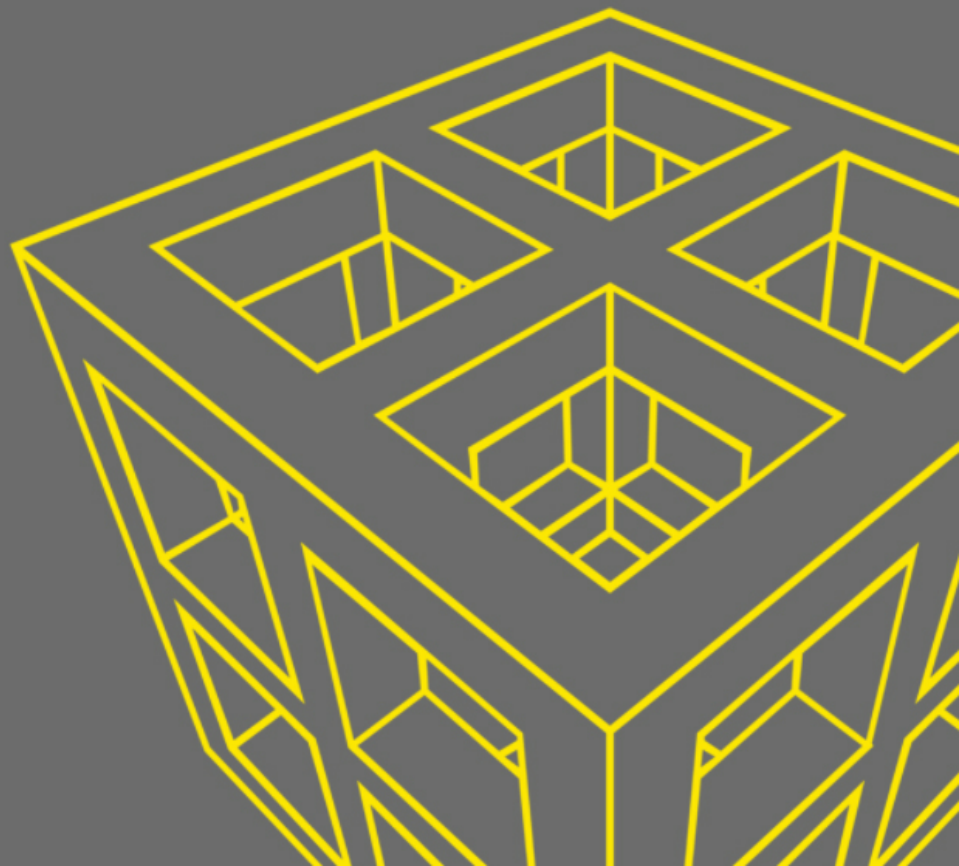
base7 nxSIVR



base7

- Engineering company specialising in signalling, wireless and access gateway software and platforms
- Founded in 2002
- Customers in Europe, Africa, Asia, Middle East, Latin America and USA
- Customers include BT, Telefonica,Orange, Vodafone,T-Mobile, EE, Telstra, WIND, Airtel, etc..
- Head Office in Oxford Science Park, UK
- Offices in UK, France, Boston and Singapore
- 51 employees in 2018 in the engineering, testing and support departments.

base7 Products

- Media Gateway Controllers
- ss7/IP Gateways
- SRP/Announcement Platforms
- 3G RNC, 4G EPC
- Diameter Gateways
- SIP Gateways
- AGCF/PSTN Gateways
- Class 4/5 Softswitches
- Media Transcoding Platforms
- Telco Service Platforms

nxSRF

- Standalone SRF with separated media capability including simple/variable announcements and transcoding
- Core product launched in 2007
- Built on an IP core with high-speed packet processing on standard x86 servers/VM's.
- Processing at L2/3 allows for faster throughput and lower latency allowing the nxSRF to process 8-10x the throughput of conventional SRF platforms.
- Integrates with NFV and data flow service platforms for next-generation management and service deployment.
- Has modules with interfaces to V/HLR, SCP, MSC, GGSN, SMTP, SMSC, IMS and other network elements to allow for full integration of network call flows and data elements.
- Service Logic integrates with most enterprise data sources and allows for seamless integration

