B Series Personal Notification via SMS and Email

White Paper

Abstract

The Bosch B Series control panel version 2.00 introduced the ability for end users of the system to receive emails and text messages directly from the control panel. With enhancements made in firmware version 2.01, the personal notification system becomes much more flexible and powerful, allowing security dealers to more effectively tap into this growing market.

This paper describes the configuration options and mechanisms to allow security dealers to understand and properly select and configure the personal notification method.

Technologies

B Series version 2.00 utilized a single hardware path that could be used for personal notification. The B440 Plug-in Communicator was able to send personal notifications via Cellular Short Message Service (SMS). The destination of the message could be a Cellular telephone number or an email address. If an email address was provided, the SMS text message would be sent to the Cellular carrier's SMS-to-email bridge. This server would convert the text message to an email and route it accordingly.

B Series version 2.01 adds a new dimension to the personal notification options. The control panel can directly talk via the Ethernet to an email server. This can be done using the onboard wired Ethernet, or via a B440 or B441 Plug-in Cellular Communicator.

With the new flexibility come additional configuration options. Understanding these is critical to finding the most cost-effective and reliable solution to meet your customers' needs.

Reliability

The Cellular SMS is a very reliable mechanism in terms of ease of connectivity and up-time. The control panel and the Cellular infrastructure have battery backups, so personal notifications can be sent even during power outages.

Sending email over Cellular is nearly as reliable as sending an SMS. Notifications can still be sent during power outages. However, any time a 3rd party email server is used, you may experience downtime as a result of that server. Also, the required passwords and rules for sending emails may change, causing a permanent service interruption until the configuration is updated.

Sending email over onboard Ethernet adds another layer of complexity on top of that imposed by the email over Cellular. The connection relies on the end-users' network infrastructure. This may include low-end network equipment, which is not always protected by battery backup. Any power failure or equipment failure will also temporarily affect the ability to send personal notifications. However, most end users rely heavily on their network connection, and are very satisfied with their up-time. You will likely find email over onboard Ethernet is reliable enough for the majority of personal notification needs.

Since onboard Ethernet does not require a plug-in Cellular communicator, or a monthly data plan, this is the lowest cost solution.

Side Effects of Spam

Unwanted “spam” emails had a huge and lasting effect on our personal notification infrastructure. Whenever an email server or domain (such as “aol.com”) was determined to send too much spam, it would be “blacklisted” by other email servers. This meant that whenever somebody from that blacklisted domain or server tried to send emails, the email network outside their organization would discard the email. That resulted in other subscribers using the same internet service provider (ISP) as the spammer being blocked from sending emails.

When legitimate internet service providers became blacklisted, they worked extremely hard and fast to stop the source of the spam within their network, and then petitioned to be removed from the blacklist.

In response, internet service providers now consistently use security measures to prevent spam from originating within their networks. To use any commercial email system, you will need to have a username and password and often use an encrypted connection to the email server in order to send an email.

The configuration of these and the rules they impose may be an inconvenience up front, but once they are properly configured, the systems will run reliably.

Mobile Phone (Cellular) Destinations

The most common use of personal notifications is to send a text message to the end users’ mobile phone (Cellular). These arrive as SMS text messages, but they don’t necessarily originate that way. They could originate as SMS message or as emails.

SMS to SMS

The control panel can send an SMS message to any mobile phone number, regardless of the Cellular carrier. This is the simplest to configure, and is the most reliable as it is immune to email server changes and spam filtering.

To configure SMS to SMS in RPS (Remote Programming Software) simply enter the mobile phone number as the SMS Phone #, and set the method to the appropriate “Cellular SMS” device.

Email to SMS

The control panel can send emails to customer Cellular phones. All major Cellular providers maintain an email-to-SMS bridge for this purpose. But the bridge will only send SMS message to the customers of their own network, so the security dealer must know the phone number and Cellular carrier of the end customer to use this.

The following table provides the email to SMS configuration for the major US Cellular carriers.

Customer's Cellular Carrier	Customer's Phone Number	Associated Email
Verizon	(555) 123-4567	5551234567@vtext.com
AT&T	(555) 123-4567	5551234567@txt.att.net
T-Mobile	(555) 123-4567	5551234567@tmomail.net
Sprint	(555) 123-4567	5551234567@messaging.sprintpcs.com

Most discount wireless providers that resell Cellular service under a private label will not always work with the above configuration. A quick web search can usually determine whether or not a particular discount Cellular provider has an SMS-to-email bridge.

All SMS-to-email bridges use strict spam filtering and the requirements of these may change without notice. It is recommended that email to SMS be tested offline before using this in control panel configuration.

To configure Email to SMS in RPS simply enter the phone number as an email address per the table above, and set the method to be "Plug-In Cellular Email", "Bus Device Cellular Email" or "Onboard Ethernet Email". Be sure the email server configuration is correct, as described in the

Email Configuration section below.

Email Destinations

Some users including smart phone users may prefer to receive an email as their notification. These can originate as SMS messages or as emails.

SMS to Email

The Bosch Cellular data plans include access to an SMS-to-email bridge. This will allow text messages from a B440 and B441 Plug-in Communicator to be sent to end-users' email accounts.

