

# Private Computation Solutions Partner Playbook

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## Introduction

This is the step-by-step guidebook for Meta platform advertisers to set up, install, and use privacy-enhanced ads measurement products (e.g., Private Lift and Private Attribution).

We recommend engineers to go through this resource as it requires certain knowledge or familiarity with network setup, cloud service, etc.

## How to use the playbook

Follow the step-by-step instructions to setup, install, and use the product. Please contact your Meta representative for any questions/issues encountered.

## Requirements

You'll need the below work to be done by someone (engineers) with permissions and familiarity with the following components:

1. Domain name service (for setting DNS A record for Conversions API Gateway subdomain)
2. Basic knowledge and permissions to access AWS services like IAM, S3 - Creating and Reading, VPC - creation, Peering, Route Tables (all these creations will happen through scripts).
3. Making API calls (for using Private Computation Graph API)
4. Debugging and log reading
5. **(if not using UI: familiarity with running shell commands)**
6. (Only for clients who need/want to prepare your own conversion data): SQL and hashing
7. Please make sure you have reviewed the following AWS Prerequisites and Permission requirements.

- a. [Private Computation: Business pre-check questions](#)
- b. [Private Computation: AWS pre-check questions](#)
- c. [Private Computation: Guide to answering AWS pre-check questions](#)

## Private Computation Products overview

Both Private Lift and Private Attribution are measurement solutions that use encrypted data and are powered by secure multi-party computation (MPC) with select partners such that each participating partner's data is kept private from the other, and, upon completion of the MPC, each participating partner is only able to view the aggregated output statistics of the computation.

Previously, this type of reporting required at least one party to learn which specific people converted after seeing an ad, considering Meta has the information about who saw an ad and the advertiser has information on who converted. MPC makes it possible for both parties to only learn insights about ads performance, without the need for either party to see the other's data.

**(Private) Lift** is a powerful way to understand the incremental effect of your advertising on Meta's platform. This is a kind of experiment where we compare groups of [people](#) who did and did not have the opportunity to see your advertising to understand its causal impact on specific business objectives, such as brand recognition or conversion.

**(Private) Attribution** is a measurement product that determines the user actions that led to the desired outcome between the click of the ad and the conversion. We currently support 1-day click-through attribution.

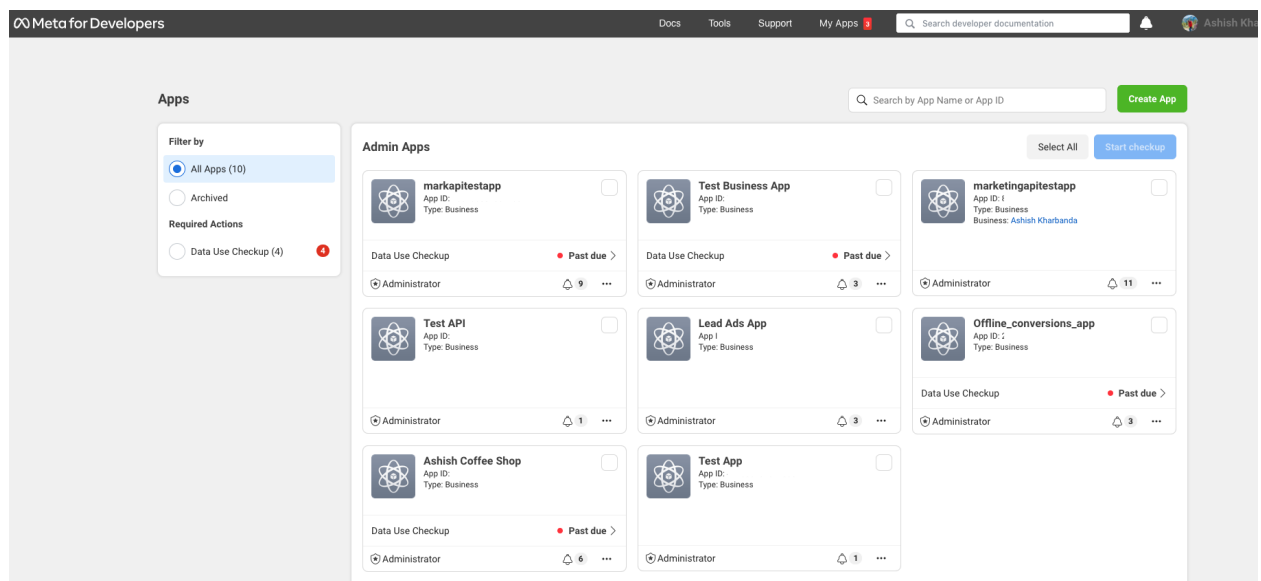
## Step 1: Conversions API Gateway Setup (1 Hour)

To run the commands to install the Private Lift infrastructure (specified in step 2 below), install Conversions API Gateway, by referring to the following guide. Please make sure to select at least an t2.xlarge EC2 instance type:

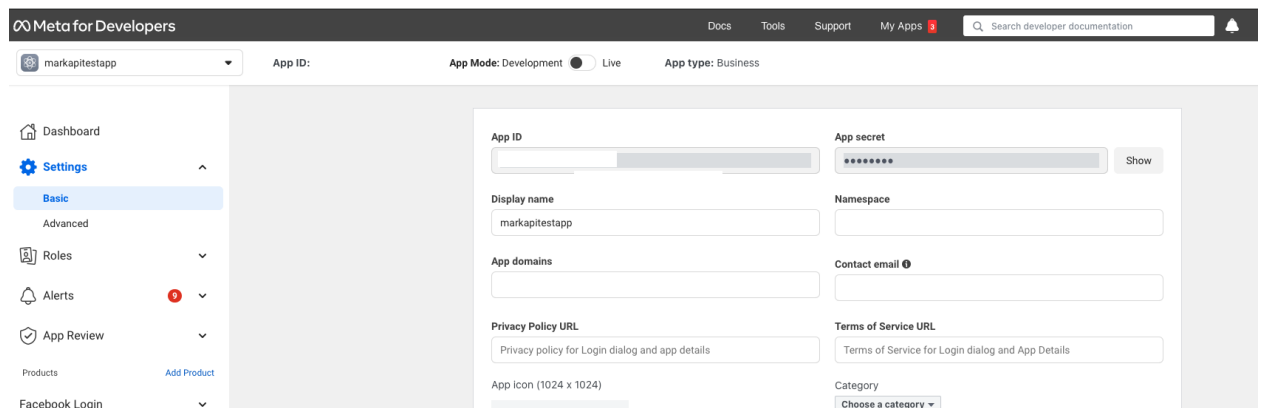
<https://developers.facebook.com/docs/marketing-api/conversions-api/guides/gateway/setup>

## Step 2: Generating 60 days Access Token (10 Minutes)

- Go to [developers.facebook.com/apps](https://developers.facebook.com/apps) and select the app that you want to use.

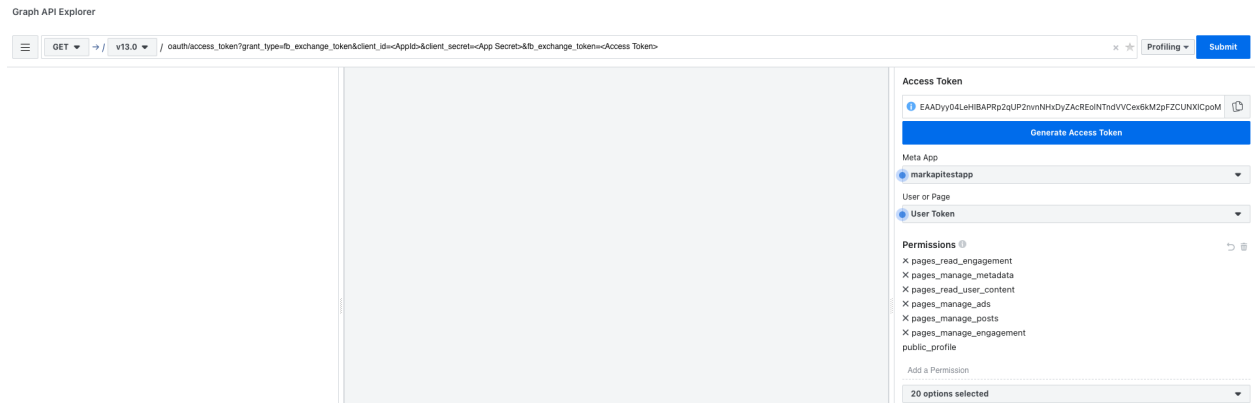


- Navigate to Settings → Basic. Click on “Show” near app secret and copy both App ID and App Secret.

