

# Nebulae LoRa Server Installation Guide

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## Preface

### Privacy information

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### Revision history

Name	Description of Change	Date	Version
Sagar Patel	Nebulae LoRa Server Installation Guide	17/12/2019	1.0

### Approval

Name	Position	Signature	Date
Urmik Shah	Project Manager		18/12/2019

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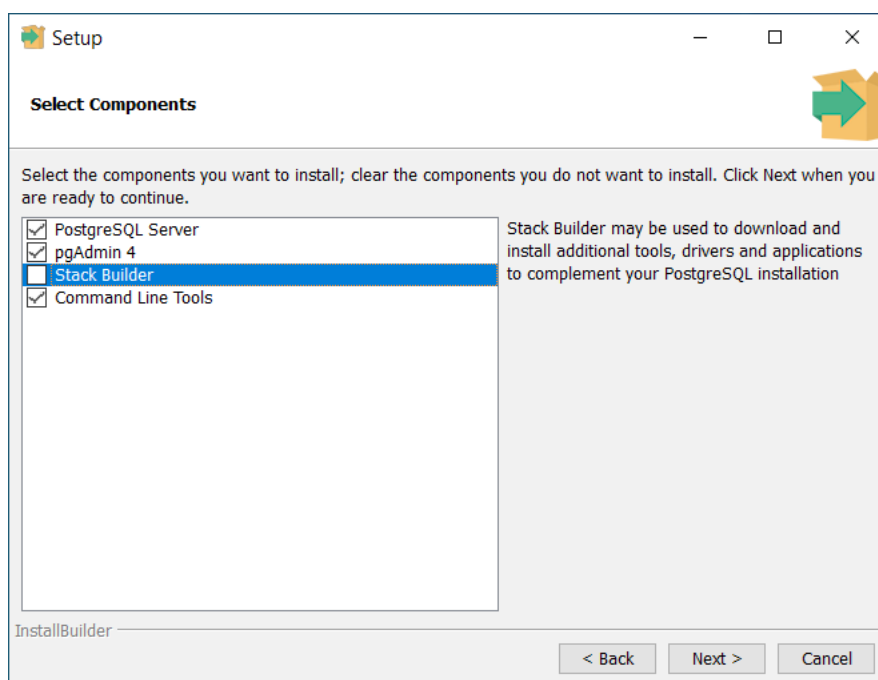
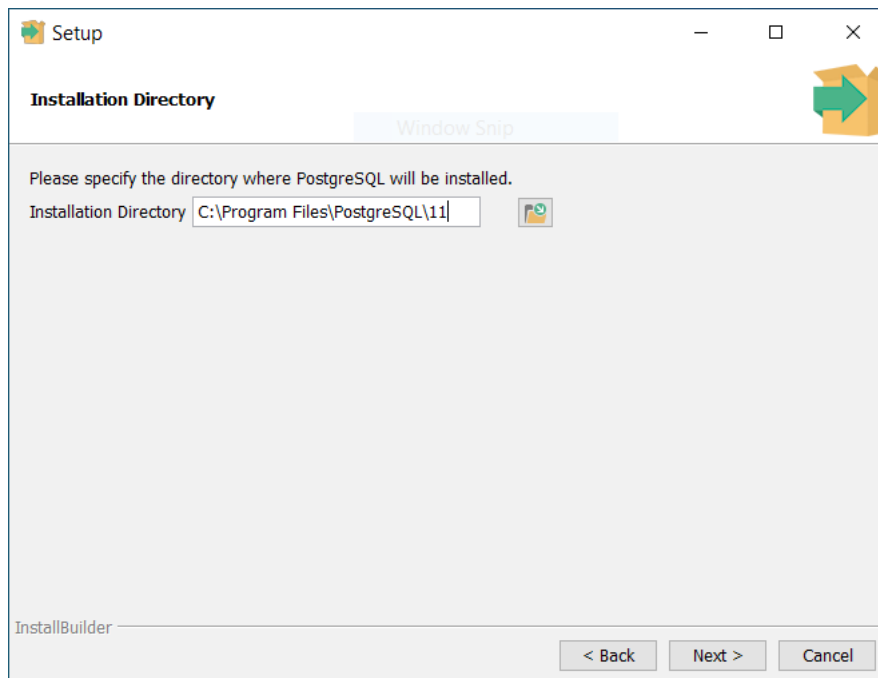
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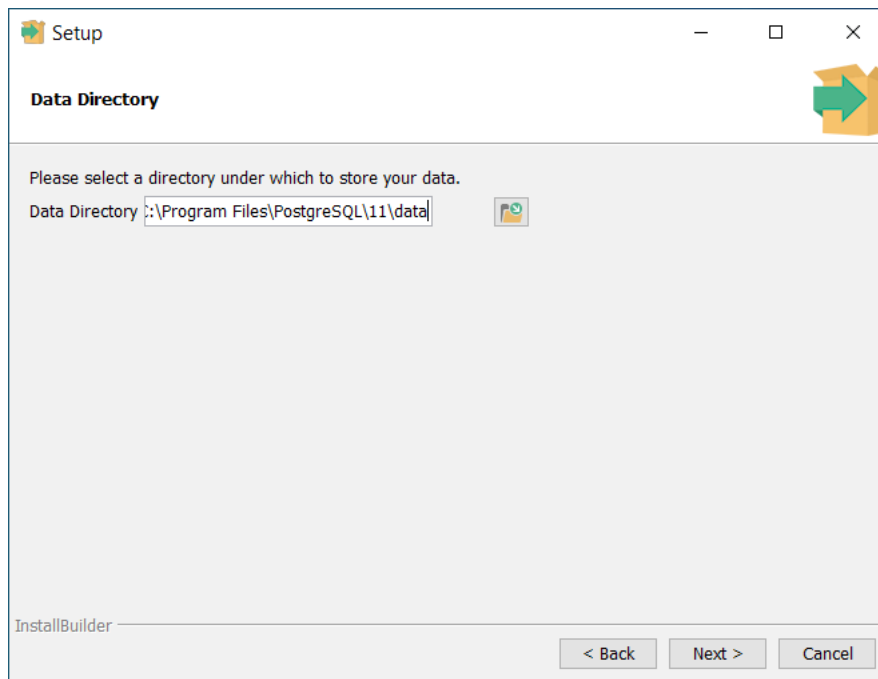
## 1 Copy Setup Package on Server Folder

Copy all Nebulae Lora server package on server folder for installation.

## 2 Install PostgreSQL on Windows server

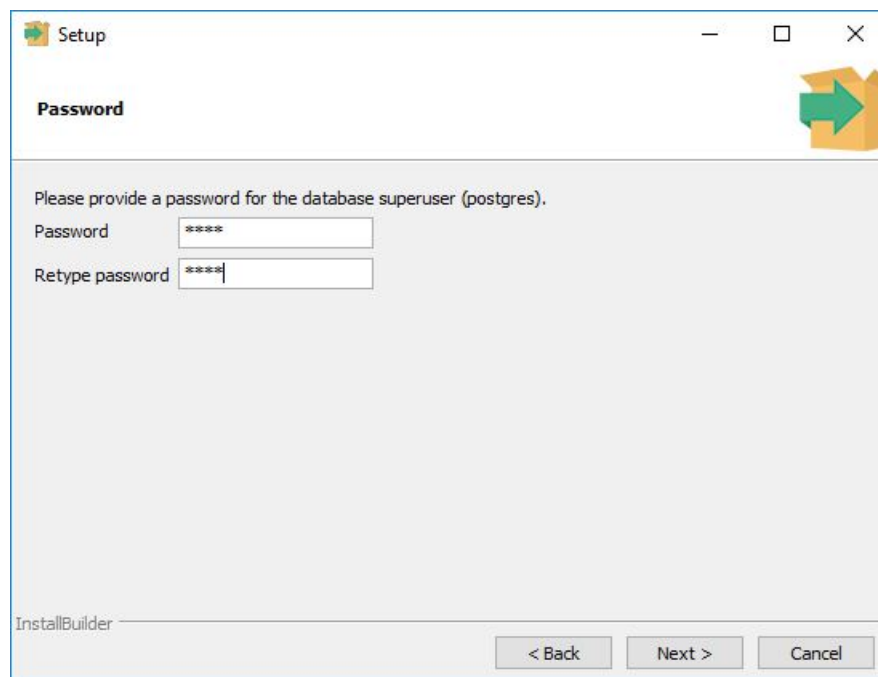
Please find PostgreSQL installation setup for postgresql database ([postgresql-11.5-1-windows-x64.exe](#)) and follow installation step.





