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 products. 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 Private Computation Infrastructure 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. I**f 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: Private Computation Infrastructure Setup (1 Hour)

Configure AWS and Install Private Computation Infrastructure

1. Login to AWS console.
2. Click here to go to the Cloudformation stack creation page.
3. Select the AWS region where you want to install Private Computation Infrastructure.
4. Fill the subdomain (example: pl.your-domain.com), admin email, password and proceed with stack creation.
5. Select at least **t2.xlarge** instance type.
6. The creation process takes approximately 5 minutes, after which two outputs will be written to the "Outputs" tab for the new AWS instance. You will know it is done when the Status says: CREATE_COMPLETE in the Stack info Tab.
7. Once complete, go to the “Outputs” tab.
8. Take note of the IP under CallToAction, as you’ll need to add this as an A and AAAA name record for the subdomain you specified in step 4.
9. Take note of the ConversionsApiGatewayInstanceURL, which you’ll need to provision the Private Computation Infrastructure UI.

Configure Your DNS

Set up your DNS by accessing your DNS provider.

1. Add the IP address generated under CallToAction in the previous step as an A name record for the subdomain you’re using.
2. Add the subdomain you’ve defined in your Cloudformation step during the “**Configure AWS and Install**” process above.
3. Steps for this will vary depending on your partner, so please refer to their documentation if you have any problems completing this step.
4. Save your configuration.

Provisioning

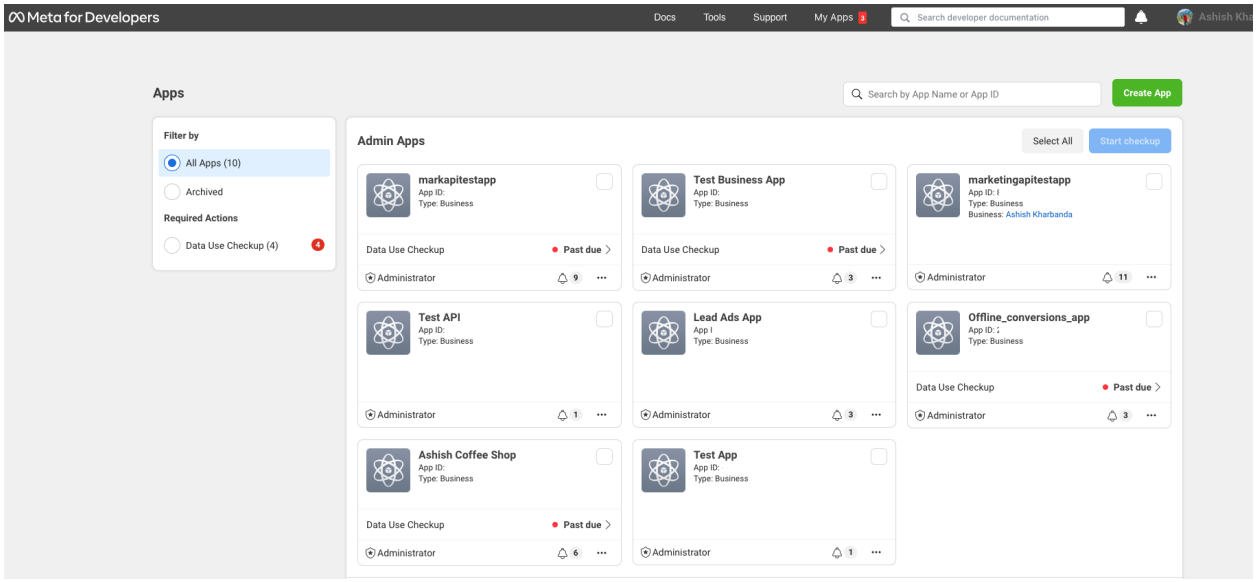
Next, refer to the ConversionsApiGatewayInstanceURL, and click on the URL.

1. A new webpage appears titled Conversions API Gateway is provisioning. This URL indicates that Private Computation Infrastructure is being installed.
2. Setup takes approximately 30 minutes, and then the Private Computation Infrastructure UI will be accessible.
3. You will get the message “provisioning finished” once setup is done.

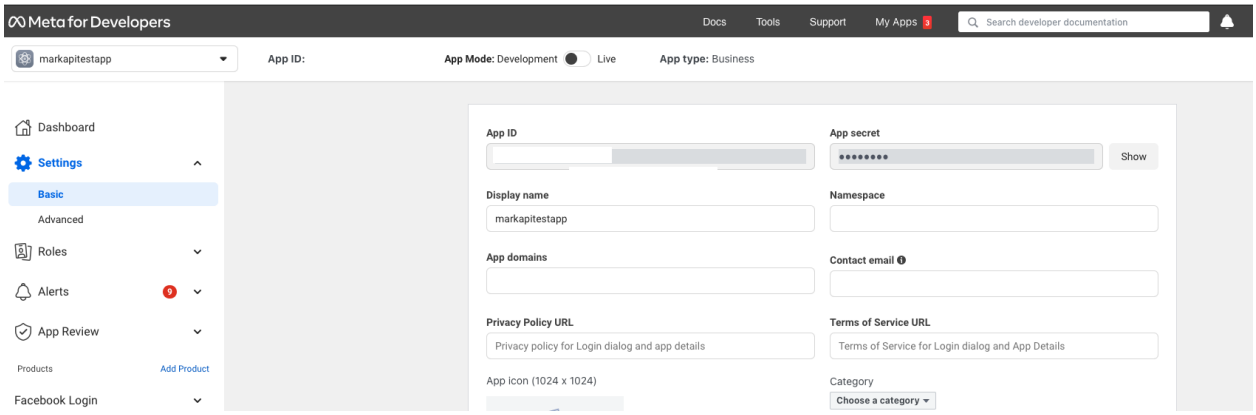
Step 2: Generating 60 days Access Token (10 Minutes)

You will need this token to perform various tasks during Private Computation deployment and while using Private Lift and Private Attribution products.

- Go to developers.facebook.com/apps and select the app that you want to use.

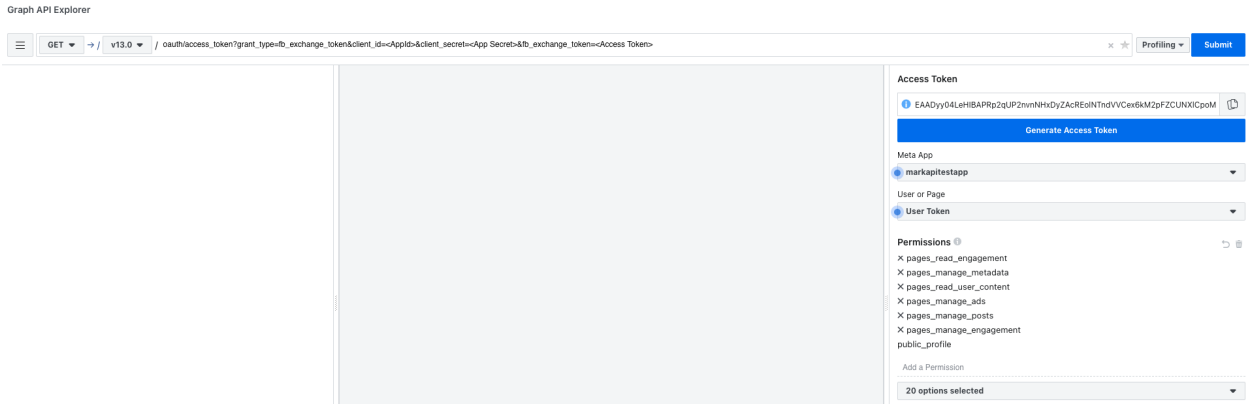


- Navigate to Settings → Basic. Click on “Show” near app secret and copy both App ID and App Secret.

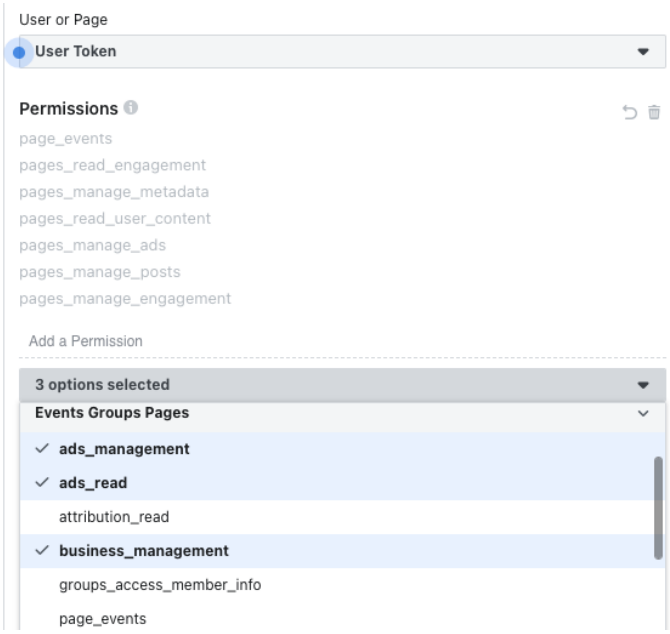


- Go to https://developers.facebook.com/tools/explorer
- In the GET request enter:
  `oauth/access_token?grant_type=fb_exchange_token&client_id=<AppId>&client_secret=<App Secret>&fb_exchange_token=<Access Token>`

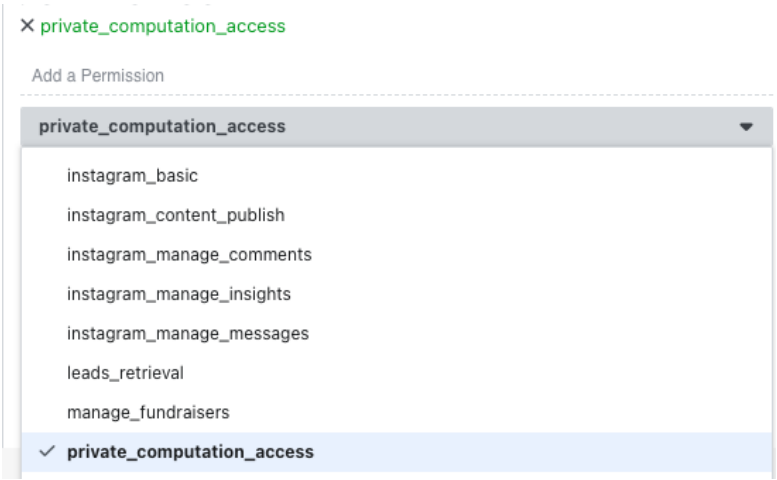
  Replace <AppId> and <App Secret> with the values copied in the previous step. Also replace the <Access Token> with the Access Token on the screen in the right corner (see below).



- 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**



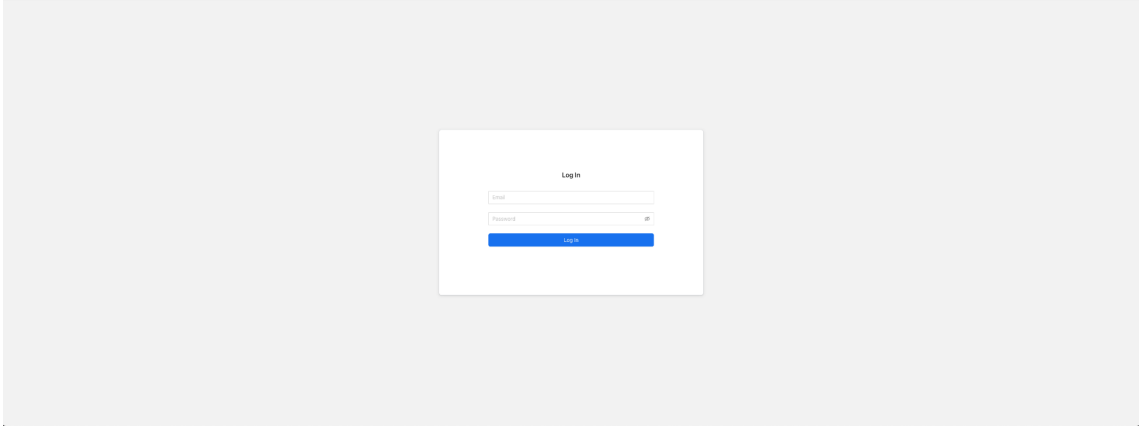
    - → Other→ Select **private_computation_access**.