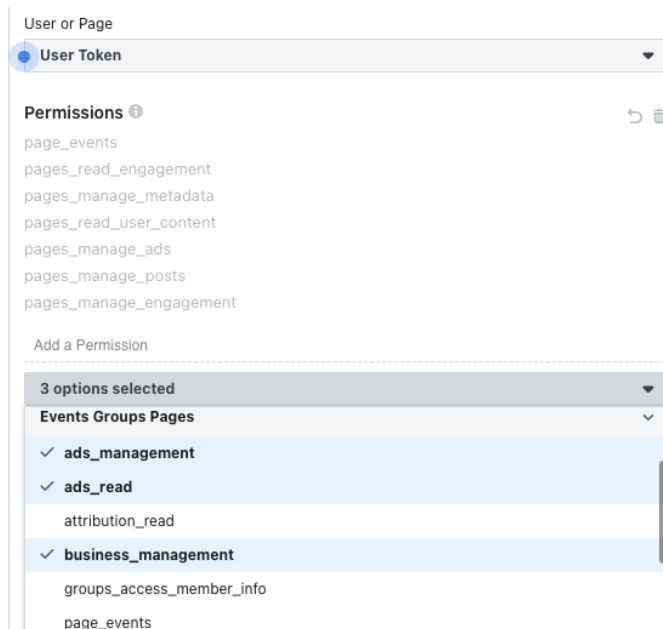


- Go to <https://developers.facebook.com/tools/explorer>
- In the GET request enter:  
oauth/access\_token?grant\_type=fb\_exchange\_token&client\_id=<AppId>&client\_secret=<App Secret>&fb\_exchange\_token=<Access Token>

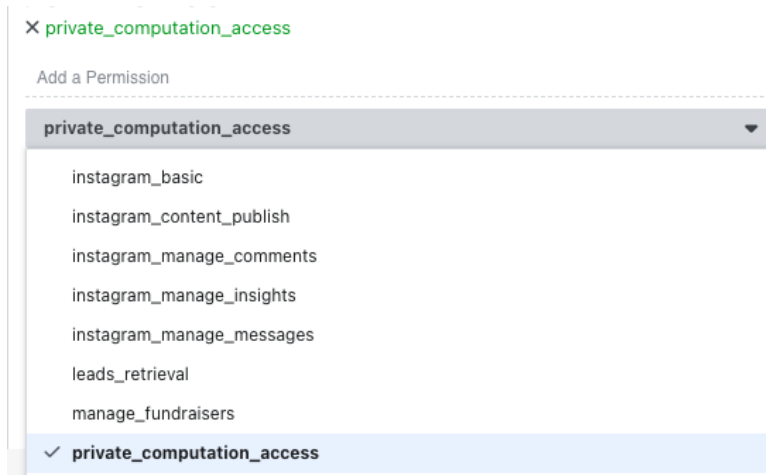
Replace **<AppId>** and **<AppSecret>** with the values copied in the previous step. Also replace the **<Access Token>** with the Access Token on the screen in the right corner (see below).



- Click on the User or Page dropdown and select User Token.
- Click on Add a Permission
  - → Events Groups Pages → Select **ads\_management**, **ads\_read** and **business\_management**



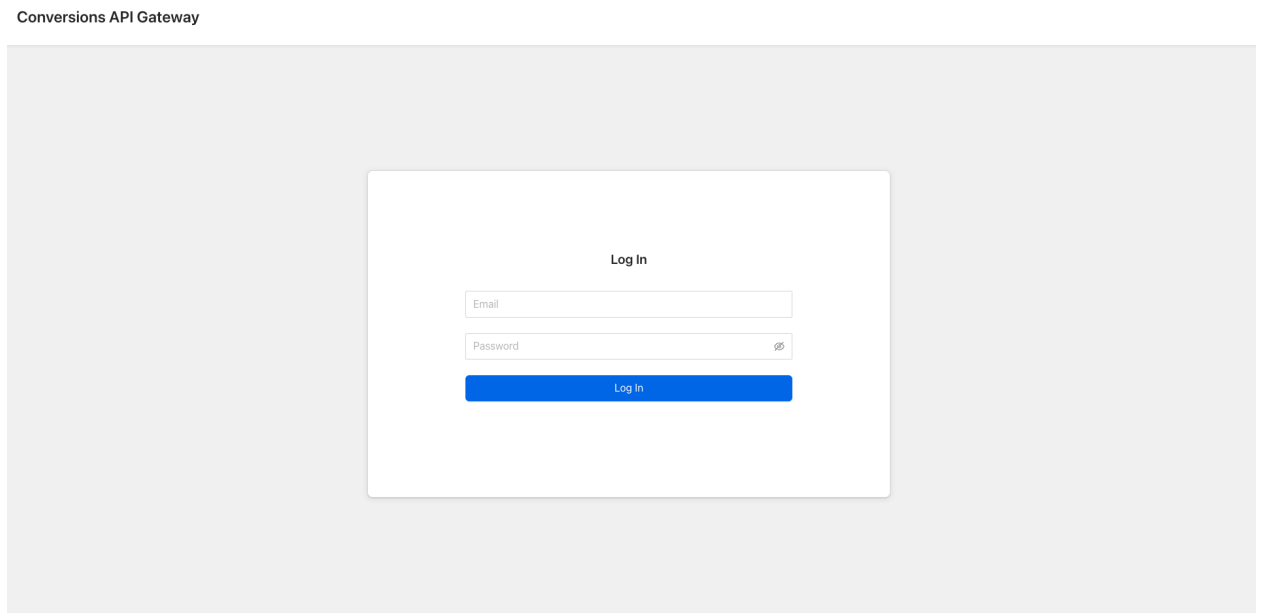
- → Other → Select **private\_computation\_access**.



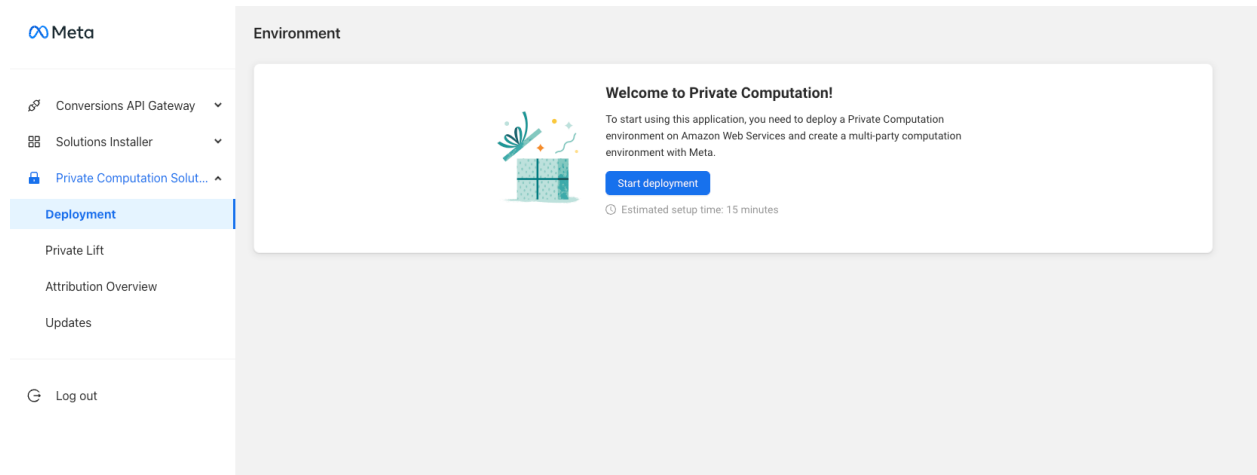
- Click on Submit Button and copy the access\_token received in the response.
  - Please carefully store this token.

## Step 3: PCS AWS Infrastructure Setup (30 Minutes)

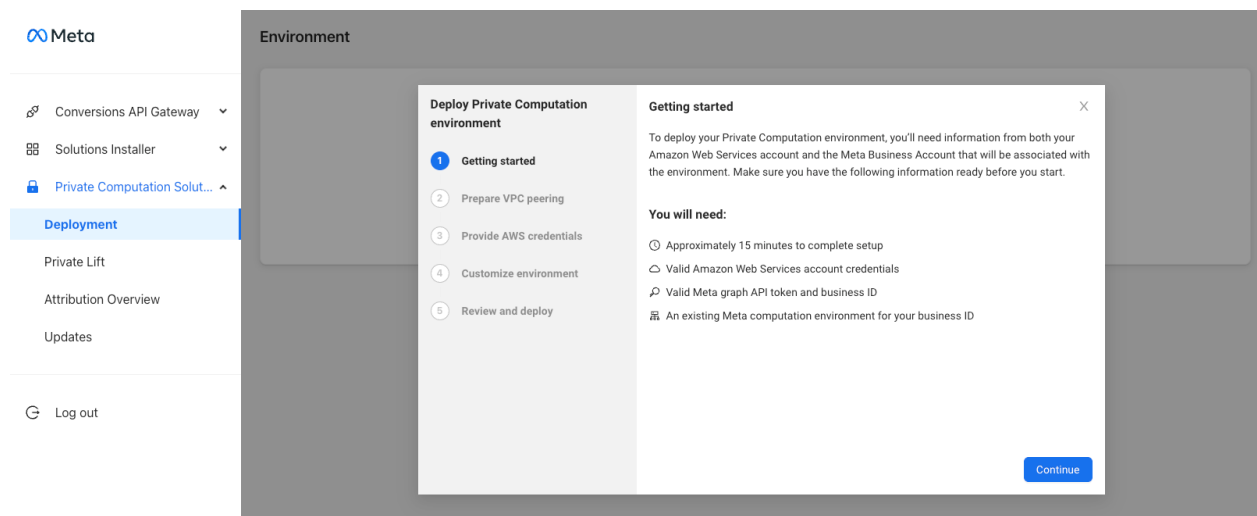
- Navigate to <https://<capig.instance.url>/hub/ui>. You should see the following window:



- Enter the credentials and login.
- Navigate to the Deployment Menu and click Start deployment.



