



oLink User Guide

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Document Details

Revision History

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Table of Contents

Document Details	2
Revision History	2
1. Introduction	4
1.1. Purpose.....	4
1.2. Objectives	4
2. Overview	5
2.1. Components	5
2.2. Service Account	5
2.3. oLink Topology and Publishing Flow	5
3. oLink Features.....	7
3.1. Step 1: Save Amazon Cloud Service Account and Channel Details.....	7
3.2. Step 2: Add Articles	8
3.3. Step 3: Content Retrieval.....	9
3.4. Step 4: Content Reconstruction	10
3.5. Step 5: URL Generator	11
4. oLink - Limitations.....	14
4.1. oLink Limitations.....	14
5. oLink Configuration.....	15
5.1. Create Database and Config Database Connection	15
5.2. Config AWS Access Key.....	19
5.3 Create S3 Bucket.....	23
5.4 Install AWS CLI	25
5.5 Copy oLink files	26
5.6 Config “Logo” picture	26

1. Introduction

1.1. Purpose

The purpose of this guide is to provide an overall overview of oLink capability and also detail the individual features.

1.2. Objectives

To provide a clear understanding of the purpose and capabilities of the oLink, such that the reader can understand the features and also if required, be able to publish content/generate short URLs.

2. Overview

oLink is a firewall circumvention open-source toolset. It enables content providers from a free country like the US to target their audience in China and other repressive countries.

2.1. Components

In order to function oLink requires the additional components below to be available

- ▶ Windows Operation System. Win8.1, Win 10 is compatible. Mac OS and Other operation system is not supported at this time.
- ▶ SQL Server – used to store the content structure. The free express version is compatible.
- ▶ Web Browser – oLink work with the following industry-standard web browsers
 - Chrome
 - Safari
 - Firefox
 - Edge
 - Other modern web browsers

2.2. Service Account

Besides the above components, oLink also requires the below cloud service account to function

- ▶ Amazon Cloud Service Account.

2.3. oLink Topology and Publishing Flow

oLink uses the below components to break through the firewall.

- ▶ Management Console:
Management Console allows users to store the following info
 - Cloud Service account details.
 - The channel name and note/description.
 - The contents in the channel.
- ▶ Content Retrieval Utility:
The content retrieval utility fetches content (including audio, video, HTML page with <article> element and txt files) and saves it to local storage.
- ▶ Content Reconstruction

The content reconstruction fetch contents from local storage, then reconstruct contents and generate HTML files. Also, content reconstruction will upload generated files to AWS S3.

► URL Generator

URL Generator creates short URL links that point to AWS s3 entry HTML which will not be blocked by the firewall. These links can then be promoted to users in a repressive regime.

A topology of the elements required for oLink is shown below.

