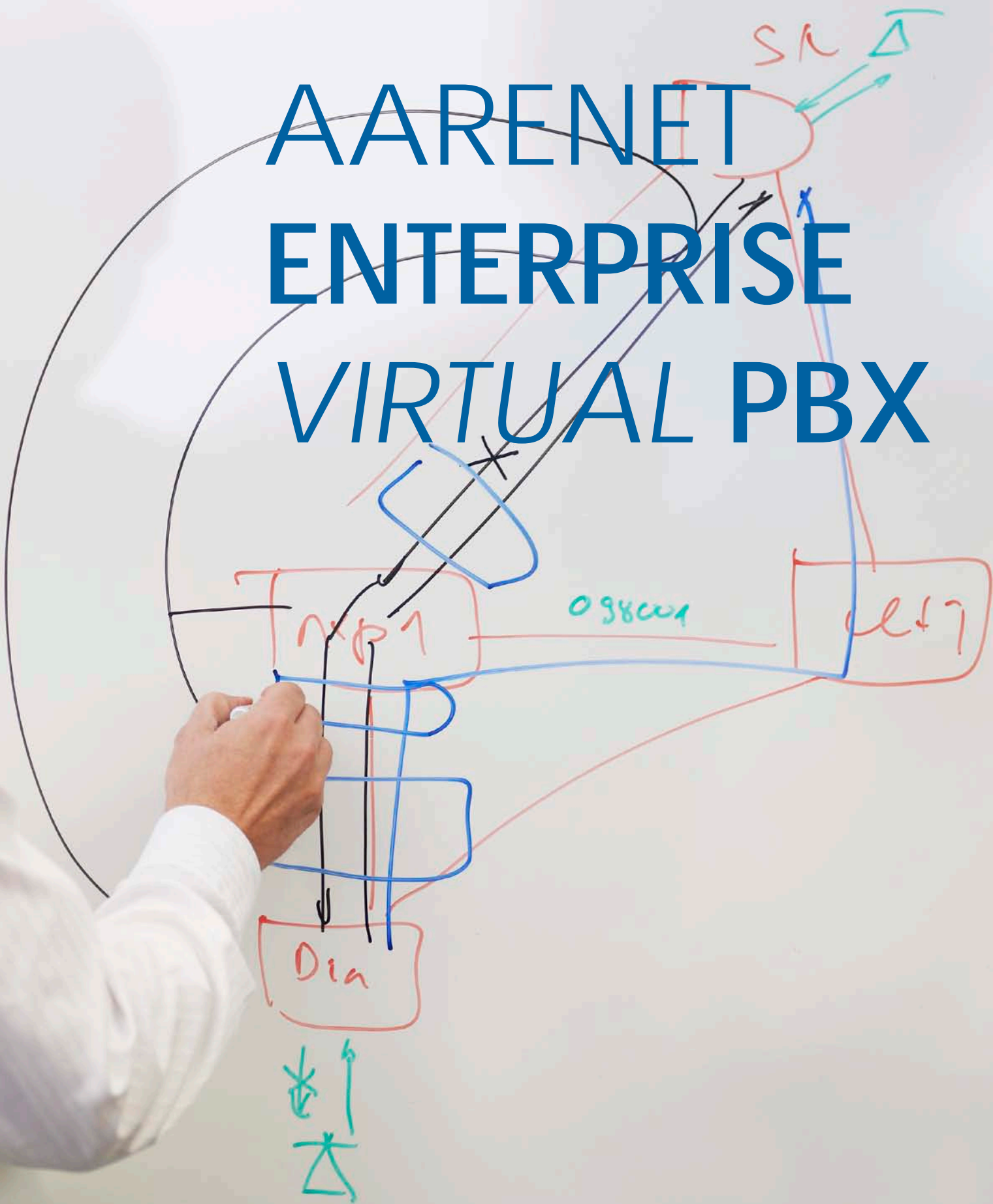# AARENET
ENTERPRISE
VIRTUAL PBX

DE SCR IP TI ON

REPLACING EXISTING PRIVATE BRANCH EXCHANGE SYSTEMS AND DEVICES BY AN IP-BASED VIRTUAL AND CENTRALISED BRANCH EXCHANGE.

denk-stein:net
MEASUREMENT TECHNOLOGY
Kaiserin-Augusta-Allee 8 ▪ 10553 Berlin ▪ Germany
☏ +49-(0)30-398981-0 ✆ +49-(0)30-398981-39
✉ sales@denk-stein.com 🌐 www.denk-stein.com

Vertrieb & Systemintegrator für Carrier + Corporate Networks

1.

INITIAL SITUATION

Many Enterprise customers wish to do without acquiring their own local PBX and utilise the Virtual PBX services of a Telecom Service Providers (TSP).

