

Emoze for Enterprise
Mobile Push Messaging Technical
White Paper



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Chapter 1 INTRODUCTION

Today's market, especially the economic downturn, has forced everyone in all walks of life to look for new ways to work and play more effectively and productively in order to reduce costs. Globally, more employees are working while away from their traditional office, and even when they are inside the office, they have become less dependent on direct voice communications. Data communications, text, IM and email, are a major trend in the world today. Email is the most effective means of data communication especially since attachments can be sent via email. Email and PIM connectivity can contribute significantly towards making employees more productive and more accessible to clients. With real-time mobile push email, employees can receive message and attachments on the go, anywhere, anytime.

The beginning of 2009 marked a significant change in the mobile messaging market. Two major device manufacturers, Nokia and Motorola, chose to discontinue their proprietary solutions in favor of other options. Nokia stopped developing Intellisynch preferring to focus on partnering offers and Motorola sold its Good Technology to Visto. "This opens the market to other players," says Stephen Drake, program vice president, Mobility and Telecom.¹

Emoze mobile, push-messaging fits right into this opening as it is the best match for Enterprise enabling businesses of all sizes to empower their mobile work force without spending a fortune while still offering the necessary management and security that business requires. Emoze for Enterprise is also a very flexible solution, enabling employees to stay connected with both their office and their personal email accounts on the same device. With Emoze, everyone can stay in touch with family, friends, and business contacts. The Emoze approach to mobile push messaging solutions is that communication should not be a one size fits all solution and users should be able to manage their mobility as best suits them. Emoze not only offers mobility now but it offers "Mobility Your Way".

With an Emoze for Enterprise solution, employees can send and receive email and manage their personal information (PIM) data (inbox, contacts, calendar) while on the go anywhere in the world – 24 hours a day, 7 days a week 365 days a year

Sara Radicati, CEO of the Radicati Group stated that even with the changing economic conditions, the growth in the next four years will be driven by mobile operators and enterprise looking for advanced email solutions that offer less expensive messaging solutions with reliable availability and proven security.

¹ Worldwide Corporate Mobile Email 2009-2013 Forecast and Analysis
IDC March 27, 2009
Pub ID IDC2204440

The Radicati Group predicts that by 2012, the worldwide email market revenue will reach \$67B.

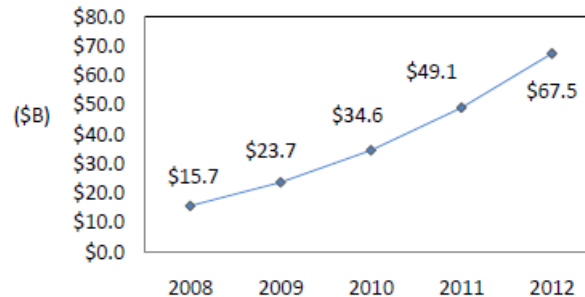


Figure 1: Worldwide Wireless Email Market Revenue 2008-2012²

According to Gartner, the information technology research and advisory firm headquartered in Stamford, Connecticut, by the end of 2010, 1.2 billion people will carry mobile handsets capable of providing a rich, mobile environment that unites mobility with the Web over mobile broadband.

1.1 Smart, Simple, and Secure

Today, mobility matters. However, staying connected can be complicated, risky and expensive. Emoze for Enterprise provides business of all sized with a smart, simple and secure solution that does not require dedicated staff to implement or administer. The centralized management system is user-friendly, intuitive and secure.

With Emoze for Enterprise, employees have hassle-free access to corporate email, attachments, contacts and calendar anywhere, anytime. There is no need to poll the server constantly checking for new emails. The user gets an alert each time a mail arrives to his/her mobile device. The entire process is transparent with no need for any effort on the part of the user.

With Emoze for Enterprise, emails are transferred compressed and encrypted to ensure privacy and security. In addition, data is never stored on an intermediate server. The patented Emoze synchronization process ensures that data is only moved when the recipient is available to receive. Emoze uses state-of-the-art AES encryption to ensure that only authorized users are able to access information.

1.2 Mobility Your Way

Emoze for Enterprise does not require that employees use a dedicated device or that the business subscribe to a dedicated server. Emoze works with most versions of the Microsoft Exchange Mail servers. Once installed, Emoze for Enterprise enables the IT administrator to manage a wide variety of devices without having to configure each device individually.

² Radicati Group October 2008

Emoze supports all common data sources; POP3 and IMAP for local ISP email, web-based mails like Gmail and Yahoo, Google apps, Windows Live, Hotmail and OWA for office email systems that work with MS Exchange.

Since Emoze is a global communication system, it is operator, and network independent. It can be used with any available wireless data network (GPRS, EDGE, UMTS, CDMA, Wi-Fi, HJSDPA, etc.). On compatible handsets, Emoze can also access data via available Wi-Fi networks.

1.3 Low Total Cost of Operation (TCO)

Cost of acquisition and cost of use are major factors in any business decision today. The dynamics of the market and the nature of the economy demand that every business look closely at the expenses involved in implementing any solution. Emoze promises the lowest total cost for two reasons. The first reason is the Emoze does not rely on a "store and forward" architecture meaning that less physical server space is needed to support massive numbers of subscribers. Emoze has also driven costs down by moving to a more efficient server technology.