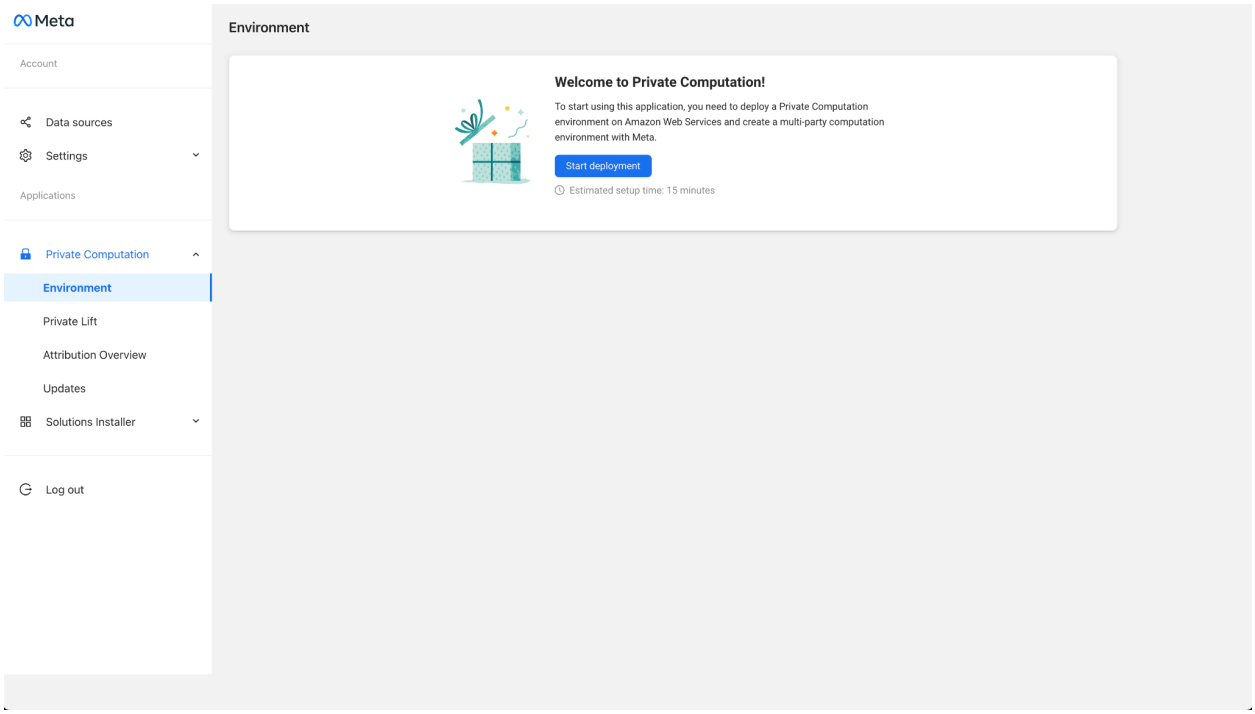
- Click on Submit Button and copy the access_token received in the response.
    - Please carefully store this token.

Step 3: Private Computation Environment Setup (30 Minutes)

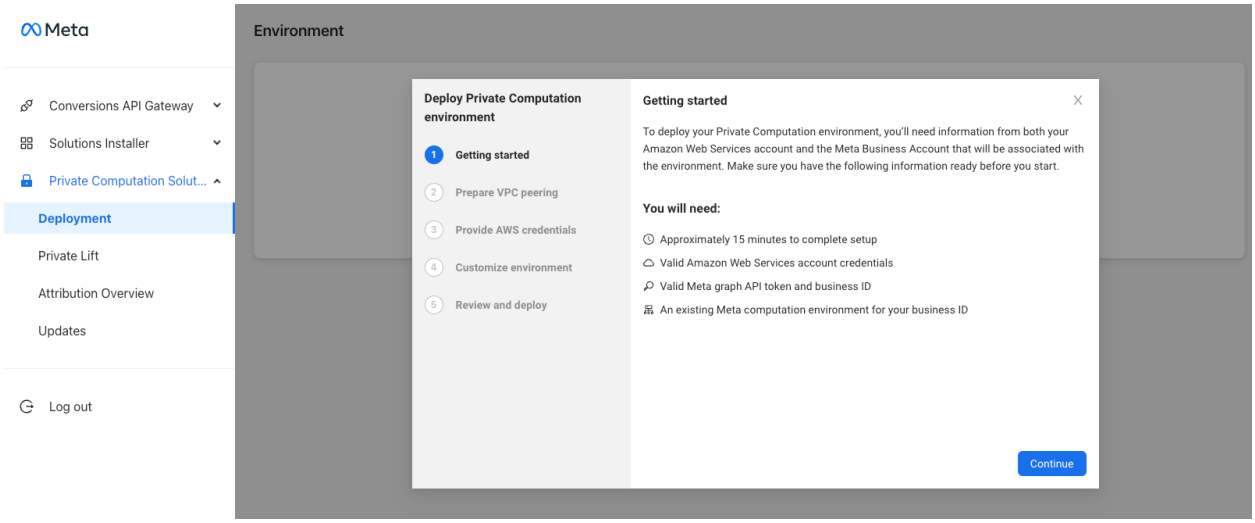
- Navigate to `https://<private-computation-infrastructure.instance.url>/hub/ui`. You should see the following window:



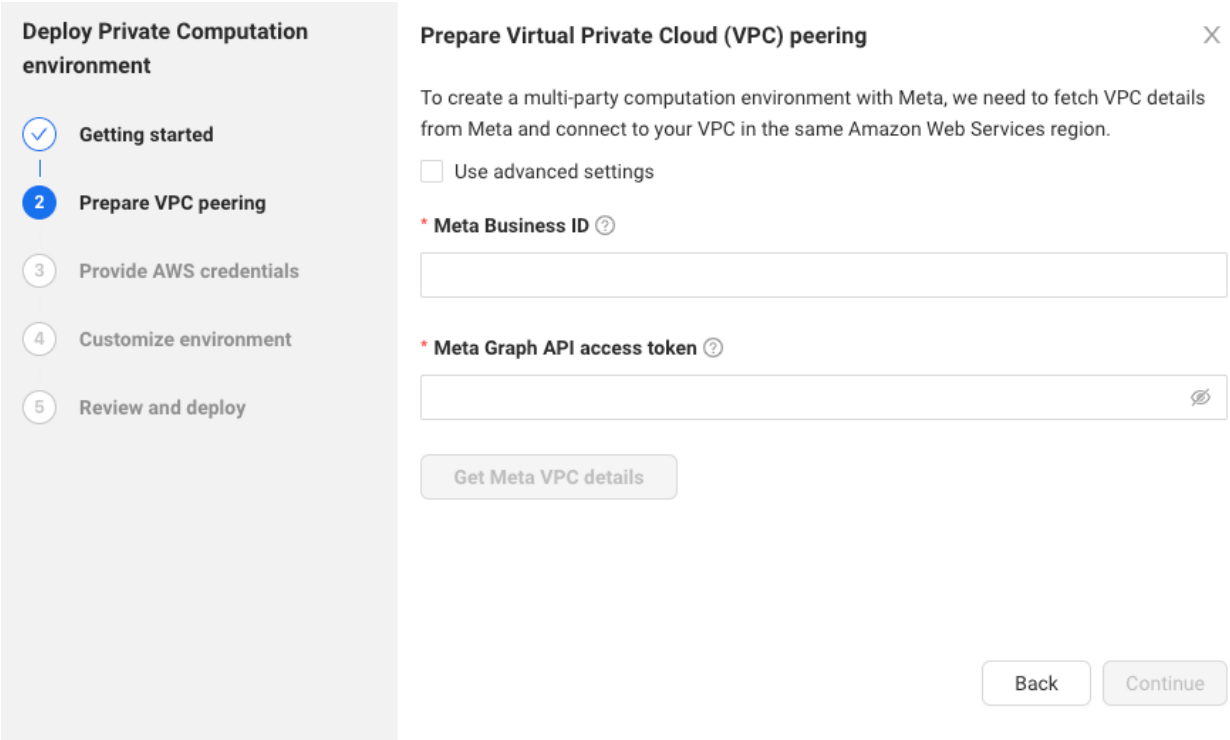
- Enter the credentials and login.
- Navigate to the Deployment Menu and click Start deployment.



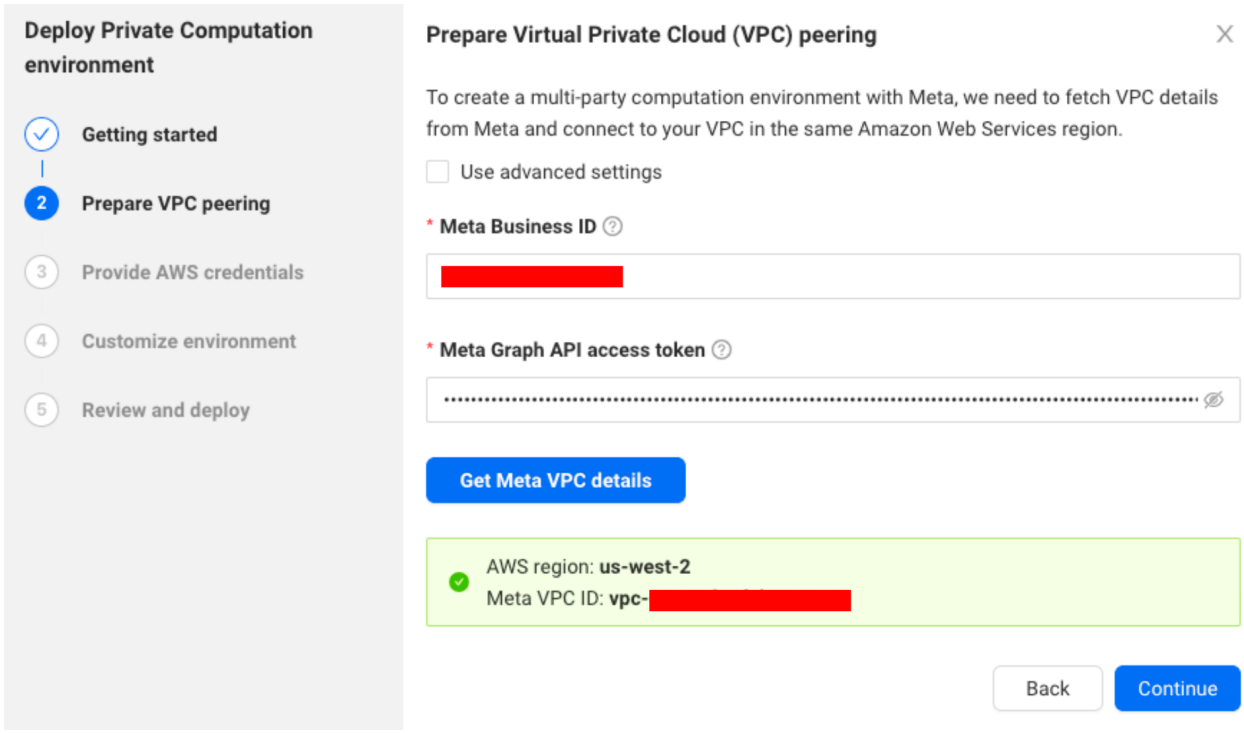
- A modal will pop up, and the screen will show on what you would require to have to complete the deployment



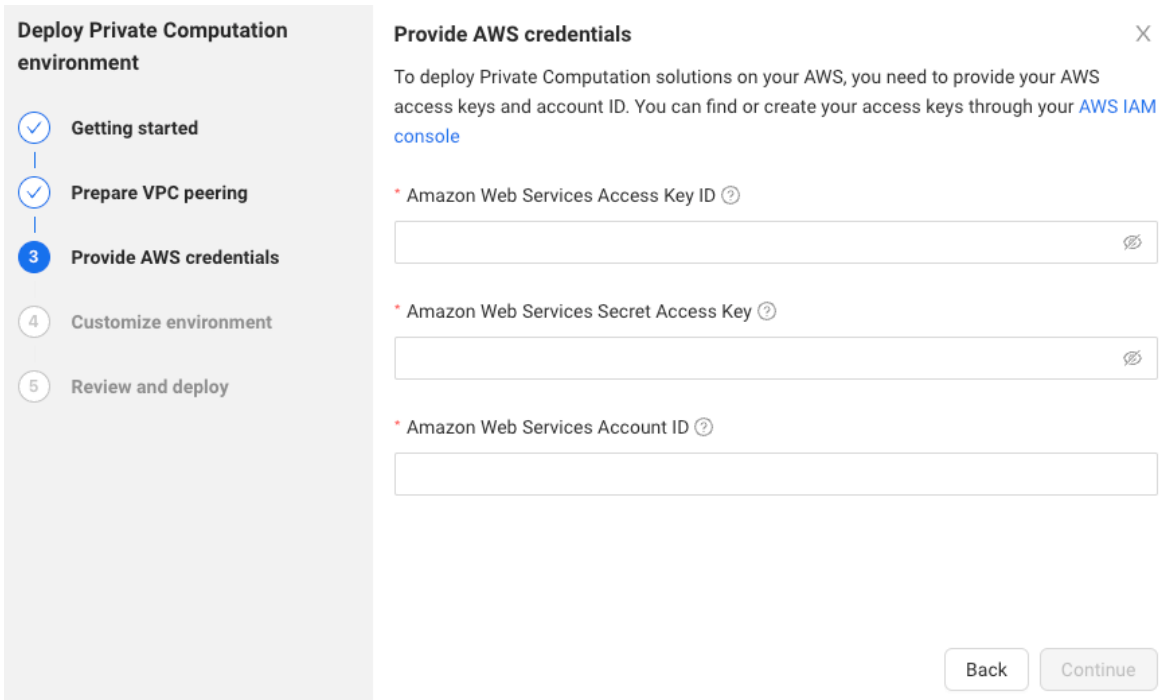
- Click continue, and go to the next step. You should see a screen that looks like below:



