Grandstream Networks, Inc.

Amazon S3 Storage Integration Guide

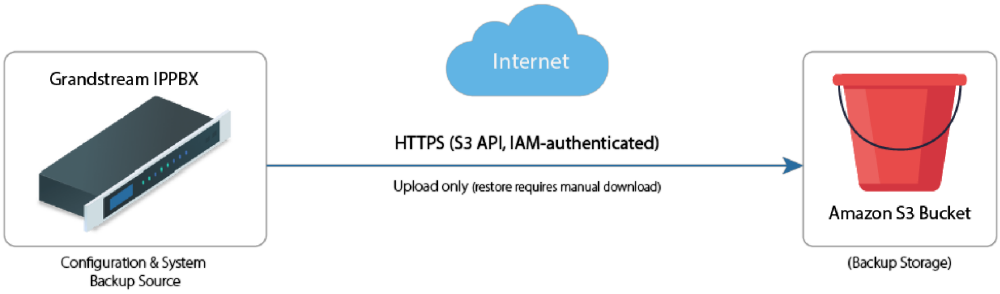
INTRODUCTION

This guide explains how to integrate Grandstream IPPBX systems with Amazon Storage Service (S3) to store system backup files in customer-owned cloud storage. This integration is intended for recovery, compliance, and long-term retention, independent of the primary Grandstream IPPBX storage.

Amazon S3 provides highly durable, off-site storage, allowing administrators to maintain an additional copy of PBX configuration data outside the appliance or cloud instance. When configured, the PBX automatically uploads backup archives to a designated S3 bucket using secure IAM credentials.

The procedures in this guide walk through:

- Preparing an Amazon S3 bucket and IAM user.
- Configuring the PBX to connect securely to that bucket.
- Performing manual and scheduled backups to S3.



Overview of PBX backup integration with Amazon S3

PREREQUISITES

To complete this integration, please ensure the following:

- The Grandstream PBX is upgraded to a firmware release that introduces Amazon S3 storage integration *(For more information, refer to the Supported Models section)*.
- Administrator access to the PBX web UI with integration privileges.
- An AWS account with the ability to create and manage S3 buckets, as well as IAM users and access credentials.
- Stable internet access from the PBX to AWS.
- A dedicated IAM user limited to access only the target S3 bucket.

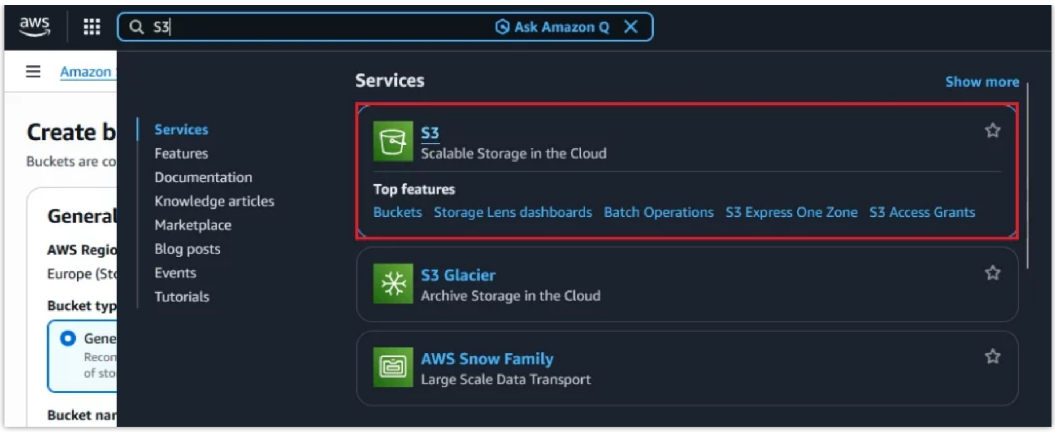
AMAZON S3 CONFIGURATION

This section covers the preparation steps required in Amazon S3 before the PBX can store backups. You will create a dedicated backup bucket and an IAM user with restricted permissions that the PBX will use to upload backup files securely.

Create an S3 Bucket

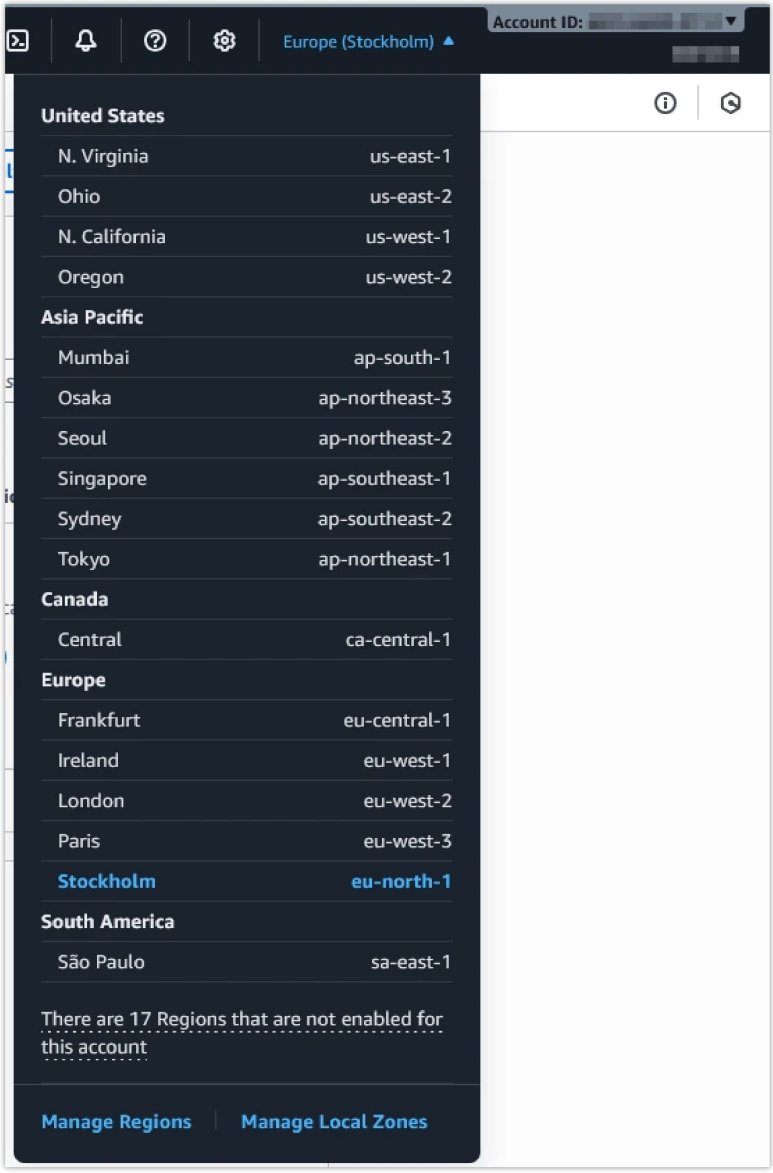
Follow the steps below to create the bucket that will store IPPBX backup files.

