# Sending Email and SMS Reminders Using BeagleBone Green and Bluetooth

Team: The RNS Group

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This guide will give step-by-step instructions on how we can send emails from linux and the BeagleBone Green. The fellow students in the class found the ability to send emails from our BeagleBone quite interesting, so we felt we would share it to the class and future students who take Dr. Brian's classes!

# Setting-up the environment for using mailing services

**Installing and configuring the POSTFIX:** It is necessary to download and install postfix in order for the mail services to work on your debian.

- 1. Use the following command to install POSTFIX on your debian. [2] sudo DEBIAN\_PRIORITY=low apt install postfix
- 2. Use the following command to configure the settings for your POSTFIX. [2] *sudo dpkg-reconfigure postfix*
- 3. The following tab shows up, wherein you need to choose Intersite Site as your preferred option, as given in the following picture.

iration:
t
>

4. In the subsequent window, fill in the mail address of the local host. For E.g., if you're using Gmail write down "gmail.com".



5. Now, fill in the email you are using to send the mail. For E.g., if you are using xyz@gmail.com, fill in "xyz@".



6. Pass through the following window and click 'ok'.

€ ▼		aadpratap@351-Debian: ~		٩	≡ '	×
Package c	onfiguration					
		Postfix Configuration				_
Please g should c gateway,	<pre>ive a comma-separ onsider itself th you probably war</pre>	rated list of domains for the final destination. I the to include the top-le	or which this f this is a m evel domain.	machi ail do	ne main	
Other de	stinations to acc	cept mail for (blank for	r none):			
351-Debi	an.localdomain, 3	351-Debian, localhost.lo	ocaldomain, ,	local	hostS	_
	<0k>	<ca< td=""><td>ancel&gt;</td><th></th><th></th><td></td></ca<>	ancel>			

7. We did not want to force synchronous updates on the mail queue, therefore select 'No'.



8. Click 'Ok' for the following window and pass through.



9. We do not want to have a limit on the mailbox therefore we select '0' size limit.

•	aadpra	atap@351-Debian: ~		۹ ≡	×
Package config	uration				
Please speci prevent runav upstream defa	y the limit that Postfix y the limit that Po ay software errors ault is 51200000.	<pre>Configuration  - stfix should place A value of zero</pre>	ce on mailbo (0) means n	x files t o limit.	o The
Mailbox size	limit (bytes):				
0					
	<0k>	<	Cancel>		

10. There is no need for an extension so we pass by the following window as well and select 'Ok'.



11. Use 'all' internet protocols and select 'Ok'.



## 1.SENDING EMAILS WITH GMAIL USING LINUX, BEAGLEBONE GREEN, AND MSMTP

1.1 Installing required packages for msmtp:

[1] On the host,

(host) \$ sudo apt-get install msmtp msmtp-mta

#### 1.2 Creating an app password in Google for msmtp

[1] For the email account, you want to be sending emails from, you will have to create an email password and for that:

- Go to <u>https://myaccount.google.com/</u> and login to the gmail account.
- Select Security from the side menu and turn 2-Step Verification ON.

ogle Account	C Search Google Account			
Home Personal info		Secu Settings and recommendations to he	<b>Irity</b> elp you keep your account se	cure
Data & personalisation Security People and sharing Payments and subscrip	Critical secur Protect your account	rity issues found It now by resolving these issues		
	Take action			
	Signing in to	Google		
	Password		Last changed 9 Apr	>
	2-Step Verification	n	🥝 On	>
	App passwords		1 password	>
	Home Personal Info Data & personalisation Security People and sharing Payments and subscriptio	Home Personal Info Bata 6 personalisation Security People and sharing Peyments and subscriptions Take action Signing in to Password 2:Step Verificatio App passwords	Ione     Security       Personalisation     Critical security issues found       Security     Protect your account now by resolving these issues       Payments and subscriptions     Take action       Signing in to Google     Password       2.Step Verification     App passwords	Inne     Security       Personalisation     Critical security issues found       Beaurity     Protect your account now by resolving these issues       Payments and subscriptions     Take action       Signing in to Google     Use changed 9 Apr       2:Step Verification     on       App password     Last changed 9 Apr