features

- Supports
  - PlayAnnouncement with multiple message ID's or variable parts
  - Prompt and Collect functionality
  - ScriptRun to allow execution of more complex scripts
  - Standalone IVR functionality
  - DTMF and ASR processing
  - TTS support
  - Standard H.248 or MGCP interface for media control
  - Local or remote caching and storage of announcements
  - Active/Active High availability
  - Message Accounting for all signalling messages
  - Fax processing
  - Integration with SMSC via SMPP or MAP
  - USSD processing/generation support
  - SMTP notification

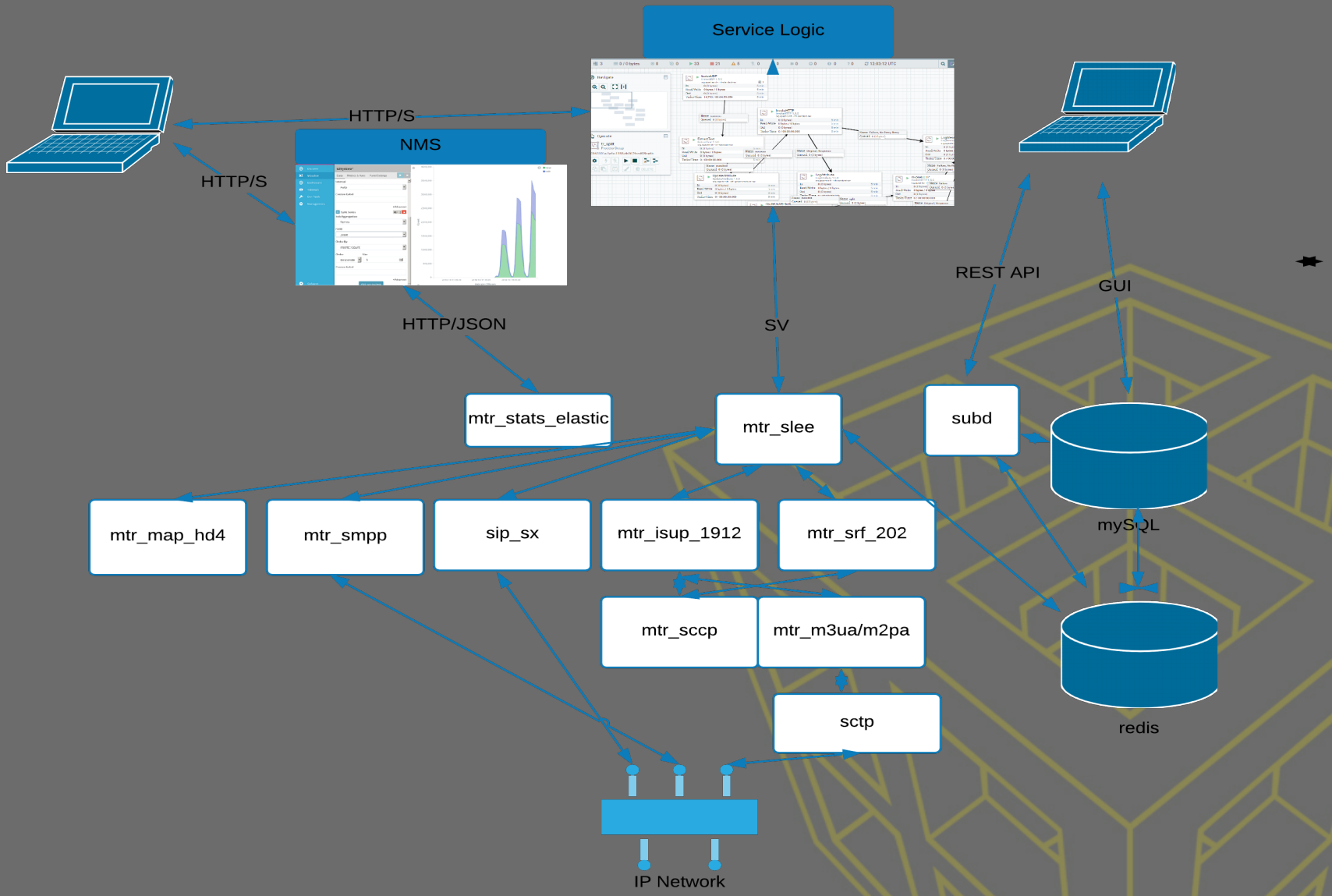
interfaces

- TDM ss7 Low and High Speed links
- SIGTRAN M2PA, M2UA, M3UA, SUA
- H.248/MGCP
- VXML, MSCML,MRCPv1 and 2 for ASR/TTS
- XMPP
- INAP CS1-4, CAP 1-3, Vendor and Regional variants
- MAP v1-3
- ISUP Q.763/767, ETSI v2 and Vendor and Regional Variants
- WINS 1 and 2