1. Sign in to the AWS Console and open **Amazon S3**.



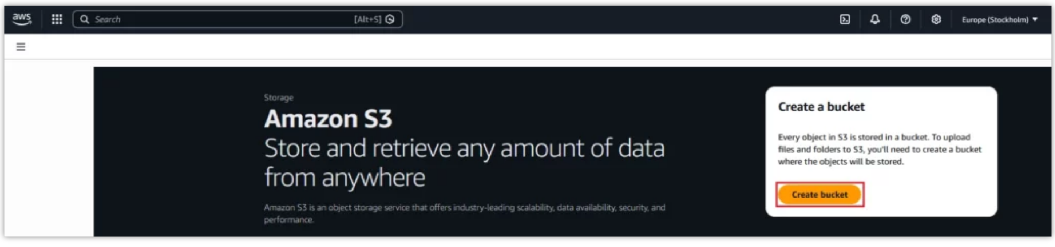
Navigating to the Amazon S3 Service from the AWS Console

2. Before creating the bucket, select the correct **AWS Region** in the console header (top-right). The bucket will be created in this region.



Selecting the AWS Region

3. Click **Create bucket**.

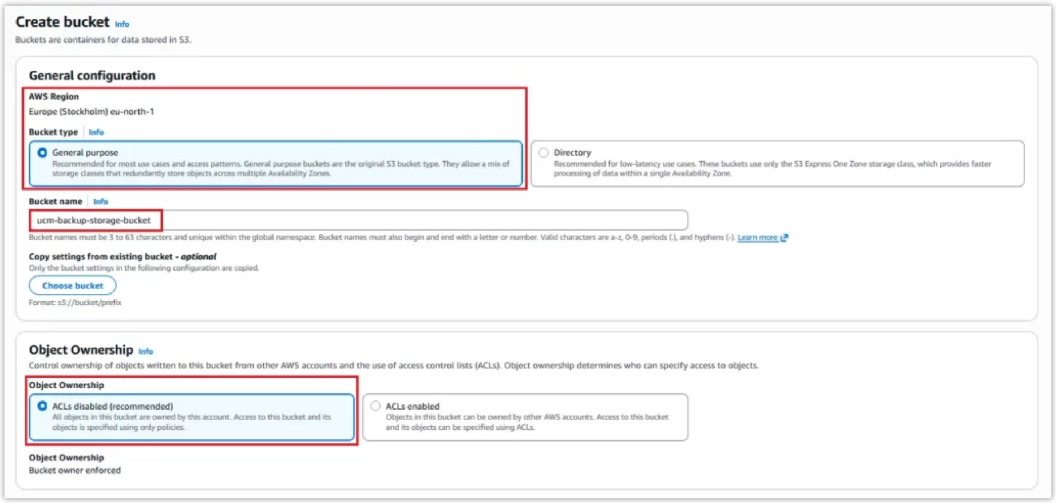


Amazon S3 Bucket Creation

4. On the Create bucket page, review the value shown under **AWS Region** (for example: eu-north-1, us-east-2, etc.)
5. Under **Bucket type**, select *"General purpose"*.

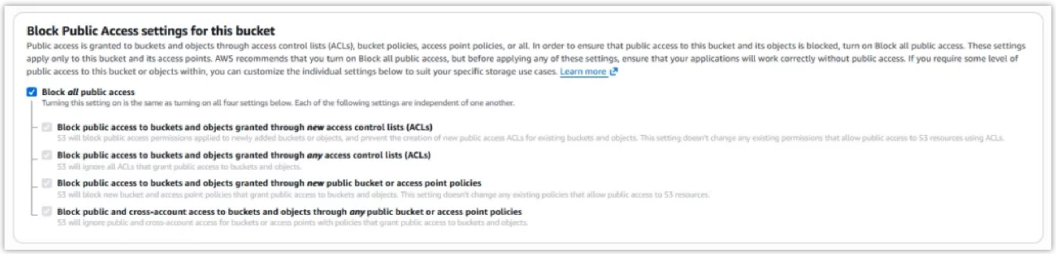
> General-purpose buckets are recommended because they automatically store data across multiple Availability Zones (for high durability) and support the full set of standard Amazon S3 features used by the PBX backup integration.

6. Enter a **Bucket name**.
7. Leave **Object Ownership** set to *"ACLs disabled (recommended)"*. This ensures the bucket owner always retains control of backup files and access is managed using IAM policies instead of object-level ACLs, reducing complexity and misconfiguration risk.