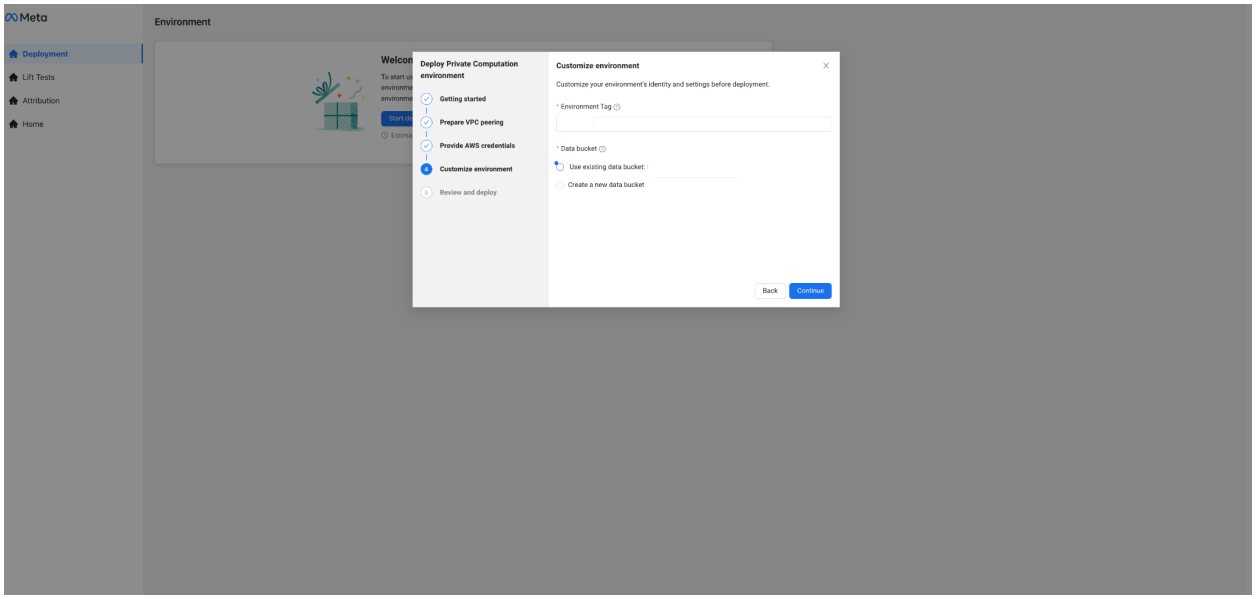
- Enter your business id, and the Graph API token generated in Step 2. Then click the button “Get Meta VPC details” the AWS region and peered Meta-side VPC ID should pop-up (as a reference).
- Note: Please Only click “use advanced settings” if advised by a META representative. The advanced settings option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



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

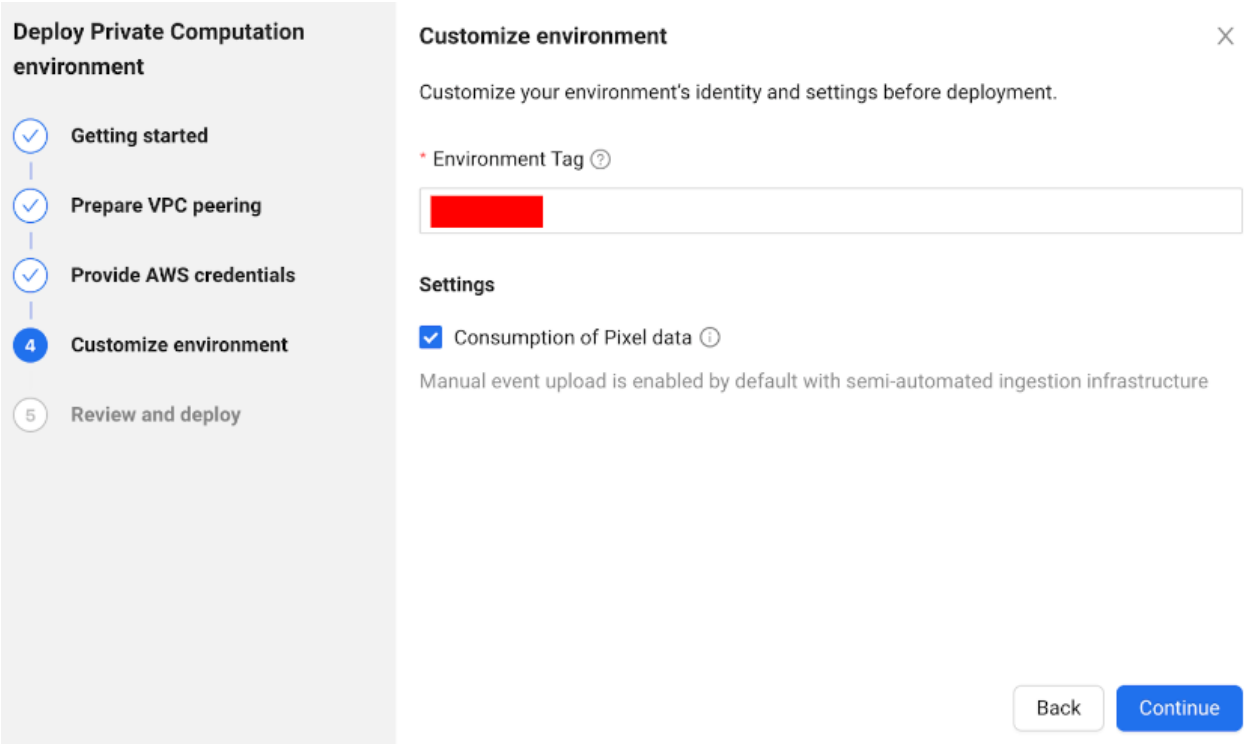


- Enter AWS Access Key ID and Secret Access Key, your AWS account ID and click on continue. These credentials should have admin access to create new components - S3 Buckets, Kinesis, VPC, Subnets, ECS Clusters.



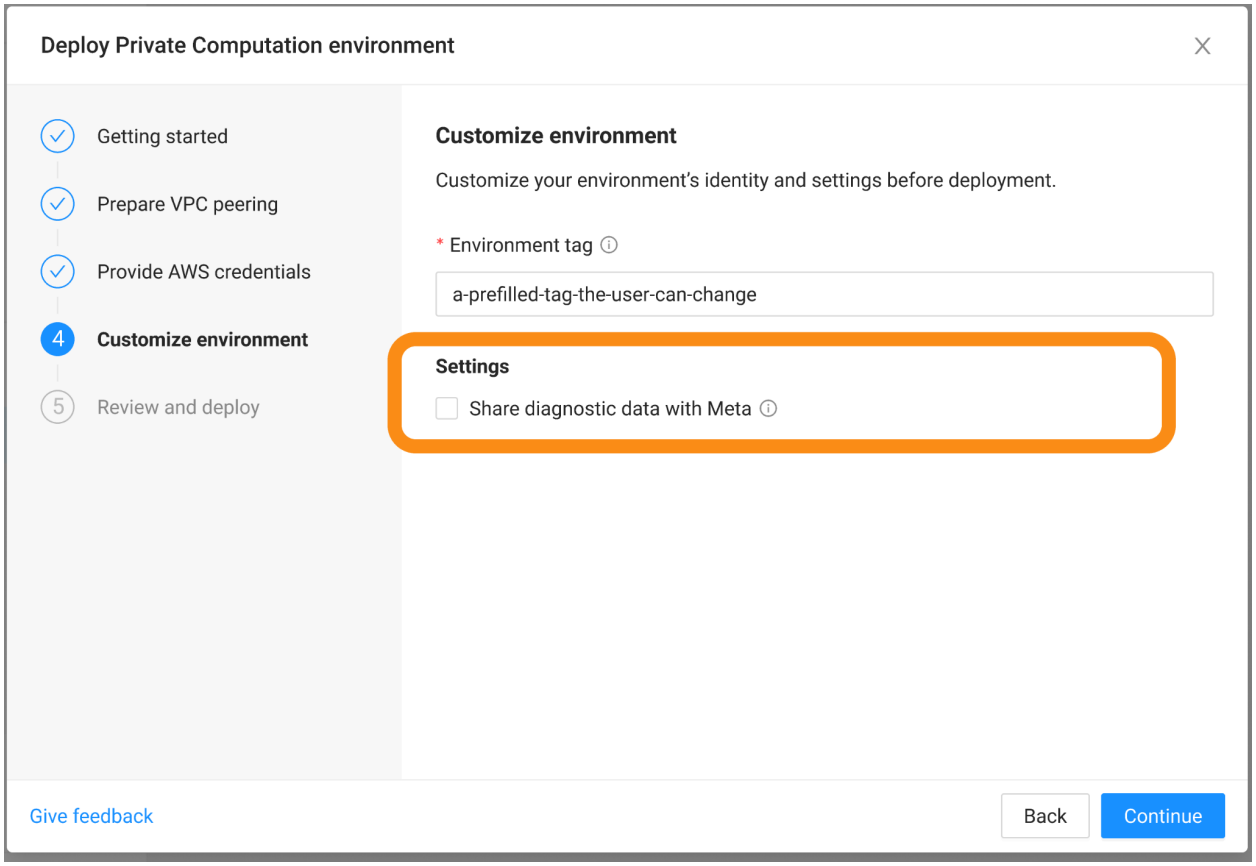
- In step 4, You can customize the environment. Please fill in the required fields and click on Next:
    - **Environment tag:** a string that will be appended to the name or tag of AWS resources to be created. It will be easier for you to identify which AWS resources are created. For ease, we have pre-generated 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:



Data Ingestion Settings:

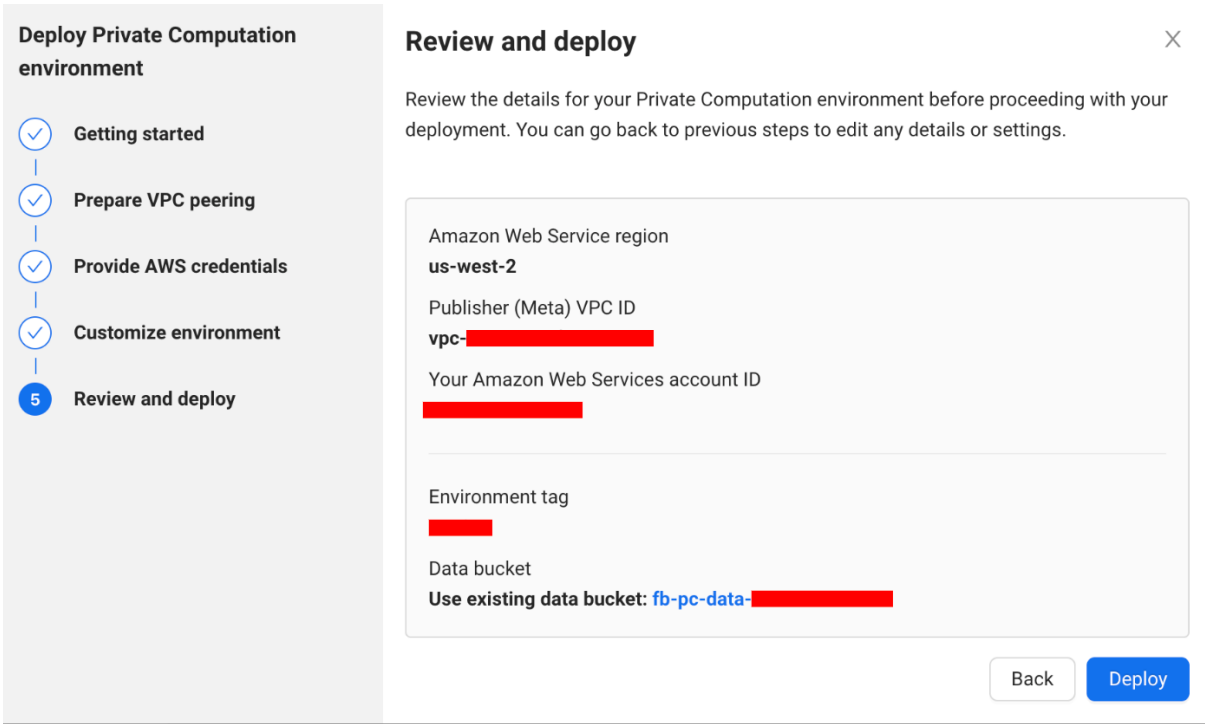
- We have enabled Manual event upload pipeline by default. This is required for using the Events Uploader modal.
- Toggle the checkbox “Consumption of Pixel data” if you don’t wish to send pixel events back to Meta as Conversions API events. If you already have Conversions API integration in place, or if you do not wish to forward your web pixel events as Conversions API events, you can toggle this button to off.