- A modal will pop up, and the screen will show on what you would require to have to complete the deployment



- Click continue, and go to the next step. You should see a screen that looks like below:

Deploy Private Computation environment

✓ Getting started

2 Prepare VPC peering

3 Provide AWS credentials

4 Customize environment

5 Review and deploy

Prepare Virtual Private Cloud (VPC) peering

To create a multi-party computation environment with Meta, we need to fetch VPC details from Meta and connect to your VPC in the same Amazon Web Services region.

☐ Use advanced settings

\* Meta Business id ?

\* Graph API access token ?

Get Meta VPC details

Back

Continue

- Enter your business id, and the Graph API token generated in [Step 2](#). Then click the button “Get Meta VPC details” the AWS region and peered Meta-side VPC ID should pop-up (as a reference).
- Note: Please Only click “use advanced settings” if advised by a META representative. The advanced settings option is described [here](#).

Deploy Private Computation environment

✓ Getting started

2 Prepare VPC peering

3 Provide AWS credentials

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Prepare Virtual Private Cloud (VPC) peering

To create a multi-party computation environment with Meta, we need to fetch VPC details from Meta and connect to your VPC in the same Amazon Web Services region.

☐ Use advanced settings

\* Meta Business id ?

\* Graph API access token ?

Get Meta VPC details

✓ AWS region: us-west-2

Meta VPC ID: vpc-

Back

Continue



- Press continue to go to the next screen.
- You should be in credential screen now as below:

Deploy Private Computation environment

✓

Getting started

↓

✓

Prepare VPC peering

↓

3

Provide AWS credentials

↓

4

Customize environment

↓

5

Review and deploy

Provide AWS credentials

×

To deploy Private Computation solutions on your AWS, you need to provide your AWS access keys and account ID. You can find or create your access keys through your [AWS IAM console](#)

\* Amazon Web Services Access Key ID ?

\* Amazon Web Services Secret Access Key ?

\* Amazon Web Services Account ID ?

Back

Continue

- Enter AWS Access Key ID and Secret Access Key, your AWS account ID and click on continue. These credentials should have admin access to create new components - S3 Buckets, Kinesis, VPC, Subnets, ECS Clusters.

Deploy Private Computation environment

✓

Getting started

↓

✓

Prepare VPC peering

↓

✓

Provide AWS credentials

↓

4

Customize environment

↓

5

Review and deploy

Customize environment

×

Customize your environment's identity and settings before deployment.

\* Environment Tag ?

\* Data bucket ?

☒ Use existing data bucket: fb-pc-data

☐ Create a new data bucket

Settings

☒ Consumption of Pixel data ⓘ

Manual event upload is enabled by default with semi-automated ingestion infrastructure

Back

Continue

- In step 4, You can customize the environment. Please fill in the required fields and click on Next:  
**Environment tag:** a string that will be appended to the name or tag of AWS resources to be created. It will be easier for you to identify which AWS resources are created. For ease, we have pre-generated a tag for you (using “<month><day>” format), but you can change the tag based on your suitable name.  
**Data bucket:** this is the S3 bucket is where data for the computation is stored. If you are redeploying PCS, you have the option to reuse the existing data bucket or create a new bucket for this deployment.

Note: If a suitable bucket could not be found, the screen will look as show below:

The screenshot shows a multi-step wizard titled "Deploy Private Computation environment". The steps are: 1. Getting started, 2. Prepare VPC peering, 3. Provide AWS credentials, 4. Customize environment (current step), and 5. Review and deploy. The "Customize environment" step has a sub-header "Customize environment" and a description "Customize your environment's identity and settings before deployment." It features a required field "Environment Tag" with a red input box. Below this is a "Settings" section with a checked checkbox "Consumption of Pixel data" and a note "Manual event upload is enabled by default with semi-automated ingestion infrastructure". At the bottom right are "Back" and "Continue" buttons.

Data Ingestion Settings:

- We have enabled Manual event upload pipeline by default. This is required for using the Events Uploader modal.
  - Toggle the checkbox “Consumption of Pixel data” if you don't wish to send pixel events back to Meta as Conversions API events. If you already have Conversions API integration in place, or if you do not wish to forward your web pixel events as Conversions API events, you can toggle this button to off.
- Next, review and deploy. This is the final step before actual infrastructure deployment starts, Please review the information for a moment before you can click the deploy button.

### Deploy Private Computation environment

- ✓ Getting started
- ✓ Prepare VPC peering
- ✓ Provide AWS credentials
- ✓ Customize environment
- 5 Review and deploy**

## Review and deploy

Review the details for your Private Computation environment before proceeding with your deployment. You can go back to previous steps to edit any details or settings.

Amazon Web Service region  
**us-west-2**

Publisher (Meta) VPC ID  
**vpc-**

Your Amazon Web Services account ID

Environment tag

Data bucket  
**Use existing data bucket: fb-pc-data-**

BackDeploy

- About 10 minutes later, you should be able to see the following screen confirming the successful deployment.

**Meta**

Conversions API Gateway ▾

Solutions Installer ▾

Private Computation Solut... ▴

**Deployment**

Private Lift

Attribution Overview

Updates

Log out

### Environment

#### Latest Deployment

Undeploy Download Log

Progress: 100%

<b>Status</b> COMPLETED	<b>Deployment Start Time</b> Monday November 7th 2022, 4:42:51 pm
<b>VPC peering setup</b> Completed	<b>Total Time Taken</b> 4 minutes, 51 seconds
<b>Amazon Web Services Region</b> us-west-2	<b>Deployment Tag</b> 
<b>Your Amazon Web Services Account ID</b> 	<b>Publisher (FB) Account ID</b> 
<b>Publisher (FB) VPC ID</b> vpc-	<b>S3 Config Bucket</b> <a href="#">Config Bucket</a>
<b>S3 Data Ingestion Bucket</b> <a href="#">Data Ingestion Bucket</a>	<b>Allow Manual Event Upload</b> Yes

**Allow Pixel Data to Route to Meta**  
Yes

#### System diagnostics

System diagnostics can help you detect and troubleshoot issues with Private Computation deployment.

- VPC peering status: If the VPC peering has been completed you should see “Completed” status under “VPC peering setup”, and if it’s failed you should see failed status shown below. Please follow the appendix [here](#) on how to retry a failed VPC peering connection, and how to proceed forward.

## Latest Deployment

Undeploy

Download Log

Progress: 100%  

### Status

COMPLETED 

### Deployment Start Time

Monday November 7th 2022, 12:27:05 pm

### VPC peering setup

 Failed - [Retry VPC peering](#)

### Total Time Taken

9 minutes, 50 seconds

### Amazon Web Services Region

us-west-2

### Deployment Tag



### Your Amazon Web Services Account ID



### Publisher (FB) Account ID



### Publisher (FB) VPC ID

vpc-

### S3 Config Bucket


[Config Bucket](#)

### S3 Data Ingestion Bucket

[Data Ingestion Bucket](#)

### Allow Manual Event Upload

Yes

 Upload events

### Allow Pixel Data to Route to Meta

Yes

Lastly, please complete below steps:

- Open CAPI API Gateway Shell: `https://<capig.instance.url>/hub/shell`
- Run the following update commands after updating the placeholders (AWS access key and AWS secret key):
  - `config write CloudResources /AWS_ACCESS_KEY "<Your aws_access_key_id>"`
  - `config write CloudResources /AWS_SECRET_KEY "<Your aws_secret_access_key>"`

**Note:** The AWS access key and secret key needs either: admin-level access to all AWS services, or a minimal set of necessary permissions (see [A3](#) for more details)

## Verify infra completeness and connectedness

Before moving forward, please

1. Confirm with your Meta POC if they have made changes to routing tables and provided access to ECR repositories. You can follow the [instructions](#) to run PCE Validator to ensure the setup is correct.
2. (Recommended) You can run an [ad-hoc system diagnosis](#) to validate the cloud infra setup.

## Data Ingestion

There are two different ways to ingest your data.