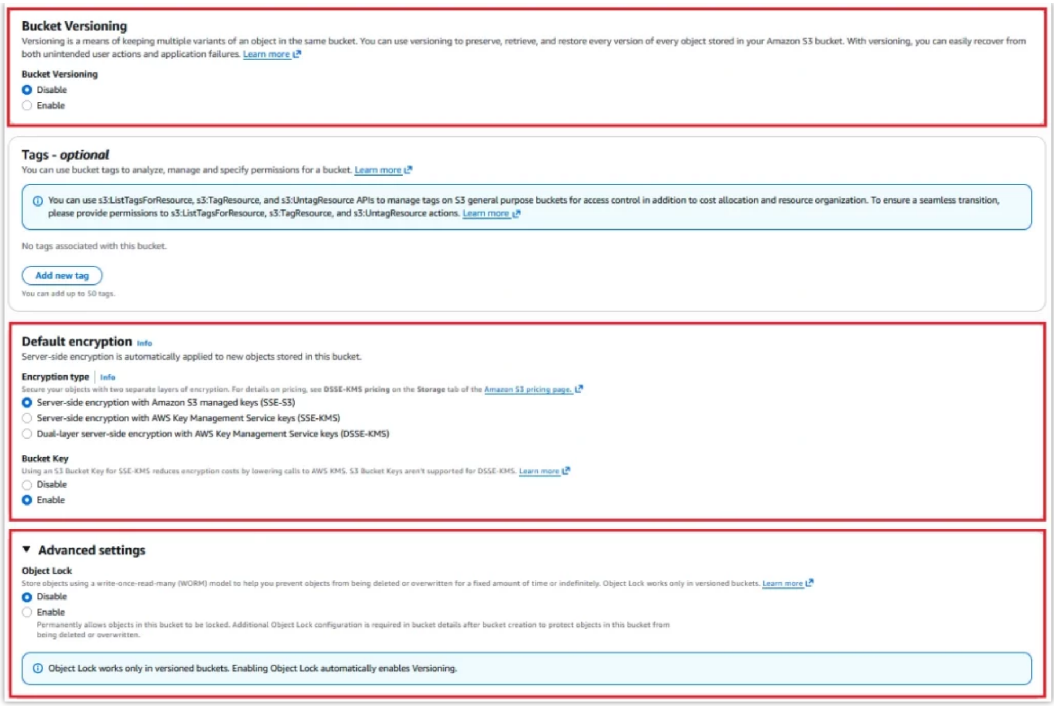
Bucket Creation Configuration Settings

8. Ensure that **Block all public access** remains enabled. This setting enforces private-only access paths since backups must never be exposed publicly.



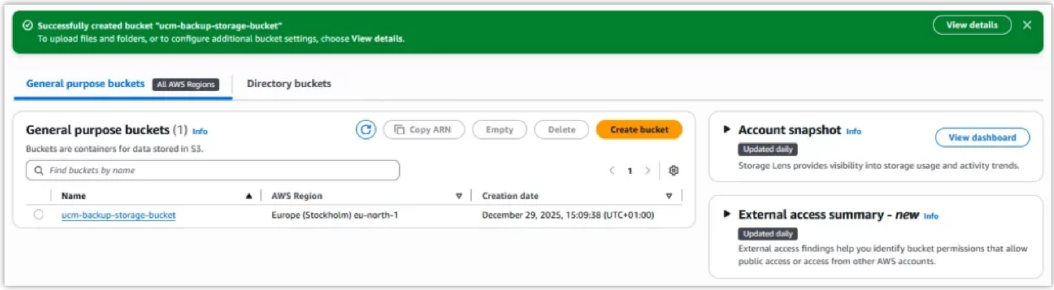
Bucket Public Access Settings

9. (Optional but recommended) **Enable Versioning and Default Encryption** before creating the bucket. Versioning allows rollback to previous backups if one becomes corrupted, and encryption ensures backup data is protected at rest.
10. (Optional) Enable **Object Lock** only if your organization requires immutable backups. Object Lock prevents backup files from being deleted or overwritten for a defined retention period. It is typically used in regulated environments (WORM compliance).



Bucket Versioning Encryption and Object Lock Settings

11. Click *Create bucket*. After creation, you will see a confirmation message and be redirected to the bucket details page.



Bucket Creation Confirmation Page

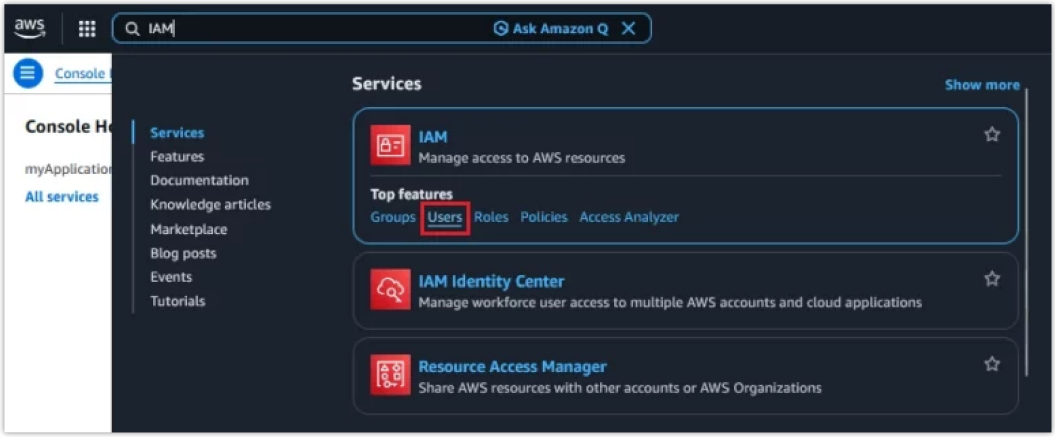
12. Record the **bucket name** and **region**, both of which are required when configuring Amazon S3 on the PBX.

Create an IAM User and Access Keys

The PBX connects to Amazon S3 using an IAM user. It is strongly recommended to create a dedicated IAM user with restricted permissions instead of using a root or administrative account.

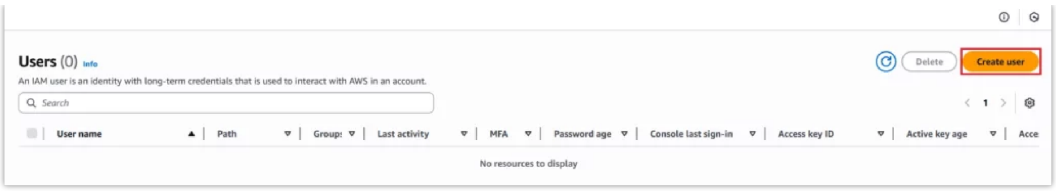
Follow the steps below to create credentials for the PBX.