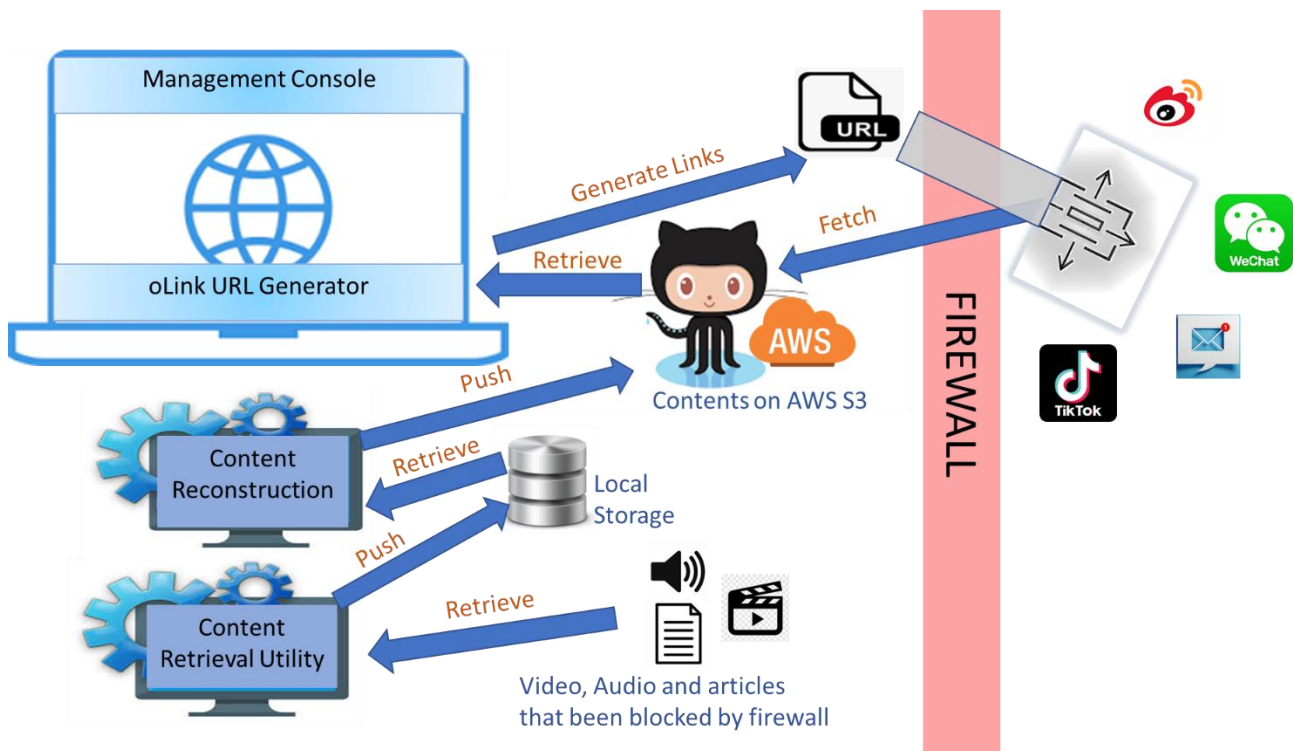


Figure 1 oLink Topology

3. oLink Features

3.1. Step 1: Save Amazon Cloud Service Account and Channel Details

oLink utilize the cloud service to allow content owner publish the article, audio and video to the audience in China and other repressive countries. So the first step is saving cloud service account details and channel details.

oLink requires below cloud service account details and channel details:

- ▶ S3 Id: Please ref to [Chapter 5.2](#) for how to create S3 Id.
- ▶ S3 Key: Please ref to [Chapter 5.2](#) for how to create an S3 key.
- ▶ S3 Bucket: Please ref to [Chapter 5.3](#) for how to create an S3 Bucket.
- ▶ Channel Name:
- ▶ Channel Notes:

The screenshot shows the 'oLink' interface with three tabs: 'Management Console' (selected), 'Content Retrieval', and 'Content Reconstruction'. Under the 'Management Console' tab, there are five input fields:

- S3 Id**: A text box containing a series of asterisks.
- S3 Key**: A text box containing a series of asterisks.
- S3 Bucket**: A text box containing the value 'olink'.
- Name**: A text box containing the Chinese text '自由亚洲电台'.
- Note**: A text box containing the Chinese text '自由亚洲电台（RFA）成立于1996年3月，是总部设在美国华盛顿的'.

At the bottom center of the form is a 'Save' button.

In the oLink "Management Console" Tab, the user needs to fill in the cloud service account/channel details and click the "Save".

3.2. Step 2: Add Articles

The next step is adding articles. Copy articles URL to Website Url and click “Add button”.

Currently, oLink only supports WordPress, Youtube link and Facebook article link only support through purchasing professional service.

- ▶ Copy the URL to the “Website Url” field:

Website Url Add Del

Chk	Id	Name
-----	----	------

Website Url Add Del

Chk	Id	Name
-----	----	------

- ▶ Click the “Add” button

Website Url Add Del

Chk	Id	Name
<input checked="" type="checkbox"/>	1	https://www.rfa.org/mandarin/Xinwen/5-08072021114644.html?encoding=traditional

- ▶ Repeat the above two steps, add multiple articles

Website Url Add Del

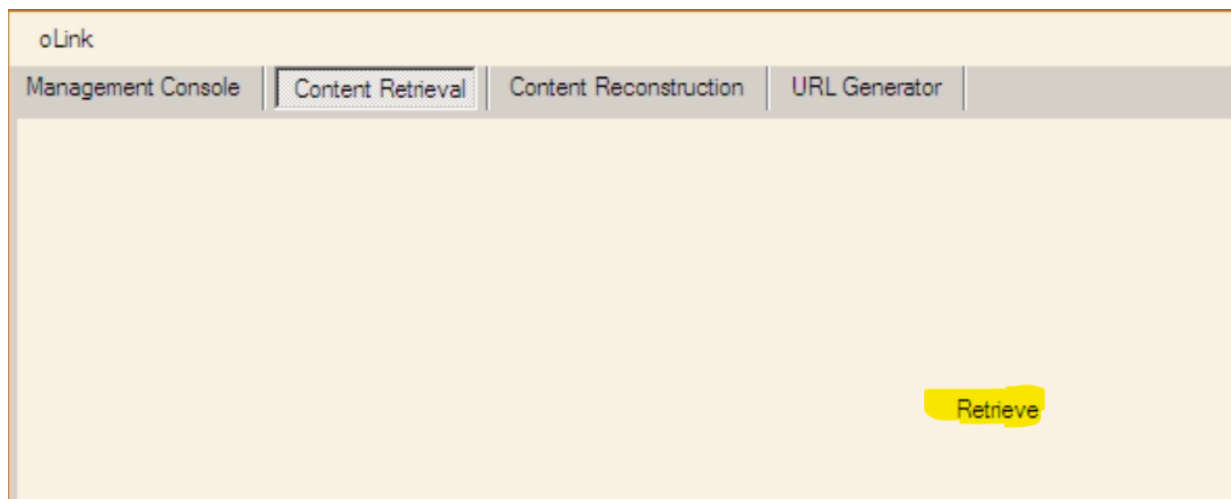
Chk	Id	Name
<input checked="" type="checkbox"/>	5	https://www.rfa.org/mandarin/zhuannan/yehuazhongnanhai/gx-08062021142138.html?encoding=...
<input type="checkbox"/>	4	https://www.rfa.org/mandarin/yataibaodao/meiti/hc-08062021102100.html?encoding=traditional
<input type="checkbox"/>	3	https://www.rfa.org/mandarin/yataibaodao/huanjing/wy-08062021103906.html?encoding=traditio...
<input type="checkbox"/>	2	https://www.rfa.org/mandarin/Xinwen/4-08072021113216.html?encoding=traditional
<input type="checkbox"/>	1	https://www.rfa.org/mandarin/Xinwen/5-08072021114644.html?encoding=traditional