When You install PostgreSQL it will ask default password please enter below password in PostgreSQL

**Password: root**



Setup

**Port**

Please select the port number the server should listen on.

Port

InstallBuilder

< Back Next > Cancel

Setup

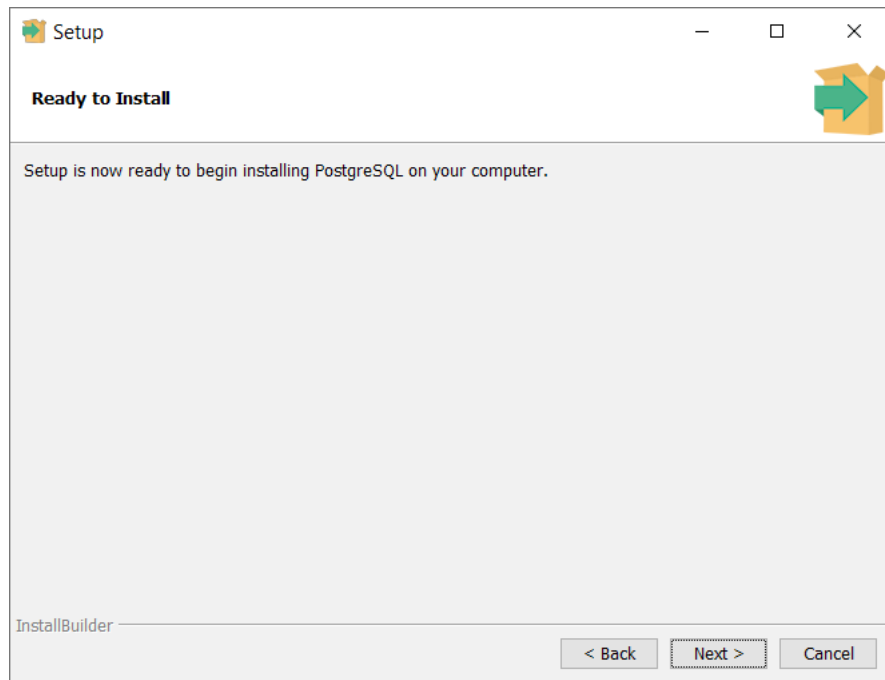
**Advanced Options**

Select the locale to be used by the new database cluster.

Locale

InstallBuilder

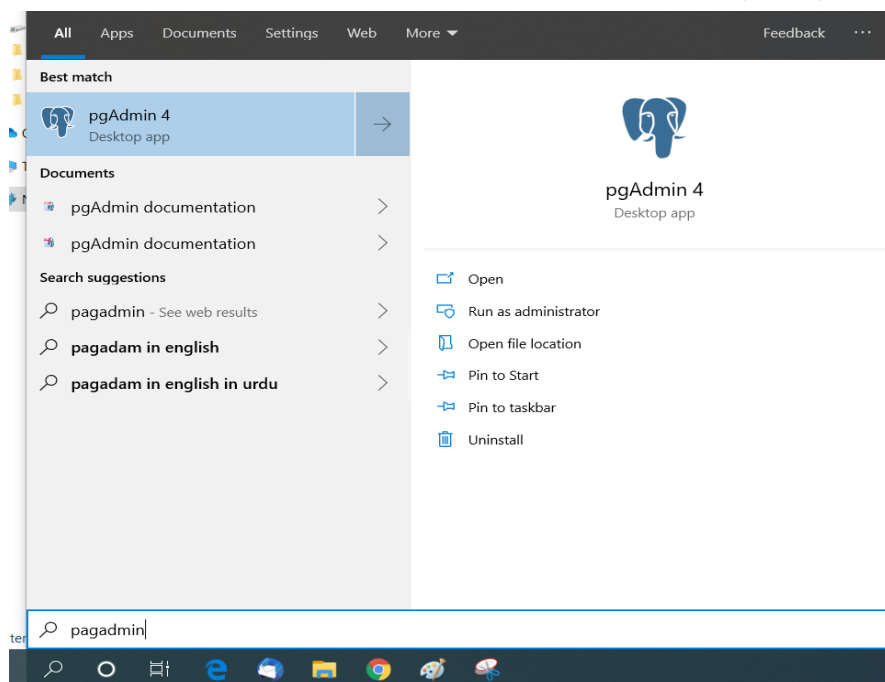
< Back Next > Cancel

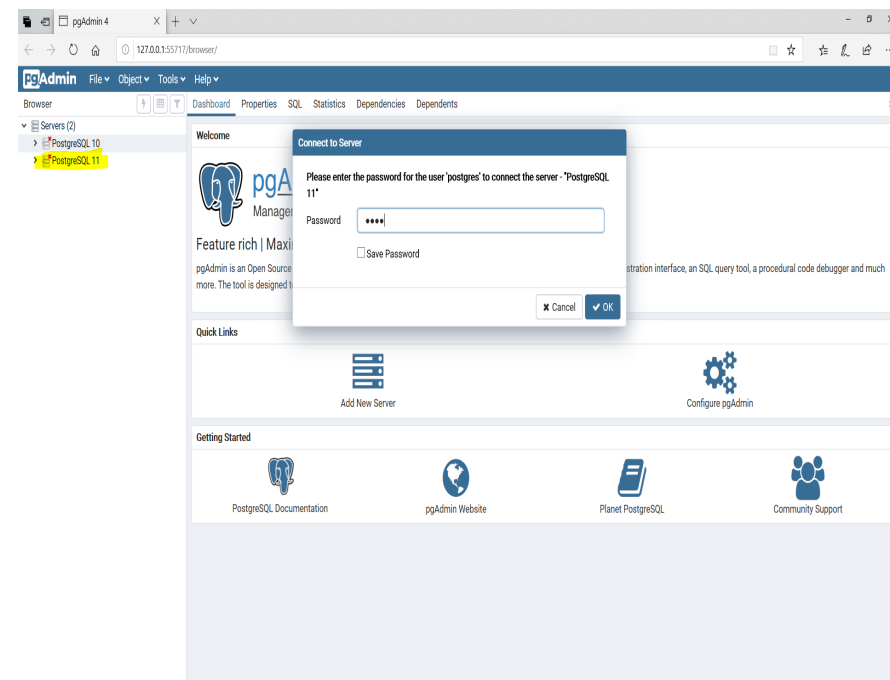
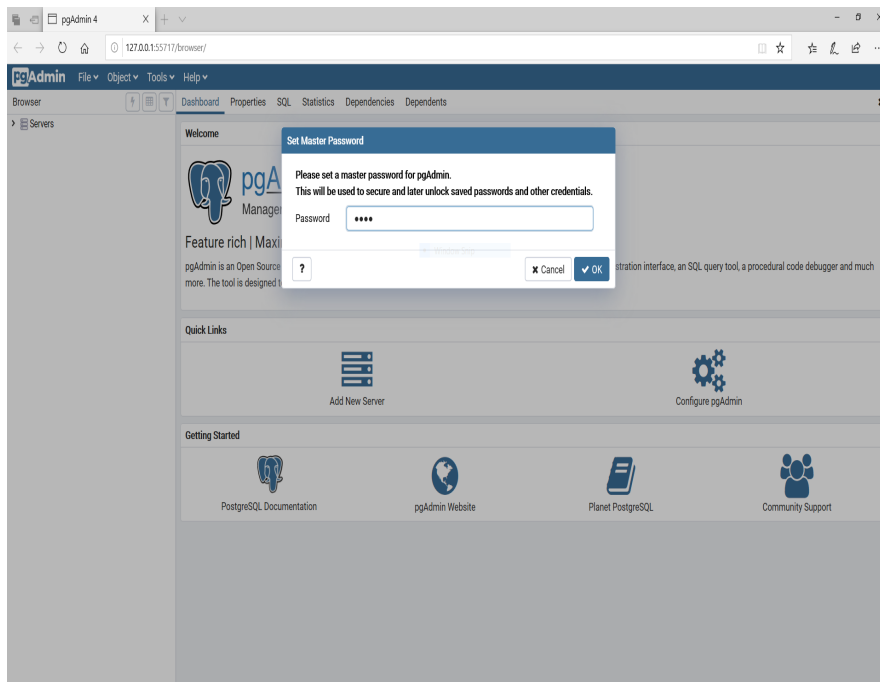