1. Open the AWS Console and go to **IAM→Users→Add users**.



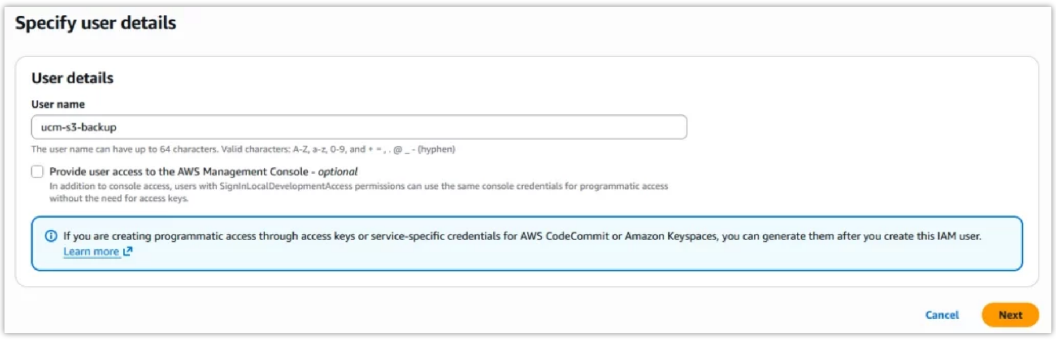
Navigating to IAM Users in the AWS Console

2. Click on *"Create user"*.



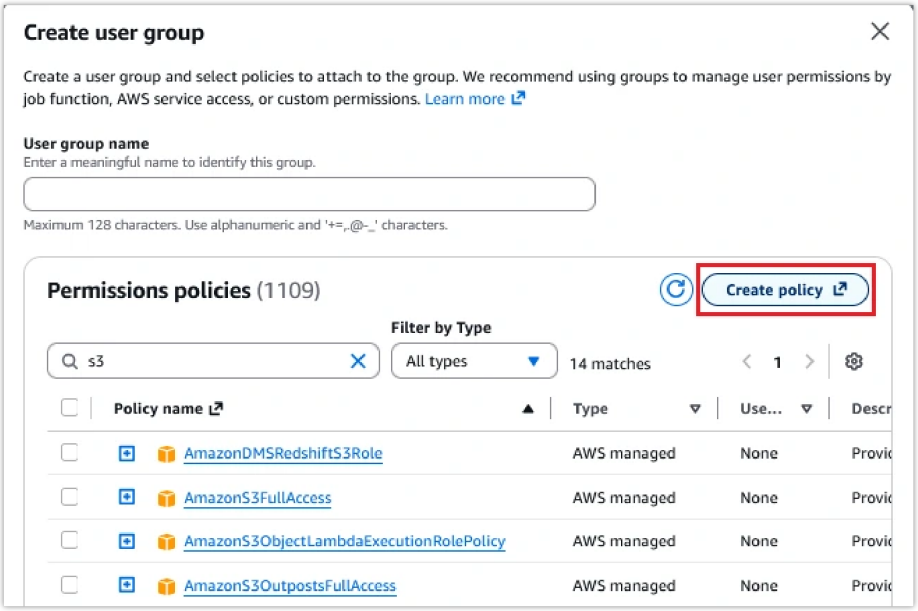
Creating a new IAM user in the AWS Console

3. Enter a username *(for example: ucm-s3-backup)*.
4. Leave *"Provide user access to the AWS Management Console"* unchecked.



Configuring IAM User Details

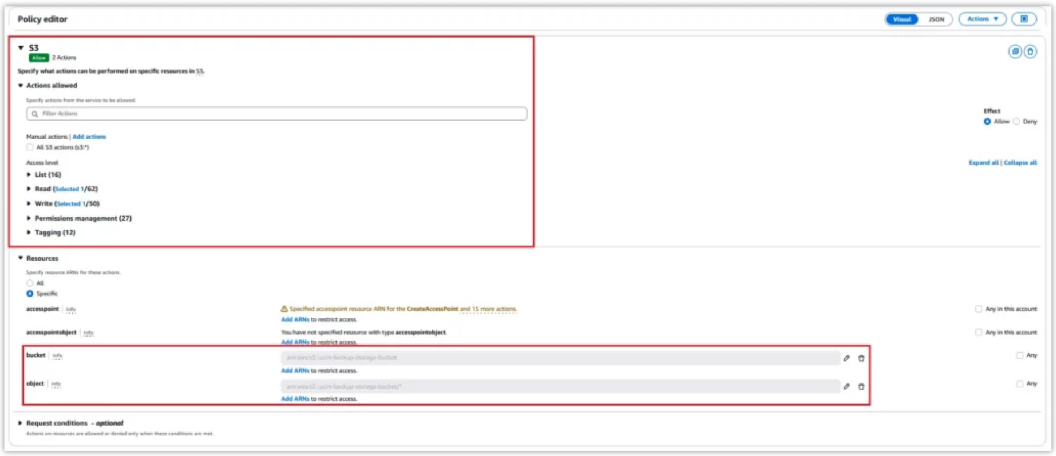
5. On the **Set permissions** page, select *Add user to group*. Using a group makes it easier to manage backup permissions later if additional systems are added.
6. Click **Create group** and name the group something descriptive, such as *"ucm-backup-group"*.
7. Select Create policy to configure the permissions for this user group.



Create User Group Policy

8. On this page, name the policy and define permissions using either the **Visual editor** or the **JSON editor (advanced)**.
   - **Method 1 (Visual editor):**
     - Choose **Service** → **S3**, then enable:
       - `GetBucketLocation` (under Read)
       - `PutObject` (under Write)
     - Specify the resources by clicking *"Add ARN"* under **bucket**, entering the previously created bucket name, then repeat under **object** and enter the same bucket name with `*` as *"Resource object name"* to allow access to objects inside the bucket.
   - **Method 2 (JSON editor):** Paste the policy below and replace `YOUR-BUCKET-NAME` with your S3 bucket name.