- ▶ The user also can select the single or multiple articles, then click the “Del” button to delete the article from the list.

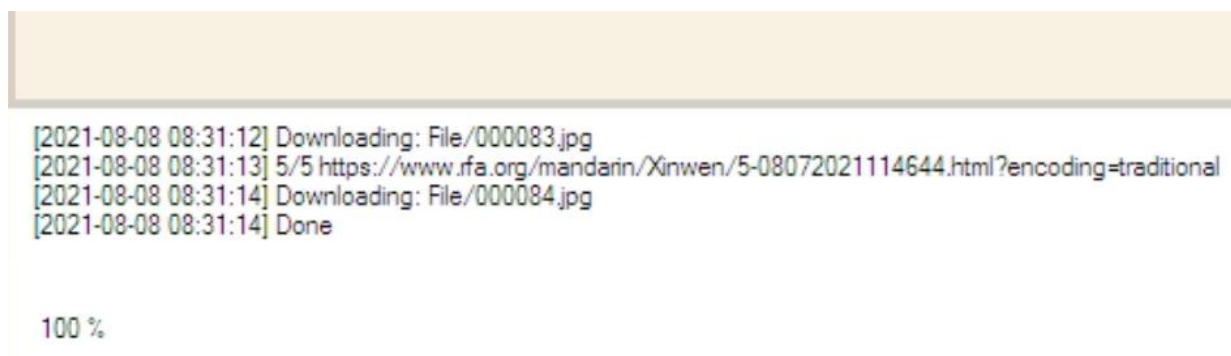
3.3. Step 3: Content Retrieval

The next step is the retrieval of the content, like the text, audio and video from the webpage selected in step2.

- ▶ Click Tab “Content Retrieval”
- ▶ Click Button “Retrieve”



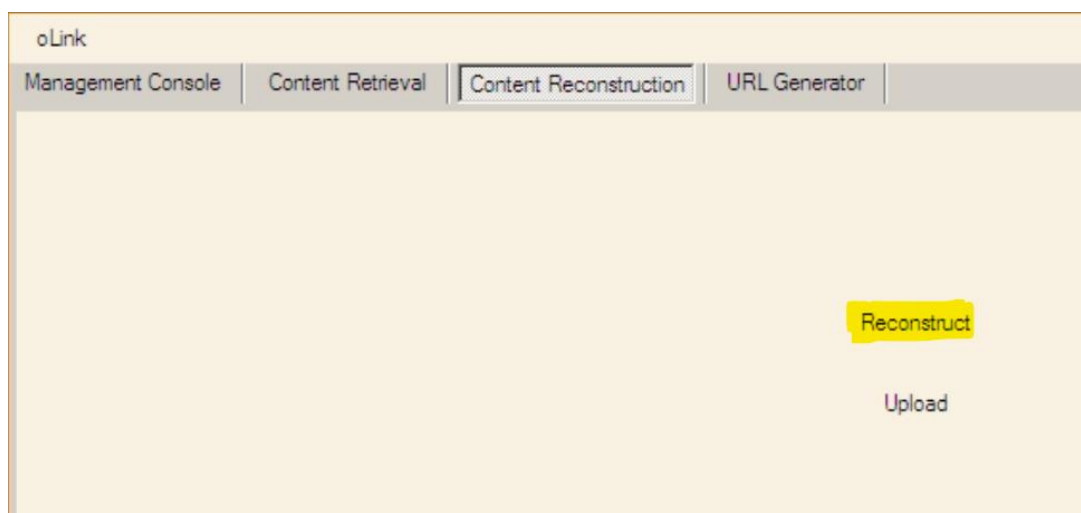
- ▶ oLink start the “Content Retrieval”, detail logs displayed in the below text box.