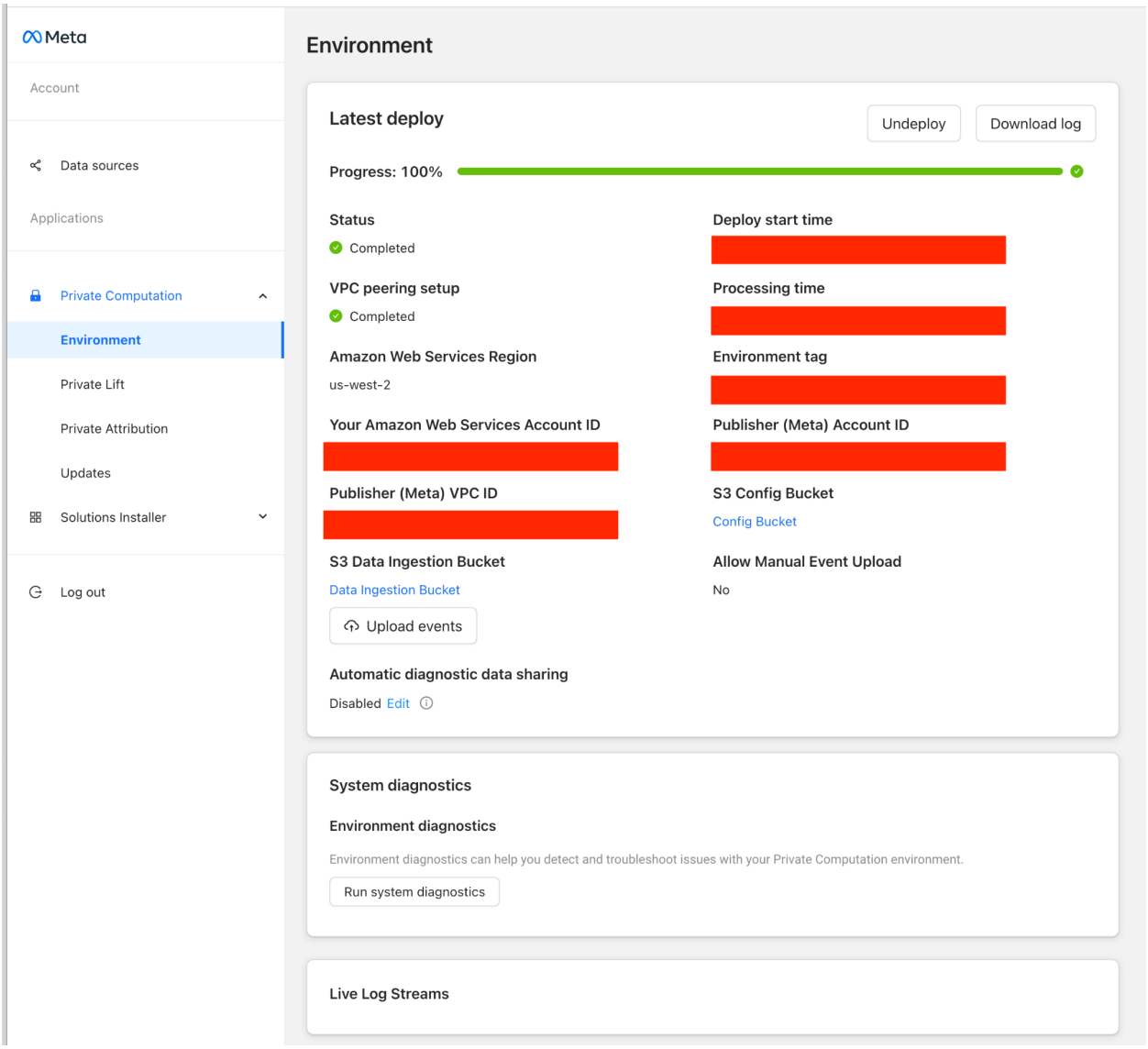
Share diagnostic data settings:

- To help clients better troubleshoot issues and improve the product, it's recommended to opt-in for diagnostic data sharing with Meta. When turned on, diagnostic data sharing will automatically upload logs to Meta within 5 minutes after a calculation run. The diagnostic data will contain: console logs from the study runner (i.e. run coordinator), console logs from the worker containers, logs from the PC data pipeline (Athena, Glue, Kinesis, Lambda). For more details on diagnostic data sharing see A6: Sharing diagnostic data with Meta

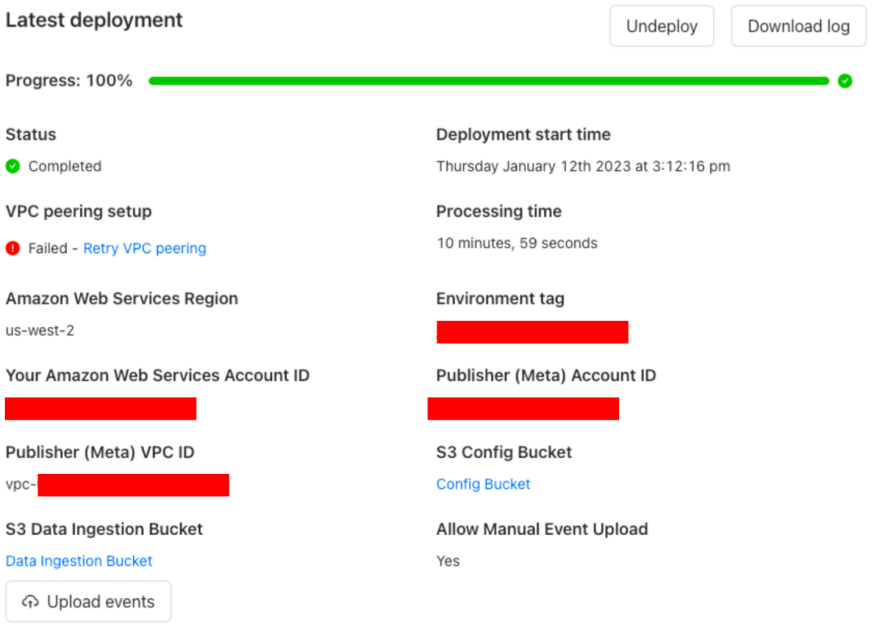
- Next, review and deploy. This is the final step before actual infrastructure deployment starts, Please review the information for a moment before you can click the deploy button.



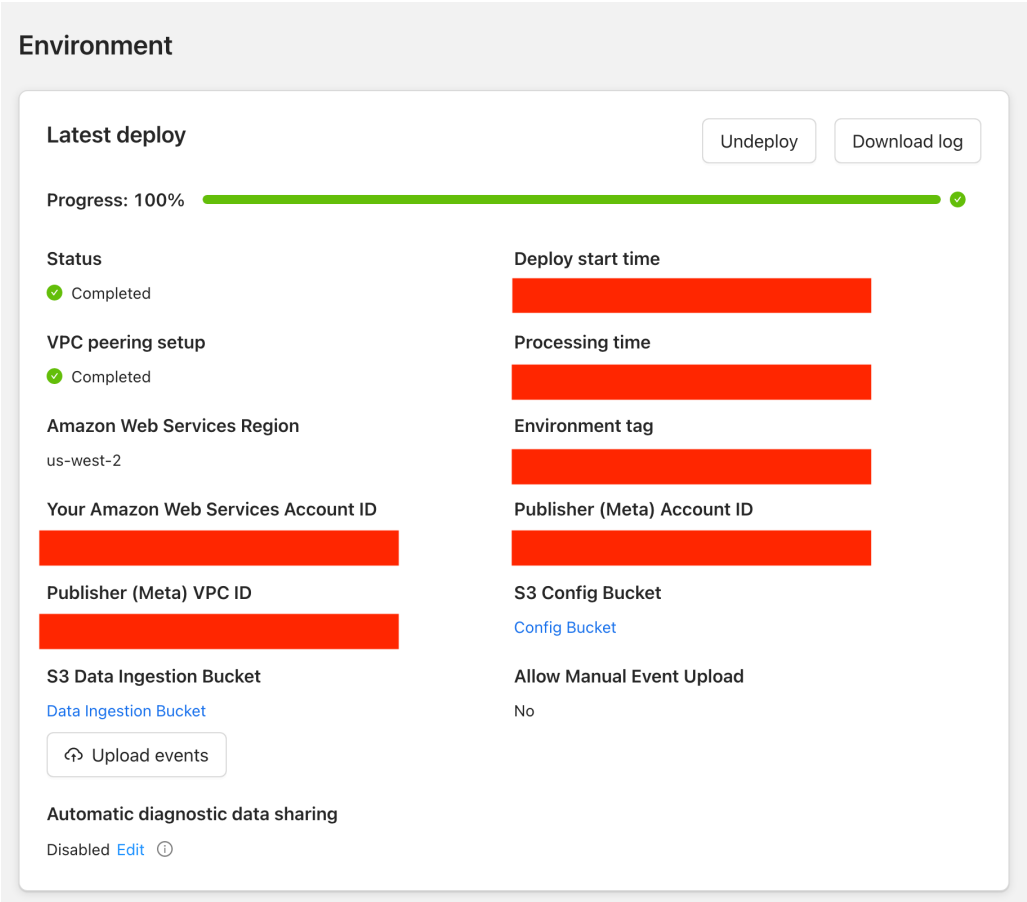
- About 10 minutes later, you should be able to see the following screen confirming the successful deployment.

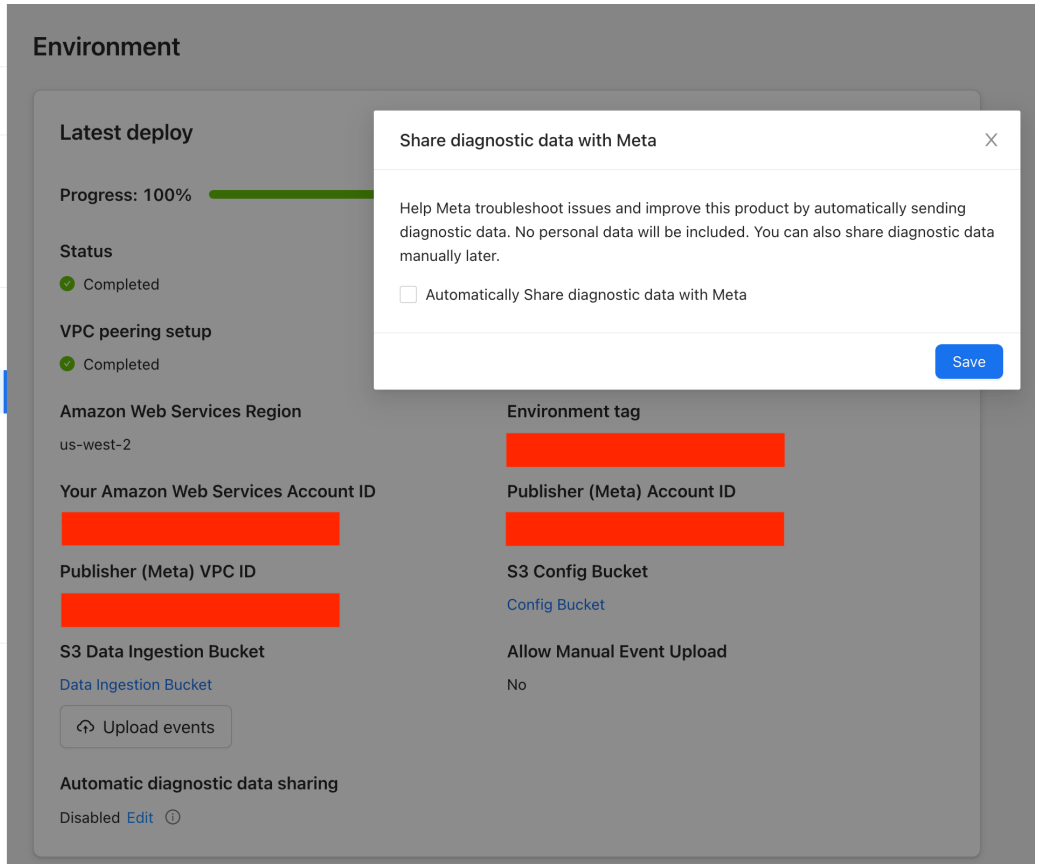


- VPC peering status: If the VPC peering has been completed you should see “Completed” status under “VPC peering setup”, and if it’s failed you should see failed status shown below. Please follow the appendix here on how to retry a failed VPC peering connection, and how to proceed forward.