### 3 Open PgAdmin 4

Now we need to create two databases for nebulae network server and nebulae lora app server

Connect PgAdmin 4 database server with default password (root)

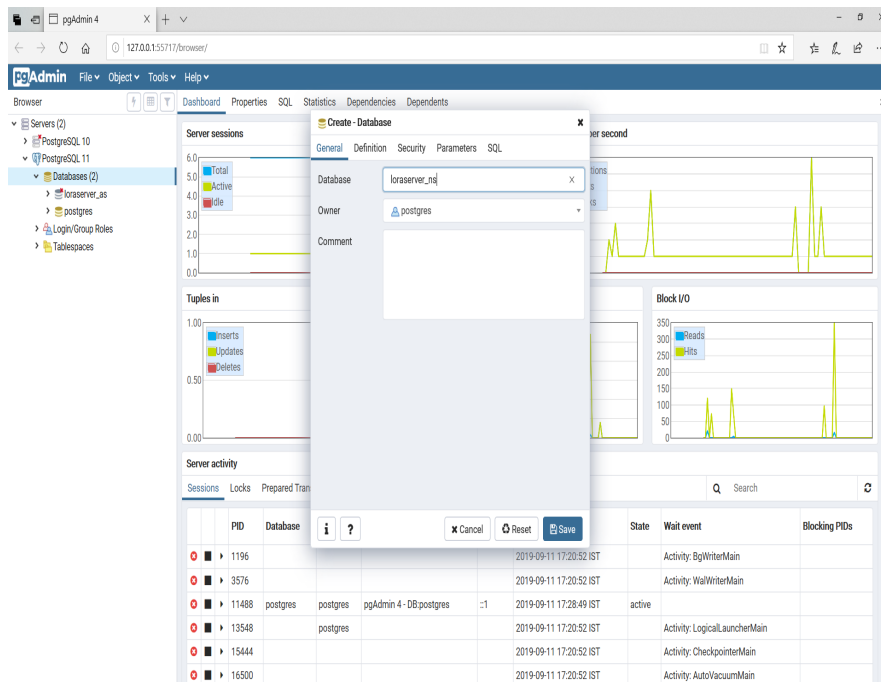




Create 1<sup>st</sup> database for Network server

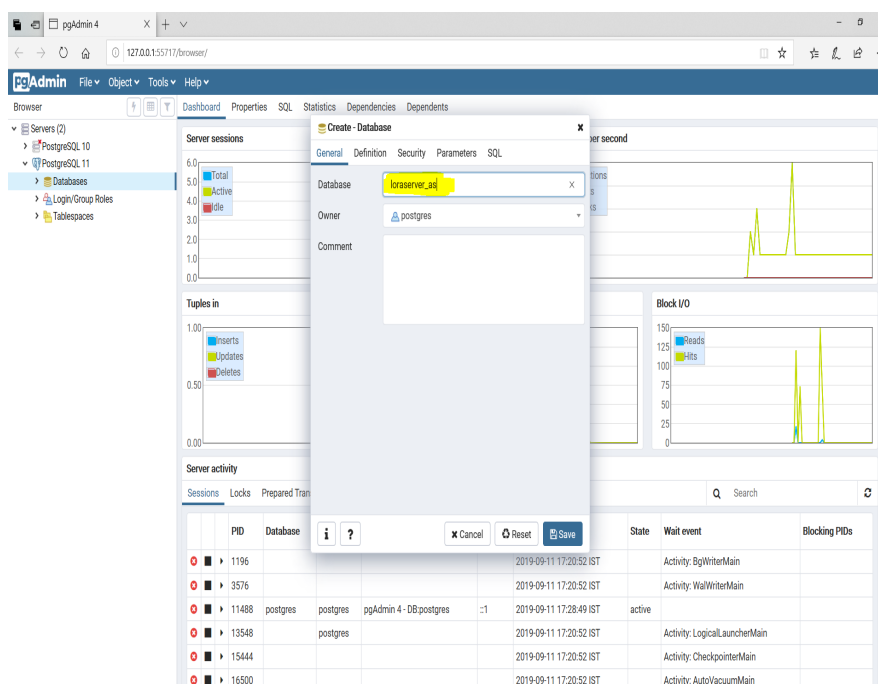
**DB Name:** loraserver\_ns





Create 2<sup>nd</sup> database for Application server

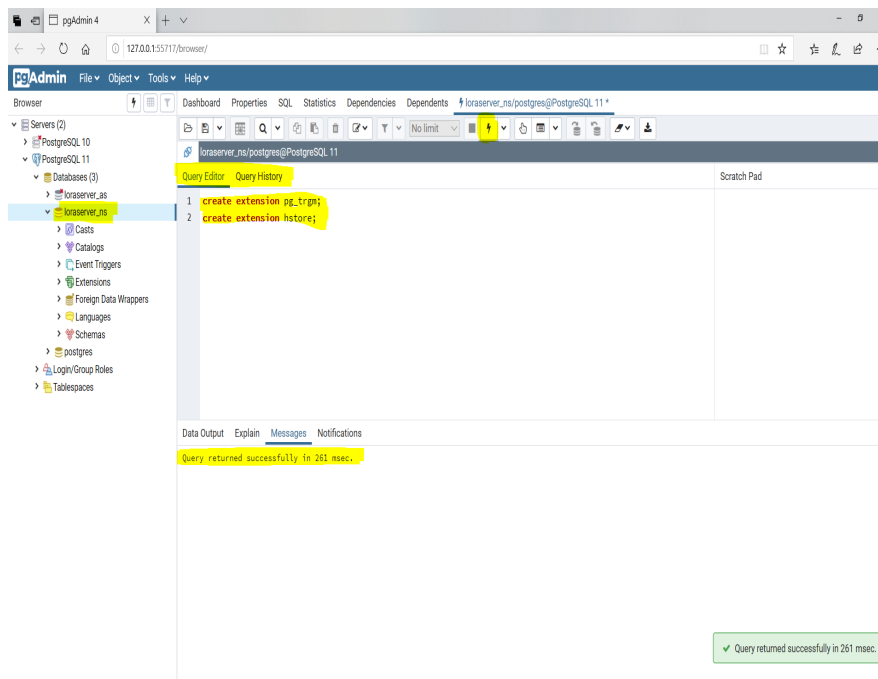
**DB Name: loraserver\_as**



Now we need to add below 2 postgresql extension in nebulae lora application server databases using PgAdmin 4 query editor from Tools menu

**DB Name: loraserver\_as**

```
create extension pg_trgm;
create extension hstore;
```



## 4 Setup Databases

Execute the following queries to set up the databases that are used by the Nebulae components.