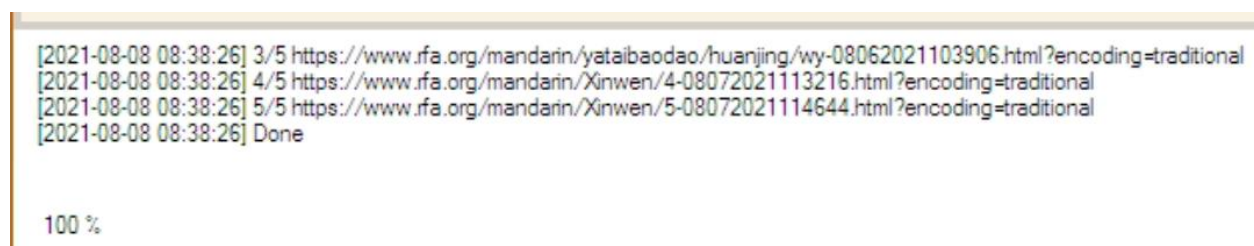
3.4. Step 4: Content Reconstruction

The next step is the content reconstruction, build the web pages in a special way to break through the firewall. In this step, oLink will use the text, audio and video file created in step 3, build multiple HTML pages:

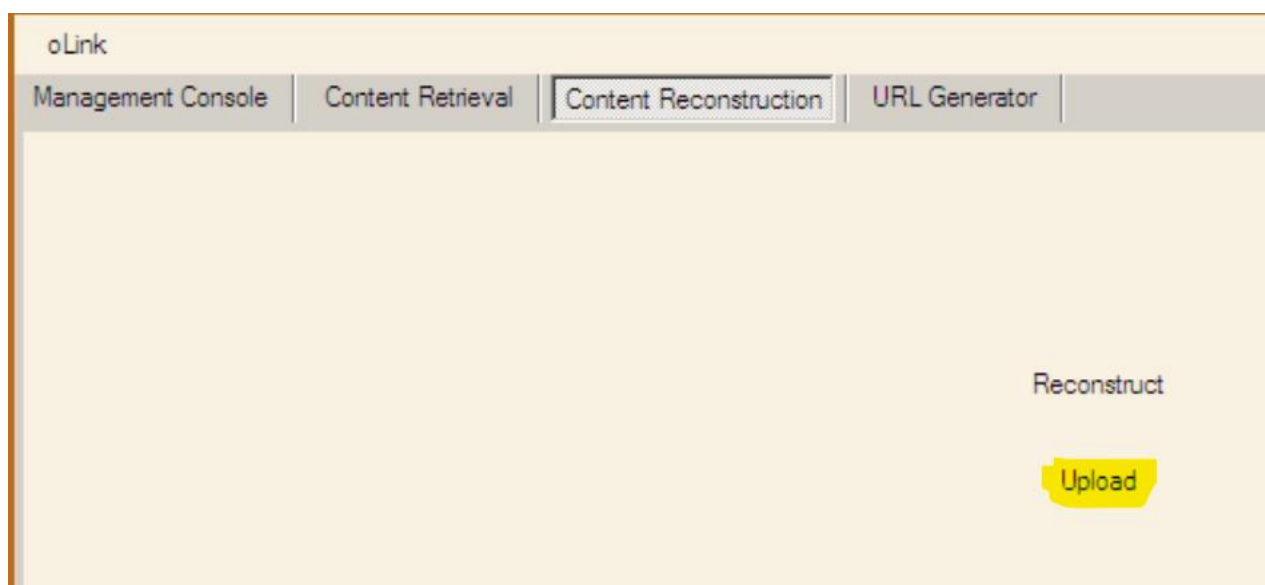
- ▶ Click Tab “Content Reconstruction”
- ▶ Click Button “Reconstruct”



- ▶ oLink start the “Content Reconstruct”, detail logs displayed in the below text box.



- ▶ HTML fiels generated
- ▶ Click the “Upload” button



- ▶ All the HTML files uploaded to the S3 bucket

```
[2021-08-08 08:42:06] upload: File\000084.jpg to s3://olink/File/000084.jpg  
[2021-08-08 08:42:06] upload: File\000081.png to s3://olink/File/000081.png  
[2021-08-08 08:42:06] upload: File\000083.jpg to s3://olink/File/000083.jpg  
[2021-08-08 08:42:34] upload: File\000078.mp3 to s3://olink/File/000078.mp3
```

100 %

3.5. Step 5: URL Generator

This is the last step, generate the short URLs that can be used in SMS, Social media, email and other channels.

- ▶ Click Tab “URL Generator”
- ▶ Click Button “Generate”



- ▶ Short link generated. Repeat the above step, can generate multiple short links.

```
[2021-08-08 08:42:39] upload: File\000082.mp3 to s3://olink/File/000082.mp3  
[2021-08-08 08:44:00] upload: File\000074.mp3 to s3://olink/File/000074.mp3  
[2021-08-08 08:44:00] Done  
[2021-08-08 08:46:05] https://is.gd/DRVv0x
```

100 %

- If you use a browser to open the link, you can view all the articles selected in step 2.