- Automatic diagnostic data sharing status:
    - To help clients better troubleshoot issues and improve the product, it's recommended to opt-in for diagnostic data sharing with Meta. ~~it will automatically~~ Then the diagnostic data will be automatically uploaded to Meta within 5 minutes after a failed run. The diagnostic data will contain: console logs from the study runner (i.e. run coordinator), console logs from the worker containers, logs from the PC data pipeline (Athena, Glue, Kinesis, Lambda). For more details on diagnostic data sharing see in A6: Sharing diagnostic data with Meta
    - You can click the Edit button to bring up the dialog"Share diagnostic data with Meta", and enable or disable the automatic diagnostic data sharing. Your select will apply to the future calculation runs.





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 Elastic Container Registry (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.

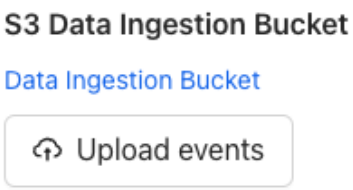
Data Ingestion

Create Data Sources

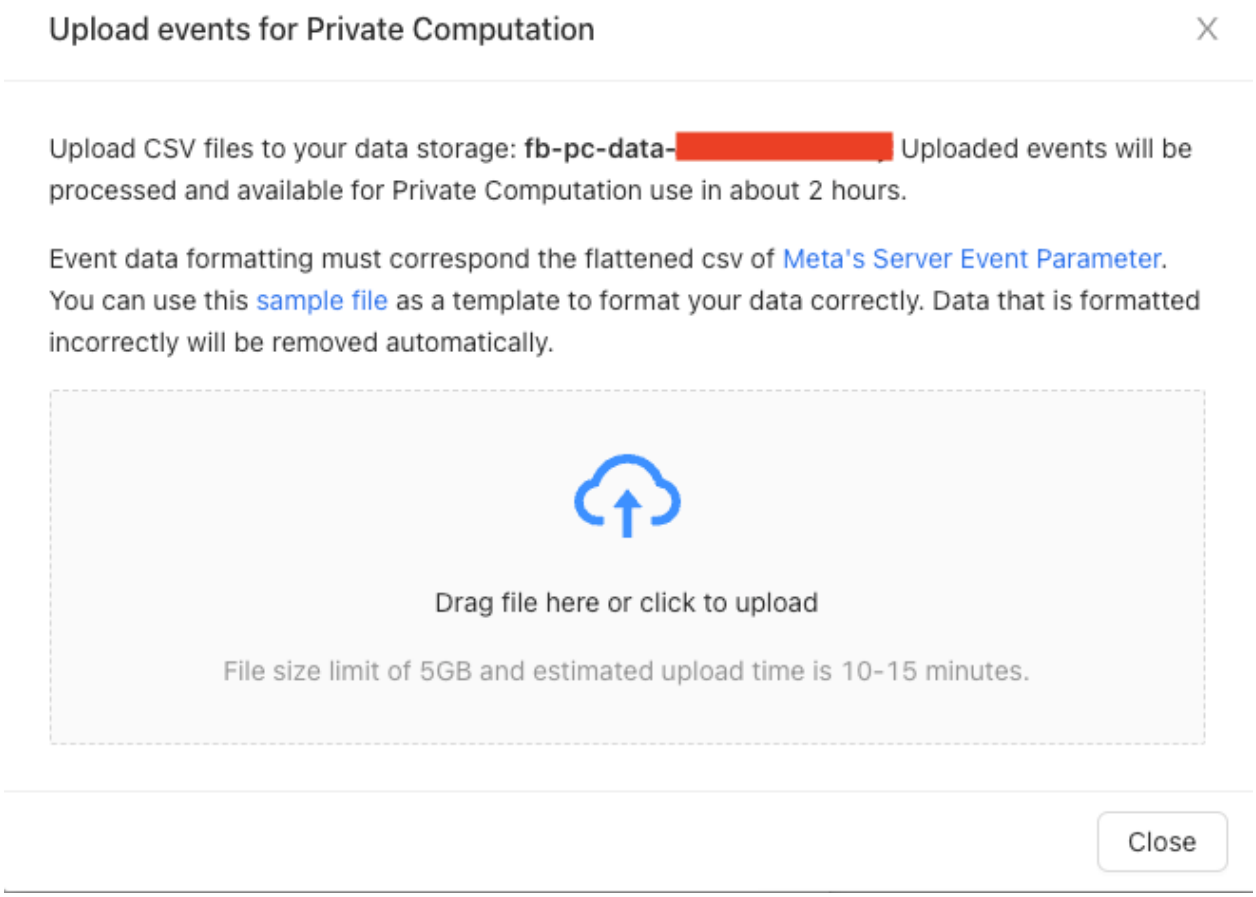
1. Login to the Private Computation Infrastructure UI by following the subdomain defined in your Cloudformation step during the "**Configure AWS and Install**" process above. Use the email and password used while setting up the Cloudformation stack.
2. Go to the "Data sources" page and create a new data source.
3. Data sources are the ways you ingest conversion/signal data and use it for Private Computation. Conversion signals can be sent to data sources through Meta pixel optionally.
4. Conversion signals can also be uploaded to data sources manually.

There are two different ways to ingest your data.

1. Automated data ingestion and computation with pixel:
    a. Connect to Meta pixel while creating a new data source. This will facilitate automatic data ingestion.
    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). Generally, this process 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://<private-computation-infrastructure.instance.url>/hub/pcs/deployment`
        ii. Click on the 'Upload events' button under the 'S3 Data Ingestion Bucket' section



        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)



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. Troubleshooting
   i. If the file was uploaded but the expected events are missing during a computation run, double check if the semi-automated Glue job is up to date
      1. This issue could be resolved by removing spaces and special characters from your file name. Or, you can redeploy the Private Computation infra if the issue persists after changing the file name.