- BICC CS1/2 and Vendor and Regional Variants
- SIP/SIP-I/SIP-T
- REST HTTP/HTTPS for integration points
- Elasticsearch API for statistics
- VXML v2.0,v2.1
- CCXMl v1.0

features

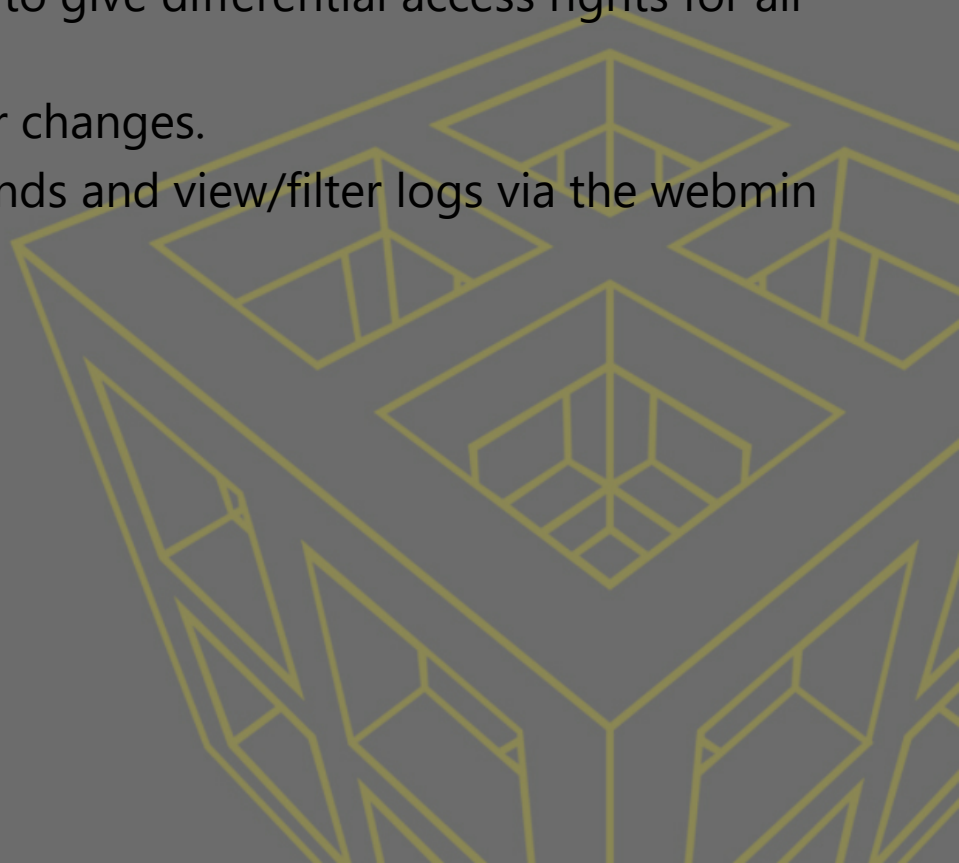
- Codecs : G.711, G.723.1, G.726/7, G.729A/B, GSM-FR, NetCoder CABLE: G.711, G.723.1, G.726/7, G.729A/B, G.7281, G.729E1 GSM/UMTS: GSM-FR, GSM-EFR, AMR (8 rates) & VoIP Coders CDMA: EVRC, QCELP 8k, QCELP 13k & VoIP Coders
- Independent dynamic vocoder selection per channel (within each group)
- Echo Cancellation G.165 and G.168 compliant, 32, 64 or 1281 msec tail length
- Fax Support T.38 (IP) compliant Group 3 fax relay and fax bypass (automatic fallback to G.711) support
- DTMF Packet side or PSTN side detection and generation, RFC 2833 compliant
- Quality Enhancement Dynamic programmable jitter buffer, VAD, CNG, 802.1p/Q VLAN tagging, DiffServ, voice quality monitoring, G.729B