- ▶ The generated HTML has the below functions:
 1. Click the article list to view the selected article.
 2. Play the audio/video in the article.
 3. Click the Home button return to the article list.
 4. Click the browser button back to the last viewed article.
 5. Mobile-friendly HTML design

4. oLink - Limitations

4.1. oLink Limitations

oLink has the following current limitations.

- ▶ The open-source version does not support the Youtube link, Facebook link.
- ▶ The open-source version only supports websites created by WordPress.

5. oLink Configuration

5.1. Create Database and Config Database Connection

1. Create a folder "C:\oLink".
2. Create a sub-folder "C:\oLink\DB".
3. Use the below script to create the database. (If the user prefer to store the database in a different folder, needs to update below "folder and file name" marked in yellow.)

```
USE [master]
GO

/***** Object: Database [oLink]  Script Date: 8/01/2022 9:22:00 PM *****/
CREATE DATABASE [oLink]
CONTAINMENT = NONE
ON PRIMARY
( NAME = N'oLink', FILENAME = N'C:\oLink\DB\oLink.mdf' , SIZE = 3072KB , MAXSIZE = UNLIMITED, FILEGROWTH = 1024KB )
LOG ON
( NAME = N'oLink_log', FILENAME = N'C:\oLink\DB\oLink.ldf' , SIZE = 1024KB , MAXSIZE = 2048GB , FILEGROWTH = 10%)
GO

IF (1 = FULLTEXTSERVICEPROPERTY('IsFullTextInstalled'))
begin
EXEC [oLink].[dbo].[sp_fulltext_database] @action = 'enable'
end
GO

ALTER DATABASE [oLink] SET ANSI_NULL_DEFAULT OFF
GO

ALTER DATABASE [oLink] SET ANSI_NULLS OFF
GO

ALTER DATABASE [oLink] SET ANSI_PADDING OFF
GO

ALTER DATABASE [oLink] SET ANSI_WARNINGS OFF
GO

ALTER DATABASE [oLink] SET ARITHABORT OFF
GO

ALTER DATABASE [oLink] SET AUTO_CLOSE OFF
GO
```

```
ALTER DATABASE [oLink] SET AUTO_SHRINK OFF
GO

ALTER DATABASE [oLink] SET AUTO_UPDATE_STATISTICS ON
GO

ALTER DATABASE [oLink] SET CURSOR_CLOSE_ON_COMMIT OFF
GO

ALTER DATABASE [oLink] SET CURSOR_DEFAULT GLOBAL
GO

ALTER DATABASE [oLink] SET CONCAT_NULL_YIELDS_NULL OFF
GO

ALTER DATABASE [oLink] SET NUMERIC_ROUNDABORT OFF
GO

ALTER DATABASE [oLink] SET QUOTED_IDENTIFIER OFF
GO

ALTER DATABASE [oLink] SET RECURSIVE_TRIGGERS OFF
GO

ALTER DATABASE [oLink] SET DISABLE_BROKER
GO

ALTER DATABASE [oLink] SET AUTO_UPDATE_STATISTICS_ASYNC OFF
GO

ALTER DATABASE [oLink] SET DATE_CORRELATION_OPTIMIZATION OFF
GO

ALTER DATABASE [oLink] SET TRUSTWORTHY OFF
GO

ALTER DATABASE [oLink] SET ALLOW_SNAPSHOT_ISOLATION OFF
GO

ALTER DATABASE [oLink] SET PARAMETERIZATION SIMPLE
GO

ALTER DATABASE [oLink] SET READ_COMMITTED_SNAPSHOT OFF
GO

ALTER DATABASE [oLink] SET HONOR_BROKER_PRIORITY OFF
GO

ALTER DATABASE [oLink] SET RECOVERY SIMPLE
GO

ALTER DATABASE [oLink] SET MULTI_USER
```



```
GO

ALTER DATABASE [oLink] SET PAGE_VERIFY CHECKSUM
GO

ALTER DATABASE [oLink] SET DB_CHAINING OFF
GO

ALTER DATABASE [oLink] SET FILESTREAM( NON_TRANSACTED_ACCESS = OFF )
GO

ALTER DATABASE [oLink] SET TARGET_RECOVERY_TIME = 60 SECONDS
GO

ALTER DATABASE [oLink] SET DELAYED_DURABILITY = DISABLED
GO

ALTER DATABASE [oLink] SET ACCELERATED_DATABASE_RECOVERY = OFF
GO

ALTER DATABASE [oLink] SET QUERY_STORE = OFF
GO

ALTER DATABASE [oLink] SET READ_WRITE
GO

USE [oLink]
GO

/***** Object: Table [dbo].[G10 事物] *****/
SET ANSI_NULLS ON
GO

SET QUOTED_IDENTIFIER ON
GO

CREATE TABLE [dbo].[G10 事物](
    [序号] [int] IDENTITY(1,1) NOT NULL,
    [名称] [nvarchar](max) NULL,
    [标题] [nvarchar](max) NULL,
    [摘要] [nvarchar](max) NULL,
    [封面] [nvarchar](max) NULL
) ON [PRIMARY] TEXTIMAGE_ON [PRIMARY]
GO

/***** Object: Table [dbo].[G10 文件] *****/
```

```

CREATE TABLE [dbo].[G10 文件](
    [序号] [int] IDENTITY(1,1) NOT NULL,
    [名称] [nvarchar](max) NOT NULL
) ON [PRIMARY] TEXTIMAGE_ON [PRIMARY]
GO

/***** Object: Table [dbo].[G10 配置] *****/

CREATE TABLE [dbo].[G10 配置](
    [S3Id] [nvarchar](50) NOT NULL,
    [S3Key] [nvarchar](max) NOT NULL,
    [S3Bucket] [nvarchar](10) NOT NULL,
    [Name] [nvarchar](50) NULL,
    [Note] [nvarchar](max) NULL
) ON [PRIMARY] TEXTIMAGE_ON [PRIMARY]
GO

