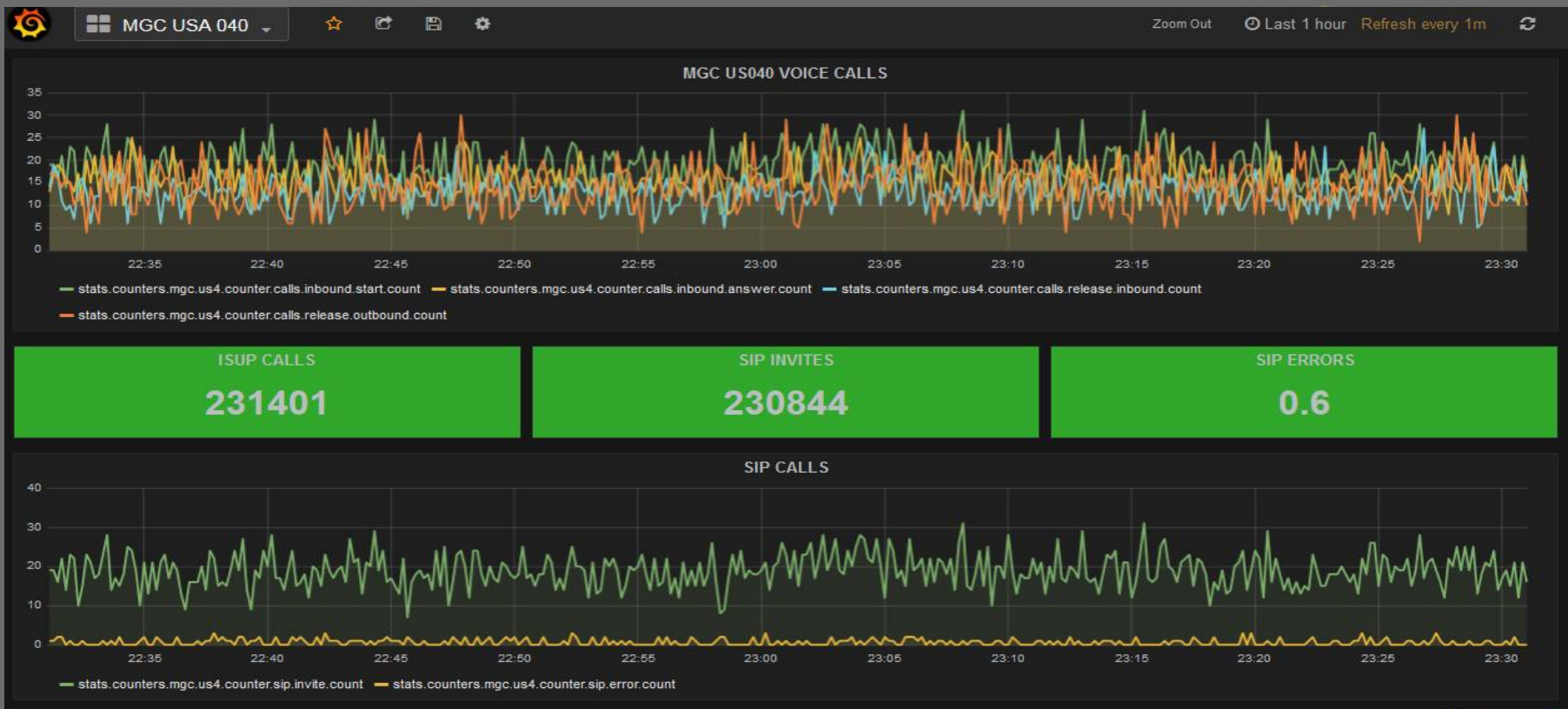
Actions	Idactivation	Msisdn	Service	Data	Int Data	Activate Deactivate	Alarm Time	Service Id Activate	Service Id Deactivate
View Edit Delete Copy	2	+15129108000	Call Waiting	test_data	43	✓	NULL	1	2

