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# Technical and Functional Description

## NetPBX Plug & Play R1A

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# 1 Introduction

NetPBX® Plug & Play is a PBX based in VoIP (Voice over IP) Technology. It includes most of the PBX (Private Branch eXchange) features.

It works with any high speed internet connection and with any local or long distance telephony operator.

NetPBX® Plug & Play allow the organizations to reach the IP technology World in a clear and easy way, it means that can merge conventional telephony with IP telephony in the same PBX.

One of its components is the configuration that includes all necessary data in order the PBX to work correctly. The configuration is performed over the WEB interface where the data is entered.

## 2 Technical Characteristics

### 2.1 Easy Installation

NetPBX® Plug & Play is an easy-to-install product with minimal installation requirements. It only needs a computer and a CD with installation software.

The installation takes around 60 minutes.

### 2.2 Compatibility

#### 2.2.1 High Speed Internet

NetPBX® Plug & Play requires a High Speed Internet service. This service can be supplied by any internet service provider (ISP) and any capacity. It depends on your organization needs.

#### 2.2.2 VoIP

One important characteristic of NetPBX® Plug & Play is that uses VoIP Technology. It allows all calls to be originated or terminated into and from remote extensions to the organization. The remote extensions can be registered from any available internet connection in the world.

NetPBX® Plug & Play also can process incoming and outgoing calls to and from PSTN from other user in any place in the world by using the internet connection. It means that uses VoIP telephony provided by Internet Telephony Service Providers (ITSP) to initiate and receive local or long distance calls using Internet instead of trunks, at lower telephony costs.

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NetPBX® Plug & Play, is ready to be used in an easy and transparent way with any of the most commonly used ITSPs.

### 2.2.3 CODEC's and Protocols

NetPBX® Plug & Play interacts with several elements (i.e. VoIP service), Devices (IP Phone) that support different codec's and SIP protocol. NetPBX® Plug & Play is flexible and supports the most common codec's that are also supported by VoIP technology services and devices. It guaranties a high quality voice of your calls.

Supported protocol:

- SIP

Supported codec's:

- G.729
- G.711 (ALaw)
- G.711 (ULaw)
- GSM
- iLBC

### 2.2.4 Hardware

NetPBX® Plug & Play is full compatible with the most commonly used IP devices such as IP phones, analog adapters, gateways, etc. , its design easily integrates almost any IP device.

To use PSTN connection it is required a Card for analog Line or for E1 link. It is required different card in each case.

## 2.3 Connectivity

### 2.3.1 LAN

NetPBX® Plug & Play is integrated to your Local Network (LAN) and allows internal communication all over the organization by using the computers, analog phones or IP phones as the PBX extensions.

### 2.3.2 Telephony Lines

NetPBX® Plug & Play can be easily connected to telephony network or PSTN.

- *Analog Link.* NetPBX® Plug & Play can be connected to the analog link if your organization requires or already has the line.

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- *E1 / T1 Link.* NetPBX® Plug & Play can easily be connected to E1 or T1 trunk link if your organization requires or already has the link. This will allow the access to the telephony network with all available lines of this type of link.

### 2.3.3 ISP / ITSP

NetPBX® Plug & Play uses connection to a high speed internet service. This allows the extensions to be able to register from anywhere.

The system supports configuration for two different accounts of the most commonly used ITSPs.

## 3 Functional Characteristics

### 3.1 WEB GUI (Graphical User Interface)

NetPBX® Plug & Play has an administration module that uses a WEB interface for an easy and transparent system configuration.

There are three administration levels according to the type of user:

- **User:** It allows managing all extension information: voice mail, personalized messages, feature setup, Call Detail Records.
- **Operator:** It allows managing NetPBX® Plug & Play operational data: Extensions, Dial Plan, Profiles, Call Detail Records, Features, Configuration Parameters and Backups.
- **Administrator:** It allows managing system data: System Configuration, System Information and Maintenance.

### 3.2 User Profiles

NetPBX® Plug & Play handle 5 categories or level access to calls. They can be defined and updated easily on the Web Interface.

The operator defines the dialing privileges for each profile as required.

Each extension belongs to one of the different profiles. The profile defines the type of calls the extension can perform.

The profiles are:

- Basic
- Limited
- Medium
- Advanced
- Complete

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### **3.3 Dial Plan**

NetPBX® Plug & Play allows the configuration for outgoing call routes and the definition of cost and channels the calls will take to be routed.

### **3.4 Extension Directory**

The NetPBX® Plug & Play extensions can be found in the online directory. All users can look to all existing extensions by accessing the Web Interface.

### **3.5 Call Routing**

NetPBX® Plug & Play has the Call Routing function. This function has a mechanism to configuration priority for the outgoing route selection of phone call. This warrants an optimal QoS.

This mechanism is based on configuration of:

- call cost for the route, and
- channel priority

Due that VoIP calls are of lower cost, the operator can configure the system to route the calls by VoIP. When VoIP is not available the call can be routed by PSTN. This configuration will depend on the services available for your particular NetPBX® Plug & Play.

### **3.6 Remote Extensions**

This function allows the NetPBX® Plug & Play user to have an extension in any location. It is only needed a high speed Internet access from a laptop, IP phone or analog phone (with adapter) to have an available remote extension.

This is very useful when it is required to have telephony access from members of your organization when they are in different location.

A soft phone extension defined in your laptop located in your office can be used during a business trip as a remote extension with all the same functionality but in other place out of the office

### **3.7 CDR (Call Detail Record)**

NetPBX® Plug & Play provides online call detail records on the WEB interface.

This function gives the user the detail of the calls made and received, the duration, used features in the call, etc. The CDR reports can be search by date, dialed number, called id, etc.