The advantage of this is the configuration is trivial on the control panel. To configure, simply insert the plug-in module and enter the email address as the destination. The method should be set to SMS, *not* Email.

Email to Email

The B Series control panel can directly email the end-users' email addresses. This may be the most cost-effective way to enable personal notifications.

To configure Email to Email in RPS simply enter the email address, and set the method to be "Plug-In Cellular Email", "Bus Device Cellular Email" or "Onboard Ethernet Email". Be sure the email server configuration is correct, as described in the

Email Configuration section below.

Data Charges

Sending Email from Onboard Ethernet

The onboard Ethernet is the most cost-effective way to send emails. There is no charge for the sending of each email. The only requirement is that the system is configured properly, and the panel is able to contact the required server through the firewalls. The drawback is the requirement of configuring and maintaining the outbound email account as described in the section

Email Configuration below.

Sending SMS Text Messages from the Plug-In Cellular Communicator

The B Series control panel can directly send SMS text message whenever a B440 or B441 Plug-in Cellular Communicator is present and activated.

The Bosch data plans all support SMS service at à la carte rates. Frequent SMS users should choose a plan that includes a monthly bundle of SMS text messages. To prevent overages, please review the terms of the data plan, and configure the control panel to only report events to the end customer at a rate that will be within the monthly allotment. Any time the personal communication method of SMS is chosen, SMS text message rates will apply.

Sending Email from the Plug-In Cellular Communicator

The plug-in Cellular communicator can be used to send emails. This will use the Ethernet data channel rather than the SMS text message. This will count towards your total monthly data byte count, and does not require an SMS text bundle option to be added to the plan.

The billing for sending the email is higher than the size of the received email. The total billing is for establishing a transport layer security (TLS) encrypted socket to an email server, authenticating, sending the email, and disconnecting. This is approximately 17 kilobytes per email, which is far less efficient than sending email as an SMS.

A 100 KB plan can only send 5 emails per month if it used solely for email. A 2 MB plan can send 120 emails per month if it is used solely for email.

Email Configuration

In order to send an email from the panel (but not an SMS to email), the email server must be properly configured. This requires only a few pieces of information: an email server name and port number, authentication mechanism, username, and password.

An important item is choosing an email provider that meets your needs. For large security dealers, the information technology department may create the entire infrastructure you require to do this and run a dedicated email server for this purpose. For other dealers it may make more sense to contract a 3rd party email service provider to maintain a dedicated email server. Other dealers may find that a free email provider may make the most sense. Alternately, you could rely on the end-users' internet service providers.

The only requirement of the email server is that it be reachable by the control panel. If the panel is on an internal corporate network with a strict firewall, the Cellular communicator is the best option to reach the public internet. But the corporation may provide an internal email server that can be used directly.

For internally operated or contracted 3rd party email providers, you can get the required configuration directly from the server operators.

To use the end-users' own internet service provider is a possibility, but may be a burden for some customers. The end user should contact his internet service provider to create a dedicated email account for his security panel. He must then and provide the security dealer the SMTP server information along with the username and password.

If the end-user wishes to share his personal email account, without creating a separate one for the control panel, this will work, but he will need to provide his email address and email password to the dealer, and notify the dealer any time the password is changed.

Another complication of using the end users' internet service provider is the provider may require inbound connections to originate within their network. Those providers will work for onboard Ethernet, but not for Cellular technologies. The Cellular technologies will originate from an IP address within the Cellular network and may be blocked by an email SMTP server that works fine for wired Ethernet.

For all public email providers, the SMTP server information is available on the web. Some sample common server configuration is in the table below.

Provider	**SMTP Server URL**	**Port**	**Authentication / Encryption**
Gmail	smtp.gmail.com	465	Encrypted
Yahoo (unencrypted)	smtp.mail.yahoo.com	25	Authenticate
Yahoo (encrypted)	smtp.mail.yahoo.com	465	Encrypted
Verizon	smtp.verizon.net	465	Encrypted
AT&T	outbound.att.net	465	Encrypted
Comcast	smtp.comcast.net	465	Encrypted
Time Warner	smtp-server.<region>.rr.com	25	Authenticate

For all commercial email providers the username includes the domain name, for example: "JohnSmith_4599922@gmail.com", and the password is the same password used to login and read email over the web. A sample RPS Email Server Configuration using Gmail might look like this:

Email Server Configuration	Entry
Email Server Name/Address	smtp.gmail.com
Email Server Port Number	465
Email Server Authentication/Encryption	Encrypted
Authentication User Name	JohnSmith_4599922@gmail.com
Authentication Password	SecretP@ssword!

For some providers it is okay to share a single account with multiple panels. So you can create a single account alarms_by_joe@freemailsystem.com and configure all control panels to use the same credentials.

For other email providers, including Gmail, there are restrictions to prevent sharing accounts. Each time a new login is detected the user must login to the web and authorize the new access. Once Gmail has detected too many users are actively using the same account at the same time, the entire account may be locked-out for all users. But Gmail will work fine if each control panel has its own Gmail account.

Summary

B Series control panels with firmware version 2.01, or greater, offer a wide variety of methods for personal notification. The factors of cost per message, expected number of personal notifications per month, ease of configuration, ease of maintenance, and required reliability must all be taken into consideration when choosing the best mechanism for personal notification.