- ✓ **For loraserver\_ns Database**

Execute `E:\\nebulae_lora_server\\PostgreSQL\\loraserver_ns.sql` file

- ✓ **For loraserver\_as Database**

Execute `E:\\nebulae_lora_server\\PostgreSQL\\loraserver_as.sql` file

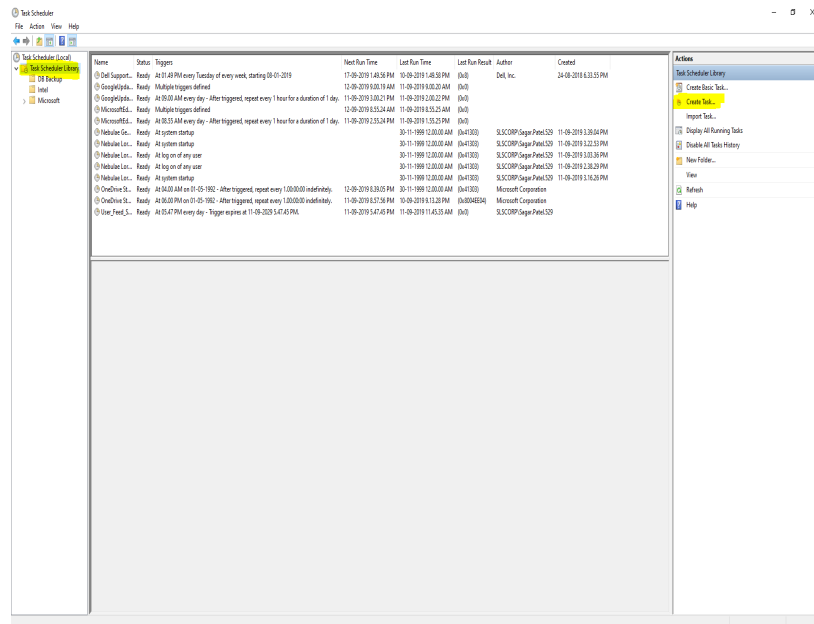
**\*Note:** Please execute .sql file content in PgAdmin 4 query editor from Tools menu

## 5 Install Redis on Windows server

Please find Redis installation setup for Redis Server ([Redis-x64-3.2.100](#)) and follow installation step.

## 6 Lora MQTT Setup

- Open Windows Task Scheduler From start menu



- Create Task for lora-mqtt

**Name:** Nebulae Lora MQTT

Click on Next button and follow below procedure

**Create Task**

General Triggers Actions Conditions Settings

Name: Nebulae Lora MQTT

Location: \

Author: SLSCORP\Sagar.Patel.529

Description:

Security options

When running the task, use the following user account:  
SLSCORP\Sagar.Patel.529 Change User or Group...

☐ Run only when user is logged on

☒ Run whether user is logged on or not

☐ Do not store password. The task will only have access to local computer resources.

☒ Run with highest privileges

☐ Hidden

Configure for: Windows Vista™, Windows Server™ 2008

OK Cancel

Create Task

General **Triggers** Actions Conditions Settings

When you create a task, you can specify the conditions that will trigger the task.

Trigger	Details	Status
---------	---------	--------

New... Edit... Delete

OK Cancel

New Trigger

Begin the task: **At startup**

Settings

No additional settings required.

Advanced settings

☒ Delay task for: **2 minutes**

☐ Repeat task every: 1 hour for a duration of: 1 day

☐ Stop all running tasks at end of repetition duration

☐ Stop task if it runs longer than: 3 days

☐ Activate: 11-09-2019 3.07.51 PM ☐ Synchronize across time zones

☐ Expire: 11-09-2020 3.07.51 PM ☐ Synchronize across time zones

☒ Enabled

OK Cancel

Delay Task for MQTT: 2 Minutes

Now Click on Action

Create Task

GeneralTriggersActionsConditionsSettings

When you create a task, you can specify the conditions that will trigger the task.

Trigger	Details	Status
At startup	At system startup	Enabled

New...

Edit...

Delete

OK

Cancel

Create Task

GeneralTriggersActionsConditionsSettings

When you create a task, you must specify the action that will occur when your task starts.

Action	Details
--------	---------

New...

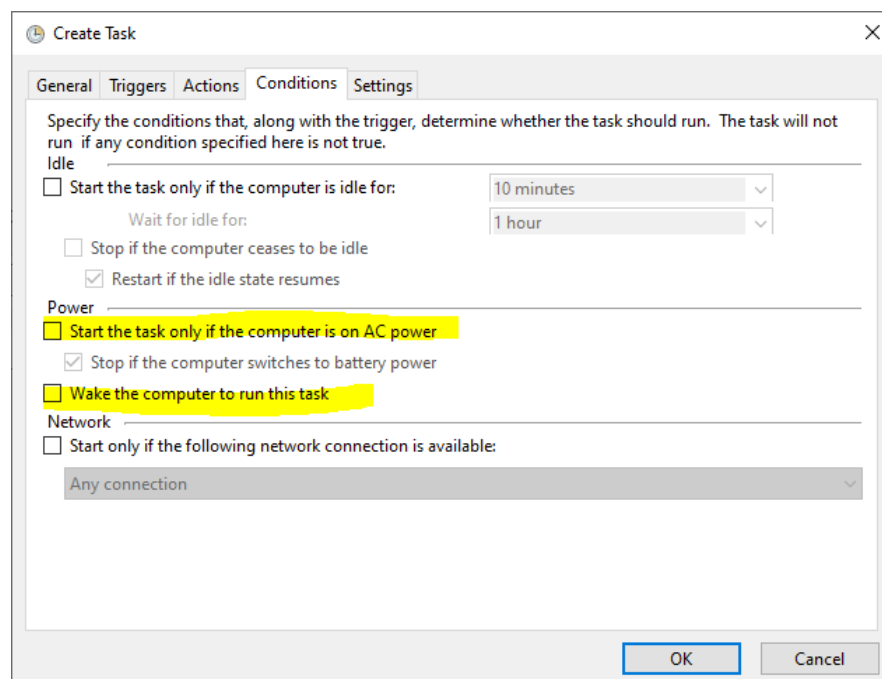
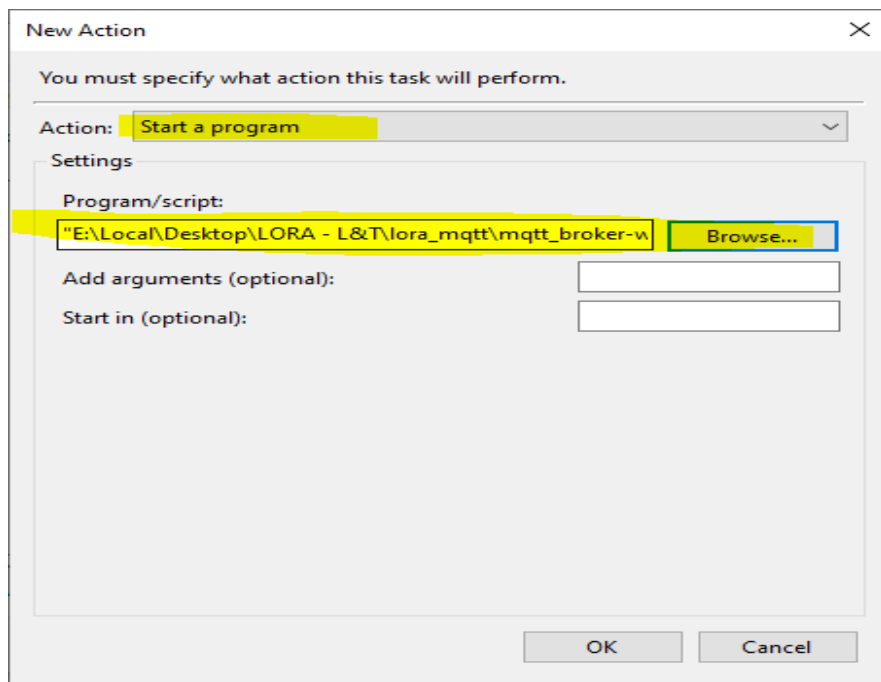
Edit...