With Emoze for Enterprise, data costs are kept to a minimum as well. Data is compressed by almost 80% making transfers faster, more efficient and, as a result, less costly.

Emoze for Enterprise is simple and is not a complex system that requires dozens of dedicated IT staff. Since it is not a complicated system to install nor is it difficult to manage, day-to-day operational costs are minimal. One administrator can easily manage a large number of users without a problem.

1.4 Technical Overview

Emoze for Enterprise is a Telco grade solution that is easily integrated with the corporate network to provide a cost-effective and non-complex solution for mobile push messaging and push content. Emoze for Enterprise infrastructure is a robust infrastructure that meets the needs of today's business world.

The Emoze architecture is designed to support several major Telco- grade challenges such as scalability, high availability, and redundancy. First, scalability means that Emoze can support additional users at minimum cost and with minimal impact on the total cost of operation. Second, Emoze provides high availability, which means the system has minimal downtime. Finally, Emoze architecture enables the system to keep working even if one component fails providing redundancy.

Emoze for Enterprise can be installed as an in-house system, where the Emoze servers are physically located in the DMZ of the company or Emoze can host the service. Emoze for Enterprise works behind the company firewall and most often works with the existing ports.

Once the Emoze servers are installed, the company IT team can provision users and enable them to begin using the service immediately. The Admin console provides centralized management. The user-friendly GUI enables the administrator to manage users, establish preferences and view statistics on usage.

Chapter 2 BUSINESS CASE

2.1 Overview

Today's economy requires every enterprise to be agile and responsive to every situation, which is why it is absolutely essential that the mobile work force be empowered with access to up-to-the-minute information wherever they are in order to increase or even maintain productivity. Every business needs information to make decisions, close deals or get answers for clients and they need to be able to send and receive information easily.

Since so many employees are no longer tied to their desks, it is essential to provide employees with an efficient way to access the information they need in real-time. With Emoze for Enterprise mobile, push messaging employees can access their inbox, contacts and respond to calendar events anytime from wherever they are.

2.2 Business Case

There are two ways to stay in contact via email, pull or push. Pull email involves the user logging onto a mail server to check if there is anything new. Push email is faster, easier, more efficient and cheaper. Every time an event occurs, the email is sent and the recipient receives an alert that a new mail has arrived.

Let's look at Mr. Stephen Crane, a sale manager at The Portal Company. He now has Emoze for Enterprise mobile, push email on his mobile device. He can now use his down-time to read and respond to his email, which is what he does while he takes the train to work. Later the same day, he takes a taxi to a business meeting. He is not thinking about his email, but gets an alert that he has a new mail. His secretary has sent him an urgent email telling him his flight is changed and is flying tonight instead of tomorrow. She has attached his e-ticket so he does not need to return to the office. Instead, he heads home, grabs his suitcase and makes his plane. Emoze on his mobile device enabled him to save time, be much more productive, get the job done and save money for the company.

The return on investment with Emoze for Enterprise is instant. The installation, deployment and monthly cost are returned immediately in increased productivity as shown in this chart.

The ROI can be calculated by estimating the amount of time an employee saves by being able to access emails, attachments, contacts and calendar events from any location at any time.

This very simple calculation shows the enormous potential to save money.

Number of Employees	100
Average number of hours worked per week	40
Average number of minutes saved per day(i)	15
Average annual salary per employee	\$65,000
Cost to company for employee(ii)	150%
Total Savings to company for time gained	\$244, 440

An employee earns \$65,000/year. At that rate, the employee earns \$31/hour.

Cost of employment is factored as 150% making an effective rate of \$47/hour.

If that employee saves just 15 minutes every day using Emoze for Enterprise the savings is \$11.75/hour x 40 hour work week (\$470/week) x 52 weeks/year, which is a savings of \$24,440 per year per employee

If the company has 100 employees at this salary, each saving only 15 minutes per day, the annual saving is for time spent is \$2,444,000 per year,

The cost of Emoze after the initial, depreciable investment is simply the annual license fee plus the cost of data usage for each client.

Cost of Emoze for Enterprise for 50 licenses	\$3,500
Data plan per user per month	\$ 30
Total cost of data usage annually	\$36,000
Total cost data + Emoze for Enterprise	\$39,500
Return on Investment (ROI) (iii)	619%

The ROI is the total savings divided by the cost of the investment.

Assumptions:

- i. Cost of employment is factored as 150%, which is what it costs the business per employee for recruitment, training, and provisioning (IT, office space, etc.)
- ii. Time saved is a conservative estimate
- iii. The ROI does not include other cost factors such as reduced voice and SMS expense, reduced travel expenses, etc.

This is based on a very small amount of time saved. If employees are able to be more efficient and more productive, the ROI is greater.

Chapter 3 TECHNICAL ARCHITECTURE

3.1 Overview

Emoze for Enterprise offers any business serious about increasing information access an award winning solution that offers the most flexibility along with the highest level of security and the lowest total cost of ownership.

The Emoze for Enterprise design enables it to work with a several versions of the Microsoft Exchange mail servers³ supporting MS Outlook and Outlook Web Access. The Emoze security infrastructure enables business to feel confident that sensitive emails are protected during data transfer while still allowing employees the freedom they need when using their mobile device.

The initial hardware investments are lower since there is little need for storage of the data being transferred. It is also not necessary to procure special devices since Emoze supports a broad range of data enabled mobile handsets. With Emoze, the company IT can manage a multiple users without having to configure each different mobile device manually.