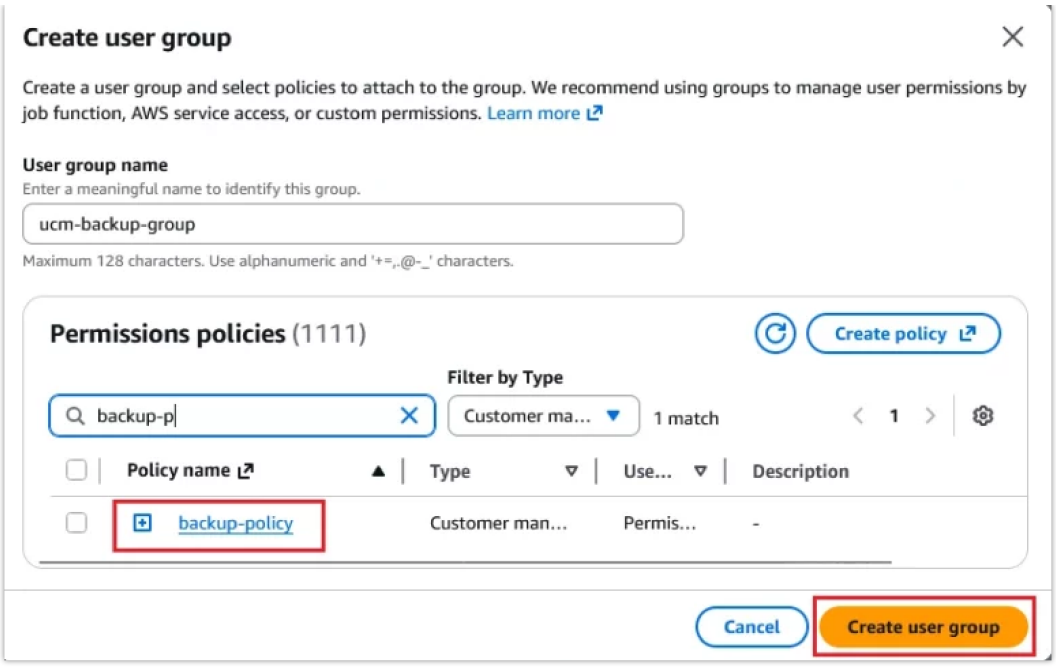
```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "s3:GetBucketLocation",
        "s3:PutObject"
      ],
      "Resource": [
        "arn:aws:s3:::YOUR-BUCKET-NAME",
        "arn:aws:s3:::YOUR-BUCKET-NAME/*"
      ]
    }
  ]
}
```



Visual Policy Configuration

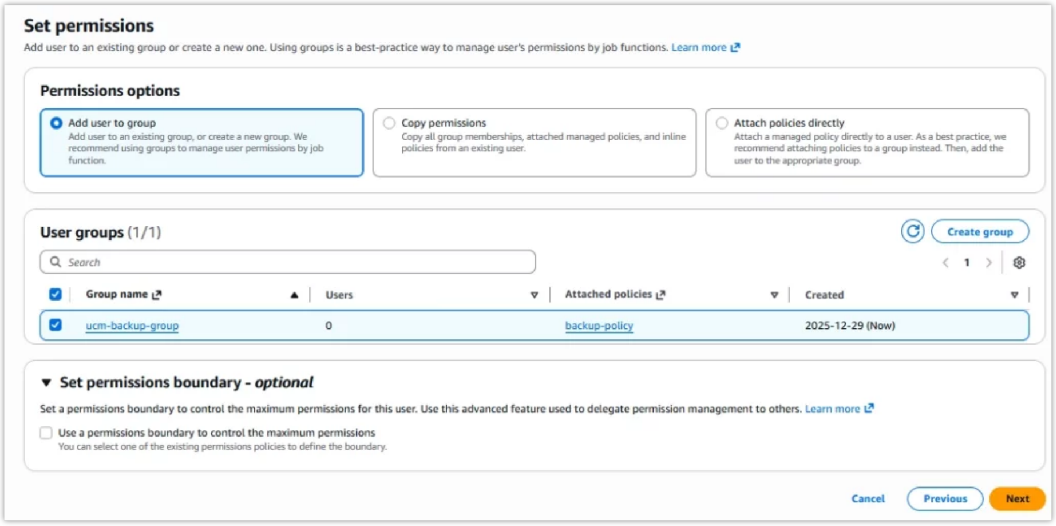
JSON Code Policy Configuration

9. Save the policy, return to the **Create user group** window, refresh the list, select your new policy, and click **Create user group**.



