

White Paper

Millennium iPBX:

The Next Generation Converged Platform

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Introduction

Private Branch Exchanges (PBXs) are so mission-critical to enterprises that they are taken for granted as a basic right, like the air we breathe. Data transfer is becoming ubiquitous, yet voice communication remains the primary media for communication and must be available upon demand.

Brief History of VoIP PBX to Present Day

PBXs went through a transformation in the late 1970's when the PBX technology went from analog to digital. Now, thirty plus years later, PBXs are once again going through a transformation. This transformation is due to a technology shift available through Internet Protocol (IP). Where in the past, analog and digital PBXs carried voice signals over dedicated circuits, now in the IP era, voice shares the media with data traffic on the same network. This is accomplished by converting voice signals (i.e. audio) to voice packets and sharing the media with data packets. This transportation of voice packets over IP is referred to as Voice Over Internet Protocol (VoIP). In the late 1990's, two startup companies, NBX and Selsius, were the pioneers in developing the first generation of VoIP PBXs. NBX was acquired by 3COM and Selsius was acquired by Cisco. Over the last five years, the VoIP technology has matured from being an innovative 'student hobby' to enterprise class solutions - opening up a new technology window for businesses built on evolving communications.

The leading US PBX manufacturers are now offering either converged iPBX or pure VoIP based PBX. Today, due to infancy of the VoIP PBX, and lack of an IP based telecommunications standard, VoIP PBX lacks the feature richness of the converged iPBX. However, in the next three to five years, VoIP PBX will evolve and will start offering features similar to a digital PBX. eOn Communications, with rich heritage of telecommunications, offers a cost-effective Millennium iPBX business solution converging the best of both technology worlds and enabling enterprises to join the migration path towards evolution.

Business Benefits of eOn Communications' Millennium iPBX

In 2005, eOn Communications developed a Millennium iPBX roadmap which offers Millennium customers a migration path for IP, with features and functionality that they enjoy today on existing digital phones, with the advantage of the IP world. The Millennium roadmap consists of adding support for Session Initiation Protocol (SIP) VoIP phones, IP Networking, IP Trunking, and providing an IP transport for a host of existing features such as Computer Telephony Integration (CTI), Remote Programming Diagnosis (RPD) and Station Message Detail Recording (SMDR). This enables eOn Communications customers to reduce their operating costs and maximize their employee's effectiveness. Some examples of cost saving and benefits are as follows:

- ***Simplified Infrastructure*** -VoIP uses an IP network. There is no need for a separate voice network. Enterprises can wire the building with one cable and use it for both voice and data. This completely eliminates the classical Telecom wiring.
- ***iPBX and Phone Management*** -VoIP phones use IP protocol. It is another IP device connected to the IP backbone. This allows centralized administration and configuration of the phones regardless of phone location (local or remote). In addition, interface to the iPBX via IP (example Telnet or web browser), will allow easier access to the Remote Programming and Administration functions of the iPBX.
- ***Add-Move-And-Changes*** -IP Phones are Ethernet based, they are like any other data equipment. They can be moved from one location to another location without assistance of qualified technicians. This further extends the current Millennium feature of phone portability.

- **Flexibility** - With IP, a company can now offer a fully functional office environment to its employees anywhere there is a broadband connection. In addition, the company does not have to install dedicated telephone lines to local or remote sites. The broadband connection is shared between the data and voice traffic and completely eliminates the need for additional lines for voice connectivity.
- **Toll-by-pass via IP Trunking** - A large number of Millennium customers employ a network of Millenniums to support both the main headquarters and branch offices, or in campus environments. The leasing of dedicated lines for interconnection of these remote sites is an ongoing expense. Because many of these installations already have a Wide Area Network (WAN) to carry data, these enterprises can now use the WAN to carry VoIP voice that now interconnects to the Millennium. In addition, network traffic can be terminated to the iPBX using IP trunks, allowing the enterprise to take advantage of lower priced carrier VoIP services as compared to Public Switched Telephone Network (PSTN) based carrier services.
- **Presence** - iPBX can minimize “telephone tags”. With iPBX, an IP phone user’s presence is detected in real time and calls can be forward to the appropriate user in real time. No matter where a user is currently located, as long as they have a connection to the network and are “registered” as their prime extension at their current device, calls for that user will be delivered directly to that user’s current device. This minimizes “telephone tags” and increases the employee productive.
- **Feature Transparency** - Users of enhanced eOn SIP phones will enjoy all the benefits and features currently available to Millennium digital phones, regardless of their location. Display information, button indicators, all feature dial access capability, all feature button programmability, hands free operation and more are available with the new SIP phones. Furthermore, the dual color LED indicators provide a more productive visual experience. Use of analog phones on the Millennium and users of generic SIP phones will have a reduced set of available features. The initial release of Millennium VoIP will support a number of reduced feature set generic SIP phones available from third party SIP phone vendors, as well as the “somewhat enhanced” Cortelco SIP Phone. Future releases will support the full featured eOn SIP Phone. The Cortelco SIP Phone will provide display information, a limited number of programmable buttons and a single LED indicator, also programmable, generally for message waiting. Due to the lack of button LED indicators, the associated button