d. 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

Prerequisites

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

1. Open Private Computation Infrastructure Shell:
   `https://<private-computation-infrastructure.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" : "events_data",
  "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
}
```

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 sharing diagnostic data with Meta, for automatically uploading logs to Meta within 5 minutes after a failed run.
You can open the Environment tab and find the setting "Automatic diagnostic data sharing", then click the Edit button to update the setting.
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.

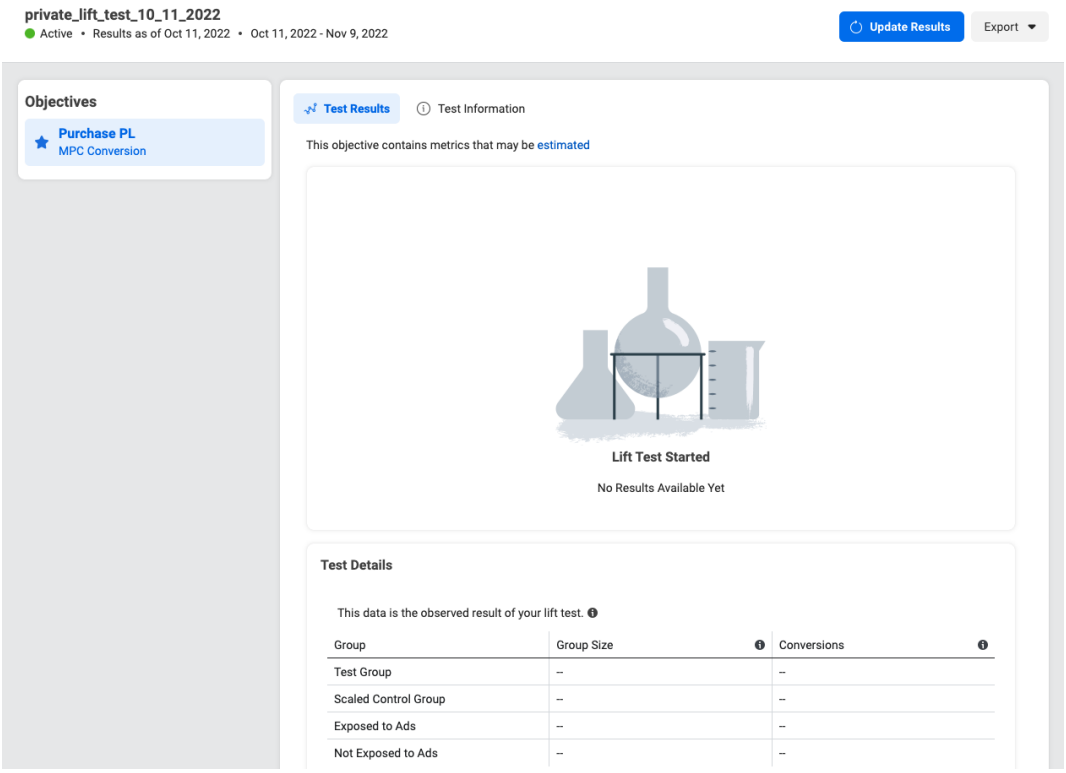
More details can be found in A6: Sharing diagnostic data with Meta.

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.

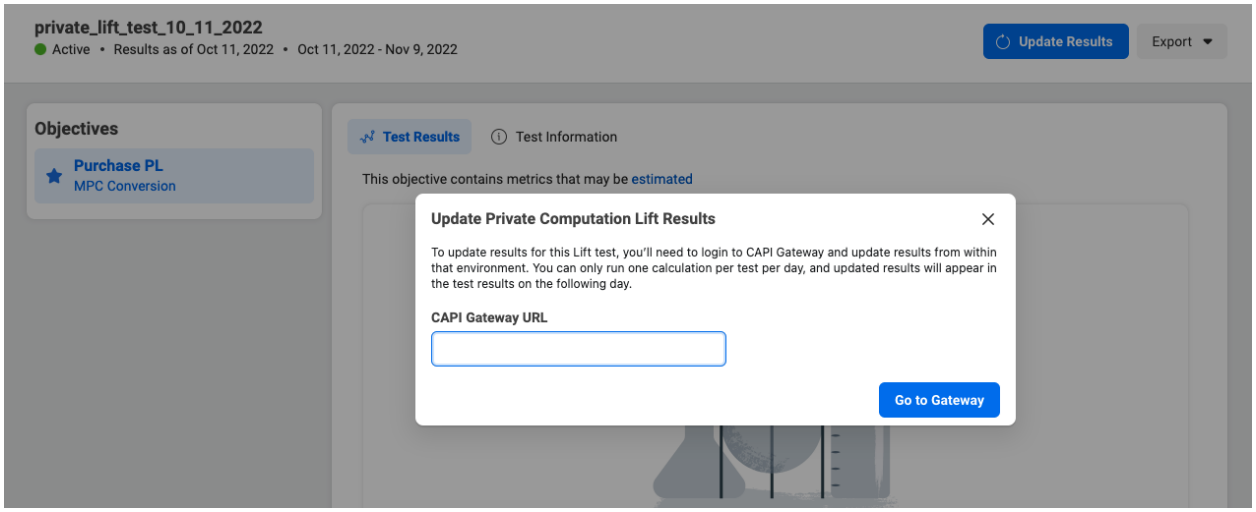
Private Lift

Step 1: Run Private Lift Computation (15 mins)

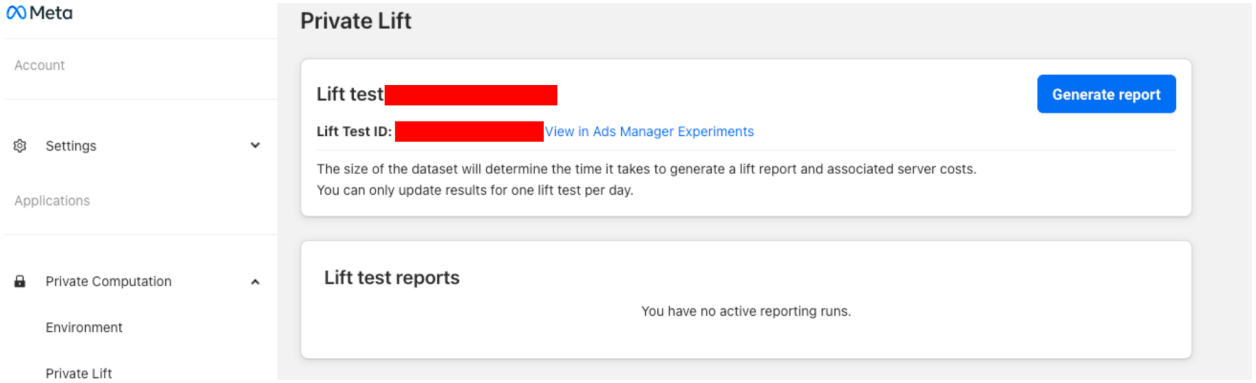
- Go to Lift Report UI (sample URL: `https://business.facebook.com/ads/lift/report/?ad_study_id=<your ad_study_id>`) and select a MPC Conversion objective
    - replace <your ad_study_id> with your own study id



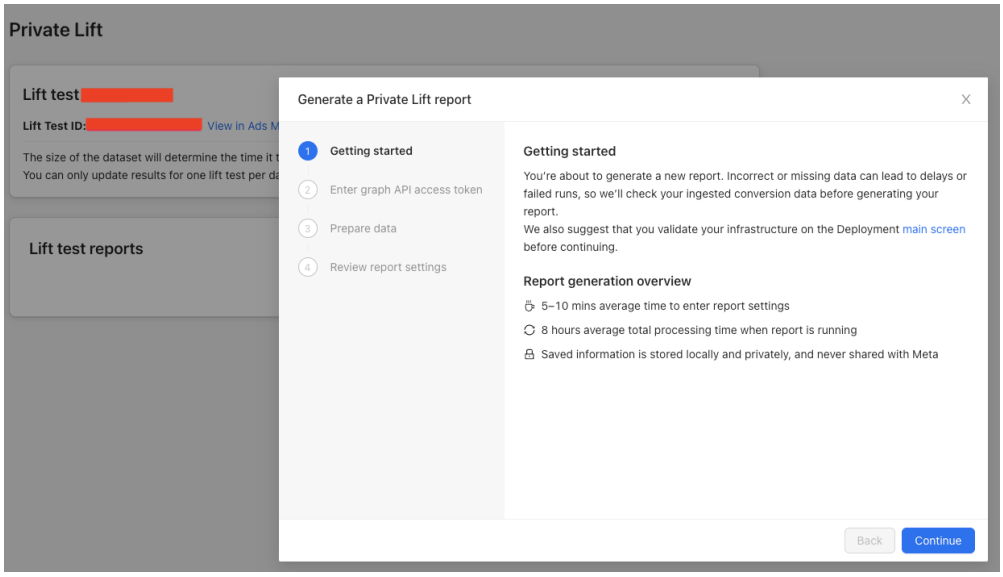
    - Click on “Update Results”. A new window will pop-up, enter your Private Computation Infrastructure instance url here and click on “Go to Gateway”.



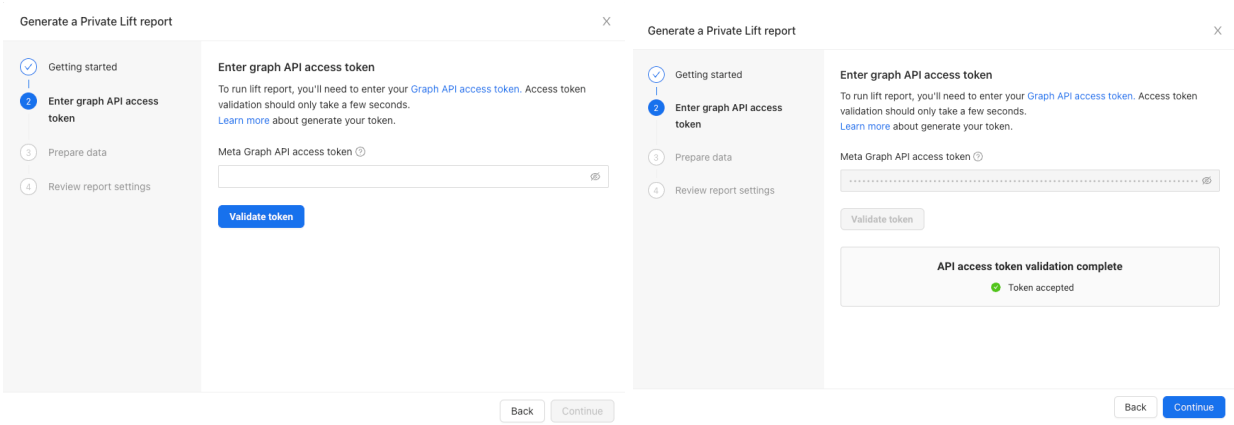
- You are now re-directed back to Private Computation Infrastructure. To start the computation, click on “Update Results”.
  - Format: `https://<private-computation-infrastructure.instance.url>/hub/pcs/calculation/<your ad_study_id>/<your ad_study_name>`
- Enter the following URL and click on “Go to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



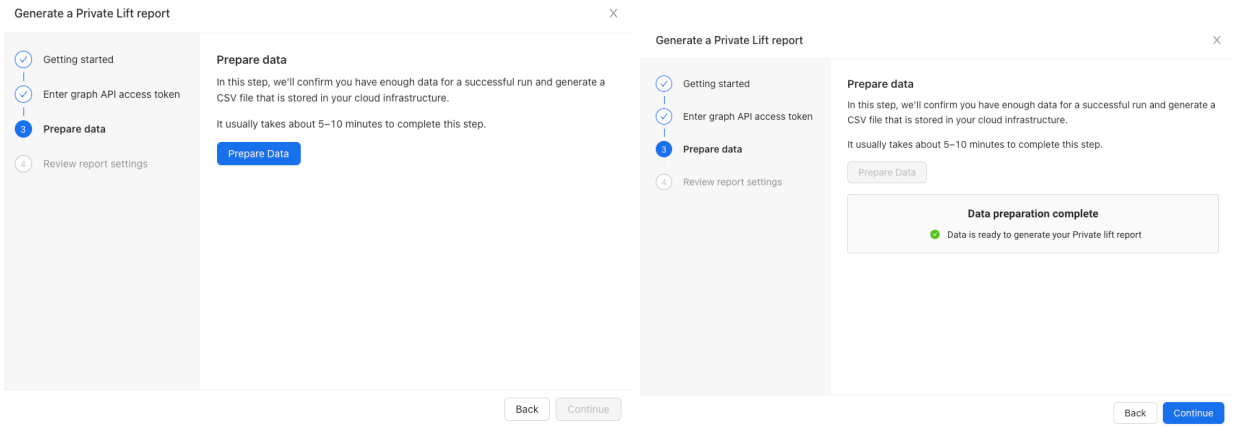
- To proceed, click “Generate report” to launch a pop-up window with instructions and multiple steps to guide you through.



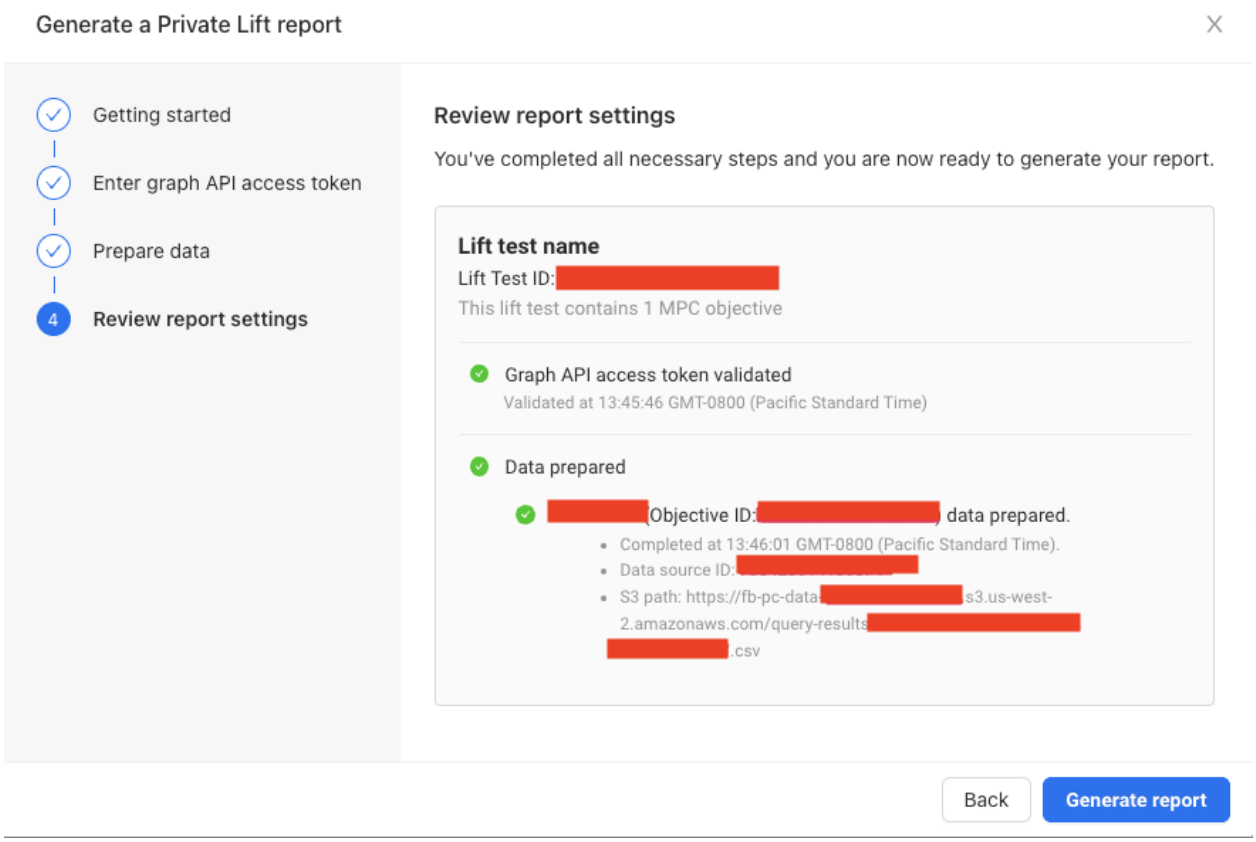
- After reading the instructions and basic info on "Getting started" step, click "Continue" to go to the next step



- Enter the Graph API token generated in Step 2 and click on "Validate token". Once the token is validated, click "Continue".



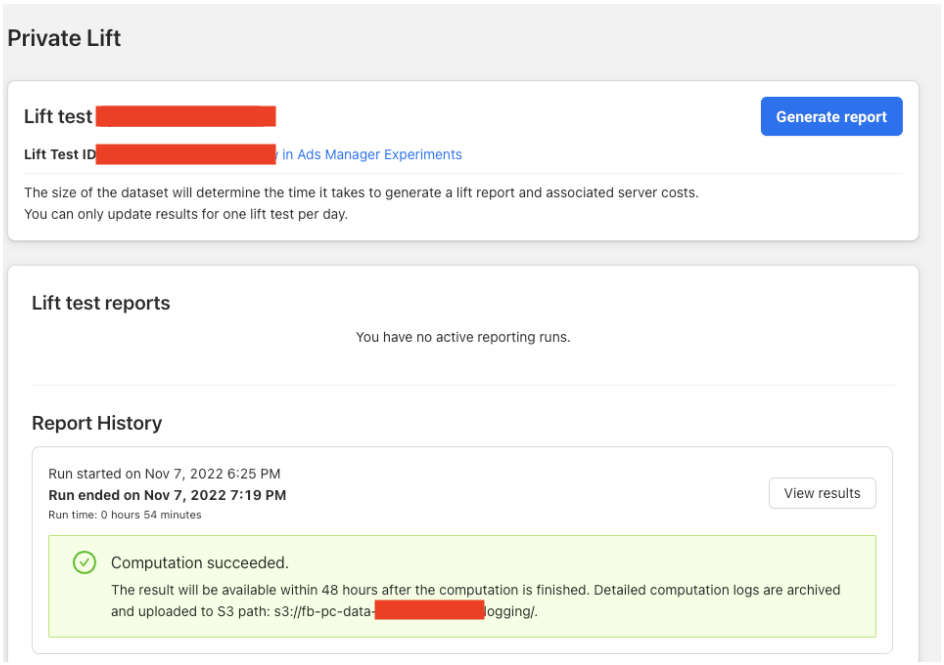
- Click "Prepare Data" to confirm if enough data has been ingested for a successful run, and generate a CSV file that is stored in S3 data ingestion bucket. Once data preparation completes, click "Continue".



- 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/fbpcs_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.



Private Attribution

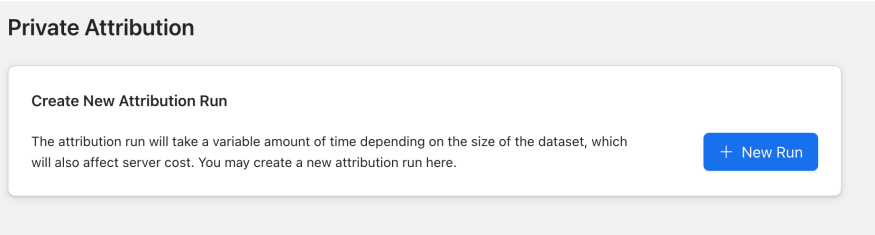