```

4. Config Database connection

The database connection string is stored in “oLink.exe.config”.

If your database is using windows authentication, edit “oLink.exe.config” as below

```

<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <appSettings>
    <add key="DB" value="server=localhost;Initial Catalog=oLink; ;persist security info=True; Integrated
Security=SSPI;/>
  </appSettings>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
  </startup>
</configuration>

```

If your database is using SQL Server authentication, edit “oLink.exe.config” as below, use your username and password to replace “sa” and “sapassword”.

```

<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <appSettings>
    <add key="DB" value="server=localhost;Initial Catalog=oLink;User ID=sa;Password=sapassword"/>
  </appSettings>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
  </startup>
</configuration>

```

5.2. Config AWS Access Key

You can use the AWS Management Console to create/manage the access keys. Follow the below steps to create AWS Access Key

1. sign in to the [AWS console](#).

Sign in

☒ **Root user**
Account owner that performs tasks requiring unrestricted access. [Learn more](#)

☐ **IAM user**
User within an account that performs daily tasks. [Learn more](#)

Root user email address


Next

By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

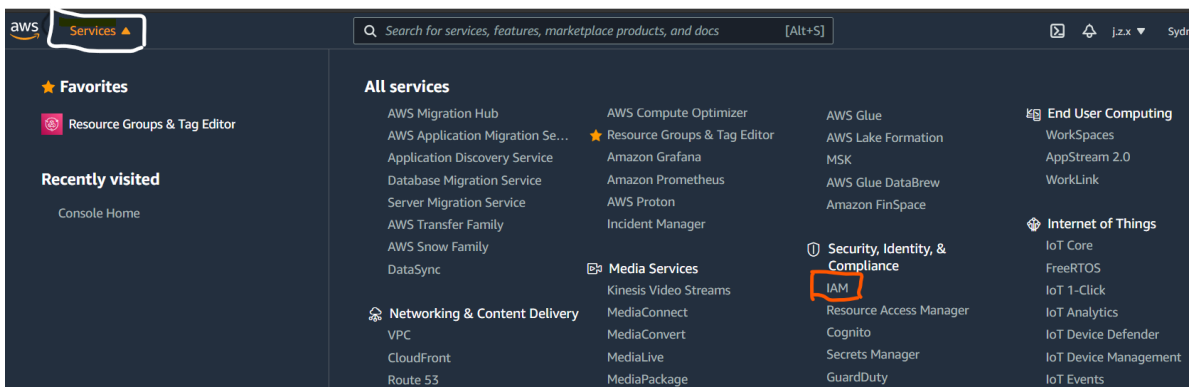
☐ New to AWS?

Create a new AWS account

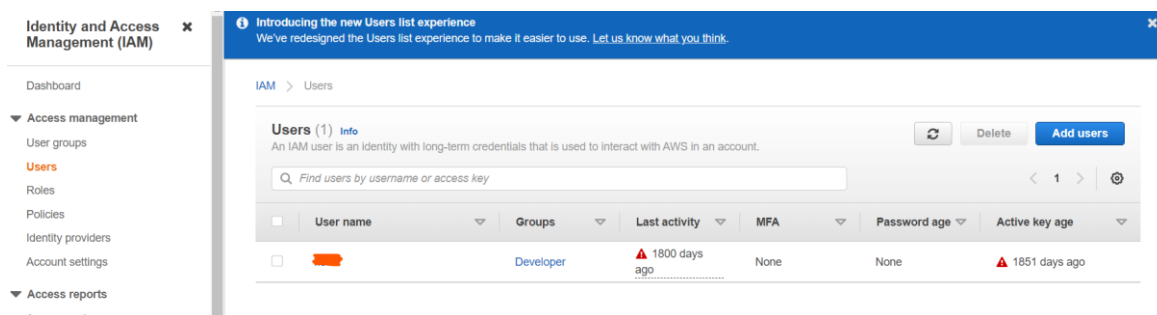
Select “Root User” and key in the email address and password.