Delete

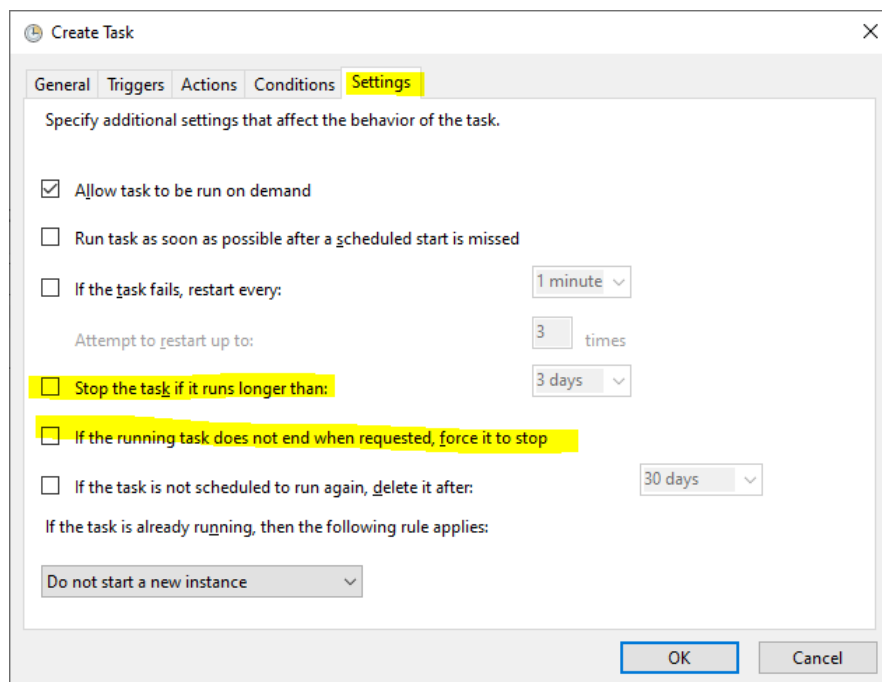
OK

Cancel

Now select `mqtt_broker-windows.exe` and click OK button

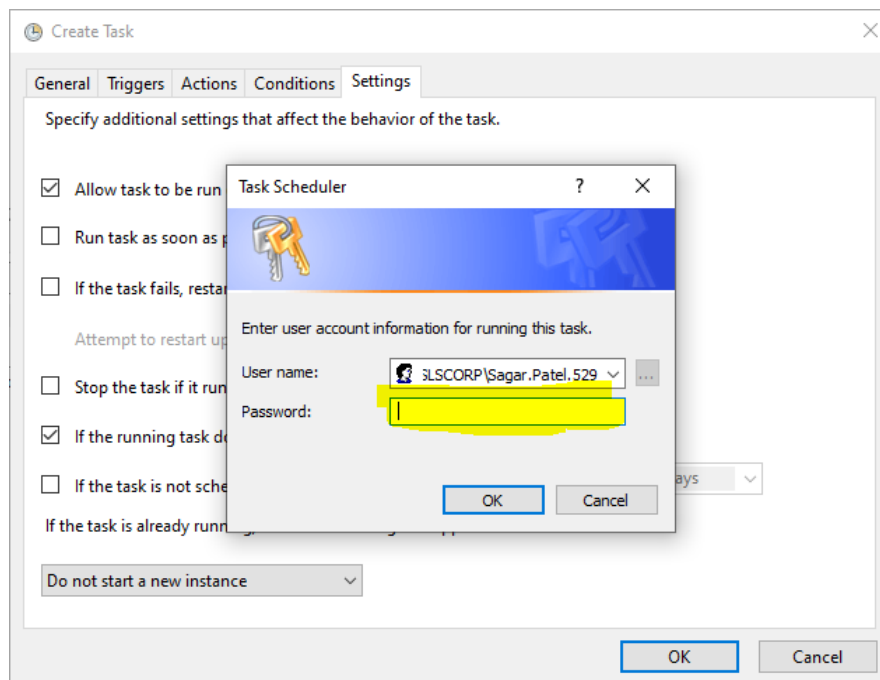


Go to Setting Tab and make below configuration



When you click on OK button it will ask Server Administrator Password For creating task.

Please enter Server Administrator password and click OK button



## 7 Create Nebulae Lora Gateway Bridge Task

For Nebulae Lora gateway bridge please follow below task for creating

**Name:** Nebulae Lora Gateway Bridge

Create Task

General Triggers Actions Conditions Settings

Name: Nebulae Lora Gateway Bridge

Location: \

Author: SLSCORP\Sagar.Patel.529

Description:

Security options

When running the task, use the following user account:

SLSCORP\Sagar.Patel.529 Change User or Group...

☐ Run only when user is logged on

☒ Run whether user is logged on or not

☐ Do not store password. The task will only have access to local computer resources.

☒ Run with highest privileges

☐ Hidden Configure for: Windows Vista™, Windows Server™ 2008

OK Cancel

**Lora gateway Bridge Delay Time: 4 Mins**

New Trigger

Begin the task: At startup

Settings

No additional settings required.

Advanced settings

☒ Delay task for: 4 minutes

☐ Repeat task every: 1 hour for a duration of: 1 day

☐ Stop all running tasks at end of repetition duration

☐ Stop task if it runs longer than: 3 days

☐ Activate: 11-09-2019 3.07.51 PM ☐ Synchronize across time zones

☐ Expire: 11-09-2020 3.07.51 PM ☐ Synchronize across time zones

☒ Enabled

OK Cancel

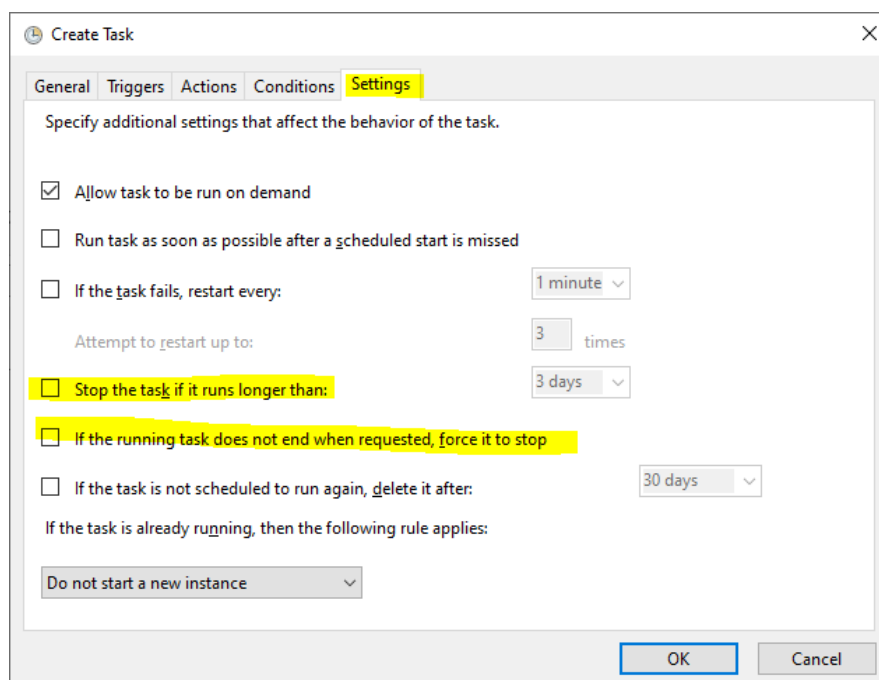
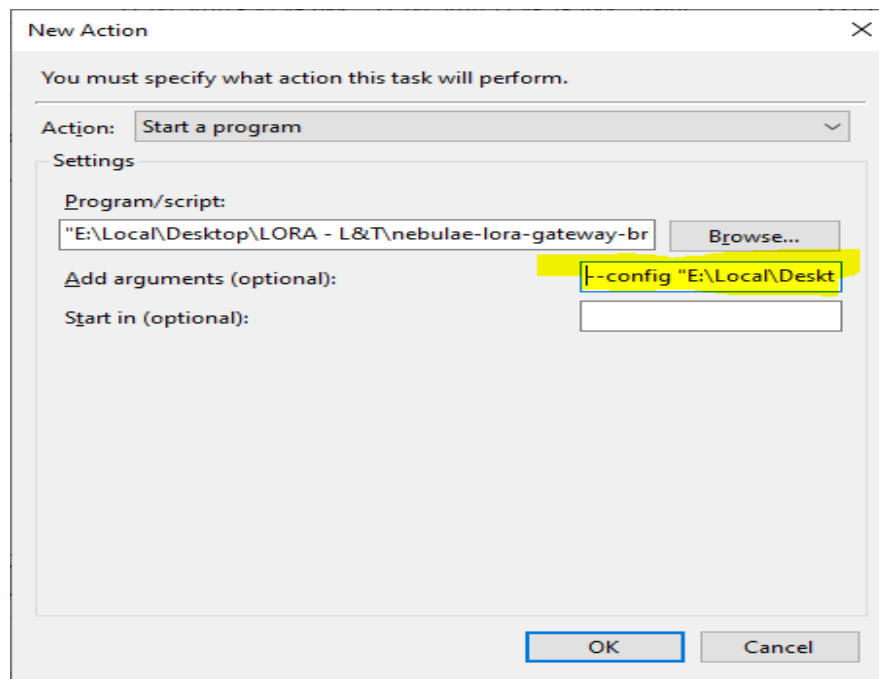
**Exe:** nebulae-lora-gateway-bridge.exe