system design

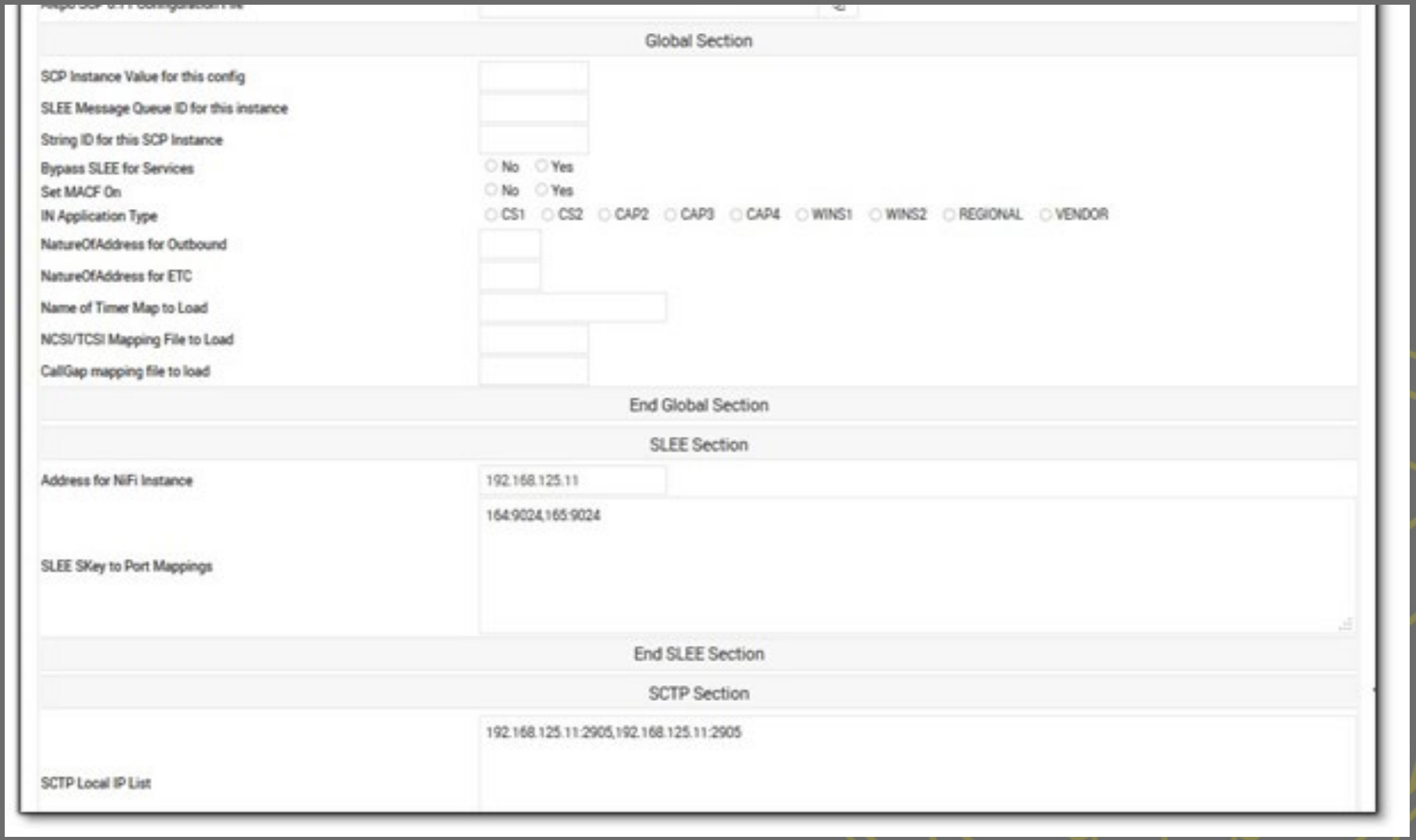


configuration

- Platform configuration is managed using the webmin tool.
- This gives a simple, browser-based interfa ce to the mian configuration elements
- Users and groups can be configured to give differential access rights for all levels
- Full audit trail and rollback facility for changes.
- You can also execute system commands and view/filter logs via the webmin screen