 For your convenience, the AWS sign-in page uses a browser cookie to remember your user name and account information. If you previously signed in as a different user, choose [Sign in to a different account](#) near the bottom of the page to return to the main sign-in page.

2. Click Services -> IAM



3. Select Users -> Add Users



4. Key in “User Name”, Tick Access type: “Programmatic access”, then click “Next Permissions”

Add user



Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name*

[+ Add another user](#)

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

- Access type* ☒ **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.
- ☐ **AWS Management Console access**
Enables a **password** that allows users to sign-in to the AWS Management Console.


* Required


[Cancel](#)


[Next: Permissions](#)

5. Select “Attach existing policies directly”, tick “AdministratorAccess”, then tick “Next Tags” .


▼ Set permissions

 Add user to group

 Copy permissions from existing user









 Attach existing policies directly

Create policy



Filter policies ▼

Showing 669 results

	Policy name ▼	Type	Used as
<input checked="" type="checkbox"/>	 AdministratorAccess	Job function	Permissions policy (1)
<input type="checkbox"/>	 AdministratorAccess-Amplify	AWS managed	None
<input type="checkbox"/>	 AdministratorAccess-AWSElasticBeanstalk	AWS managed	None
<input type="checkbox"/>	 AlexaForBusinessDeviceSetup	AWS managed	None
<input type="checkbox"/>	 AlexaForBusinessFullAccess	AWS managed	None
<input type="checkbox"/>	 AlexaForBusinessGatewayExecution	AWS managed	None
<input type="checkbox"/>	 AlexaForBusinessLifesizeDelegatedAccessPolicy	AWS managed	None
<input type="checkbox"/>	 AlexaForBusinessPolyDelegatedAccessPolicy	AWS managed	None

Cancel


Previous

Next: Tags

6. Click “Next: Review”

Add tags (optional)

IAM tags are key-value pairs you can add to your user. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this user. [Learn more](#)

Key	Value (optional)	Remove
<input type="text" value="Add new key"/>	<input type="text"/>	

You can add 50 more tags.

Cancel

Previous

Next: Review

7. Click “Create User”.

Review

Review your choices. After you create the user, you can view and download the autogenerated password and access key.

User details

User name	oLink
AWS access type	Programmatic access - with an access key
Permissions boundary	Permissions boundary is not set

Permissions summary

The following policies will be attached to the user shown above.

Type	Name
Managed policy	AdministratorAccess

Tags

No tags were added.

[Cancel](#)[Previous](#)[Create user](#)

- Click "Download .CSV", save it to the folder oLink installed, then click "Close".



Success

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://286687413401.signin.aws.amazon.com/console>

[Download .csv](#)

	User	Access key ID	Secret access key
▶	oLink	AKIAUFP7GYSM2NY3IQHQ	***** Show

[Close](#)

- Find Access key ID and Secret access key in the csv file and save as S3 id and S3 Key in the oLink Management Console Tab.

5.3 Create S3 Bucket

1. sign in to the [AWS console](#).

Sign in

☒ **Root user**
 Account owner that performs tasks requiring unrestricted access. [Learn more](#)

☐ **IAM user**
 User within an account that performs daily tasks. [Learn more](#)

Root user email address


By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

Select “Root User” and key in the email address and password.

2. Click “All Services” -> S3

▼ All services

Compute

EC2
 Lightsail 
 Lambda
 Batch
 Elastic Beanstalk
 Serverless Application Repository
 AWS Outposts
 EC2 Image Builder
 AWS App Runner


Containers

Elastic Container Registry
 Elastic Container Service
 Elastic Kubernetes Service
 Red Hat OpenShift Service on AWS