Emoze for Enterprise functions securely behind any company firewalls. It is easy to integrate and often does not even require opening new ports.

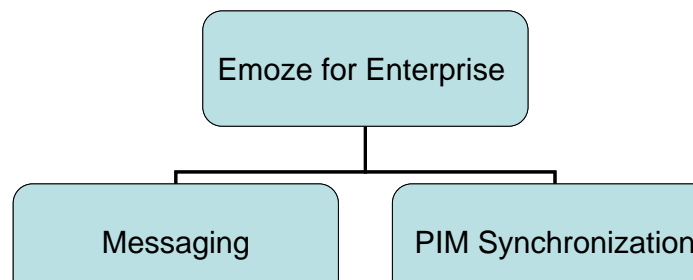


Figure 2 Emoze Messaging

The Emoze for Enterprise Messaging solution consists of:

- Emoze for Enterprise Gateway servers
- Emoze Admin Control Center
- Emoze client for individual mobile devices

³ Emoze works with MS Exchange 2000 and above

Emoze for Enterprise supports messaging services and supports synchronization for personal information, which includes the Inbox and subfolders like drafts and sent mail, Contacts and Calendar.

3.2 Emoze for Enterprise Gateway Servers

The Emoze Gateway servers are a smart infrastructure that enables business to adjust rapidly to changing market demands without the necessity to make extensive capital investments in order to maintain the technology.

There are actually two modes to run the Emoze for Enterprise service. One mode is a MAPI impersonation, which is suitable for SOHO, small businesses that have less than 50 employees. The other mode is the Admin model, which is suitable for larger business including major corporations.

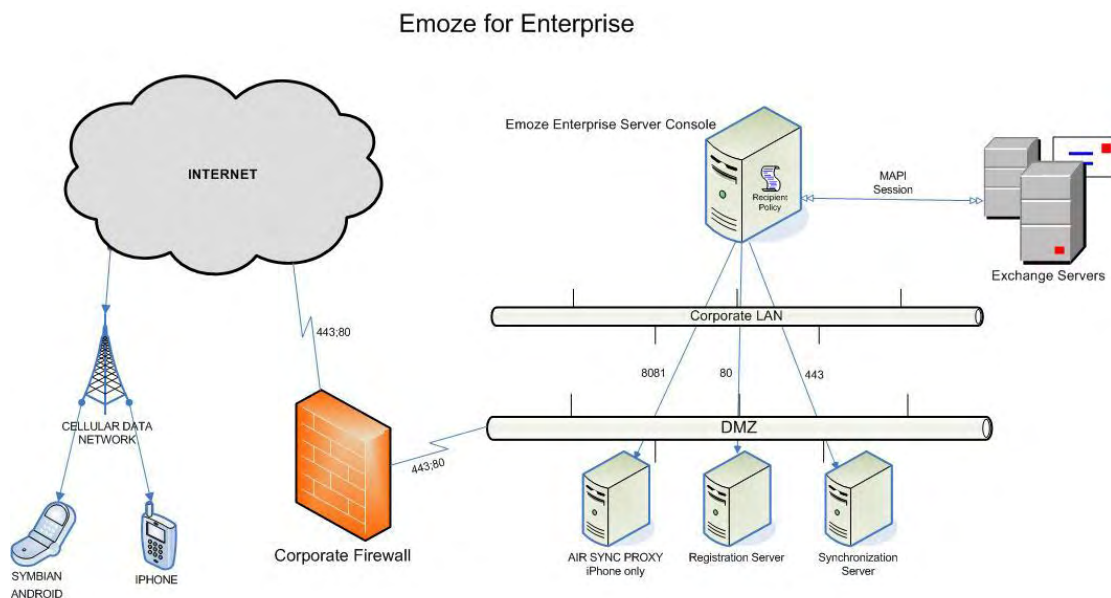


Figure 3 Emoze Architecture

The Exchange server sends notification to the Emoze for Enterprise server, which checks with the registration server (for authorization), finally getting to the Synchronization server, which can then transmit to the mobile device.

Emoze can combine its award winning software with a leaner and very resilient infrastructure to provide a solution that offers high efficiency and outstanding performance while it minimizes both capital investment and operational expenditures.

This infrastructure is based on blade server technology, which is a modular unit consisting of the chassis that can house several individual blade processors. This multi-unit housing provides essential computing power and performance features that reduce energy consumption. Its flexible, modular design shares power and cooling, enabling increased server density,

enhancing performance while reducing cost per watt/sq. foot.

The modular design of the Emoze Gateway servers provides exceptional reliability, scalability and management efficiency in a system that actually reduces the cost of implementing the infrastructure and works to reduce the actual day-to-day cost of operation.

The Emoze solution is available as either an in-house solution where the Emoze servers are located in the DMZ of the Corporate behind the company firewall or a hosted solution where the Emoze servers are located outside the Corporate but again protected by firewalls and Emoze security.