configuration



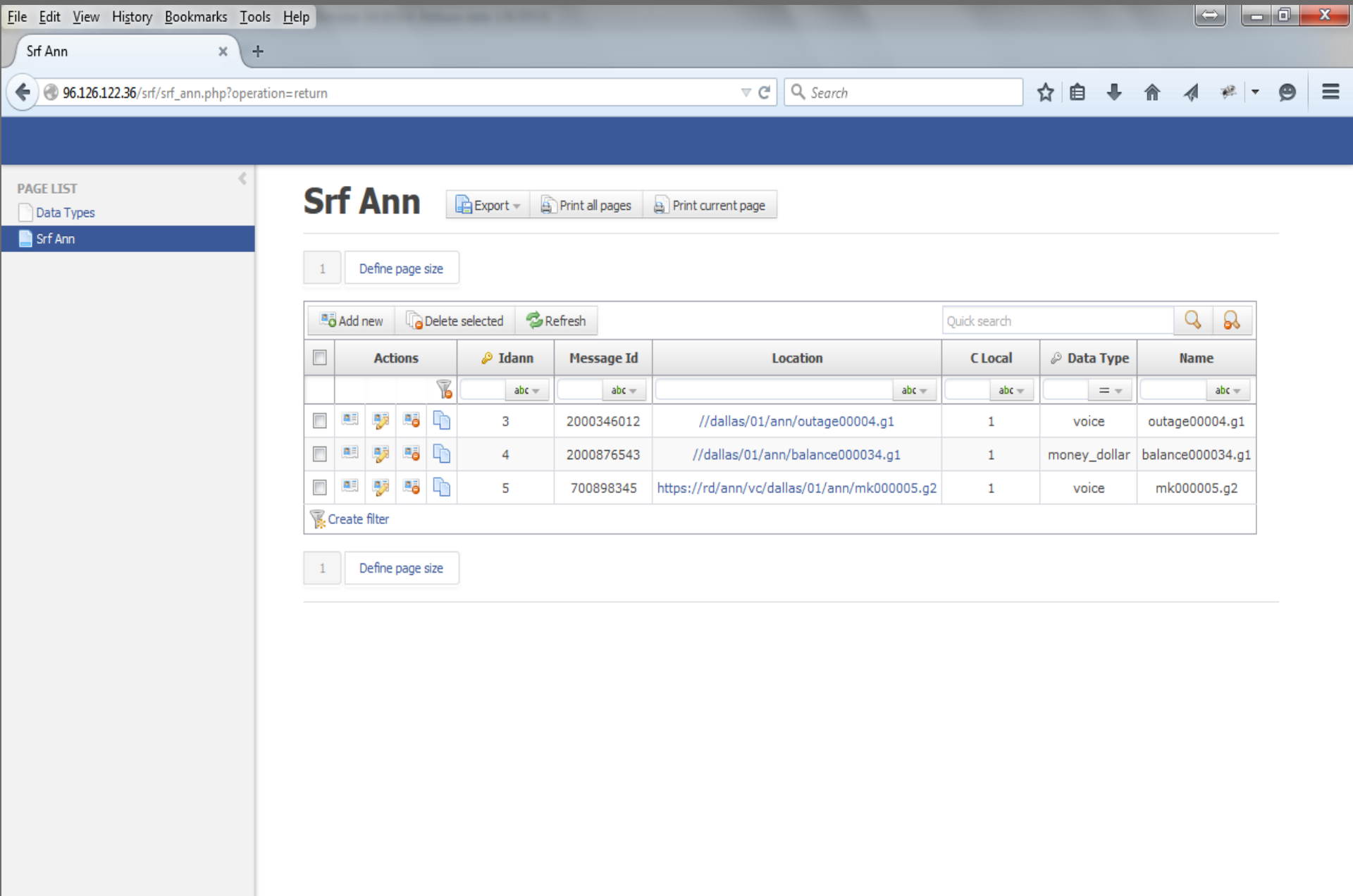
databases

- The platform has two database platforms, mySQL and Redis
- The mySQL database serves as a permanent store and interface items set in the GUI and rest interface.
- The redis database is the real-time source of information for service logic processing
- Both databases can be configured in replicated clusters.
- The redis DB additionally utilises the sentinel configuration to manage master slave replication and management to ensure there is always a current database available to the SLEE for querying/writing real term service information.

configuring media and scripts

- Simple web-based GUI for configuring and managing announcements, media and scripts
- Announcements can be stored locally on the SRF or at a remote location.
- Configurable between local caching and remote access for file
- Locally stored files are automatically backed up to the peer SRF platform
- Announcements and scripts can also be configured and managed directly via the REST API. This is the underlying protocol of the web interface