1. Automated data ingestion and computation:
  - a. No further action is required.
  - b. Depending on your needs and study setup, different wait time could apply. Your Meta representative will guide you on the exact wait time.
2. Prepare your own conversion data
  - a. Using the semi-automated ingestion pipeline (Manual Data Upload). It should take less than 30 mins to ingest multi-month conversion data.
  - b. UI option for uploading conversion events data in CSV format
    - i. Navigate to the deployment summary page
      1. <https://<capig.instance.url>/hub/pcs/deployment>
    - ii. Click on the 'Upload events' button under the 'S3 Data Ingestion Bucket' section

### S3 Data Ingestion Bucket

Data Ingestion Bucket

 Upload events

- iii. Prepare your data in the semi-automated events data format (Appendix [A1](#)). Open the 'sample file' link for an example of this data format.
  1. Maximum upload size per file: 5GB
- iv. Upload the events files to the upload modal by either selecting or by dropping the file(s)

## Upload events for Private Computation



Upload CSV files to your data storage: **fb-pc-data-**[REDACTED] Uploaded events will be processed and available for Private Computation use in about 2 hours.

Event data formatting must correspond the flattened csv of [Meta's Server Event Parameter](#). You can use this [sample file](#) as a template to format your data correctly. Data that is formatted incorrectly will be removed automatically.



Drag file here or click to upload

File size limit of 5GB and estimated upload time is 10-15 minutes.

Close

- v. Note - if you see an error, try refreshing the page first and then reopen the uploader modal. If the error persists and you are unable to resolve it, please reach out to your Meta representative.
  - vi. If you see the 'JOB\_NOT\_PROVISIONED\_ERROR' then please refer to [this section](#) for some ideas on how to resolve it.
  - vii. If you see the 'BUCKET\_CORS\_MISSING\_ERROR' then please refer to [this section](#) for some ideas on how to resolve it.
- c. S3 API option: Please visit Appendix [Semi-auto data ingestion/preparation](#) for more details on uploading events data to s3.
3. (optional) PL Synthetic testing
- a. While we wait for real data to accumulate, you/advertisers can leverage a “synthetic” lift study (e.g., all synthetic, fabricated data on both sides) to test the pipeline E2E (including AWS infra setup, PL binaries correctness and VPC connection with Meta side). It could provide you more streamlined onboarding experiences, enabling the faster feedback loop to flag errors along the pipeline. Please reach out to your Meta representative for more details

## Step 4: Private Computation Runs

### [WIP] Prerequisites

#### Step 1: Check config before running computation (5 mins)

1. Open CAPI API Gateway Shell: <https://<capig.instance.url>/hub/shell>
2. Run the following commands
  - a. config read Kinesis

- Expected values:

```
{
  "PUBLISH_TO_KINESIS" : true,
  "BATCH_PUBLISH_PERIOD" : 1000,
  "BATCHING_ENABLED" : true,
  "FIREHOSE_DELIVERY_STREAM_NAME" :
  "cb-data-ingestion-stream-<TAG>",
  "AWS_REGION" : "<AWS REGION>"
}
```

For AWS\_REGION, it should be lower case and format like “us-west-2”

- b. config read Athena

- Expected values:

```
{
  "AWS_REGION" : "<AWS REGION>",
  "CATALOG_NAME" : "AwsDataCatalog",
  "DATABASE_NAME" : "mpc-events-db-<TAG>",
  "TABLE_NAME" : "fb_pc_data_<TAG WITH UNDERSCORE>",
  "QUERY_RESULTS_S3_BUCKET_PATH" :
  "s3://fb-pc-data-<TAG>/query-results/",
  "ID_FIELDS" : "user_data.device_id,user_data.email"
  "USE_MULTIKEY" : false,
  "MULTIKEY_ID_FIELDS": "user_data.device_id|id_device_id,user_data.em
ail|id_email,user_data.processed_client_ip_address|id_ip"
}
```

- For AWS\_REGION, it should be lower case and format like “us-west-2”
- For ID\_FIELDS
  - If your data only has email PII data. Please update the ID\_FIELDS to email only with following command
    - config write Athena /ID\_FIELDS "user\_data.email"
  - If your data only has device\_id PII data. Please update the ID\_FIELDS to device\_id only with following command
    - config write Athena /ID\_FIELDS "user\_data.device\_id"
- c. config read CloudResources
  - Expected value for a new deployment:



```
{ "AWS_ACCESS_KEY" : "",
  "AWS_SECRET_KEY" : "",
  "AWS_SESSION_TOKEN" : "",
  "CONFIG_FILE_S3" :
"s3://fb-pc-config-<TAG>/config.yml",
  "IMAGE_TAG" : "latest",
  "USE_IAM_USER_AUTH" : false
}
```

■ Expected value for an older deployment:

```
{ "AWS_ACCESS_KEY" : "<YOUR AWS ACCESS KEY>",
  "AWS_SECRET_KEY" : "<YOUR AWS SECRET KEY>",
  "AWS_SESSION_TOKEN" : "",
  "CONFIG_FILE_S3" :
"s3://fb-pc-config-<TAG>/config.yml",
  "IMAGE_TAG" : "latest",
  "USE_IAM_USER_AUTH" : false
}
```

To enable the data ingestion to S3 using CAPIG, please complete below steps:

- Open CAPI API Gateway Shell: <https://<capig.instance.url>/hub/shell>
  - Run the following update commands after updating the placeholders (AWS access key and AWS secret key):
    - `config write CloudResources /AWS_ACCESS_KEY "<Your aws_access_key_id>"`
    - `config write CloudResources /AWS_SECRET_KEY "<Your aws_secret_access_key>"`
- **Note:** The AWS access key and secret key needs either: admin-level access to all AWS services, or a minimal set of necessary permissions (see [A3](#) for more details)

## Step 2: (optional) automate diagnostic data sharing with Meta

To help clients better troubleshoot issues and improve the product, it's highly recommended to opt-in for diagnostic data sharing with Meta. It will automatically upload logs to Meta within 5 minutes after a completed (either success or failed) run. No customer data (e.g., user identities, pixel events) will be included in the collected diagnostic data, and the retention days is 30-day maximum, with access controlled. Note that:

- Only for the Private Lift. We will add support for Private Attribution later.
- Logs collection won't happen if the computation run failed to start, e.g., due to invalid AWS credentials assigned to config values, failure in input data preparation.

### Steps

- Go to CAPI-G Shell: <https://<capig.instance.url>/hub/shell>

- Run the following commands:
  - `config write pclogs /ENABLE_AUTO_UPLOAD true`
  - `config write pclogs /UPLOAD_LOGS_FROM_SUCCESS_RUN true`
- To double check it succeeded:
  - Run the following commands:
    - `config read pclogs`
  - Expected value:

```
{ "ENABLE_AUTO_UPLOAD" : true,  
  "UPLOAD_LOGS_FROM_SUCCESS_RUN" : true}
```

- Make sure the following section is in the account policies to enable collection of diagnostic data, and add the section if it does not already exist. Here are the [instructions](#) on how to ensure that the required permission exists.

```
{  
  "Action": [  
    "logs:*"  
  ],  
  "Effect": "Allow",  
  "Resource": "*"   
},
```

More details can be found in [A6: Sharing diagnostic data with Meta](#).

Now you are ready to use Private Computation products. Follow the section below to run [Private Lift](#), or go to [this section](#) to run Private Attribution.

## Private Lift

### Step 1: Run Private Lift Computation (15 mins)

- Go to Lift Report UI (sample URL:  
`https://business.facebook.com/ads/lift/report/?ad_study_id=<your ad_study_id>`) and select a MPC Conversion objective
  - replace `<your ad_study_id>` with your own study id

private\_lift\_test\_10\_11\_2022  
 ● Active • Results as of Oct 11, 2022 • Oct 11, 2022 - Nov 9, 2022


Update Results Export

**Objectives**

- ★ Purchase PL  
MPC Conversion

**Test Results** ⓘ Test Information

This objective contains metrics that may be **estimated**



**Lift Test Started**  
No Results Available Yet

**Test Details**

This data is the observed result of your lift test. ⓘ

Group	Group Size	Conversions
Test Group	--	--
Scaled Control Group	--	--
Exposed to Ads	--	--
Not Exposed to Ads	--	--

- Click on “Update Results”. A new window will pop-up, enter your Conversions API Gateway instance url here and click on “Go to Gateway”.

private\_lift\_test\_10\_11\_2022  
 ● Active • Results as of Oct 11, 2022 • Oct 11, 2022 - Nov 9, 2022