#### • After that, click on App Passwords

Google Account	Q Search Google Account	
Home     Home     E     Personal info	Security Settings and recommendations to help you keep your account secure	
Data & personalisation	Critical security issues found	
People and sharing	Protect your account now by resolving these issues	
Payments and subscrip	Take action	
	Signing in to Google	
	Password Last changed 9 Apr	>
	2-Step Verification 🥥 On	>
	App passwords 1 password	>

#### • Next up, select Other (Custom Name)

#### ← App passwords

App passwords let you sign in to your Google Account from apps on devices that don't support 2-Step Verification. You'll only need to enter it once so you don't need to remember it. Learn more

Your app passwords			
Name	Created	Last used	
Postfix	4 Jul	4 Jul	Î
Select the app and device for	or which you want to	generate the app password.	
Select app	Select device	~	
Mail			
Calendar			GENERATE
Contacts			
YouTube			
Other (Custom name)	]		

• Fill in the name as msmtp (for example)

#### ← App passwords

App passwords let you sign in to your Google Account from apps on devices that don't support 2-Step Verification. You'll only need to enter it once so you don't need to remember it. Learn more

Your app passwords	5		
Name	Created	Last used	
Postfix	4 Jul	4 Jul	Î
Select the app and o	device for which you want to	generate the app password.	
msmtp <b>1.</b>	×		2.
			GENERATE

• Get the password for msmtp configuration file and copy it to notepad or another temporary location as you will need it further and once you click **DONE**, you may not see the password again.

p passwords let you sign in to your Google ification. You'll only need to enter it once :	Account from apps on devices that don't support 2-Step so you don't need to remember it. Learn more
Generated app password	Here is the password you need for th msmtp configuration file
	Your app password for your device
Email securesally@gmail.com Password	How to use it Go to the settings for your Google Account in the application or device you are trying to set up. Replace your password with the 16- character password shown above. Just like your normal password, this app password grants complete access to your Google Account. You won't need to remember it, so don't write it down or share it with appone

#### **1.3 Creating a Configuration File**

[1] Now, go back on your host and create a configuration file using:

#### (host) \$ sudo nano /etc/msmtprc

#### 1.4 Configure msmtprc file

[1] Change the **username@gmail.com** to the email you used to create an app password in Google. And the **username** has to be changed as well. For example, if you used john.doe@gmail.com, change the username to john.doe.

Also, change the password to the Google App Password you copied earlier.

```
defaults
auth
         on
tls
       on
tls_trust_file /etc/ssl/certs/ca-certificates.crt
logfile ~/.msmtp.log
account gmail
host
         smtp.gmail.com
        587
port
from john.doe@gmail.com
user
        john.doe
password fkelpwkdymcwslwo
account default : gmail
```

#### **1.5 Testing the email configuration**

### (host) \$ echo "Message" | mail -s "Title" youremailaddress@gmail.com

[1] After this, you should have received an email from the configured account.

#### **1.6 Troubleshooting:**

- If you tried using the same email on 2 or more devices, it is likely to not send emails and give errors. An email just works on 1 device perfectly fine.
- Make sure the PostFig Configuration is done before you try to send emails.

If you plan to send emails through your target (BeagleBone Green) ,follow the same steps given above except for creating the App Password as you can use the same email and password on the host and the target.

#### For a C program to send the emails, you can use the code provided below:

```
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <time.h>
#include <string.h>
#include <math.h>
#include <stdbool.h>
#include <pthread.h>
#include <unistd.h>
#include <ctype.h>
void runCommand(char *command){
  FILE *pipe = popen(command, "r");
  char buffer[1024];
  while (!feof(pipe) && !ferror(pipe)){
    if (fgets(buffer, sizeof(buffer), pipe) == NULL)
       break;
  }
  int exitCode = WEXITSTATUS(pclose(pipe));
  if (exitCode != 0){
    perror("Unable to execute command:")
    printf(" command: %s\n", command);
    printf(" exit code: %d\n", exitCode);
  }
}
```

#### • Later, to call the above function for email, use the command: runCommand("echo \"Message" | mail -s "Title" youremailaddress@gmail.com");

#### **REFERENCE:**

- How to install msmtp to Debian 10 for sending emails with gmail <u>https://caupo.ee/blog/2020/07/05/how-to-install-msmtp-to-debian-10-for-sending-emails-with-gmail/</u>
- 2. How To Install and Configure Postfix on Ubuntu 20.04, <u>https://www.digitalocean.com/community/tutorials/how-to-install-and-configure-postfix-o</u> <u>n-ubuntu-20-04</u>