Step 0: Preparation

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

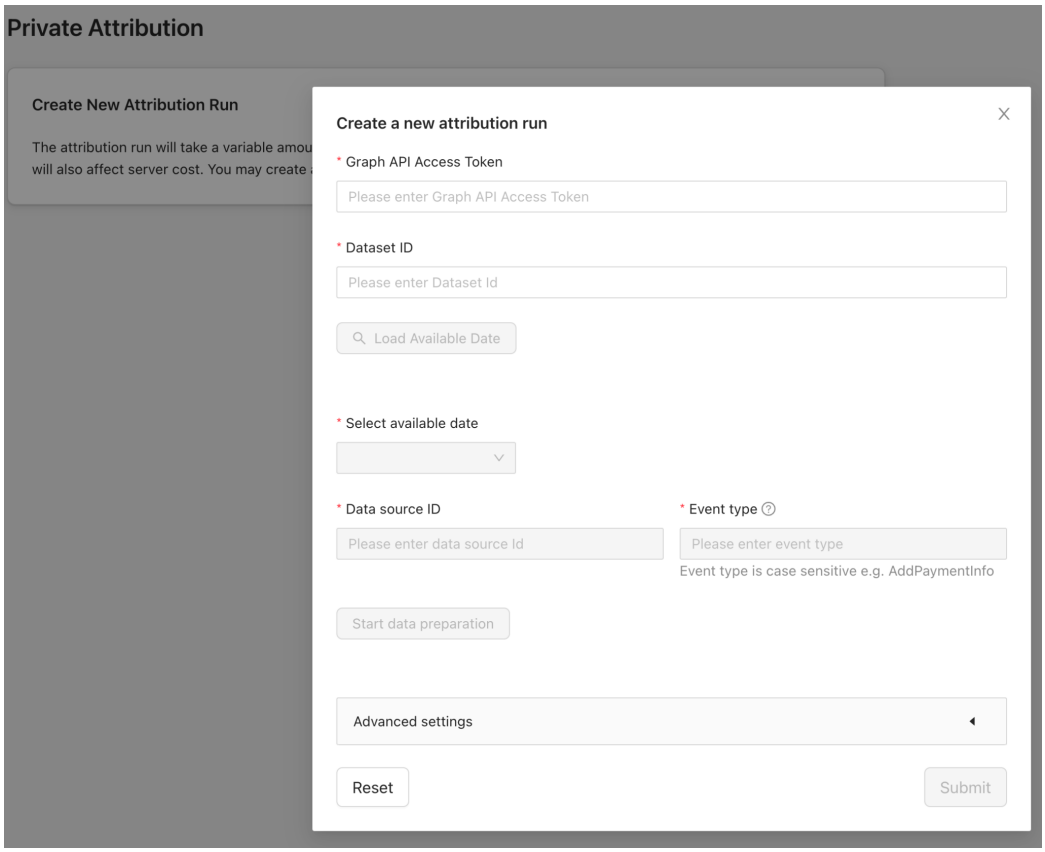
- Dataset Id

Step 1: Run Private Attribution Computation (30 mins)

- Login to your CAPI Gateway instance.
- Navigate to "Private Computation" → "Private Attribution" page.
- Click the "New Run" button, and a dialog will appear.

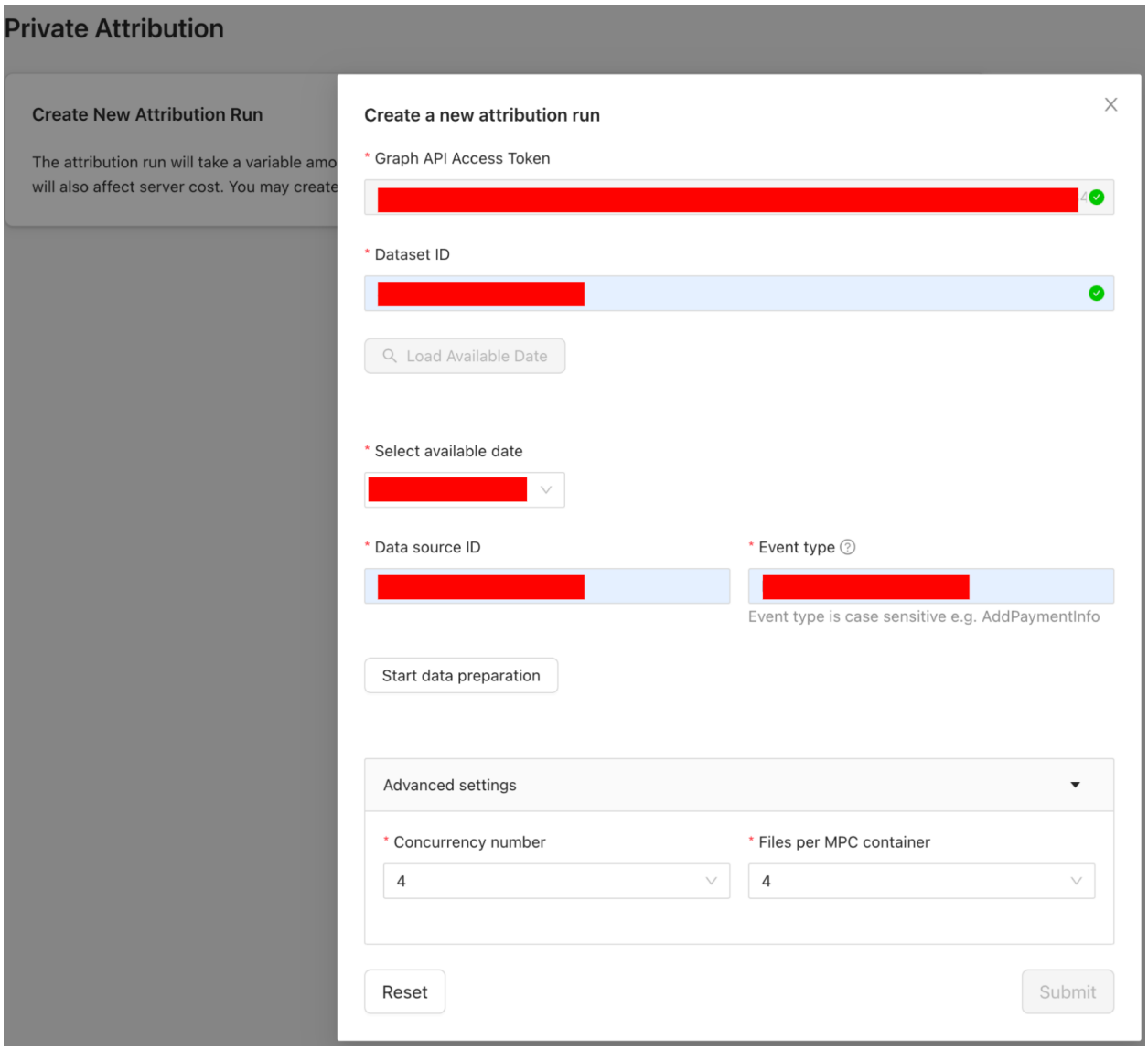


- Enter the Graph API token generated in Step 2, and the Dataset ID you get from your Meta representative.

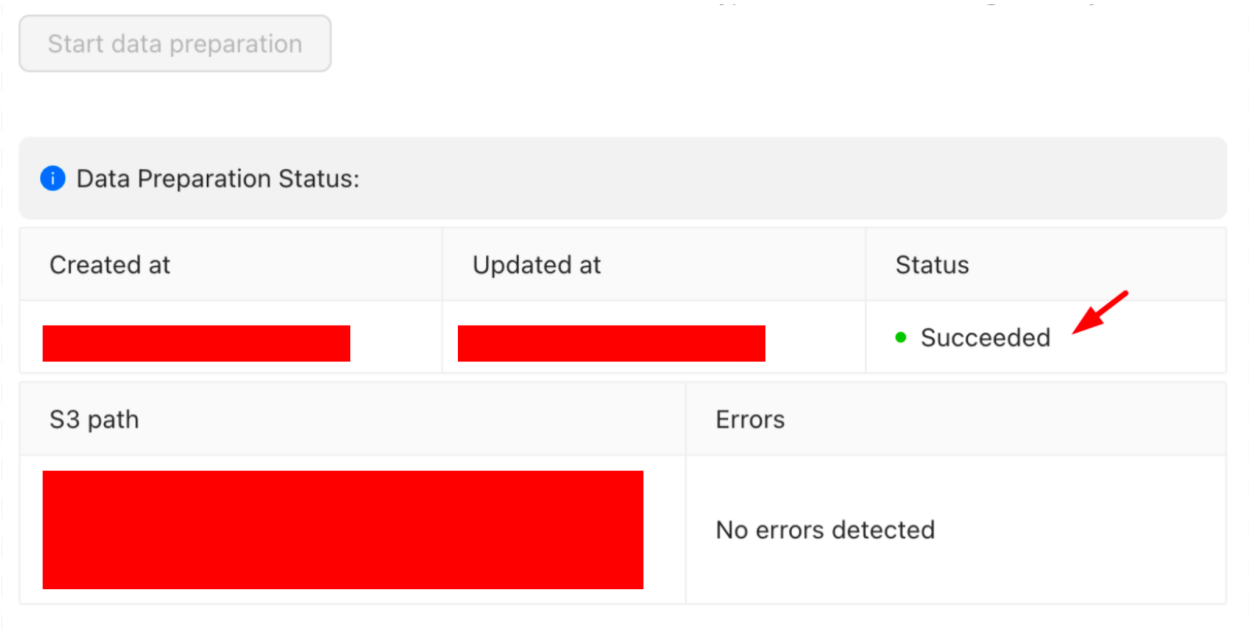


- Click the "Load Available Date".

- 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” button.



- Wait until it shows “Succeeded”.



- Click the “Submit” button at the bottom to proceed.
- 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

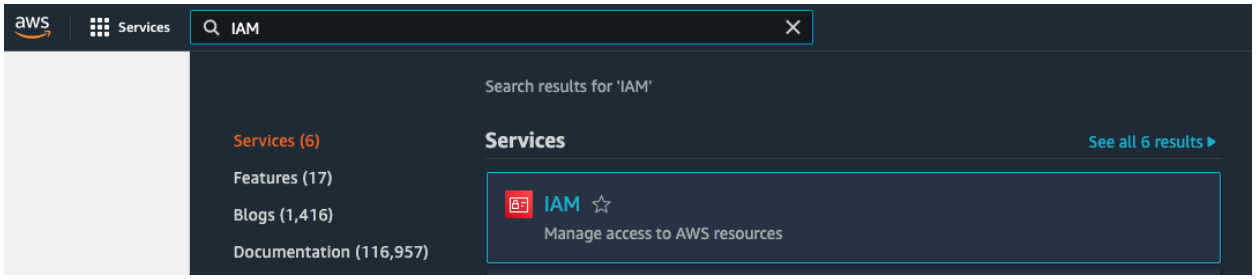
Sometimes Meta would like you to run on the “canary” tier. Here is how you can set it up.

1. Open Private Computation Infrastructure Shell: `https://<capig.instance.url>/hub/shell`
2. Run the following update commands:

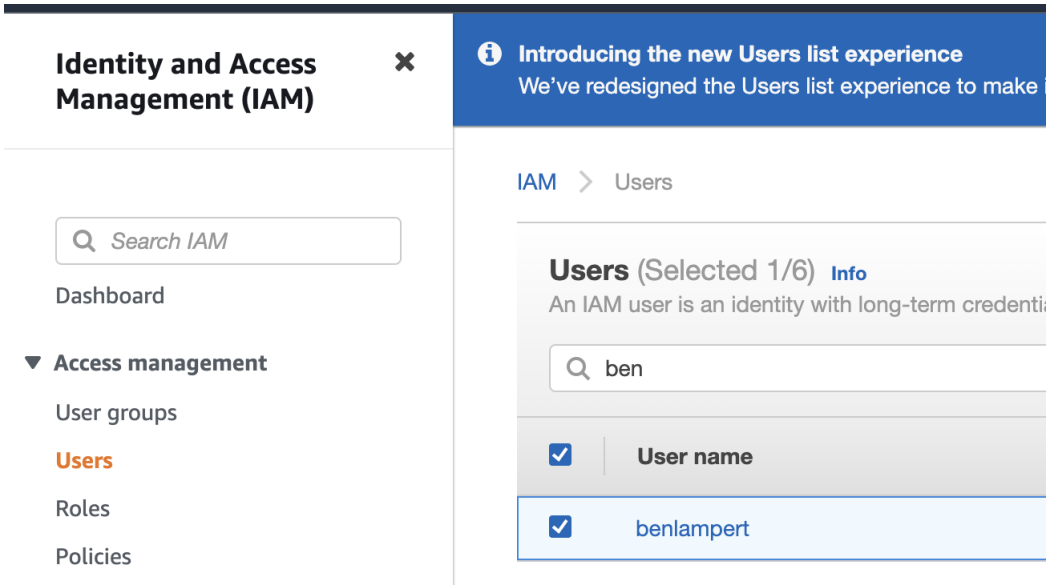
a. `config write CloudResources /IMAGE_TAG canary`

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

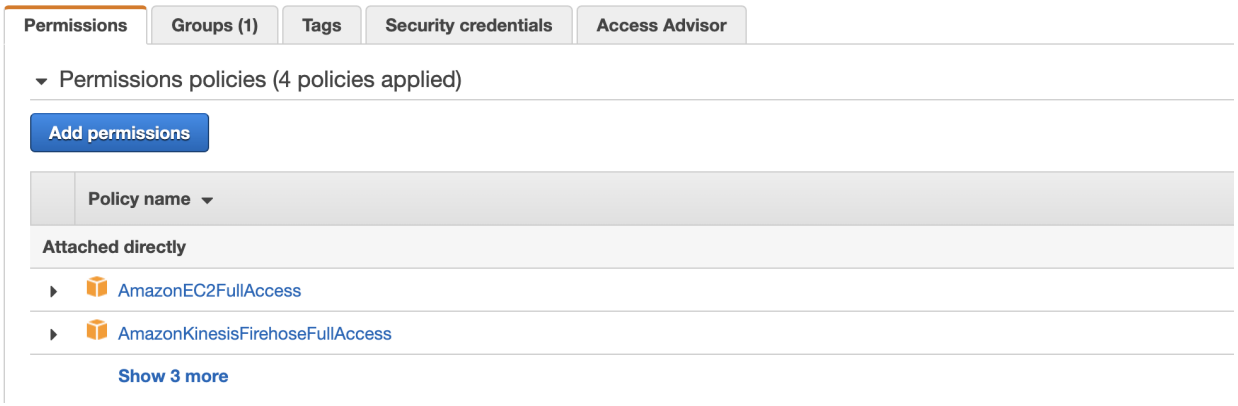
a. Open your AWS account and enter IAM component



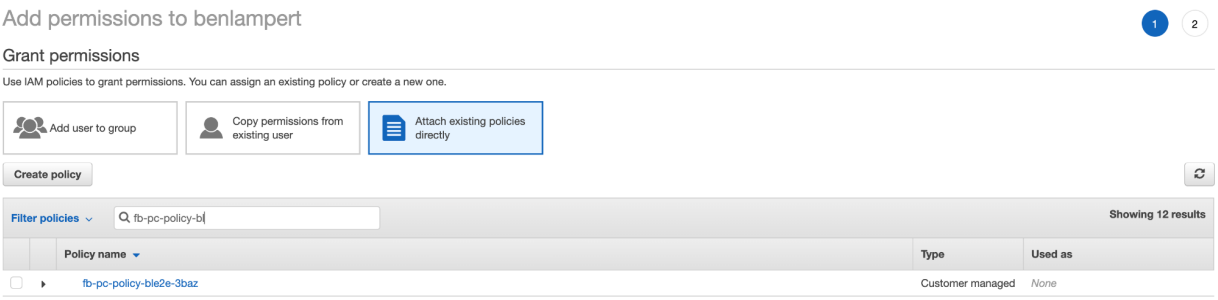
b. Select an AWS IAM user, either create an user or re-use an existing one.



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



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



e. Add permission.
f. Then you could generate the access_key and Secret_key for this user to fill in the next step in cloudbridge.

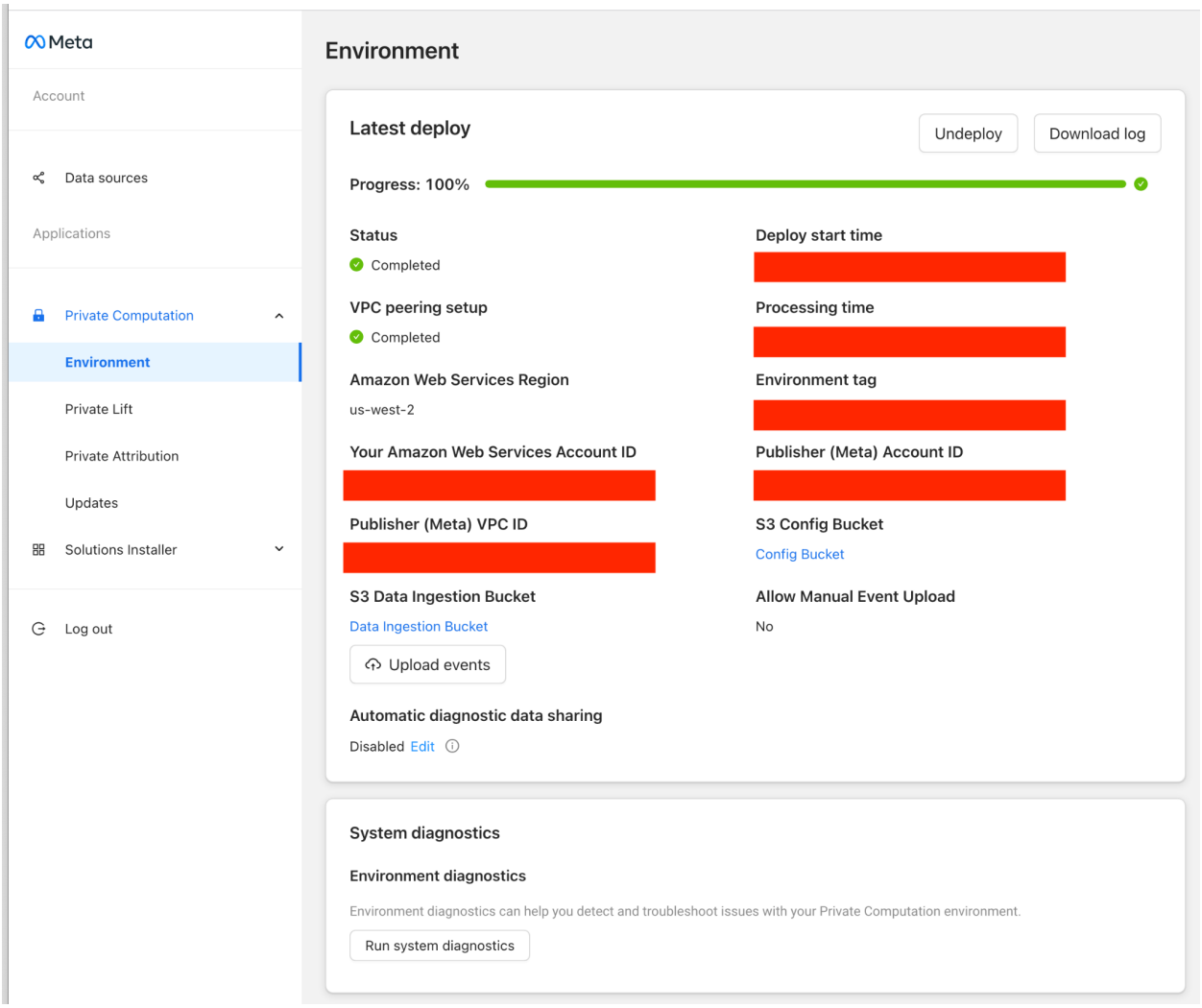
A4: Data Migration

Github URL.

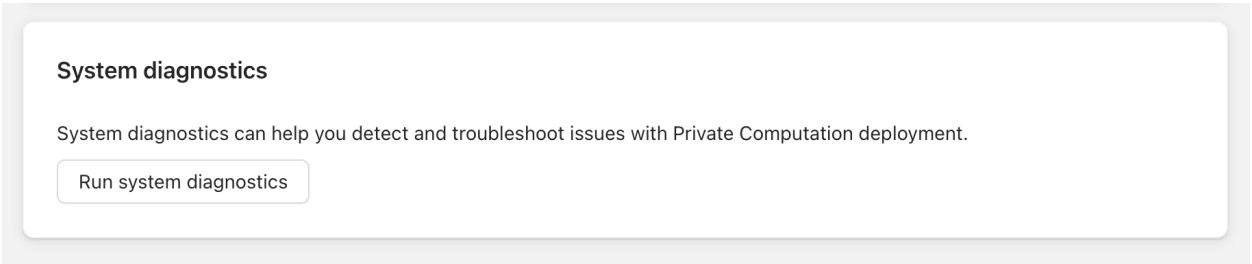
A5: Ad-hoc system diagnosis

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:



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



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.
In Meta, the diagnostics data will be kept for no longer than 30 days, and will be access controlled.
Limitations for automatic collection of diagnostic data:

- Currently only for Private Lift on top of the Private Computation Infrastructure 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/fbpcs_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 run launch, logs collection and uploading.

Usually sharing the first part of logs data is sufficient for Meta support engineers to investigate any issue related to a study run. In the computation UI, if you see a clickable link "Share Diagnostic Data with Meta" under a calculation run status, you can click it to trigger the logs upload. Then the logs upload should be finished within 5 minutes.