END-CUSTOMERS SEEK THE FOLLOWING ADVANTAGES:
- Low investments
- Flexibility in growth and on location
- Swift and flexible inclusion or exclusion of users or workplaces is possible
- Simple integration of branches or home offices
- Easy to implement and integral numbering plan for the entire enterprise
- Free calls within the organisation
- No maintenance on the system
- Ultimate availability based on redundant implemented and managed systems
- Disposability of all essential switching functionalities
- Easy management of the platform over the Internet (Browser based) by the user

THIS ADDS TO THE TELECOM SERVICE PROVIDER:
- Reaching an additional market segment with high potential
- Additional business with high value services
- Long-term retention of customers
- Safeguarding the revenues with voices minutes and IP bandwidths
- Provision of centralized and customer focused PBX services from the cloud

2.

CHALLANGES

Offering a competitive service based on a platform compared to the local installed PBXs is the challenge for a TSP. The level of the cost base requires providing the TSP as an attractive bargain to the customer. The platform needs to posses the essential functionality, quality and availability. All types of conventional devices such as analogue faxes, entrance intercom systems or answerphones need to be supported. In addition a good range of corded and cordless phones as well as the support of pc based soft phones is required.

No or limited access to private networks which are often shared with additional services is the key difficulty for a TSP in offering Virtual PBX Solutions. Disruptions in such network environments lead often to dysfunctions of telephone services. To separate the telephone services from other services is crucial, as well as the means of the support personnel to detect and cure failures in the networks of customers.

3.

DESCRIPTION OF THE SOLUTION

The system on the side of the TSP consists of an Aarenet Class 5 VoIP System with Virtual PBX functionalities. Aarenet's Enterprise Virtual PBX Systems is deployed redundantly and has the high availability of a Carrier System with 99.999%.

The Aarenet Virtual PBX functionality additionally includes popular features such as conference calls, call-forking, group-calls, voice-mail, IVR, CTI integration etc. A fully integrated fixed-mobile convergence solution ensures the seamless operations and handover between Wi-Fi, GSM/mobile and fixed line voice networks. The "one number" concept enables a transparent call-distribution amongst mobile and fixed IP phones. The PBX features are not only available in the fixed network but also on integrated smartphones and on the move via laptops or pads.

The system is connected with one or several links to the Public Switched Telephone Network (PSTN). The locations of the customer are tied with broadband IP-connections, either over the public Internet, a private IP-network or mixed IP-networks.

SYSTEM OVERVIEW
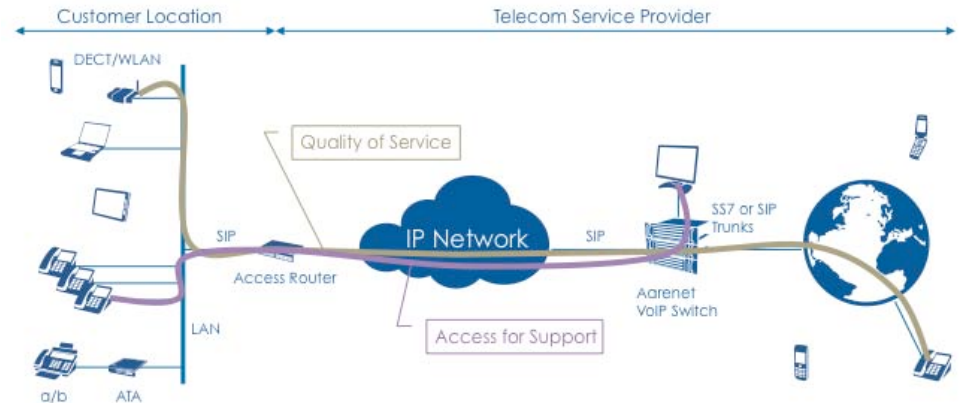
Typically dedicated IP-bandwidths are implemented at least to the access router, preferably even to the single phone access to assure the quality of voice services (Quality of Service, QoS). In addition provisions to take hold of the access router or the customer's voice devices in the private network should be implemented for service purposes by the TSP. Therefore an access router is provided and operated by the TSP at the customer's location.

VOIP ACCESS ROUTER

The customer calls either with Soft Phones or IP-Phones which are available in several levels of convenience or with IP DECT or WLAN devices. Existing analogue devices such as Fax or entrance intercom systems are being connected with suitable adapters (Analogue Terminal Adapter, ATA). Existing ISDN-devices as well as PC cards, etc. are being connected with suitable adapters. The support of certain features may depend on the used devices.

VOICE DEVICES AND TERMINAL ADAPTERS

The Virtual PBX is administrated via the Admin Centre (for PBX administrators and end-users) from any PC or via an application e.g. an app on the iPhone for end-users. The entire administration management of the Virtual PBX may occur via the Data Access Centre in an external Customers Management System. This is recommended if the TSP wants to integrate the Virtual PBX into an already existing end-user Web-interface.