3.3 Smart Routing

Emoze's unique messaging and synchronization technology is based on content routing only. The Emoze push email solution uses a smart routing method that synchronizes and transfers content and between the Exchange server and the client only when the client is connected and ready to receive. When a new event is detected on the data source or on the mobile device, the server first checks to make sure that the client is open and ready. If the client is ready, the synchronization between the client and the server is done immediately in real-time. This patented technology enables bi-directional synchronization of content between Exchange servers and any mobile device. Data is never duplicated or stored on a 3rd party server (an architecture known as store and forward). This enables the Emoze service to provide the highest level of security and privacy for its users and their content since nothing is written to the disks.

3.4 Synchronization

Emoze Enterprise Edition offers flexibility in the push methodology that relates to how messages are retrieved from the server. The options are:

- Push Mode – real-time, immediate push
- Periodic - every 15 minutes, every 30 minutes, every hour, business days, etc.
- Manually – only when user checks for mail

Push Mode

This is true push mode. As long as the mobile device is open and connected, the Emoze for Enterprise service instantly synchronizes all data transferring the new data bi-directionally in real-time. All changes are synchronized between the corporate exchange server and the mobile device. This means that when a user opens his/her mobile device the inbox is automatically updated with emails pushed to that mobile device in real-time. There is no need for the user to leave their laptop or PC connected to the internet or their Exchange server. The synchronization process does not need any other type of connection to function. Updates include not only emails but all other

events, such as folder information as well. The synchronization is automatic and continual. As long as the mobile device is open and connected, all changes are pushed in real-time. The first synchronization may take a few minutes, after that synchronization is automatic and almost continual.

Periodic Mode

Emoze for Enterprise enables either the user to determine if the best method for receiving transmission is periodic rather than immediate. The Emoze client enables the user to select a rule on the mobile device, whereby the Emoze server only synchronizes with the Exchange server according to the period selected. The Emoze service performs the same synchronization of all data transmitted as it does with full push mode, however it pushes data only according to the schedule set by the rule. As with push mode, all changes are also bi-directionally synchronized with the company's corporate Exchange server so that the user is assured of the most updated information.

Manual Mode

As with the periodic mode, the user can select a rule that enables the Emoze service to only retrieve messages manually. In this case, the data is transmitted only when the user specifically requests to pull the changes from the server. Again, it does not matter how data is received, all data transmissions are fully synchronized.

In addition, with Emoze for Enterprise, there is automatic backup since all original data is still available on the Exchange server since the synchronization does not download the data neither is any data changed. This provides an extra layer of data protection in case there is data corruption or network problems.

3.5 Security

The Emoze push email service is designed to protect the privacy and security of all data being transferred by providing a safe and secure environment in which to transfer data. Emoze implements end-to-end information security and maximum network and mobile defenses. This includes protecting both the internal network and the mobile device. All data is encrypted using AES encryption. This is a third party PKU security standard widely accepted as being very dependable. The encryption processes ensures that no one is able to intercept or read mail if they are not the authorized user. Not even Emoze technical personnel are able to read emails while they are in the Emoze system. Encryption keys are stored on the mobile device and the Emoze for Enterprise server only. Neither data nor encryption keys are accessible, at any point, over any public network, on any Emoze server or over any wireless network. The system is based on user name/password authentication. All messages are encrypted behind the data source firewall (for both personal and corporate networks), and can be decrypted only when they reach the

intended mobile device or PC.

In addition to encryption, the Emoze for Enterprise service compresses all data sent using a unique technology that enables text to be compressed up to 80%. All compression is bi-directional meaning that all data being sent as well as all data being received are compressed. Compression effectively protects the data and the network adding another layer that makes the data much more difficult to intercept or infect. In addition, compression reduces the time needed to transmit messaging reducing the costs for data transmissions.

An additional Emoze for Enterprise feature is that the solution optimizes battery usage to prevent the necessity of constant recharging.

3.6 High Availability

Emoze provides high availability and dependability because it is based on redundant systems that provide backup and eliminate any single point of failure. Both the wireless network and the Emoze infrastructure are equipped with alternative infrastructures that enable recovery from failures with no loss of service. The BGP (Border Gateway Protocol) supports network redundancy by ensuring that the access routers have two or more different paths, both physically and logically, to the Internet.

The Emoze servers include load balancer software to maintain proper load distribution. In the event of load-balancer failure, the load balancer and SSL accelerators are maintained and failed over to the redundant hardware.

In the case of hardware failures in the backbone switch, the network traffic will fail over and communication between subnets will continue to flow smoothly.

The Emoze servers are designed to multiplex traffic. If any network gateway is down, messages are automatically rerouted to a redundant server.

The Emoze infrastructure is set up to add capacity transparently, so end users will not be affected by system expansion. All the servers are located behind the load balancer and share the same virtual IP or several virtual IPs. The traffic to the Virtual IP is directed to the load balancer, which then decides according to the load shaping policy to direct the request to the less busy servers. In addition, adding capacity is a simple procedure with Blade server technology.