number can co-exist in the display information. Call features that require lamp indication will be accomplished with the use of audible tones and display information.

Feature Transparency with respect to third party SIP phones is limited to that which is supported today by current SIP protocol standards. Because of the immaturity of the SIP protocol with respect to advanced calling feature support, third party SIP phones operate very much like analog telephones with respect to Millennium system feature interoperability. For example, third party SIP phones can be placed in a hunt group, just as analog phones. However, enhanced proprietary features such as programmable feature keys, (e.g. Call Park, Voice Announce, CallBack, etc.) are not supported on third party SIP phones.

Feature Transparency will minimize training needs for IP users added to existing Millennium customers and allow existing business processes to be easily extended to these new users.

Millennium iPBX - Architecture

eOn Communications has developed an IP line card to provide support for IP family phones, IP Networking and IP Trunking. The IP line card is required to provide IP connectivity to the Millennium System Controller for call signaling and other IP features. The family of IP Phones will allow the end user to have access to all of the business features that Millennium users are accustomed to with the current digital phones over a IP managed network. The iPBX will continue to support all existing device types and phones, and allow any combination of calls between the IP and Circuit Switched world.

The addition of IP connectivity to the Millennium is very easy to install and done in a manner that allows current Millennium installations to upgrade with almost no impact on current equipment.. In order to support IP, the Millennium iPBX must have a System Controller Gen II, running version v3.11 software or later. An IP line card can be installed in the first slot of any slot pair in any shelf. In the initial release, an IP line card has access to 32 voice channels, allowing up to 32 simultaneously registered users (SIP phones), based on licensing. Multiple IP line cards can be installed to provide additional simultaneous users.

Also, support for IP Networking and IP Trunking is in development and will be available in future releases. IP Trunking will allow IP connectivity between switches that support the IP Trunking

protocols. This includes networks of Millenniums in an enterprise configuration, and also an interface to IP service providers that provide inexpensive gateways to the PSTN. When used for IP Trunking, the remote configuration programming of the millennium will be modified to support an increases number of nodes for larger configurations. Multiple IP line cards will provide a form of redundancy in that if one card becomes unavailable, other cards can be used to continue the IP support. In the event of network failure, the Least Cost Routing (LCR) alternate routing features can be invoked to allow backup use of traditional T1 or analog trunks.

Future releases will also support an IP transport layer for existing features of CTI, RPD and SMDR. A common administration interface will be developed to allow simple access to a network of Millenniums, each with their own existing RPD, from a single application.

As noted above, the initial release of IP in the Millennium iPBX will support a number of generic third party SIP phones with a very limited feature set. In addition, an increased functionality Cortelco IP Phone will be supported. Already in development, a fully enhanced feature eOn SIP Phone will provide all of the functionality currently available with the Millennium digital phones. This new phone will be packaged with a sleek look and a modern design housing two colored LED's and increased number of buttons that will be common to the new family of eOn phones.

Conclusion

Millennium with its built-in IP support for Station, Trunk and Networking allows eOn Communications to offer its enterprise customers the best of both digital and IP offerings in one platform - Millennium - The Next Generation Converged Platform.

Contact eOn Communications

If you are interested in learning about how you can meet the needs of your business today and into the future by implementing the Millennium Converged Communications Platform, contact us at 800-955-5321, or visit www.eoncommunications.com.