USER INTERFACES FOR
ENDCUSTOMER (EX. IPHONE) AND PBX ADMINISTRATOR
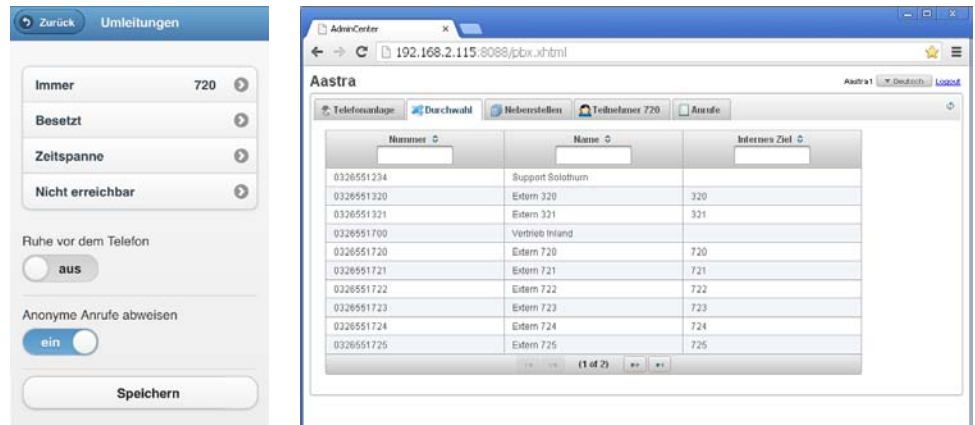
The provisioning and the support needs are organised depending on the size and the set-up of the Customer's installation. Standardizing the choice of devices and pre-configurations preferably including the network components is a sensible approach for small customers. The installation of devices shall be smooth and automated, so the customer or their service personnel will be independent of the support of the TSP. The solution for the deployment requires being so robust that the need for support is the exception rather than the rule. Challenges arise if the implementation bases on a local network inadequate to support voice services and without access for support purposes by the TSP. Large customers usually plan and deploy a Virtual PBX through a dedicated project. The requirements of VoIP on the local area network may be taken care of in these cases. In such networks VoIP will be prioritized and the access to the TSP for support purposes enabled.

4.

KEY BENEFITS OF AARENET'S SOLUTION

The solution of Aarenet offers outstanding benefits to the TSP's and the customer. TSP's receive a scalable highly available platform including extensive tools for provisioning, operations and support. To customers the solution of Aarenet features a balanced set of functionalities with a comprehensive offering of devices.

SYSTEM FEATURES:
- Broad scalability
- Redundant (including location redundant) set-up
- Carrier grade availability
- Support of all ISDN functionalities
- Support of existing appliances such as Fax, entrance intercom, EFTPOS terminals, etc.
- Flexible numbering plans for each customer
- Flexible routing (e. g. predicated on customer)
- Integrated real-time rating
- Voice channel limitation per Virtual PBX on WAN access
- Integrated FMC (Fix/Mobile Convergence) Solution

OPERATION TOOLS FOR THE TSP:
- Web portal for administration and support
- Auto-provisioning of customer devices out of Aarenet's system
- Automatic upgrade of firmware in customer devices out of Aarenet's system
- Monitoring of the customer appliances via the web portal of the Aarenet system

FUNCTIONALITIES AND EQUIPMENT:

Call related functionalities

- Call hold
- Query, toggle, accepting call-waiting
- Redialling of executed, incoming and missed calls
- Call-waiting
- Music on hold per Virtual PBX
- Call list with date, time and number (outgoing, incoming and missed calls)
- Call brokering (internal, external) with and without call back
- DTMF incoming/outgoing
- Central phone book per Virtual PBX

Calling line signalisation

- Calling line identification presentation (CLIP)
- Calling line identification restriction (CLIR)

Call distribution

- Call forwarding (all)
- Call forwarding if busy
- Call forwarding delayed
- Call forwarding if off-line
- Timed call distribution (day, night, weekend)
- Manual activation/deactivation of day/night/weekend
- Silencing incoming calls (do not disturb)
- Protection from unidentified calls
- Call forking (concurrent distribution to several numbers)

Caller groups

- Creation of caller groups (team-/line-keys)
- Queuing
- Multiple registrations per number possible
- Call distribution rules (busy, delayed, etc.)
- Executive administration functions

Voice Mail

- Individual voice mail / mailbox for each number / subscriber
- Forwarding of voice messages by email
- Remote inquiry
- Configurable size of voice boxes

IVR (Interactive Voice Response)

- Announcement texts and post dial capability for activation of different functions like other voice announcement, call execution, number dialling, call termination
- No limitation of number of announcements and sequentially actions

Conferences

- 3 party conference service (add on)
- Conferencing up to 10 participants (predefined)