Update Results Export

**Objectives**

- ★ Purchase PL  
MPC Conversion

**Test Results** ⓘ Test Information

This objective contains metrics that may be **estimated**

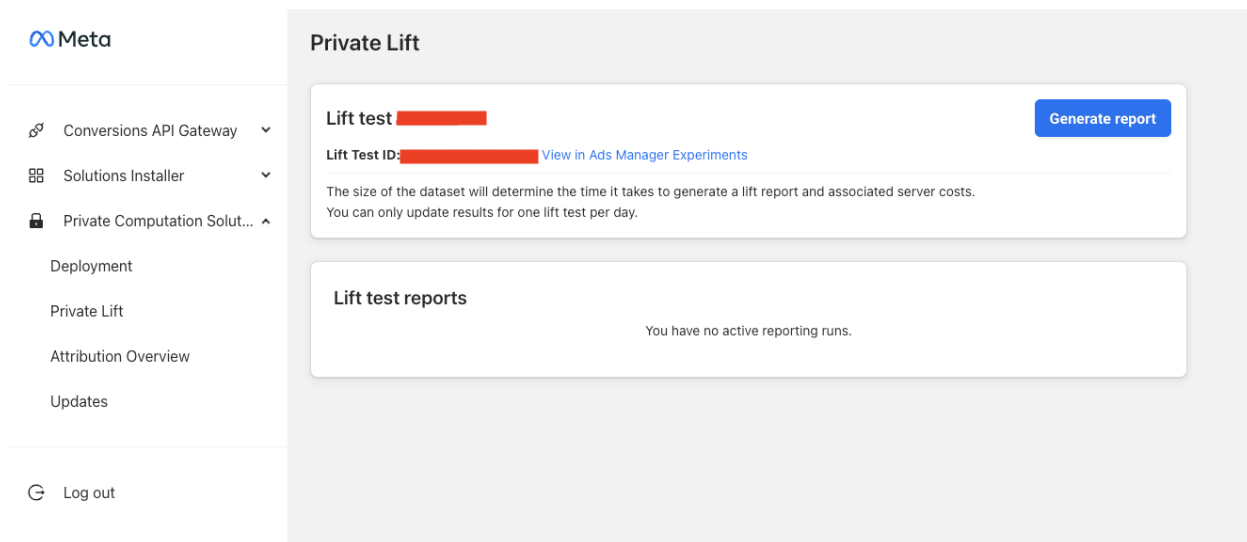
**Update Private Computation Lift Results** ×

To update results for this Lift test, you'll need to login to CAPI Gateway and update results from within that environment. You can only run one calculation per test per day, and updated results will appear in the test results on the following day.

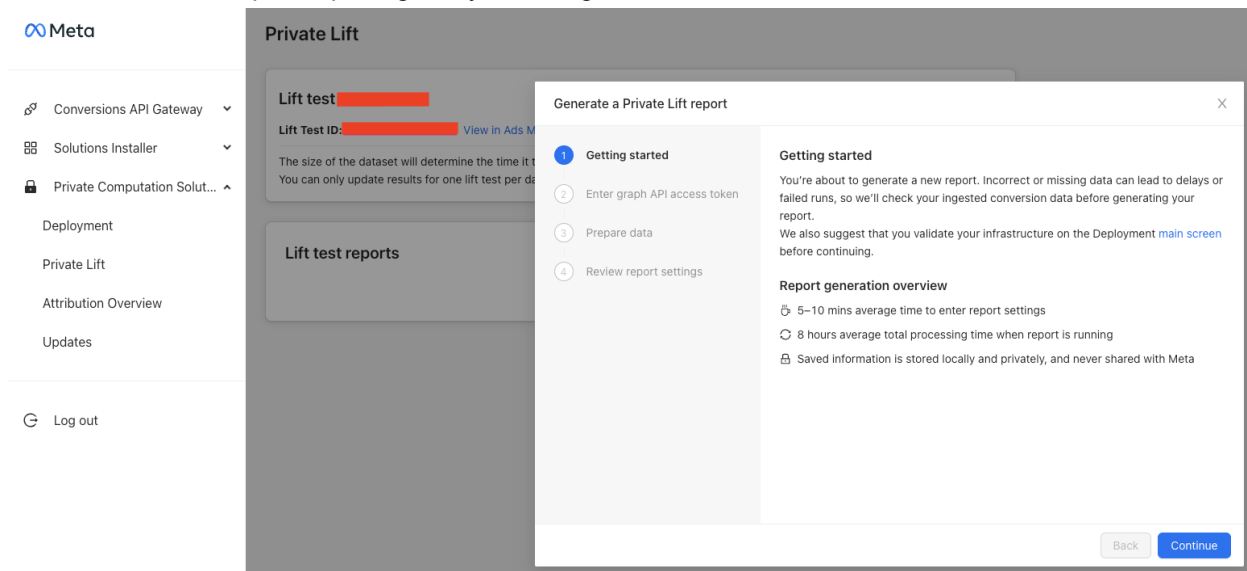
CAPI Gateway URL

Go to Gateway

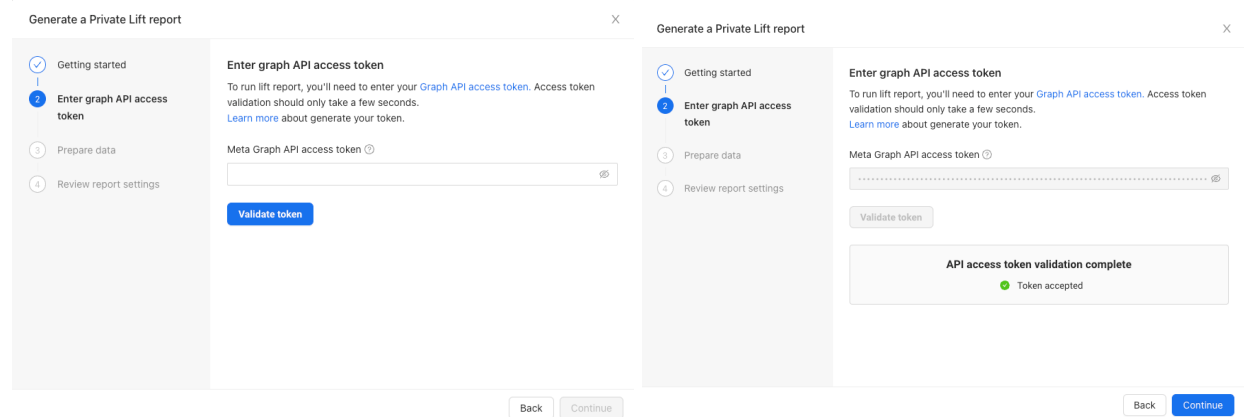
- You are now re-directed back to CAPI Gateway. To start the computation, click on “Update Results”.
  - Format: `https://<capig.instance.url>/hub/pcs/calculation/<your ad_study_id>/<your ad_study_name>`
- Enter the following URL and click on “Go to Gateway”.



- To proceed, click “Generate report” to launch a pop-up window with instructions and multiple steps to guide you through.



- After reading the instructions and basic info on “Getting started” step, click “Continue” to go to the next step



- Enter the Graph API token generated in [Step 2](#) and click on “Validate token”. Once the token is validated, click “Continue”.

The image shows two side-by-side screenshots of the 'Generate a Private Lift report' interface. The left screenshot shows the 'Prepare data' step with a 'Prepare Data' button. The right screenshot shows the 'Data preparation complete' message.

Generate a Private Lift report

Getting started

Enter graph API access token

3 Prepare data

4 Review report settings

Prepare data

In this step, we'll confirm you have enough data for a successful run and generate a CSV file that is stored in your cloud infrastructure.

It usually takes about 5–10 minutes to complete this step.

Prepare Data

Generate a Private Lift report

Getting started

Enter graph API access token

3 Prepare data

4 Review report settings

Prepare Data

Data preparation complete

Data is ready to generate your Private lift report

Back Continue

- Click “Prepare Data” to confirm if enough data has been ingested for a successful run, and generate a CSV file that is stored in S3 data ingestion bucket. Once data preparation completes, click “Continue”.

The image shows a screenshot of the 'Review report settings' step in the 'Generate a Private Lift report' interface. It shows a summary of the lift test name, ID, and validation status, along with data preparation details.

Generate a Private Lift report

Getting started

Enter graph API access token

Prepare data

4 Review report settings

Review report settings

You've completed all necessary steps and you are now ready to generate your report.

Lift test name

Lift Test ID: [REDACTED]

This lift test contains 1 MPC objective

Graph API access token validated

Validated at 13:45:46 GMT-0800 (Pacific Standard Time)

Data prepared

[REDACTED] Objective ID: [REDACTED] data prepared.

- Completed at 13:46:01 GMT-0800 (Pacific Standard Time).
- Data source ID: [REDACTED]
- S3 path: https://fb-pc-data-[REDACTED].s3.us-west-2.amazonaws.com/query-results-[REDACTED].csv

Back Generate report

- After reviewing the Private Lift report settings, access token validation, and data preparation results, if everything looks good, click “Generate report” to start generating the Private Lift report. Please note that computation will run for approx 3 - 6 hours (at most 24 hours) before completion.
- Once the computation begins, logs will be printed to output.txt in your S3 bucket under the directory `<data`

`bucket>/query-results/fbps_instances_<studyId>_<postfix>`. This will be a key resource to monitor and use for debugging purposes in case any issue occurs.

## Step 2: View Private Lift Results

- After the computation is complete, click on “View Results” to navigate to Lift UI. It can take up to 2 days for the results to populate.