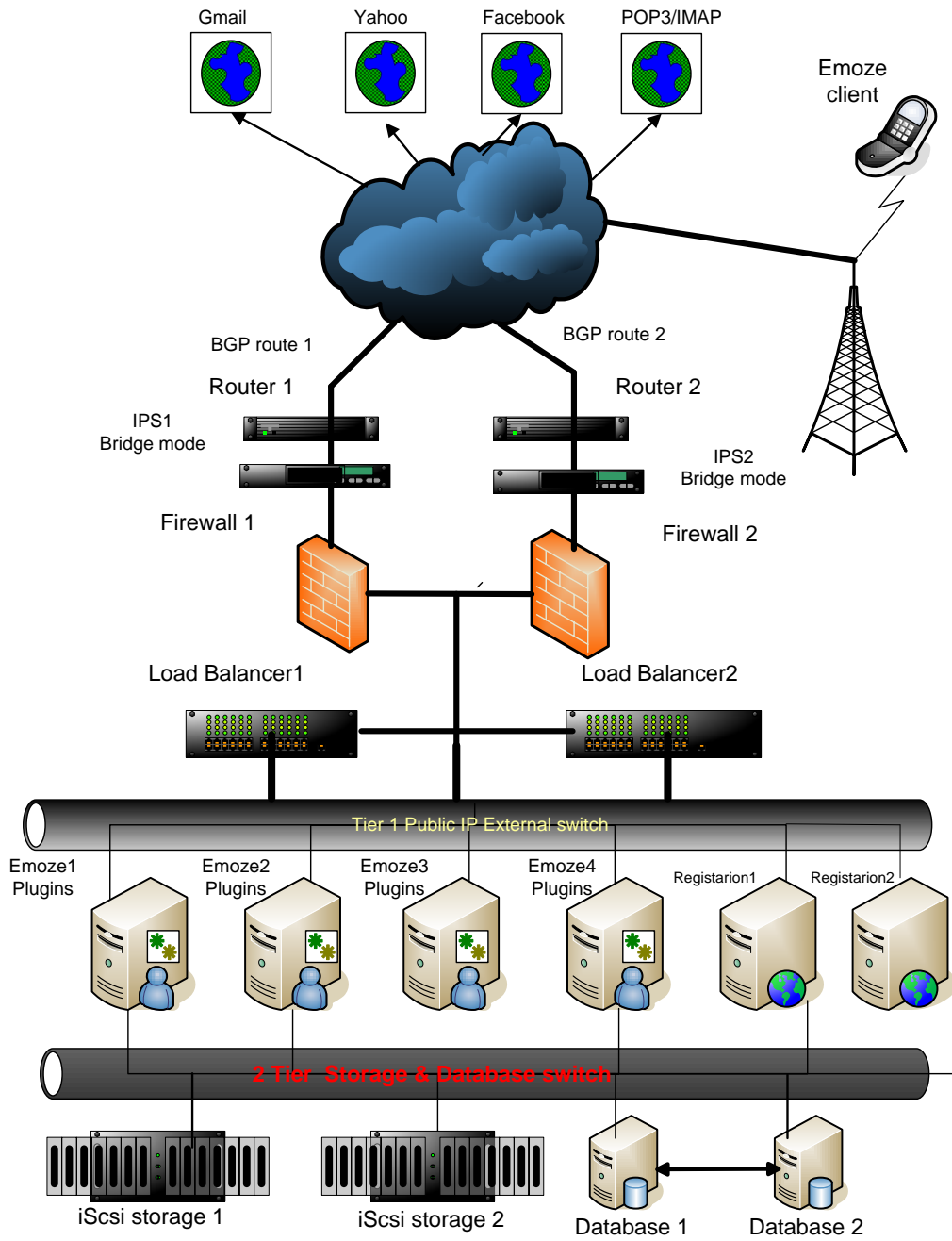


Figure 4: Operator-Network Redundancy

Chapter 4 ADMIN CONSOLE

4.1 Overview

Emoze for Enterprise provides centralized management via a user-friendly GUI known as the Admin Console. The Admin console enables the Administrator to perform all the functions necessary to enable users. It also enables the IT to set preferences and collect statistics.

In order to use the Admin console, the Administrator must create an Outlook account on the same server that runs the Emoze for Enterprise software. Once logged in as a simple user, the Administrator can create a default Outlook profile from which notifications to the clients will be sent.

The user interface consists of three tabs:

- User Control – basic user services
 - Add/remove users
 - Manage and control passwords
 - Manage folders on user’s mobile device
 - Set rules for PIM management
- Statistics – provides usage information
 - View server statistics
 - Track how the service is being used
- Preferences
 - Create user messages
 - View Logs
 - Set default rules

4.2 User Control

Administrators are authorized company IT personnel meaning that the enterprise retains control and has the ability to decide and enforce corporate policy. Emoze has no responsibility for administrating the service.

Use this tab to:

- Add users
- Remove users
- Disable or Wipe device

- Set Folders use per user
- View statistics per individual user
- View user details per individual user