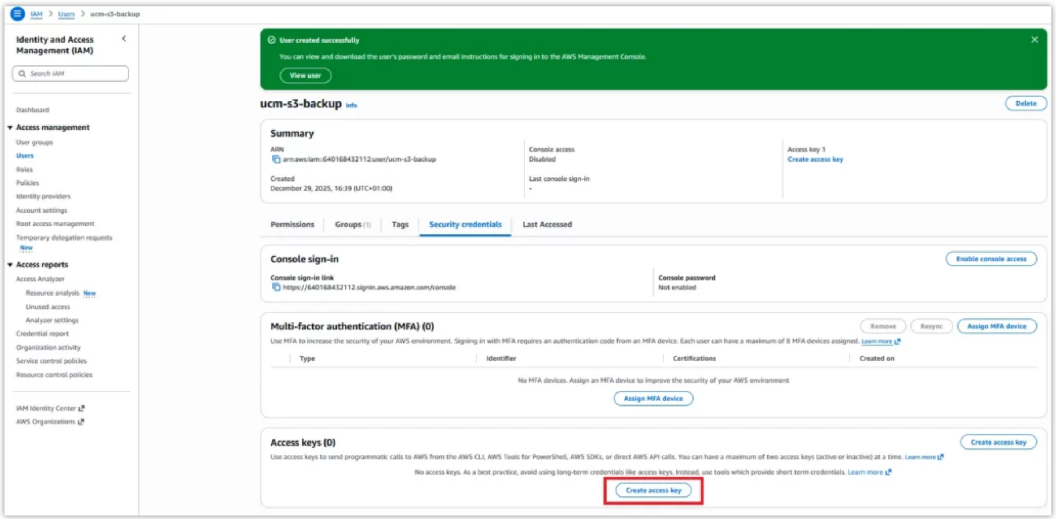
Creating an IAM User Group

10. Complete the user creation wizard by assigning the created group and confirming.



Assigning the IAM User to the Backup Group

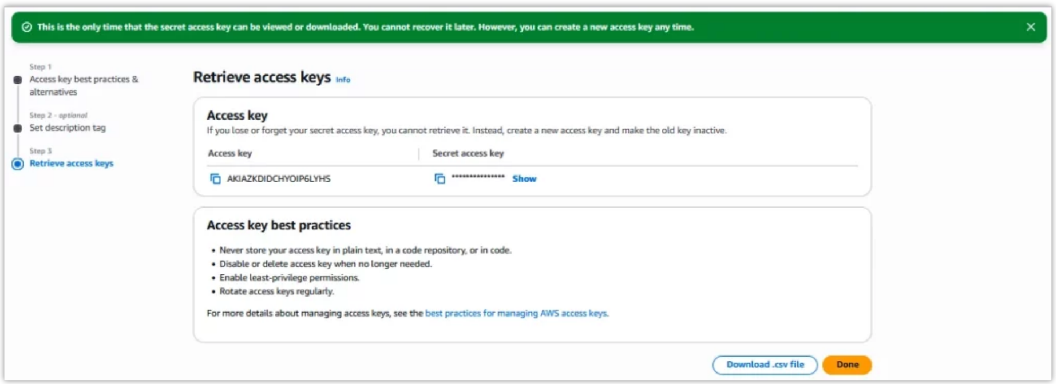
11. Open the user, go to **Security credentials**, and click **Create access key**.



Creating an IAM Access Key for the Backup User

12. Choose **Application running outside AWS**, then generate and save:
    - Access Key ID
    - Secret Access Key

13. Click *Download .csv* file and store it in a secure location.



Viewing and Downloading the IAM Access Key

Notes:

- This is the only time AWS will display the Secret Access Key. If it is lost, you must create a new access key.
- These keys will be entered later in the PBX Amazon S3 configuration.
- Keep these credentials secure. If exposed, disable and regenerate them immediately.

PBX CONFIGURATION

This section describes how to connect the PBX to the Amazon S3 bucket created earlier and how to use S3 as a backup destination. After configuration, the PBX will securely upload backup files to the designated S3 bucket.

Configure Amazon S3 Connection

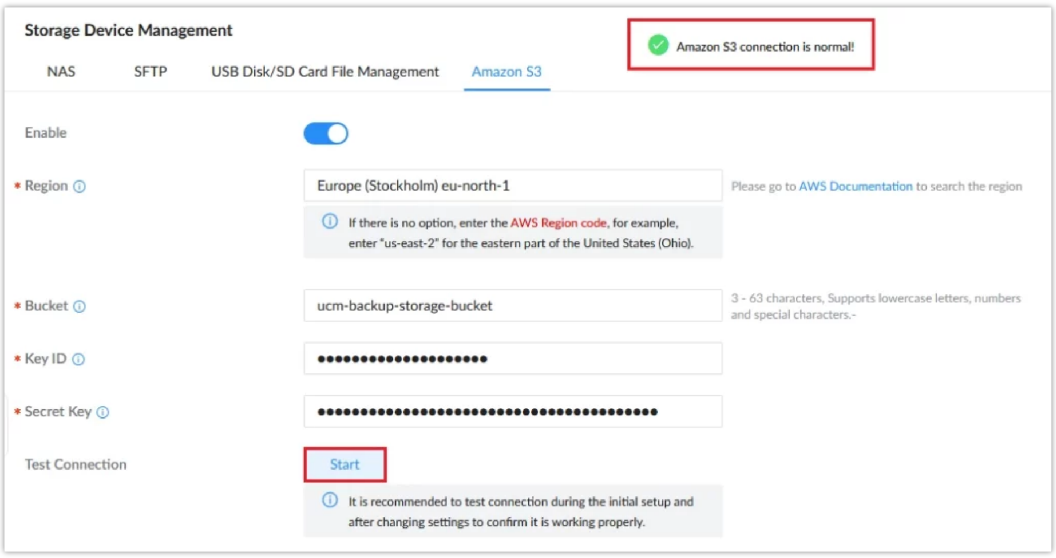
Once the S3 bucket and IAM credentials are prepared, the next step is to configure the PBX so it can store backup files in Amazon S3.

Follow the steps below.

1. Log in to the PBX web UI using an administrator account with integration privileges.
2. Go to **PBX Settings→Storage Device Management→Amazon S3**.
3. Toggle **Enable** to activate the Amazon S3 configuration fields.
4. Fill in the fields as follows:

Region	Select the AWS Region where your bucket was created (for example: *Europe (Stockholm) eu-north-1*). If only a text field is available, enter the AWS Region code (for example: *eu-north-1, us-east-2*).
Bucket	Enter the exact name of the S3 bucket you created (for example: *ucm-backup-storage-bucket*). Bucket names are case-sensitive and must match exactly.
Key ID	Paste the Access Key ID from the IAM user created earlier. The field is masked immediately after entry for security.
Secret Key	Paste the Secret Access Key from the downloaded CSV file. The field is masked immediately after entry for security.

5. Click **Start** under **Test Connection**. If the test succeeds, a confirmation banner appears, indicating that the PBX can reach the S3 bucket using the provided credentials.