The screenshot displays the Meta Private Lift interface. On the left is a sidebar with the Meta logo and navigation links: Conversions API Gateway, Solutions Installer, Private Computation Solut..., Deployment, Private Lift, Attribution Overview, and Updates. The main content area is titled 'Private Lift' and contains three sections. The first section, 'Lift test', shows a redacted lift test ID and a 'Generate report' button. Below this, a note states: 'The size of the dataset will determine the time it takes to generate a lift report and associated server costs. You can only update results for one lift test per day.' The second section, 'Lift test reports', indicates 'You have no active reporting runs.' The third section, 'Report History', shows a single report run that started on Nov 7, 2022 at 6:25 PM and ended at 7:19 PM, with a run time of 0 hours 54 minutes. A 'View results' button is present next to the run details. A green success message states: 'Computation succeeded. The result will be available within 48 hours after the computation is finished. Detailed computation logs are archived and uploaded to S3 path: s3://fb-pc-data-[redacted]logging/'.

**Private Lift**

**Lift test** [redacted] [Generate report](#)

**Lift Test ID** [redacted] [in Ads Manager Experiments](#)

The size of the dataset will determine the time it takes to generate a lift report and associated server costs.  
You can only update results for one lift test per day.

**Lift test reports**

You have no active reporting runs.

**Report History**

Run started on Nov 7, 2022 6:25 PM  
**Run ended on Nov 7, 2022 7:19 PM**  
Run time: 0 hours 54 minutes [View results](#)

✓ Computation succeeded.  
The result will be available within 48 hours after the computation is finished. Detailed computation logs are archived and uploaded to S3 path: s3://fb-pc-data-[redacted]logging/.

# Private Attribution

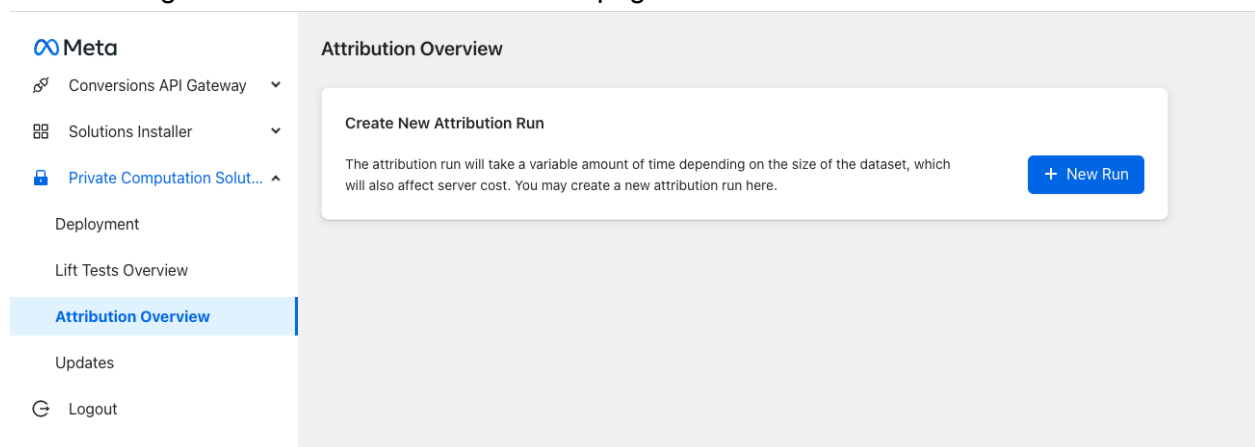
## Step 0: Preparation

Request the following information if your Meta representative hasn't provided them to you:

- Dataset Id

## Step 1: Run Private Attribution Computation (30 mins)

- Login to your CAPI Gateway instance.
- Navigate to the “Attribution Overview” page.



- Click the “New Run” button, and a dialog will appear.

Create a New Attribution Run

X

\* Graph API Access Token

Please enter Graph API Access Token

\* Dataset ID

Please enter Dataset Id

🔍 Load Available Date

\* Select Available Date

\* Data Source ID

Please enter data source Id

\* Event Type ⓘ

Please enter event type

Event type is case sensitive e.g. AddPaymentInfo

Start Data Preparation

Advanced settings

◀

Reset

Submit

- Enter the Graph API token generated in [Step 2](#), and the Dataset Id you get from your Meta representative.
- Click the “Load Available Date”.
- Choose any date from the “Select Available Date” dropdown list. If you don’t know which one to choose, use the latest one or ask your Meta representative.
- Enter the “Data Source Id” and “Event Type”. If you don’t know what the correct values should be, ask your Meta representative.



- Click the “Start Data Preparation”.

Create a New Attribution Run

X

\* Graph API Access Token

\* Dataset ID

Q Load Available Date

\* Select Available Date

\* Data Source ID

Please enter data source Id

\* Event Type ⓘ

Please enter event type

Event type is case sensitive e.g. AddPaymentInfo

Start Data Preparation

Advanced settings

▼

\* Concurrency Num

4

▼

\* Num files Per MPC Container

4

▼

Reset

Submit

- Wait until it shows “SUCCEEDED”.

- Click the “Submit” button.

Data Preparation Status:

Created At	Updated At	Status
2022-09-30T22:32:19	2022-09-30T22:32:08	• SUCCEEDED
S3 path		Error message (if any)
<div></div>		N/A

Advanced settings

Reset

Submit

- Once the computation begins, logs will be printed to output.txt in your S3 bucket under the directory `<data bucket>/query-results/fbpcs_instances_<dataset id>_<dataset timestamp>_<postfix>`. This will be a key resource to monitor and use for debugging purposes in case any issue occurs.

## Step 2: View Private Attribution Results

Ask your Meta representative for the results.

# Appendix

## A1: Semi-auto data ingestion/preparation

Github [URL](#)

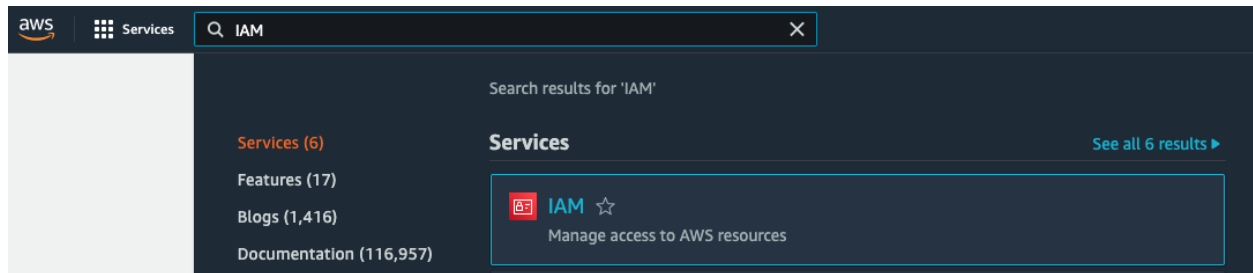
## A2: How to set “canary” tier

Sometimes Meta would like you to run on the “canary” tier. Here is how you can set it up.

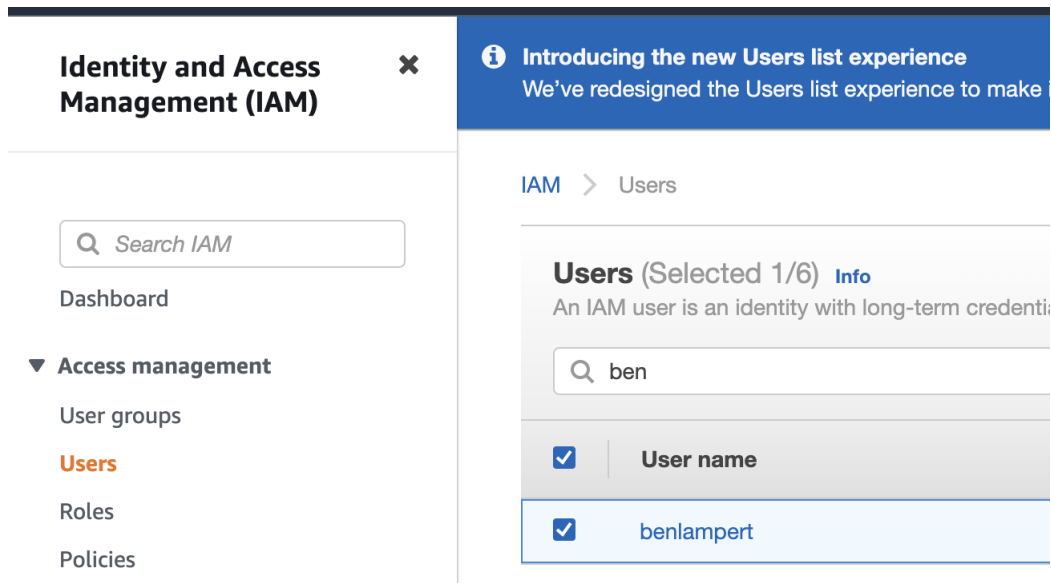
1. Open CAPI API Gateway Shell: `https://<capig.instance.url>/hub/shell`
2. Run the following update commands:
  - a. `config write CloudResources /IMAGE_TAG canary`