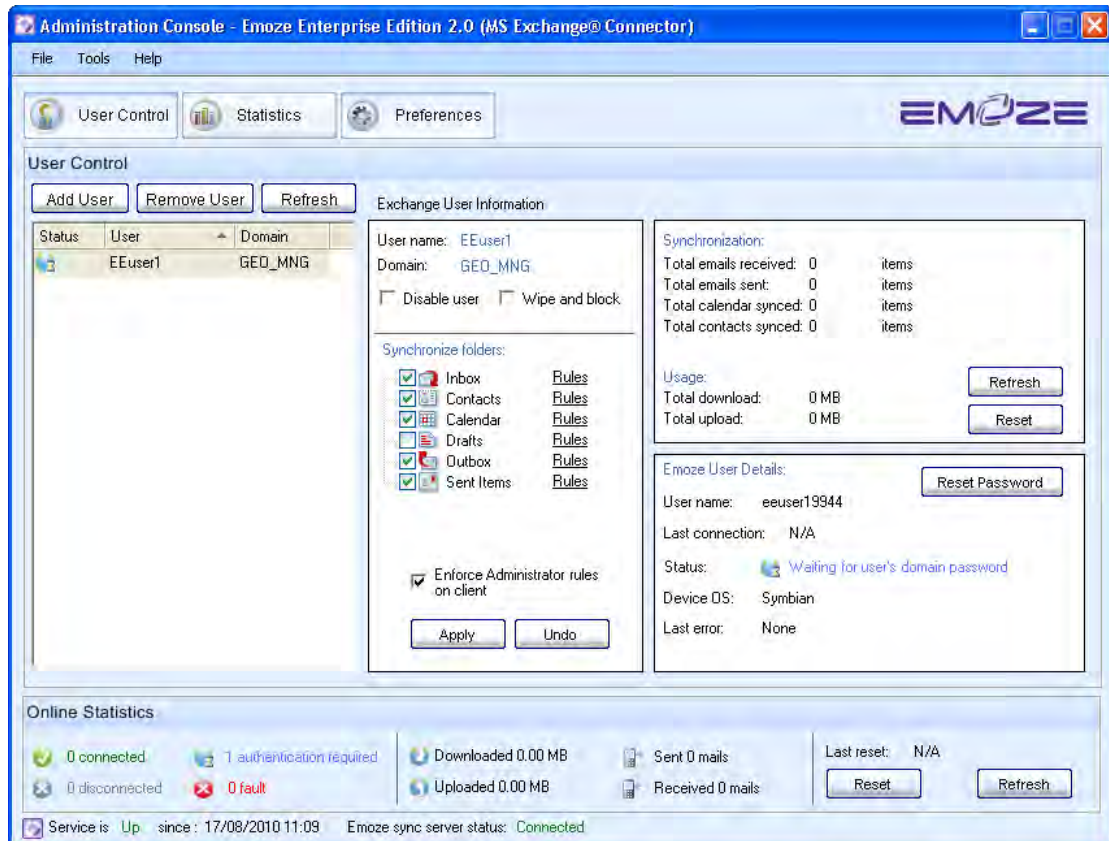


Figure 5: Admin Console – User Control

The first panel shows a list of connected users. Click Add user to view the company's address book in order to add a new user. Select a name from the list and click remove user to delete a user.

The middle pane enables the Administrator to disable a user locking the mobile device temporarily. In case of a lost device, the Administrator can wipe and block a device.

The Administrator may also select which folders and subfolders the user will be allowed to access. For each folder, there is an accompanying set of rules. These rules can be set individually by user or globally on the Preferences tab.

The final panes show (on the top) user statistics. It can be updated (refresh) or reset in order to provide information per user.

The bottom half of this pane, shows user details, i.e. the user name, last connection, etc. The Administrator is also able to reset a user's password here.

4.3 Statistics

The Statistics tab provides global information about usage. It provides the company with detailed information about server usage and statistics regarding overall usage.