Successful Amazon S3 Connection Test

6. After a successful test, click **Save**.

Using Amazon S3 for Backups

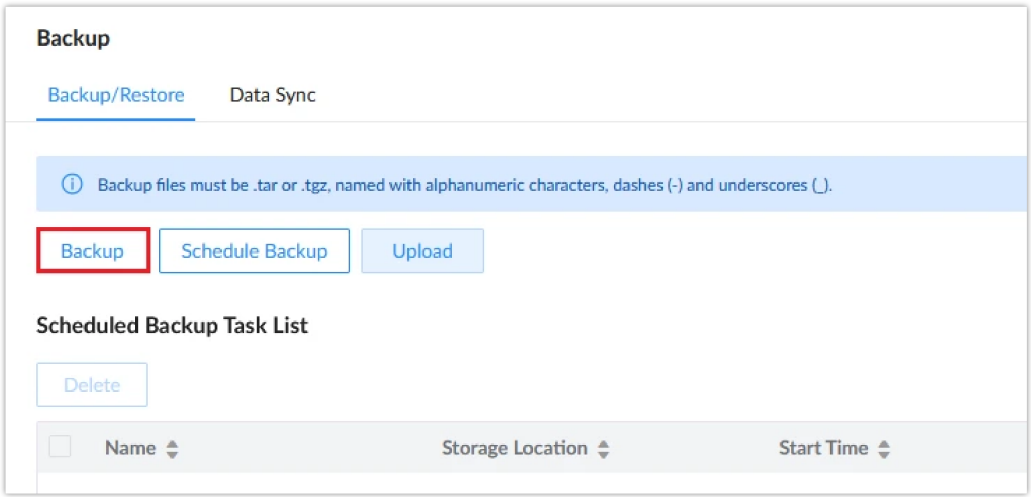
Once Amazon S3 is configured and enabled, the PBX can store backup archives directly in the configured S3 bucket.

> **Note:**
>
> Only backup files are uploaded to Amazon S3. Other system data (such as call recordings and voicemails) continues to use the primary storage configured on the PBX.

Create a Manual Backup to Amazon S3

To create a manual backup to Amazon S3, please follow the steps below:

1. Log in to the PBX web UI.
2. Navigate to **Maintenance→Backup→Backup/Restore**.
3. Click **Backup** to create a new backup task.

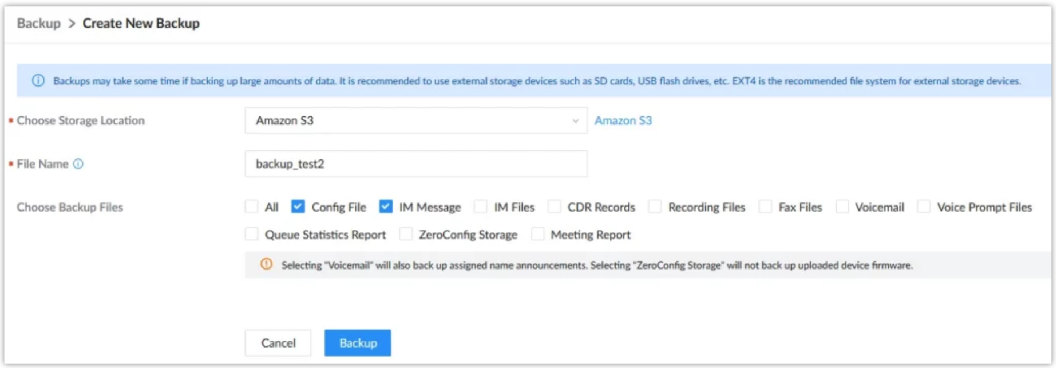


Creating a New Manual PBX Backup

4. Select the configuration components you want included in the backup.
5. Under **Storage Location**, choose **Amazon S3**.

Note:

Amazon S3 can be selected only when S3 integration is enabled and the connection test has succeeded.



Manual PBX Backup Settings

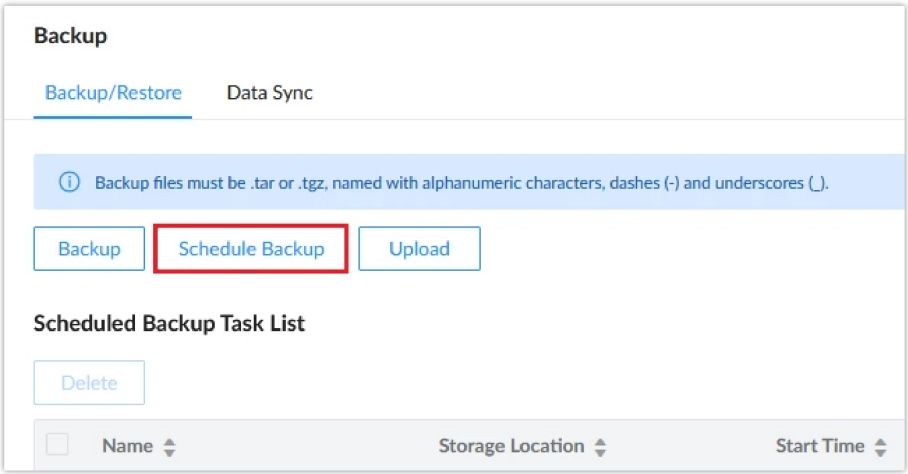
6. Click **Execute** to start the backup.

The PBX creates the backup file locally and uploads it to the configured S3 bucket using the IAM credentials provided. If the upload fails, check S3 connectivity, IAM permissions, and bucket region configuration.

Configure Scheduled Backups to Amazon S3

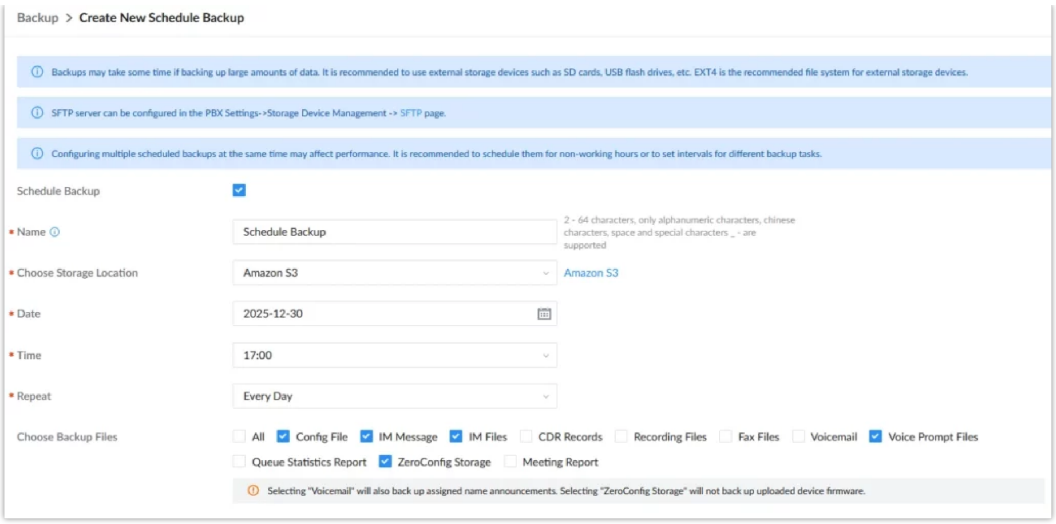
Scheduled backups allow regular automated upload to Amazon S3.