1 Define page size

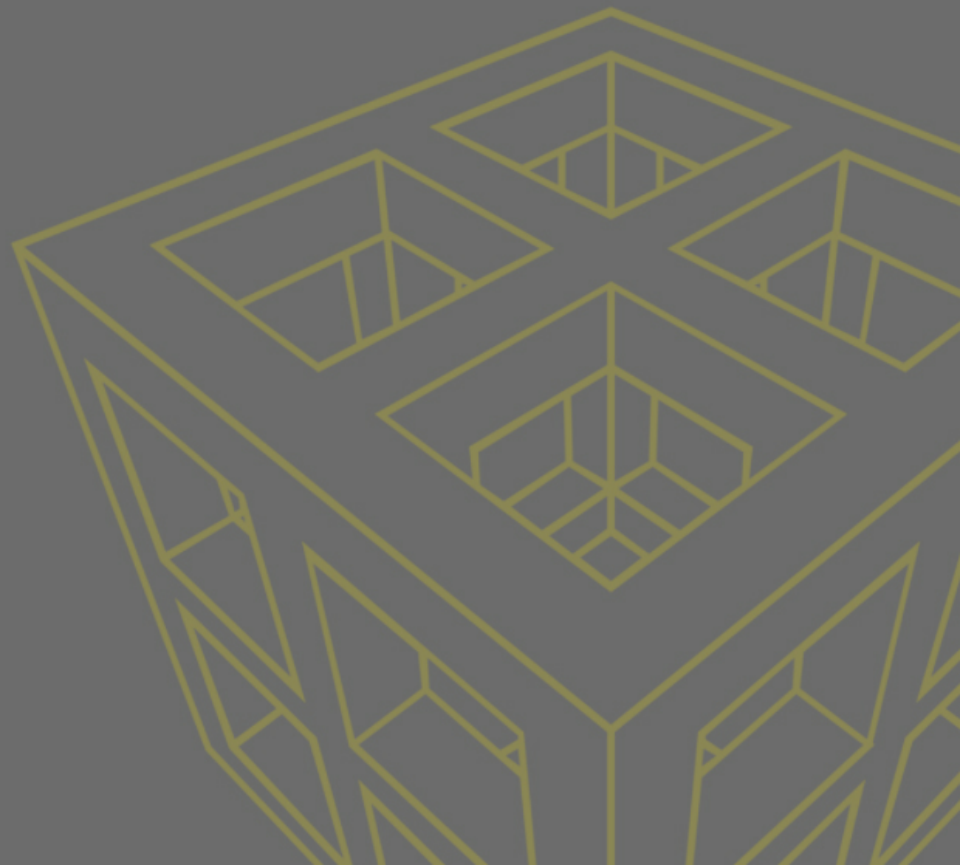
OAM



- Statistics and Alarms for all platforms are sent in standard XML and JSON format to all major statistics platforms.
- Default Grafana front end can be installed –example is below