## A3: Configure an AWS IAM user with minimal permissions for future computation after initial infra deployment

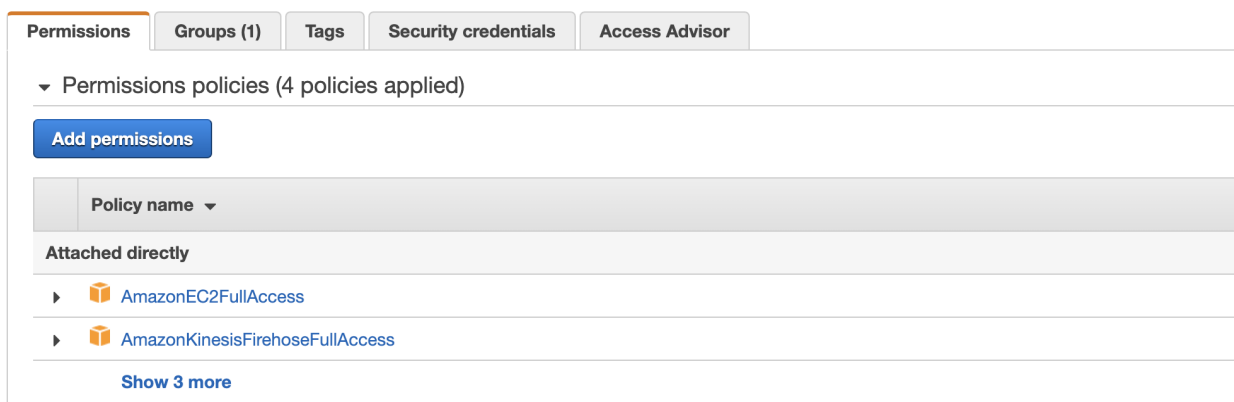
- a. Open your AWS account and enter IAM component



- b. Select an AWS IAM user, either create an user or re-use an existing one.



- c. Enter into user page and click “add permissions”



- d. Attach the “fb-pc-policy-<tag>” policy to the user.

## Add permissions to benlampert

1 2

### Grant permissions

Use IAM policies to grant permissions. You can assign an existing policy or create a new one.

 Add user to group

 Copy permissions from existing user

 Attach existing policies directly

Create policy

Filter policies  Showing 12 results

	Policy name	Type	Used as
<input type="checkbox"/>	<a href="#">fb-pc-policy-ble2e-3baz</a>	Customer managed	None

- Add permission.
- Then you could generate the access\_key and Secret\_key for this user to fill in the next step in cloudbridge.

## A4: Data Migration

Github [URL](#).

## A5: Ad-hoc system diagnosis

System diagnosis is a way to validate your deployed infrastructure completeness and connectedness (including VPC peering) before we kick off any computation runs.

Once you have completed the AWS infrastructure deployment, you shall see a summary page. Under the deployment summary page a new section is added for validating infrastructure dynamically as show below:

The screenshot displays the Meta Private Computation Solutions interface. On the left is a sidebar with navigation links: 'Conversions API Gateway', 'Solutions Installer', 'Private Computation Solut...', 'Deployment' (highlighted), 'Private Lift', 'Attribution Overview', and 'Updates'. At the bottom of the sidebar is a 'Log out' button. The main content area is titled 'Environment' and features a 'Latest Deployment' section. This section includes a progress bar at 100% and a green checkmark icon. Below the progress bar, the status is 'COMPLETED'. Other details include: 'VPC peering setup' (Completed), 'Amazon Web Services Region' (us-west-2), 'Your Amazon Web Services Account ID' (redacted), 'Publisher (FB) VPC ID' (vpc-[redacted]), 'S3 Data Ingestion Bucket' (Data Ingestion Bucket), 'Deployment Start Time' (Monday November 7th 2022, 4:42:51 pm), 'Total Time Taken' (4 minutes, 51 seconds), 'Deployment Tag' (redacted), 'Publisher (FB) Account ID' (redacted), 'S3 Config Bucket' (Config Bucket), and 'Allow Manual Event Upload' (Yes). There is an 'Upload events' button and an 'Allow Pixel Data to Route to Meta' (Yes) toggle. At the bottom of the 'Latest Deployment' section are 'Undeploy' and 'Download Log' buttons. Below this is a 'System diagnostics' section with a description and a 'Run system diagnostics' button.

**Environment**

**Latest Deployment** Undeploy Download Log

Progress: 100% ✓

**Status**  
COMPLETED ✓

**VPC peering setup**  
✓ Completed

**Amazon Web Services Region**  
us-west-2

**Your Amazon Web Services Account ID**  
[Redacted]

**Publisher (FB) VPC ID**  
vpc-[Redacted]

**S3 Data Ingestion Bucket**  
[Data Ingestion Bucket](#)

**Deployment Start Time**  
Monday November 7th 2022, 4:42:51 pm

**Total Time Taken**  
4 minutes, 51 seconds

**Deployment Tag**  
[Redacted]

**Publisher (FB) Account ID**  
[Redacted]

**S3 Config Bucket**  
[Config Bucket](#)

**Allow Manual Event Upload**  
Yes

Upload events

**Allow Pixel Data to Route to Meta**  
Yes

**System diagnostics**

System diagnostics can help you detect and troubleshoot issues with Private Computation deployment.

Run system diagnostics

Click *run system diagnostics* and provide AWS admin-level credentials to continue.  
If the system diagnosis finished successfully, you will see the following result:

The screenshot shows the 'System diagnostics' result page. It features the same sidebar as the previous screenshot. The main content area is titled 'System diagnostics' and contains the text: 'System diagnostics can help you detect and troubleshoot issues with Private Computation deployment.' Below this text is a 'Run system diagnostics' button.

**System diagnostics**

System diagnostics can help you detect and troubleshoot issues with Private Computation deployment.

Run system diagnostics

In case of any failure, you will see a download button to download logs, which you can then share to Meta to further help in debugging.

## A6: Sharing diagnostic data with Meta

For a partner to help Meta troubleshoot issues and improve the product, you can send diagnostic data to Meta either [manually](#) or [automatically](#). No customer data (e.g., user identities, pixel events) will be included in the collected diagnostic data.

Limitations for automatic collection of diagnostic data:

- Currently only for Private Lift on top of the CAPI-G Computation UI.
- Logs collection happens at the end of a computation run.
- Logs collection won't happen if the computation run failed to start, e.g., due to invalid AWS credentials assigned to config values, failure in input data preparation.

### Manual sharing with Meta

The diagnostic data is always collected automatically after every study run completes (with success or failure), and is saved to two locations in the S3 bucket used for input data, in the advertiser's cloud account:

- In the folder `s3://fb-pc-data-<ENVIRONMENT_TAG>/logging/`. Log archive file is like `logs_20221105T044117.481056Z_study-14827452455_run-12.zip`. The archive file contains multiple logs from: `output.txt` (i.e. coordinator logs), worker containers, data pipeline (Athena, Kinesis, Glue, Crawler).
- In the folder containing result data, e.g. `s3://fb-pc-data-<ENVIRONMENT_TAG>/query-results/fbps_instances_14827452455_12/`. Log files can be: `output.txt`, `job-debug.txt` and `download_logs_cli.txt`. `Output.txt` is the same as in the above archive file. The other two files help debugging the logs collection and uploading.

Note: make sure the required section to allow access log resources is in the account policies.

When you want to share the diagnostic data to Meta manually, you can download the logs archive file, which is the comprehensive and most helpful, and share with Meta.

### Automatic sharing with Meta

To further reduce the support effort by partners and shorten the latency to retrieve the logs from a partner to Meta, Meta allows a partner to opt-in for automatically logs upload. After opt-in, above diagnostic data in the logs archive will be automatically uploaded to Meta within 5 minutes after a completed study run. In Meta, the diagnostics data will be kept for no longer than 30 days, and will be access controlled.

#### Steps

1. It is highly recommended for a partner to opt-in for automatic logs upload, by entering the following commands in the CAPIG Gateway shell:
  - Command: `config write pclogs /ENABLE_AUTO_UPLOAD true`

- This is the primary config. Its config value is false by default, and no diagnostic data is uploaded automatically. True value means the diagnostic data after a failure study run will be automatically uploaded to Meta. This will greatly help the Meta engineers to diagnose failed study runs.
- Command: `config write pclogs /UPLOAD_LOGS_FROM_SUCCESS_RUN true`
  - This is a secondary config. Its config value is false by default, and no diagnostic data is uploaded automatically after a successful study run. True value means the diagnostic data after a successful study run will be uploaded automatically, if the above primary config has true value. This will help the Meta engineers to diagnose successful study runs that produced unexpected results, i.e., bad content from seemingly successful computation.

The partner can change the above config values at any time. The changed config values only affect uploading of diagnostic data from future computation runs, and do not impact the completed computation runs.