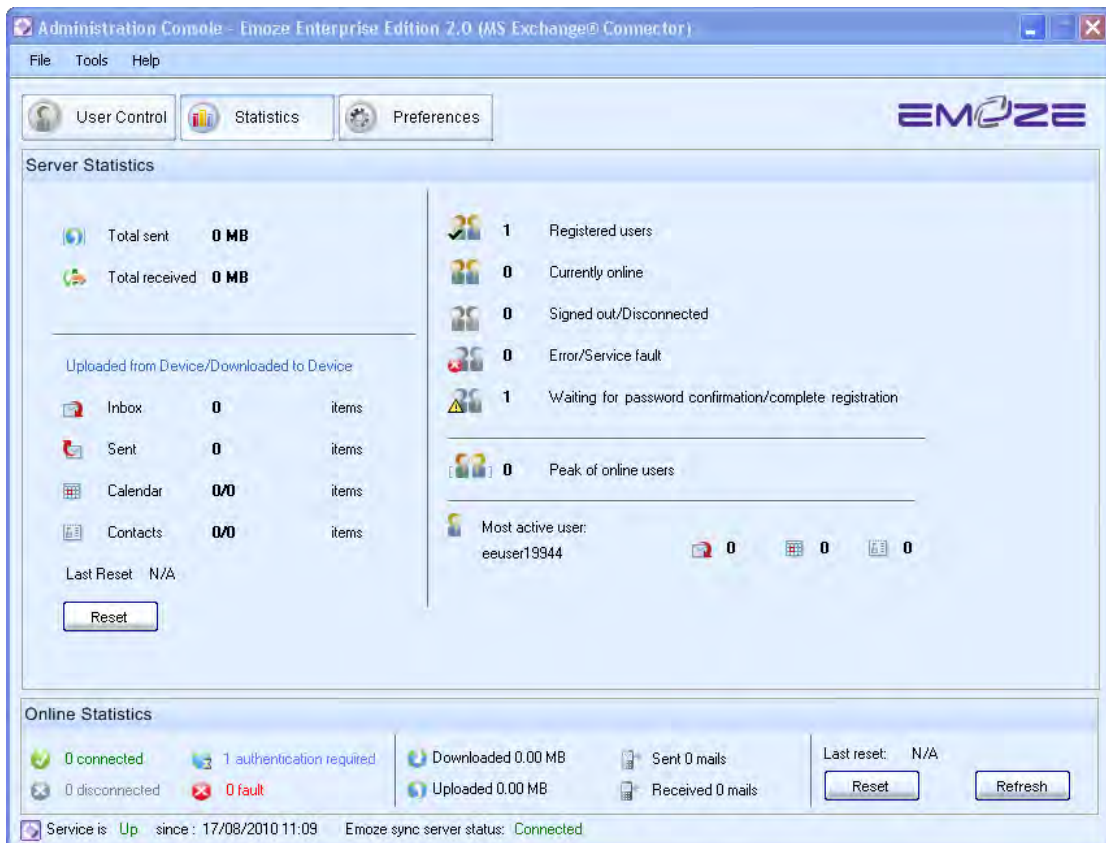


Figure 6: Admin Console -Statistics

The information, which is displayed in the bottom of the screen, reflects online Statistics. This information can be viewed from all three tabs.

4.4 Reports

Emoze for Enterprise can provide scheduled and ad hoc reports including:

- Traffic reports in the system
- Users activity reports

4.5 Preferences

The third tab, Preferences, enables the IT to determine and implement and manage company policy.

The right pane shows the message that each new user receives according to the type of mobile device being registered to the service.

The left pane displays the folder list as shown in the User Control tab. The administrator can enter each folder and select the default rules that will apply to information in that folder. For example, the Administrator can select the Inbox and choose to get emails from the last day, week, month, etc.

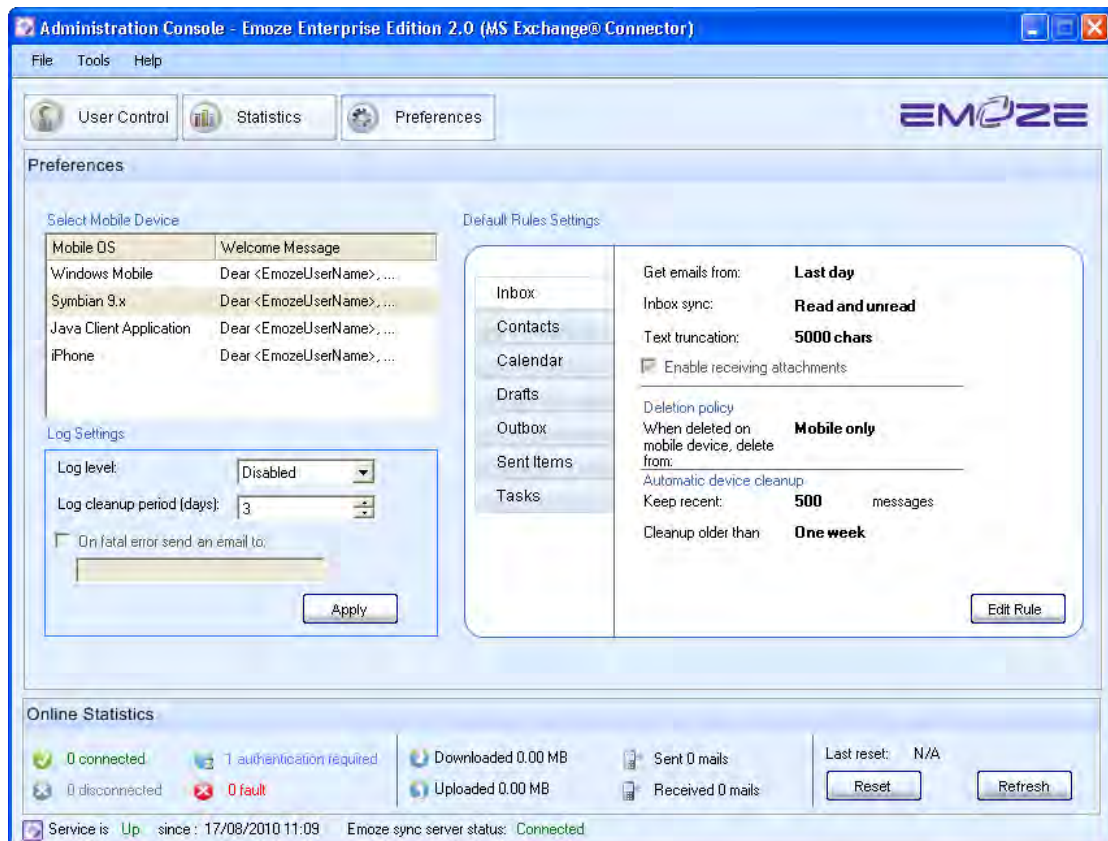


Figure 7: Admin Console – Preferences

Chapter 5 EMOZE FOR ENTERPRISE ON THE DEVICE

Emoze for Enterprise does not require a specific mobile device. Emoze supports a broad range of operating systems that include Symbian (Nokia) and Windows Mobile (Palm). Emoze for Enterprise also supports the very popular iPhone but with a slightly different configuration.

5.1 Inbox

Emoze for Enterprise supports the Inbox and subfolders like Sent Mail and Drafts. Users can add multiple accounts enabling them to add their personal email account on the same device. Emoze enables a user to add personal POP3/IMAP accounts (local ISP). Web-based accounts such as Gmail, Hotmail and Yahoo as well as social networking accounts like Facebook.