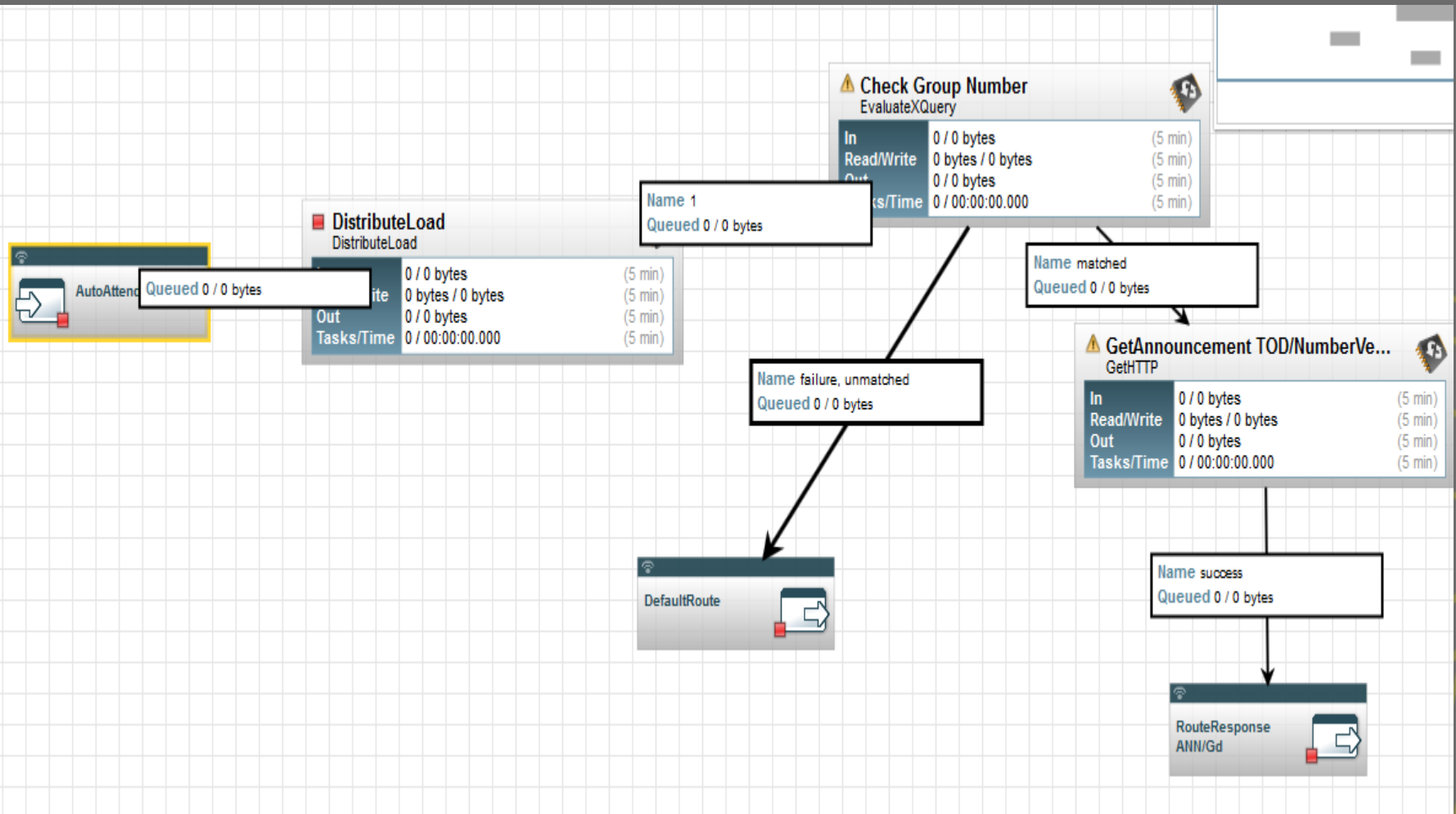
VAS Services



VAS Service on vNET

- The nxSCP platform supports most common VAS services for voice, sms, ussd and data elements.
- These are deployed as service logic scripts and subscriber databases on the SCP layer although they may interact with other elements for flow implementation.
- There is also an onboard IP/IVR with simple DTMF detection which can be utilised within the VAS logic or scripted stand-alone
- An example script for simple auto-attendant function is shown below :

Auto-Attendant



Specification and Performance

Performance	Platform
M3UA/SUA Associations	5024
M2PA links	10528
Linksets	4168
Routesets/Routes	5024/12000
ASP RK's	2056
GTT Translation	3.3 mio

Specification and Performance

HW specification		HP DL580 G7 584086-421 4P E7540 6 Core 2.0Ghz 18m/ 256Gb RAM 600Gb HDD / 4 x PSU			
		Centos 6.4			
Traffic Profile A		85% Voice Routing Only, 10 % SMS, 5 % USSD, No Content Screening			
	MSU/s	CPU %			
vNET	461877	28			
Traffic Profile B		85% Voice Black List, Bellcore Screening, 10 % SMS, 5 % USSD No Content Screening			
	MSU/s	CPU %			
vNET	329732	32			
Traffic Profile C		50 % Voice, 30 % SMS 20 % USSD w/Content Screening			
	MSU/s	CPU %			
vNET	178093	52			