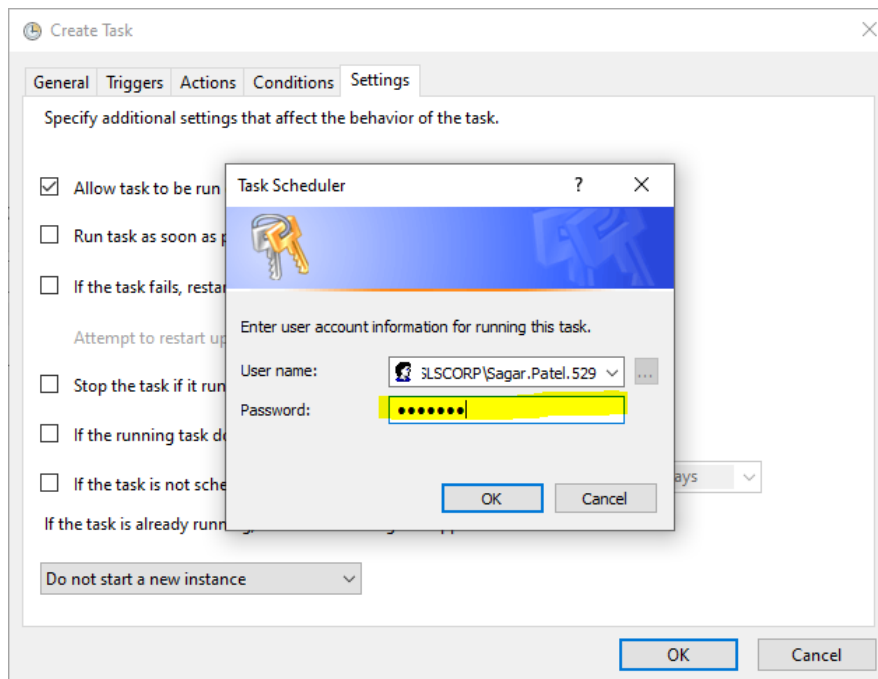
Select Nebulae Lora gateway bridge executable file. Also add below arguments  
Add arguments: `--config "E:\Local\Desktop\LORA - L&T\nebulae-lora-gateway-bridge\nebulae-lora-gateway-bridge.toml"`

Where

`--config "<Your server nebulae lora gateway bridge .toml file path>"`  
click on OK button



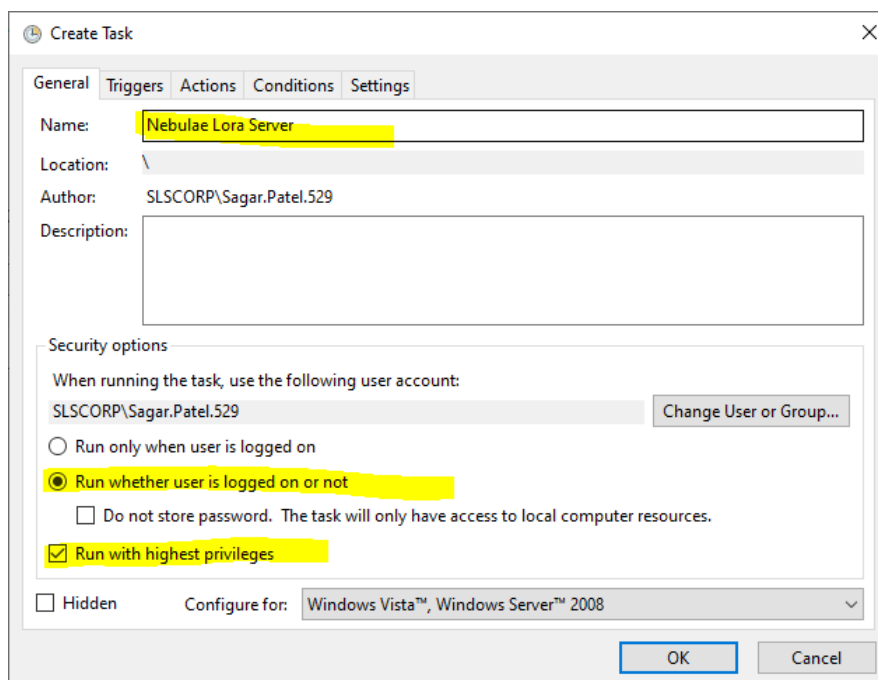
When you click on OK button it will ask Server Administrator Password For creating task.  
Please enter Server Administrator password and click OK button



## 8 Create Nebulae Lora Server Task

For Nebulae Lora Server please follow below task for creating

**Name:** Nebulae Lora Server



**Create Task**

General **Triggers** Actions Conditions Settings

When you create a task, you can specify the conditions that will trigger the task.

Trigger	Details	Status
---------	---------	--------

New... Edit... Delete

OK Cancel

**New Trigger**

Begin the task: At startup

Settings

No additional settings required.

Advanced settings

☒ Delay task for: 6 minutes

☐ Repeat task every: 1 hour for a duration of: 1 day

☐ Stop all running tasks at end of repetition duration

☐ Stop task if it runs longer than: 3 days

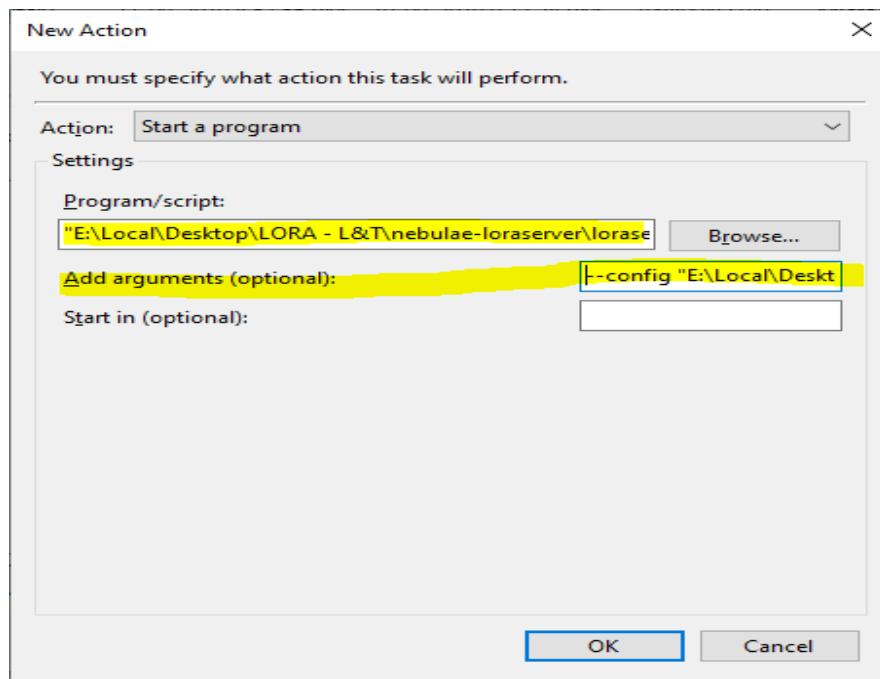
☐ Activate: 11-09-2019 3.07.05 PM ☐ Synchronize across time zones