### **3.8 Fax**

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NetPBX® Plug & Play provides the fax sending and reception function.

- Sending Fax. From any computer extension with Internet access and the WHFC client installed.
- Fax Reception. An extension is defined for fax reception. The fax is received as an e-mail attachment in image format.

### **3.9 Virtual Operator**

This function receives incoming calls with an interactive menu where it can be selected the following actions:

- Language selection
- menu option selection to be connected to a specific extension
- to connect with the operator
- to dial to a known extension number

The iterative menu is configured according to the organization needs. The configuration is done easy and fast on the WEB interface by entering **gsm** format audio files.

### **3.10 Voice Mail**

This feature allows the NetPBX® Plug & Play user to leave voice messages received when the line is busy, when phone is not answered or when the user has active the feature Do Not Disturb. The voice mail function has the following sub-functions:

**1. Personalized Messages.**

The user can record particular announcements that will be listened by the callers.

These messages can be loaded and managed on the WEB interface.

**2. Message review.**

- a. Electronic mail. The user receives the voice message as an attachment in its electronic mail address defined on user profile.
- b. Phone. The user can review the received voice messages in its phone. The message can be reproduced by accessing its voice mail from user extension.
- c. WEB interface. The user can list, download, and manage its messages on a web browser by accessing the WEB interface.

**3. Message Reply.**

The user can reply to a received message. This will allow recording a message on the mail box of originator.

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**4.** To call message originator.

The user can call to message originator number.

**5.** Make a call.

Within voice mail function, the user can make a phone call to any number.

**6.** Leave a message.

The user can leave a message on the mail box from another extension.

**7.** Remote access to voice mail from other extension.

The user can enter to its voice mail from different extension. Authentication is needed (Used and password).

### **3.11 Music On Hold**

NetPBX® Plug & Play can be configured to play music, voice messages or any audio that will be listened by the callers in following events:

- When call is on hold
- When entering to a conference room

The Music on hold is easily configured through WEB interface. System Administrator can add or remove **mp3** files that will be listened.

### **3.12 Call Pick Up**

NetPBX® Plug & Play allow the user to answer an incoming call from different extension by using the call pick up feature code.

In the WEB interface the operator defines extension groups. The calls can be picked up by members of same group.

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### 3.13 Call Forwarding

This feature allows the NetPBX® Plug & Play user to configure the extension for the incoming call to be forwarded to another number; this can be another extension or an external number.

The call forwarding can be configured for any of the following modes:

- Unconditional: the incoming call will be always forwarded.
- On Busy: the incoming call will be forwarded when the destination is busy.
- On No Answer: the call is forwarded when the call is not answered by the called party in a certain time. The time is also configured on the WEB interface.

Call forwarding features are activated and deactivated in the phone by dialing a specific feature code or through the WEB interface.

### 3.14 Call Transfer

This feature allows the user to transfer a call in progress to other number. The number can be either an extension or an external number.

This feature is accessed using a specific feature code.

### 3.15 Do Not Disturb

When the Do Not Disturb feature is active the user will not receive calls. In this case the incoming calls will be forwarded to the voice mail if this is active for the user extension.

Do Not Disturb is activated and deactivated in the phone by dialing a specific feature code or through WEB interface.

### 3.16 Dual Extension

Dual extension feature allows the NetPBX® Plug & Play user to define an additional extension to be dual. When user receives a call both extension will ring and the call can be answered on any of the two extensions.

Dual Extension is activated and deactivated with a specific feature code or through WEB interface.

### 3.17 Conference Room

This feature allows NetPBX® Plug & Play users to access a common conference room. NetPBX® Plug & Play supports up to 10 conference rooms with up to 10 conference members in each room.

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The users can join to a conference room by using a specific feature code and can be required a password to complete the action.

The feature configuration is done by the Operator in the WEB interface.

For more feature information read the NetPBX® Plug & Play User Manual.

## 4 Installation Requirements

### 4.1 System Requirements

It is needed a dedicated computer where NetPBX® Plug & Play will be running. This computer must have the following characteristics (Minimum necessary):

#### **Processor**

- 3.0 GHz Pentium4 1024MHz bus with enabled Hyper-Threading

#### **RAM**

- 1GB DDR400 RAM

#### **Motherboard**

- Mother board must have 5.0 volts to 32 bits PCI slots. The number of slots is proportional to the numbers of cards to install. Intel D865GVHZ, Intel SE7520AF2, Abit Serie IS7 are recommended.
- NetPBX® Plug & Play does not need audio card. Avoid mother board that includes integrated audio and video.
- The interruptions (IRQ) must not be shared for analog cards nor T1/E1 card.

#### **Hard Drive**

- 1 80 GB Hard Drive

#### **Network Card**

- NetPBX® Plug & Play requires an Ethernet 10/100 Mbps network card. It is recommended an external card, not integrated to mother board.

When a PSTN connection is available, NetPBX® Plug & Play requires:

#### **For Analog PSTN Line**

- Digium TDM400P Card with FXO port(s)

#### **For PSTN E1/T1 connection**

- Digium TE110P Card

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## **4.2 Initial Requirements**

### **4.2.1 Software**

NetPBX® Plug & Play CD, it includes Linux OS.

### **4.2.2 Hardware**

NetPBX® Plug & Play computer it is available to be formatted and to start software installation. It must fulfill requirements specified in chapter 4.1, including connection to LAN.

### **4.2.3 Connections**

- It is required an active ISP connection.
- If external traffic is using Internet, it is required an active ITSP account.
- If external traffic is using PSTN, it is required an active PSTN line.
- NetPBX® Plug & Play network configuration connected to LAN must be up and running.

