

PBX Data-sheet

Version 1.0

With the gaining popularity of Voice over IP business are seeking to replace their telecom equipment with software-based products that emulate the behavior of the private branch exchange (PBX) with standards-based, interoperable products. pbxnsip addresses this requirement with a software-only PBX that is built upon the Session Initiation Protocol (SIP).

Architecture

The PBX is implemented as back to back user agent (B2BUA). This architecture avoids interoperability problems with poor SIP implementations and grey-zone areas of the standards. The B2BUA takes care about race conditions (simultaneous call pick-ups in hunt groups, pickup and cancel at the same time) and is able to re-write sensitive headers to meet business requirements on caller-ID.

The PBX is used to handle enterprise-internal and -external voice

communication between SIP-compatible devices and services. A large range of SIP devices like VoIP telephones, terminal adapter, WiFi-Handsets, soft phones can be used with the PBX. The PBX can easily send and receive calls from PSTN gateways and session border controllers (SBC).

The PBX supports trunking to most Internet Telephony Service Providers (ITSP). Transfer and other advances supplementary services are treated locally on the PBX, so that ITSP do not have to offer call control services. Options for keep-alive using STUN allow the operation of the trunking interface even with ITSP that do not provide network address translation (NAT) services.

Media packets are routed through the PBX with optional transcoding. This maximizes the interoperability with available SIP devices and allows features like call cancel or call barge in. The architecture can be used in installations with several hundred extensions.

All devices can use standard key codes to control the PBX. Additional advanced SIP methods are available for controlling the PBX in a more intrinsic way (depending on the used device). The PBX is able to indicate extension status to registered devices. Devices with backlight keys may use this feature to indicate line status.

Instead of running the product on customer premises, it can also be run in hosted environments. A special provisioning interface can be used for automatic customer request handling. This feature is available in the professional version of the product.

Any number of domains can be set up. Domains and accounts may have any number of alias names. Each domain can have one or more local administrators. The PBX permits to set up any number or extensions, auto attendants, conference rooms, park orbits etc. The number of accounts is limited by the license model. Licenses for 25, 100 and an unlimited number of accounts are available.

SIP Features

The PBX supports UDP, TCP and TLS transport layers. TCP and TLS are

used to address NAT, TLS is used to address security requirements. It fully supports RFC 3263 SIP server location, including DNS SRV and DNS NAPTR. ENUM lookups are possible with the PBX. All requests are processed in an overlapping fashion, including DNS lookups.

Secure media transport is implemented using secure RTP (SRTP). The key exchange uses hop-by-hop key encryption. This feature allows end-to-middle security without the need to distribute certificates or keys.

The PBX supports RFC 3515 (REFER) and handles the transfer cases locally, so that attached devices do not have to implement this request. This method avoids interoperability problems experienced in heterogeneous environments with different user agents.

All SIP requests and responses are formulated according to the interface that is used to send the packet. This makes it possible to use the product on hosts with more than one IP address, for example one public and one private IP address.

The PBX runs as Windows service. The administration can be done using a standard web browser. The PBX may use network storage devices for media and configuration data. In Linux, the process runs as daemon.

The built-in tftp server provides selected phones with configuration data. This configuration information is generated on the fly, and can be set up in a very simple way. The configuration data can also be accessed by http or https protocol.

PBX Features

Extensions

- Multiple registrations on one extension.
- Monitoring of extension state
- Each extension may select its dial plan
- Voicemail for every extension
- Email forwarding of voice mails
- Mailbox size adjustable for each extension
- Call pickup groups can be defined per extension
- Call return and call redial per extension
- Blocking of caller-ID and rejection of anonymous calls
- Customer originated trace per Email

Auto Attendant

- Cancellation of the extension call during ring back tone
- Specific extensions may be excluded from an auto attendant
- Customized recording can be loaded
- Auto attendant handles call forwarding always, on busy or after timeout and DND

Hunt Group

- Three-stage hunt group
- Selectable ring tone
- Night service integration

Park Orbit

- Supports call parking and park retrieval
- Park orbits integrated into all extensions and hunt groups

- Permission checking for call pickup

Conference

- Simple conference mixer
- PIN authentication
- Calls can be transferred into conference

Push2Talk

- Simple 1:N communication
- One-way audio
- Multiple group setup

IVR Trees

- Customizable behavior for collecting digits
- Applications server integration via HTTP/SOAP
- Customizable recordings

Trunks

- Different trunk types for gateways, proxies and registrations
- Handling of transfer messages
- Authentication
- QoS tagging of outbound traffic
- Trunk status indication
- Trunks can run on different IP address
- Public IP allocation via STUN

Dial Plans

- Unlimited number of dial plans per domain
- Extended regular pattern matching and substitution

Plug And Play

- Integrated tftp server for automatic provisioning of configuration data
- Extensions can automatically be assigned to phones

Management

- Web Server running HTTP and HTTPS protocol
- Built-in SNMP for real-time supervision of PBX status
- CDR from web interface
- Online-help from web interface
- Logging available from web interface
- Rotating Logfiles on daily basis
- InstallShield executable for Windows

Host Requirements

The process runs on standard PC with a typical memory requirement of about 20 MB (depending on the number of accounts and the size of the tables). For small installations, the host can be shared with other applications like email and file server. For large installations, it is recommended to operate the process on a dedicated host.