☐ Expire: 11-09-2020 3.07.05 PM ☐ Synchronize across time zones

☒ Enabled

OK Cancel

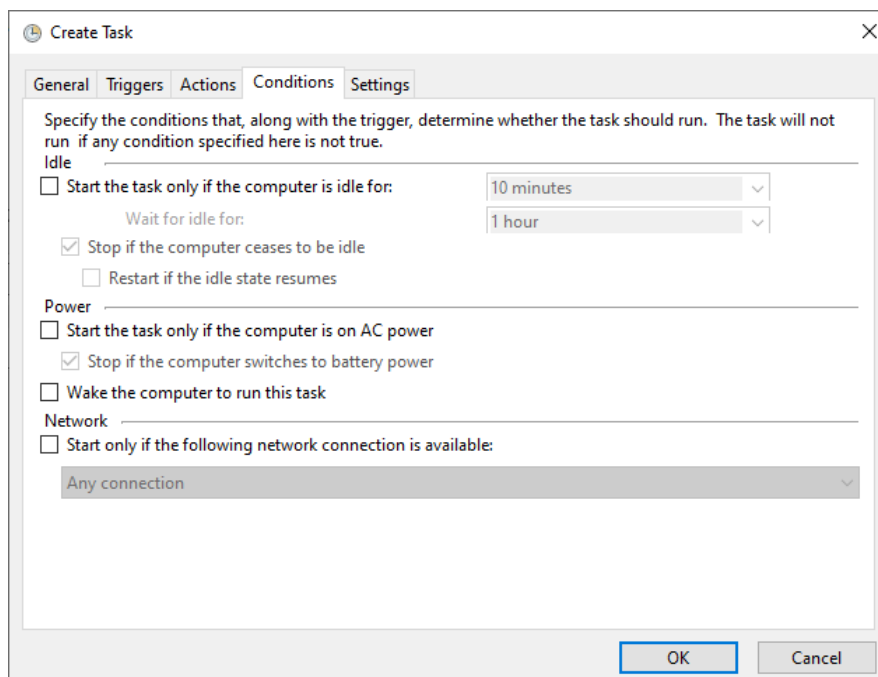
**Lora Server Delay Time: 6 Min**

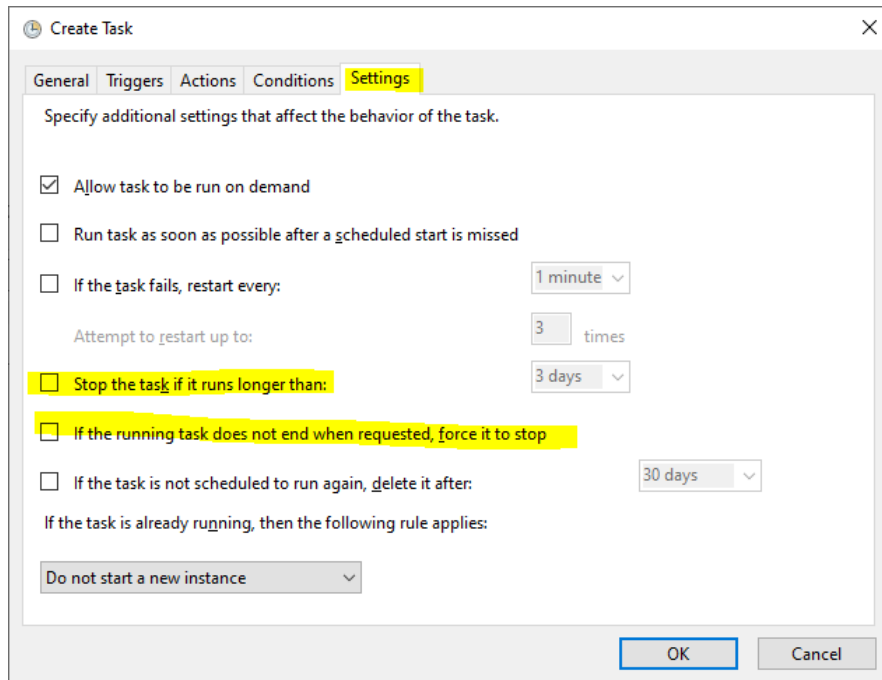


Exe: `loraserver.exe`

Add Arguments:

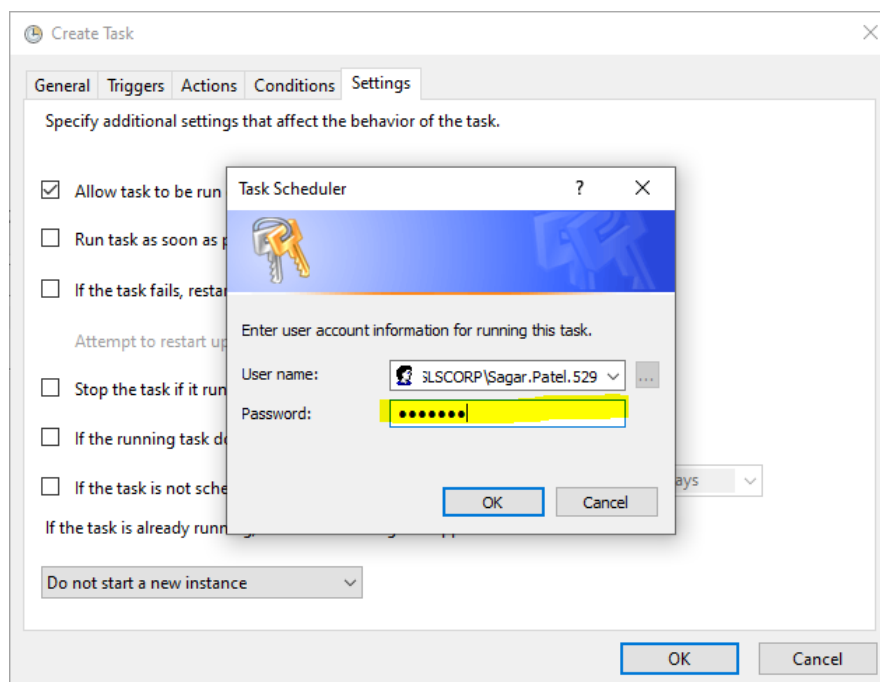
`--config "E:\Local\Desktop\LORA - L&T\nebulae-loraserver\loraserver.toml"`  
`--config "<Your Server nebulae lora server .toml file path>"`





When you click on OK button it will ask Server Administrator Password For creating task.

Please enter Server Administrator password and click OK button



## 9 Create Nebulae Lora Application Server Task

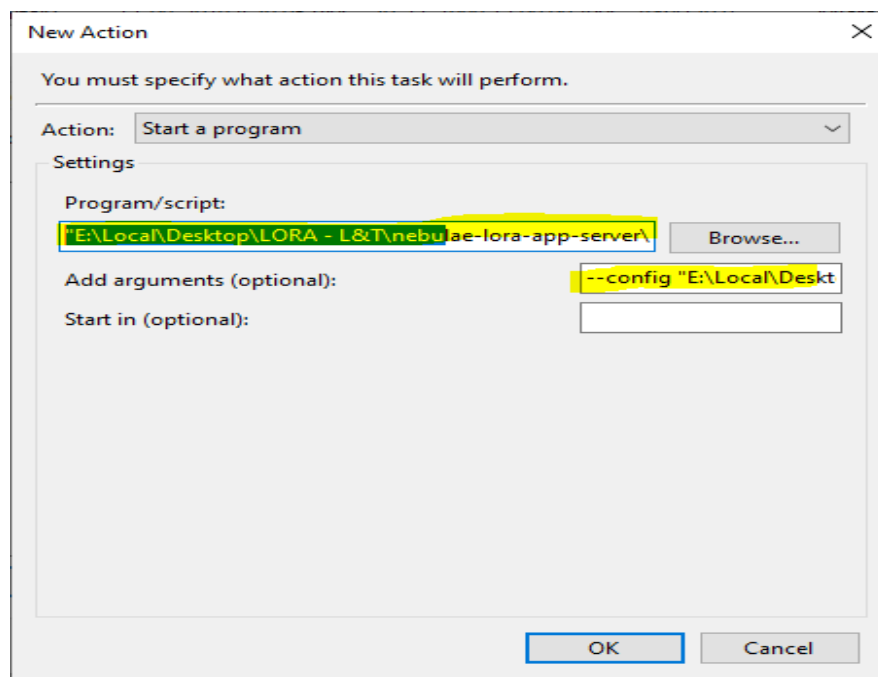
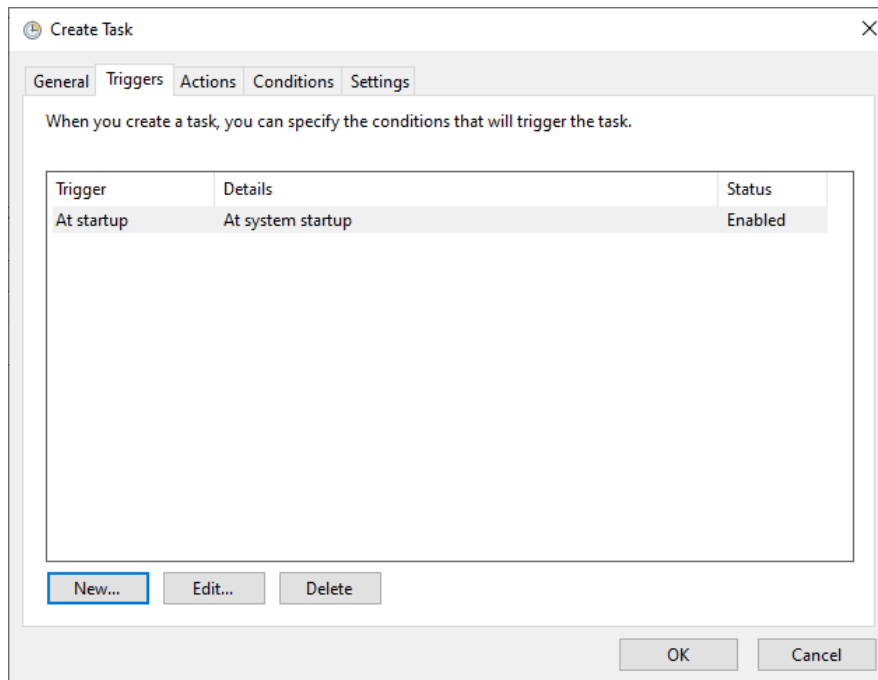
For Nebulae Lora gateway bridge please follow below task for creating