Emoze for Enterprise enables the most desired email functions:

- Receive and read emails on the mobile device
- Compose, reply, reply all and forward
- Synchronization of outbox, sent and draft folders
- Support for inbox sub-folders
- Download and view attachments

5.2 Attachments

Very often, the text of an email message is totally unimportant and it is only the attached file that the employee needs. Emoze for Enterprise supports receiving, viewing, and sending file attachments from the most popular applications. In some cases, the user may also be able to download attachments. The Administrator can set the policy for the size of attachments.

Depending on the capabilities of the mobile device and the size of the attachments, Emoze for Enterprise supports:

- Microsoft Office programs (Word/Excel/Powerpoint)
- Acrobat (PDF)
- Jpeg (photos)
- Audio files
- Microsoft Office (Word, Excel, etc.)

5.3 PIM – Personal Information

Emoze automatic PIM synchronization is a killer application for employees who need to be synchronized all the time without using cables or any other manual means. Contacts details and calendar events are synchronized in real-time as soon as they are added or changed.

The Emoze client uses the native device phone book and calendar to synchronize the contacts and calendar events. The synchronization process is bi-directional and uses the same secure environment as email. Emoze uses smart synchronization mechanisms to avoid problems like duplications and data corruption.

5.4 Rules

Emoze enables the Administrator to set default policy via the Admin console.

These rules include:

- Inbox content (read/unread)
- Rules for messages sync (
 - Number of messages to keep
 - Clean up cycles
- Rules for calendar sync
 - How many past days to synchronize
 - How many days ahead to synchronize
- Delete policy (
 - Delete from device only or from both device and PC
- Active days and hours of the client
- Auto start
- Work mode (always on/ using synchronization cycles)
- Configuring a signature for outgoing messages
- More...

Chapter 6 EMOZE PUSH CONTENT PLATFORM

6.1 Overview

The communication revolution has generated a secondary revolution, the information revolution. To enhance the user experience, Emoze has extended its push technology into the content field and can offer a platform that can deliver customized content pushed directly to the user's mobile device with all the same technology and security as push email.

Mobile, push content collects information from a wide variety of internet sources, consolidates that information, and pushes it to the user's mobile device in real-time.

The mobile, push content platform can be customized to enable Enterprise to push a myriad of information, such as breaking news, traffic, weather, stock market reports, sport updates and more, to the employees' mobile device reaching them wherever they may be, anywhere, anytime.

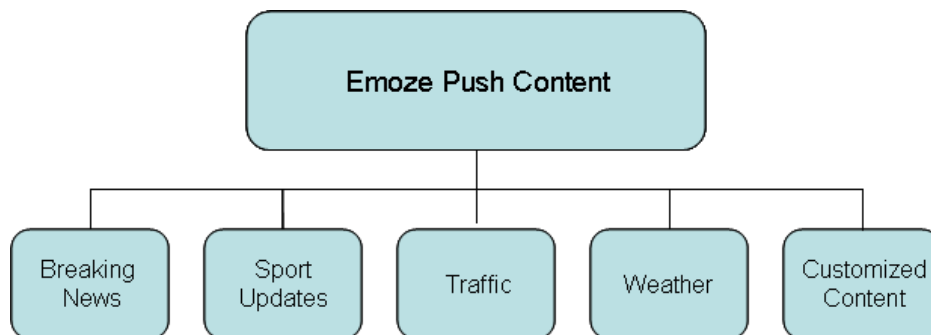


Figure 8 Emoze Push Content

6.2 Technology Overview

Like its solution for mobile, push email, Emoze provides a cost-effective and non-complex solution for push content. The content itself is derived from a wide array of RSS feeds on the World Wide Web. The content is fed into Emoze Dragon Server, which then aggregates the information and enables it to be managed by a simple and user-friendly GUI similar to the Admin Console⁴. The simple Emoze management tools enable the content to be customized and categorized. The content can be sent to the end-user in a variety of formats, like HTML or CSS, designed to fit the mobile device to which it is being sent.

⁴ Emoze for Enterprise

The content can be organized into categories according to parameters before being pushed to the end-user. End-users can select from a list the type of content they would like to receive, for example News, Sports, Traffic, etc. Emoze solves the complexity of the content value chain enabling dynamic content delivery to the end users.

Chapter 7 SUMMARY

Emoze provides the best solution for Enterprise. Emoze proves that empowering employees by giving them mobility increases productivity and enables better, faster, more positive communication for everyone in the Enterprise, not just senior executives.

Communication is instant without the hassle of signing in and polling the server to check for changes. Whether the employee is on a train or in a meeting, each time there is a message, the employee gets an alert.

Employees are able to choose from a wide variety of mobile devices, including the one they already own in order to read, respond and compose emails and their accompanying attachments. In addition, they can have access to all their contact information and can manage their calendar while on the go.

Emoze provides a platform that is affordable and efficient. There is no reason to buy dedicated mobile devices or have confidential data stored on third party servers.

Emoze provides a solution that is simple, smart and secure. All messaging is compressed and encrypted and uses maximum optimization to conserve battery life.

The Emoze server systems are designed for high availability. They are reliable, redundant and extremely scalable. The solution is also network independent allowing total global access and availability.

Emoze for Enterprise with its low TCO, high availability, ease of use and complete security can add to your bottom line.