1. Go to **Maintenance→Backup/Restore**.
2. Click **Schedule Backup** to create a new scheduled backup.



Creating a New Scheduled PBX Backup

3. Specify the date, time, and recurrence (e.g., daily, weekly, monthly, or custom).
4. Select the components to include in the backup.
5. Under **Storage Location**, choose **Amazon S3**.



Scheduled PBX Backup Settings

> **Note:**
>
> Amazon S3 can be selected only when S3 integration is enabled and the connection test has succeeded.

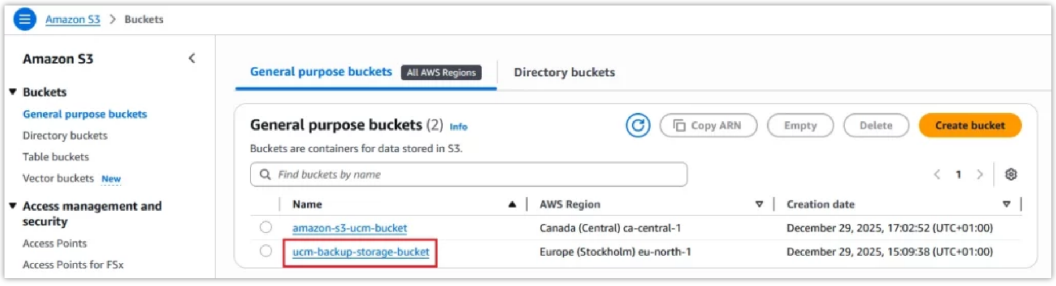
6. Save and apply the scheduled backup settings.

The PBX will automatically generate and upload backups to S3 at the configured times.

Verify Backups on Amazon S3

Once a backup task (manual or scheduled) completes, verify the S3 bucket to confirm that the backup file has been uploaded.

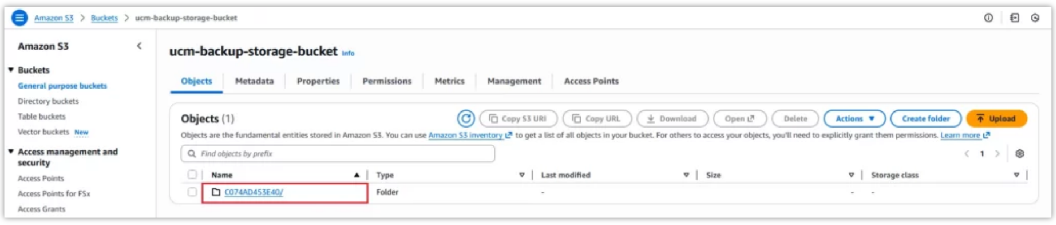
1. Sign in to the **AWS Console**.
2. Open **Amazon S3→Buckets**.
3. Select the bucket configured for PBX backups.



Selecting the S3 Bucket Used for PBX Backups

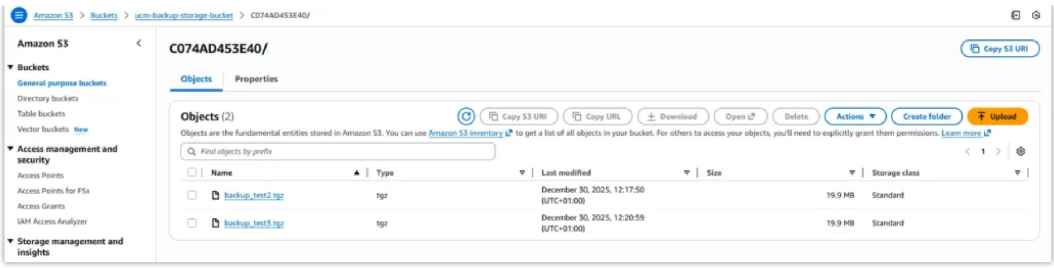
Inside the bucket, the PBX creates a folder named after its MAC address. This allows multiple devices to share the same S3 bucket without overwriting each other's backups.

4. Open the folder whose name matches the PBX MAC address.



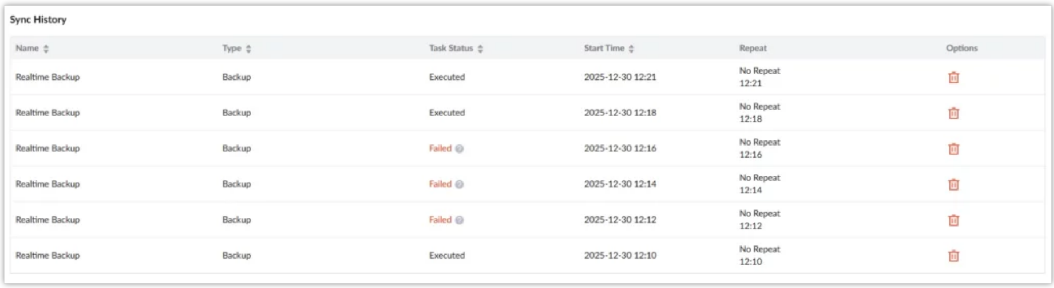
Opening the Main PBX Backup Folder

5. Inside the folder, confirm that backup files exist.



Verifying Backup Files Stored in the PBX Folder

If the folder is empty or missing, check the backup job result in **Backup→Backup/Restore→Sync History**.



Reviewing Backup Sync History

SUPPORTED MODELS

The Amazon S3 integration is available only on specific Grandstream PBX platforms and firmware releases. Use the table below to verify whether your system supports this feature before proceeding with configuration.

Models	Firmware Requirement
UCM630x	1.0.31.7+
UCM630xA	1.0.31.7+
CloudUCM	1.0.29.7+
SoftwareUCM	1.0.33.7+