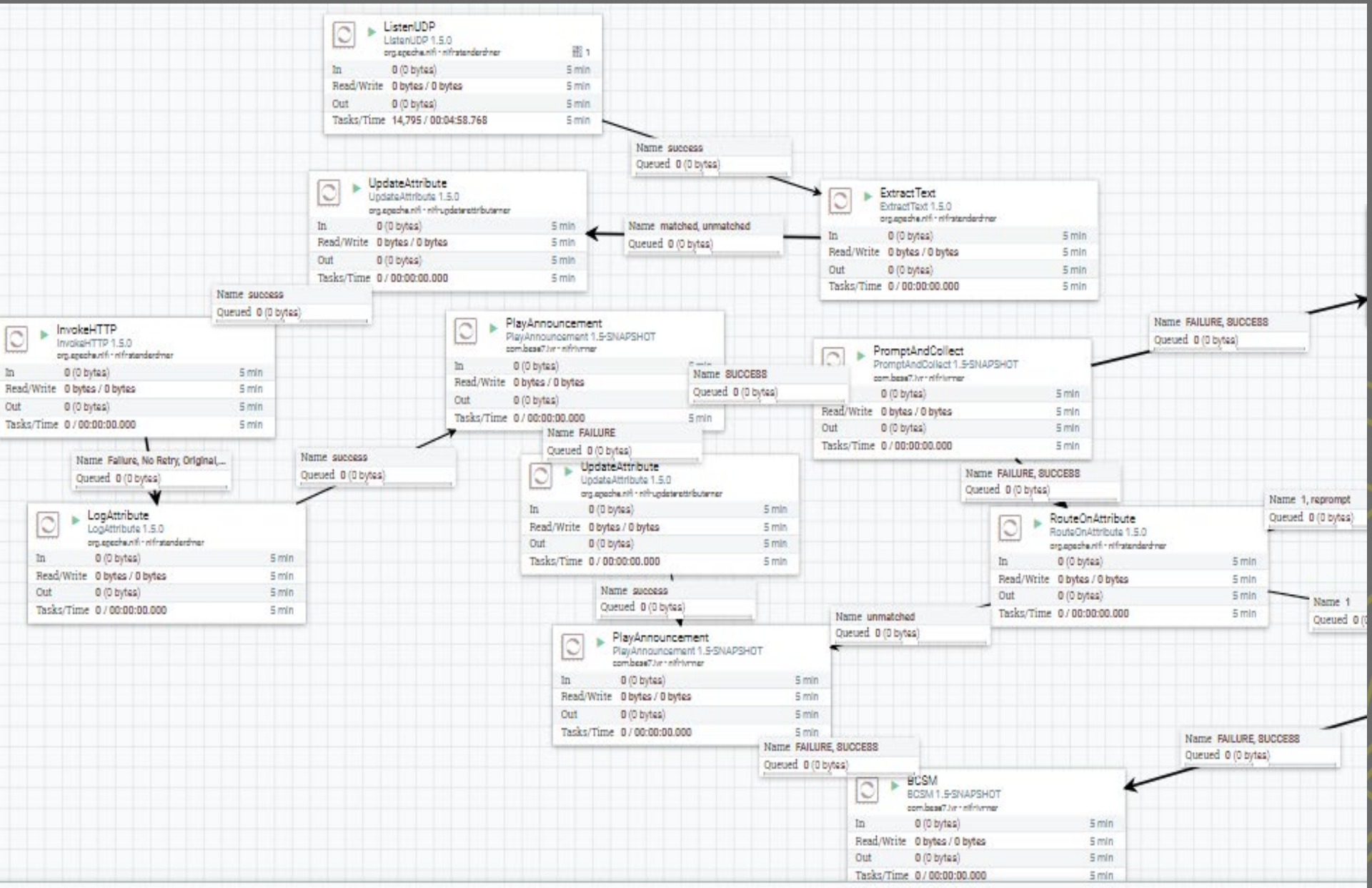
announcements



service logic

- The service logic is built using the graphical drag and drop interface using the NiFi tool
- Logic can be built using service instruction blocks that allow for playing of announcements, collection of DTMF or speech elements, interaction with web services and databases.
- VoiceXML and CCXML blocks can be used within the flow
- There is also a python scripting language that allows users to develop scripts without the gui interface
- Users can also configure standalone scripts to run either in conjunction with SCP service logic or on standalone numbers
- We will step through an example of creating service logic

service logic example



asr/tts

- The IVR supports ASR and TTS natively using it's own ML extension platform available from Release 7.1
- To invoke ASR services you can use the ScriptRun command and to invoke TTS you can pass the required spoken elements in the VariableParts of a PCUI or PlayAnnouncement command or you can make the relevant calls from within a vxml script.

high availability

- nxSRP platforms are normally deployed in linkset mesh and association failover/load balanced connection to their network endpoints/IP associations.
- The back end message account , statistics and scripting dabatbases are configured as replicated databases to ensure no data loss in the case of application or hardware failure
- All platform modules are set under minder control for automated action on failure or on statistics thresholds being breached.

monitoring/reporting

- Statistics on the platform are provided by the elasticsearch tool (https://www.elastic.co/products/elasticsearch) There is a front end visualisation and call checking tool via the kibana utility that can be accessed at port 5601 on the SRF.
- This can be used to view a dashboard of statistics or to interrogate specific callers or types or dates etc..

statistics view