**Name:** Nebulae Lora Application Server

The 'Create Task' dialog box is shown with the 'General' tab selected. The 'Name' field is 'Nebulae Lora App Server'. The 'Location' is '\'. The 'Author' is 'SLSCORP\Sagar.Patel.529'. The 'Description' field is empty. Under 'Security options', the user account 'SLSCORP\Sagar.Patel.529' is selected. The radio button 'Run whether user is logged on or not' is selected. The checkbox 'Run with highest privileges' is checked. The 'Hidden' checkbox is unchecked. The 'Configure for' dropdown is set to 'Windows Vista™, Windows Server™ 2008'. The 'OK' button is highlighted.

The 'New Trigger' dialog box is shown with the 'Begin the task' dropdown set to 'At startup'. The 'Settings' section shows 'No additional settings required.' The 'Advanced settings' section has the 'Delay task for' checkbox checked and set to '8 minutes'. The 'Repeat task every' checkbox is unchecked. The 'Stop task if it runs longer than' checkbox is unchecked. The 'Activate' checkbox is unchecked. The 'Expire' checkbox is unchecked. The 'Enabled' checkbox is checked. The 'OK' button is highlighted.

## Lora App Server Delay: 8min

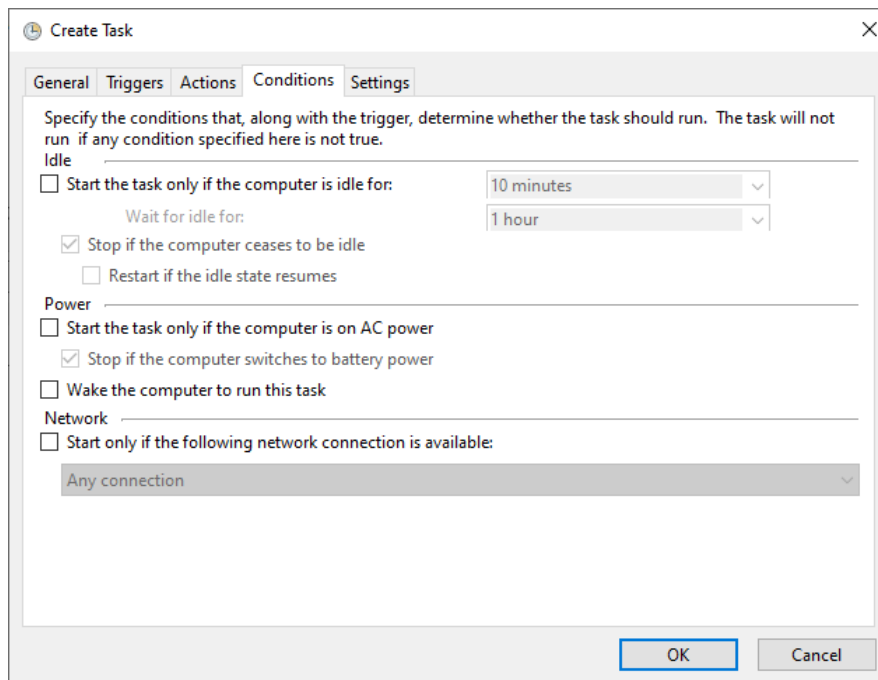


Exe: lora-application-server.exe

Add Arguments:

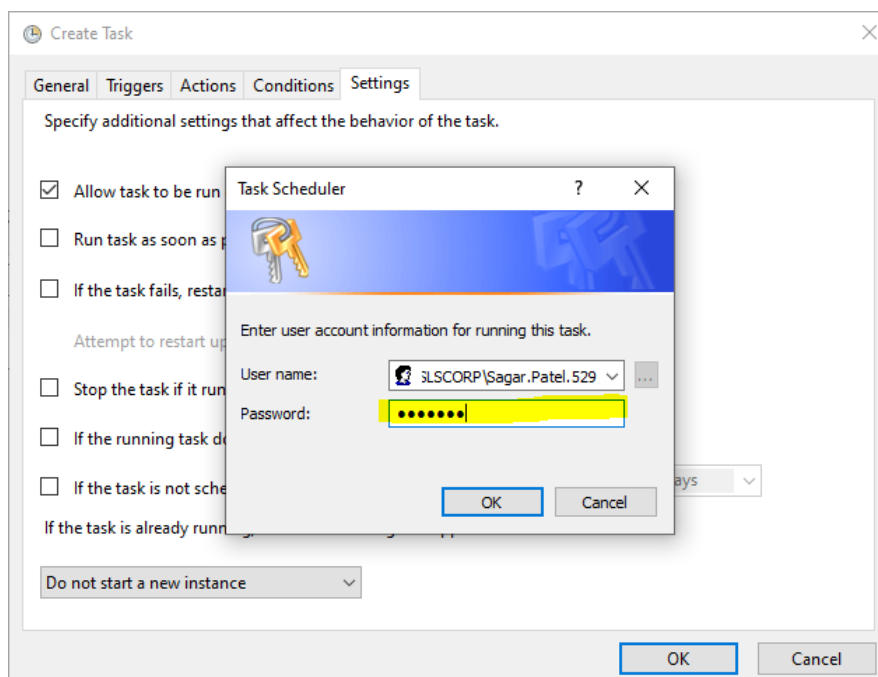
--config "E:\Local\Desktop\LORA - L&T\nebulae-lora-application-server\lora-application-server.toml"

--config "<Your Server nebulae lora app server.toml file path>"



When you click on OK button it will ask Server Administrator Password For creating task.

Please enter Server Administrator password and click OK button





**\*\*Note: 1. Please restart server after all the task setup on server**  
**2. nebulae lora server will take 15 min to up and running after server system restart**

## 10 Nebulae Lora Components Configuration Details

The following components have been installed on server with respective ports for MQTT, PostgreSQL, Redis, and Nebulae Components

<b>Nebulae LoraServer</b>	
Host	Server ip
Port	8000
<b>Nebulae Lora Application Server</b>	
Host	Server ip
Port	8080
<b>Nebulae Lora Gateway Bridge</b>	
Host	Server ip
Port (UDP)	1095
<b>Redis</b>	
Host	Server ip
Port	6379
<b>PostgreSQL</b>	
Host	Server ip
Port	5432
<b>MQTT</b>	
Host	Server ip
Port(TCP)	1093
Port(Web socket)	1094

**\*\*Note: Please don't change any configuration related to Nebulae Server components (e.g: Ports etc..)**

## 11 Ports Firewall settings

The following ports need to be set In-Bound rules in server firewall settings for outside access for LoRa Gateway Bridge

Type	Ports
TCP	1093,8080,5432,1094
UDP	1095