Storage

 **S3**
 EFS
 FSx
 S3 Glacier

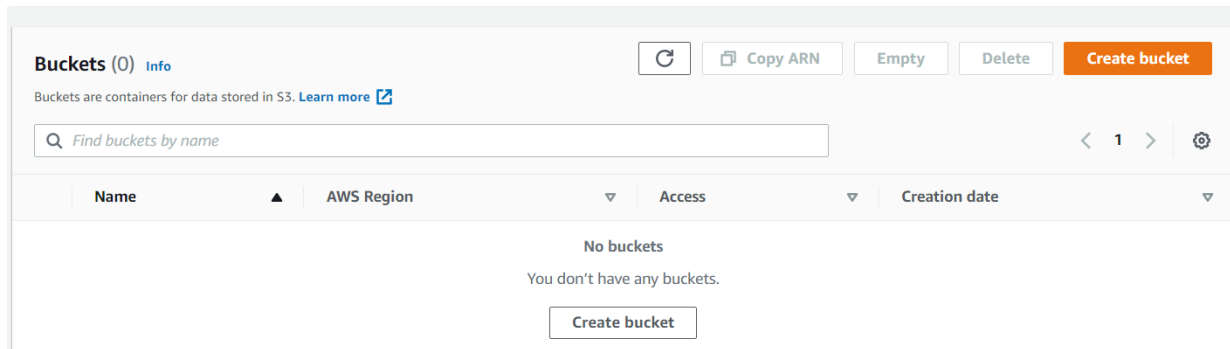
Management & Governance

AWS Organizations
 CloudWatch
 AWS Auto Scaling
 CloudFormation
 CloudTrail
 Config
 OpsWorks
 Service Catalog
 Systems Manager
 AWS AppConfig
 Trusted Advisor
 Control Tower
 AWS License Manager
 AWS Well-Architected Tool
 Personal Health Dashboard 
 AWS Chatbot
 Launch Wizard
 AWS Compute Optimizer
 Resource Groups & Tag Editor
 Amazon Grafana

Security, Identity, & Compliance

IAM
 Resource Access Manager
 Cognito
 Secrets Manager
 GuardDuty
 Inspector
 Amazon Macie
 AWS Single Sign-On
 Certificate Manager
 Key Management Service
 CloudHSM
 Directory Service
 WAF & Shield
 AWS Firewall Manager
 Artifact
 Security Hub
 Detective
 AWS Audit Manager
 AWS Signer

3. Click Button “Create Bucket”



4. In Bucket name, enter a DNS-compliant name for your bucket.

The bucket name must

- ▶ Be unique across all of Amazon S3.
- ▶ Be between 3 and 63 characters long.
- ▶ Not contain uppercase characters.
- ▶ Start with a lowercase letter or number.

After you create the bucket, you can't change its name.



Avoid including sensitive information, such as account numbers, in the bucket name. The bucket name is visible in the URLs that point to the objects in the bucket.

5. In Region, select “US East (N. Virginia) us-east-1”

General configuration

Bucket name

Bucket name must be unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#)

AWS Region

Copy settings from existing bucket - *optional*
Only the bucket settings in the following configuration are copied.

6. Untick “Block All Public Access”

Also, tick “I acknowledge that the current settings might result in this bucket and the objects within becoming public.”

☐ **Block *all* public access**

Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

☐ **Block public access to buckets and objects granted through *new* access control lists (ACLs)**

S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.

☐ **Block public access to buckets and objects granted through *any* access control lists (ACLs)**

S3 will ignore all ACLs that grant public access to buckets and objects.

☐ **Block public access to buckets and objects granted through *new* public bucket or access point policies**

S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.

☐ **Block public and cross-account access to buckets and objects through *any* public bucket or access point policies**

S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.



Turning off block all public access might result in this bucket and the objects within becoming public

AWS recommends that you turn on block all public access, unless public access is required for specific and verified use cases such as static website hosting.

☒ I acknowledge that the current settings might result in this bucket and the objects within becoming public.

7. Click Button "Create Bucket"
8. Save the bucket name as S3 Bucket in the oLink Management Console Tab.

5.4 Install AWS CLI

1. Download and run the AWS CLI MSI installer for Windows (64-bit):

<https://awscli.amazonaws.com/AWSCLIV2.msi>

Alternatively, you can run the msixec command to run the MSI installer.

```
C:\> msixec.exe /i https://awscli.amazonaws.com/AWSCLIV2.msi
```

For various parameters that can be used with msixec, see msixec on the Microsoft Docs website.






2. To confirm the installation, open the Start menu, search for cmd to open a command prompt window, and at the command prompt use the aws --version command.

```
C:\> aws --version
aws-cli/2.4.5 Python/3.8.8 Windows/10 exe/AMD64 prompt/off
```

If Windows is unable to find the program, you might need to close and reopen the command prompt window to refresh the path, or Adding the AWS CLI to your path.

5.5 Copy oLink files

1. Download “olinkdeployment.zip” from Github repo
2. Unzip the file to the folder C:\oLink
3. Copy compiled oLink.exe and olink.exe.config to the same folder.

Organize		New		Open	
s PC > OS (C:) > oLink					
Name		Date modified	Type	Size	
 DB		10/01/2022 8:04 AM	File folder		
 File		28/01/2022 8:07 AM	File folder		
 Site		28/01/2022 8:07 AM	File folder		
 oLink.exe		28/12/2021 1:47 PM	Application		
 oLink.exe.config		9/12/2021 11:41 AM	XML Configuratio...		

5.6 Config “Logo” picture

The user can config the logo section of the generated web page.



In the oLink folder -> File, you can find two image file

1. ooFace.jpg
2. ooHead.jpg

ooFace.jpg is the logo file, the resolution is 360 * 360 px

The default image is like below, the user can change to their logo.



ooHead.jpg is the picture in the upper section, the resolution is 640 * 359 px.

The default image is like below, the user can change it to their picture.