Support of Fax

- Connection of Fax devices via analogue interface
- T.38 Fax protocol support
- Patton-Inalp ATA SN4112, SN4114, SN4118

Remote Office Integration

- Linking of locations worldwide with or without VPN
- Home office integration

Fix/Mobile Convergence

- Use of VPBX functions on mobile phone
- Calls from Wi-Fi hotspots
- Seamless handover between WLAN and mobile network
- One Number Concept (landline number)MC Client for Symbian, iPhone and Android

Supported IP Phones

- Aastra 6730i und 6750i family (with support of team-/line keys, message waiting and centralised web GUI for configuration)
- Panasonic KX-UT123, KX-UT136, KX-UT248 (with support of team-/line keys, message waiting and centralised web GUI for configuration)
- Snom 300er, 700er und 800er family (with support of team-/line keys, message waiting, advice of charge and centralised web GUI for configuration)

ADMIN CENTRE:

The Admin Centre supports browser-based configuration and administration of the Virtual PBX's with different user levels such as PBX-administrator or subscriber. Furthermore it supports the end-user to use the different functionalities oft he system. With the Admin Centre the following functions can be configured or queried:

Telephony

- Calling lists
- Permanent call deviation
- Silencing incoming calls (do not disturb)
- Rejection of unidentified calling numbers
- Suppression of call identification

General settings

- Password
- Language
- Name
- Email
- Music on Hold

Administration

- Account lists
- Address lists
- Private numbers

Voice Mail

- Configuration
- Voice announcement (.wav file)
- Email address

Devices (IP-Phone)

- Advice of charge
- Multiple registration

IP-Phone Provisioning

- Default configuration
- Team-/Line- and speed-dial-keys

Customization

- Roles (user rights)

VIRTUAL PBX EXTENSIONS (UNDER DEVELOPMENT):

- Enhanced call distribution rules (random, switch on/off of subscribers, etc.)
- Admin Centre enhancements
- Enhanced display information on IP Phones
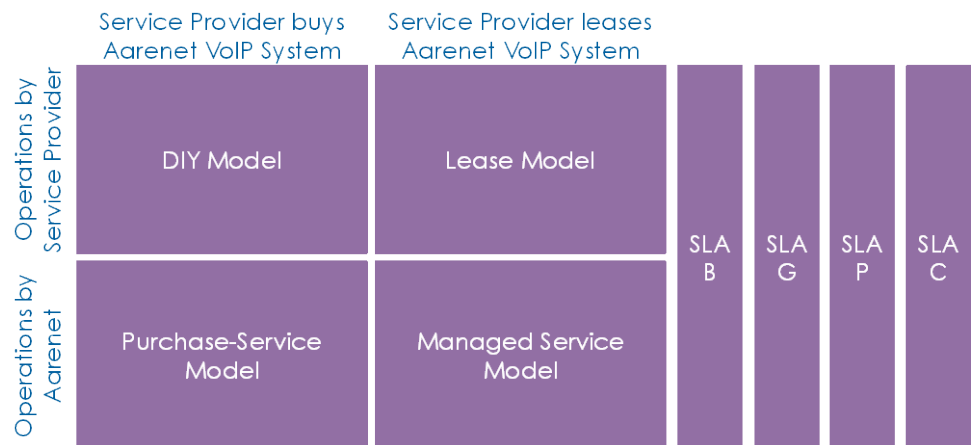- CTI integration

- Auto attendant
- Fax to Email and Email to Fax
- Conference bridge voice
- Customised Smartphone- and PC-Client
- Call record function Support of additional IP Phones (e.g. Yealink, Siemens)

5.
BUSINESS MODELS

The Aarenet business models foresee that carriers can choose services according to their requirements. The choice is between service models with focus on Capex, Opex and a selection of own or Aarenet operations supported by four different Service Level Agreements.

BUSINESS MODELS

	Service Provider buys Aarenet VoIP System	Service Provider leases Aarenet VoIP System	SLA B	SLA G	SLA P	SLA C
Operations by Service Provider	DIY Model	Lease Model				
Operations by Aarenet	Purchase-Service Model	Managed Service Model				

6.
ABOUT AARENET

Aarenet is the competent and flexible provider for Voice-over-IP/VoIP services. The company develops, realizes, markets and operates future-oriented and reliable VoIP systems for telecom-, internet- and mobile-service providers, cable operators, utilities and enterprises. Systems and services are custom designed, implemented on time, deployed in excellent quality and operated in highest availability.

denk-stein:net
MEASUREMENT TECHNOLOGY
Kaiserin-Augusta-Allee 8 ■ 10553 Berlin ■ Germany
✆ +49-30-398981-28 ✆ +49-30-398981-39
✉ sales@denk-stein.com ⊕ www.denk-stein.com