## A7: How to enable Multi-key for Private Lift

To improve the performance and quality of matching, you can enable the multi-key feature (expected to 8 percent match rate increase, only support private lift at this moment).

1. Open CAPI API Gateway Shell: <https://<capig.instance.url>/hub/shell>
2. Run the following update commands:

b. `config write Athena /USE_MULTIKY true`

To disable (disabled by default) the multi-key feature, repeat the steps above but replace true with false:  
`config write Athena /USE_MULTIKY false`

## A8: [FYI] New Requirements on Graph API Access Token Permissions are Enforced

Back in June 2022, we updated instructions for generating GraphAPI token in [Step 2](#). The consolidated list of permissions (required for both PL and PA) are: ads\_management, ads\_read, business\_management, AND private\_computation\_access. We recommend you to cross-check the access token permission list, to ensure it has the full set of desired permission scopes. Here are the steps:

- Go to Access Token Debugger:  
<https://developers.facebook.com/tools/debug/accesstoken>
- Place access token in use into the input box, then click “Debug”
- Verify if all required permissions (ads\_management, ads\_read and business\_management, and private\_computation\_access) are listed in “Scopes”.

- If yes, no actions needed;
- If not, we'd recommend asking the advertiser to re-generate the long-lived access token per instructions in [Step 2](#). Once the new access token is ready, it should be good to go!

## A9: Advanced setting on infrastructure deployment page , on modal stepper “get VPC details from meta”

While deploying, if instructed by a meta representative ,you can use advance option in getting VPC details as shown below:

The screenshot displays the Meta deployment interface. On the left is a sidebar with the Meta logo and navigation links: 'Conversions API Gateway', 'Solutions Installer', 'Private Computation Solut...', 'Deployment' (highlighted), 'Private Lift', 'Attribution Overview', 'Updates', and 'Log out'. The main content area is titled 'Environment' and features a modal stepper for 'Deploy Private Computation environment'. The stepper has five steps: 1. Getting started, 2. Prepare VPC peering (active), 3. Provide AWS credentials, 4. Customize environment, and 5. Review and deploy. The 'Prepare VPC peering' step is expanded, showing a form with the following fields: 'Amazon Web Services Region' (a dropdown menu), 'Publisher (Meta) Account ID' (a text input field), and 'Publisher (Meta) VPC ID' (a text input field). Above these fields, there is a checkbox labeled 'Use advanced settings' which is checked, and a yellow warning box stating 'Only use advanced settings if you are instructed to do so by a Meta representative.' At the bottom right of the form are 'Back' and 'Continue' buttons.

- Please fill in the required fields and click on Next:  
**Amazon Web Services Region:** This is the AWS region where the resources would be deployed. It should be the same as the region used for Conversions API Gateway deployment. ( This region should also match the META side AWS region)  
**Publisher (Meta) Account ID:** Meta AWS Account number that is provided by META representative.  
**Publisher (Meta) VPC ID:** Meta VPC ID that is provided by a META representative.



## A10: How to retry a failed VPC peering connection during deployment.

In case of a failed VPC peering connection during infrastructure deployment, you should see a screen like below.

Latest Deployment

UndeployDownload Log

Progress: 100%

Status

COMPLETED

Deployment Start Time

Monday November 7th 2022, 12:27:05 pm

VPC peering setup

Failed - [Retry VPC peering](#)

Total Time Taken

9 minutes, 50 seconds

Amazon Web Services Region

us-west-2

Deployment Tag

Your Amazon Web Services Account ID

Publisher (FB) Account ID

Publisher (FB) VPC ID

vpc-

S3 Config Bucket

[Config Bucket](#)

S3 Data Ingestion Bucket

[Data Ingestion Bucket](#)

Allow Manual Event Upload

Yes

Upload events

Allow Pixel Data to Route to Meta

Yes

- Please click on the “retry VPC peering” button. You should see a pop-up window like below:

Retry Virtual Private Cloud (VPC) peering

×

Peer Meta VPC with your VPC to create a multi-party computation environment.

Amazon Web Service region  
us-west-2

Publisher (Meta) VPC ID  
vpc-XXXXXXXXXX

\* Meta business ID ?

\* Meta Graph API access token ?

Retry

Please input your business ID and graph API token obtained from [Step 2](#) which you would have obtained earlier, and click on retry.

If the VPC peering status still shows as failed, please contact META representative to further assist you.

## A11: How to resolve the JOB\_NOT\_PROVISIONED\_ERROR in the Events Uploader modal

If you see an error message that looks like this:

## Upload events for Private Computation



Error detected: JOB\_NOT\_PROVISIONED\_ERROR

The Events Loader job was not found. The policy permission may be missing or you may not have selected the semi-automated ingestion infrastructure option during deployment. Please refer to the playbook for information on how to proceed, or contact your Meta representative.

Close

Then check the following:

1. Go to the IAM AWS services page
2. Click on 'Policies'
3. Search for the deployed policy
  - a. It should look like `fb-pc-policy-<deploy\_tag>`
4. Click on '{} JSON'
5. Check if the policy has permission to access the 'glue-ETL-<deploy\_tag>' resource.
  - Search for glue-ETL on that page
6. The allowed Resource should look like the following:
  - "arn:aws:glue:us-west-2:0123456789:job/glue-ETL-deploytag123"

If this glue-ETL resource permission is missing, then:

7. Click on "Edit policy" -> "JSON"
8. Add this JSON block next to the other Statements (first replace the <> sections with your own deployment values)

```
{
  "Effect": "Allow",
  "Action": [
    "glue:Get*",
    "glue:BatchGet*",
    "glue:List*",
    "glue:QuerySchemaVersionMetadata",
    "glue:CheckSchemaVersionValidity",
    "glue:SearchTables"
  ],
  "Resource": [
    "arn:aws:glue:<region>:<your_AWS_account_id>:job/glue-ETL-<deploy_tag>"
  ]
}
```

```
}
```

- Example of Resource name:  
"arn:aws:glue:us-west-2:0123456789:job/glue-ETL-mydeployment-123"
- **Do not** update the existing "glue:\*" statement. Instead, add a new section with the above block.

9. Save the updated policy
10. Refresh the Deployment UI page
11. Open the Uploader modal and check if the problem has been resolved

## A12: How to resolve the BUCKET\_CORS\_MISSING\_ERROR in the Events Uploader modal

If you see this error in the Uploader modal:

Upload events for Private Computation

X

Error detected: BUCKET\_CORS\_MISSING\_ERROR

The data bucket is misconfigured and this instance origin cannot upload to it. Please refer to the playbook for instructions or contact your Meta representative.

Close

Then follow these instructions to resolve the error:

1. Open the Deployment UI at /hub/pcs/deployment
2. Click on the 'Data Ingestion Bucket' link
3. Click on the 'Permissions' tab
4. Scroll down to the 'Cross-origin resource sharing (CORS)' section
5. Click on 'Edit'
6. Paste this block into the CORS config section
  - a. Update the AllowedOrigins to be your EC2 instance's domain name

```
[  
  {  
    "AllowedHeaders": [],  
    "AllowedMethods": [  
      "PUT"  
    ],  
  },  
]
```

```
[
  {
    "AllowedOrigins": [
      "https://<sub.domain.com>"
    ],
    "ExposeHeaders": []
  }
]
```

7. Click on 'Save changes'
  - It should look similar to this:

**Cross-origin resource sharing (CORS)**  
The CORS configuration, written in JSON, defines a way for client web applications that are loaded in one domain to interact with resources in a different domain. [Learn more](#)

Edit

```
[
  {
    "AllowedHeaders": [],
    "AllowedMethods": [
      "PUT"
    ],
    "AllowedOrigins": [
      "https://sub.domain.com"
    ],
    "ExposeHeaders": []
  }
]
```

Copy

8. Refresh the Deployment UI page
9. Open the Uploader modal and check if the problem has been resolved

## A13 capi-g upgrade guideline and questions.

Q: What if I have an old instance of CAPIG where I have deployed infrastructure already, should I still see a VPC peering status on the deployment UI?

A: No, you would not. The previous VPC peering connection status will just get carry forward. So if the previous VPC peering connection was in pending state, either you could contact META representative to accept the connection request from META manually, or un-deploy and redeploy the infrastructure to avail the latest auto VPC peering feature.

## A14: Ensure that the logging permission exists

Check the following:

1. Go to the IAM AWS services page
2. Click on 'Policies'
3. Search for the deployed policy
  - a. It should look like `fb-pc-policy-<deploy\_tag>`
  - b. Click on '{} JSON'
4. Check if the policy has AWS CloudWatch permissions.
  - Search for **logs:\*** on that page
5. If the **logs:\*** permission is missing, continue to the next step
  - a. Otherwise, if the below permission already exists on the policy, then no further setup is required
6. Click on "Edit policy" -> "JSON"
7. Add this JSON block next to the other Statements

```
{  
  "Action": [  
    "logs:*"   
  ],  
  "Effect": "Allow",  
  "Resource": "*"   
},
```

8. Save the updated policy