In case the second part of logs data is required for investigation, the advertiser engineer has to manually download them from S3 buckets, and share with Meta support engineers.

Automatic sharing with Meta

You can opt in for automatic logs upload in the following stages:
1) For new deployment of CAPIG: there is "Share diagnostic data settings" setting in the "Customize environment" step. You can make your choice on whether to automatically share the diagnostic data or not.

2) For upgrade and new deployment of CAPIG: you will see the one-time popup dialog when refreshing any page (except the “Updates” page) within the Private Computation Solution app. You can make your choice on whether to automatically share the diagnostic data or not, and save the setting.
3) After deployment of CAPIG: you can open the Environment tab within the Private Computation Solution app, and find the setting “Automatic diagnostic data sharing”. You can click the Edit button to update your choice, and save the setting.

By default, logs are not automatically uploaded after a successful run. You can manually click the “Share Diagnostic Data with Meta” link under a successful run to upload the corresponding logs. Or you can contact Meta support engineers to change the CAPIG config to automatically upload the logs after every successful run.

Logs upload status per computation run and troubleshooting:

- In normal cases, the logs upload status shows one of the following: a) “Diagnostic Data was shared with Meta at <timestamp with timezone>” (non-clickable). This means success of logs upload. b) “Share Diagnostics Data with Meta” (clickable), when the automatic sharing is not enabled, or the computation run succeeded.
- The status is “Error Sharing Diagnostic Data with Meta” with clickable “Retry”: the logs upload had failed after multiple internal attempts. You can click the Retry button and then confirm in the dialog, to try again. When investigation is needed, you can contact Meta support engineers for help if logs upload keeps failing after multiple retries.
- The status is missing: the computation run failed in early preparation stages of the calculation run, and no logs have been collected automatically. When investigation is needed, Meta support engineers might still ask you to manually retrieve logs from specific S3 buckets or CloudWatch locations, and then share with Meta.

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 Private Computation Infrastructure Shell:
   `https://<private-computation-infrastructure.instance.url>/hub/shell`
2. Run the following update commands:
   b. `config write Athena /USE_MULTIKEY true`

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

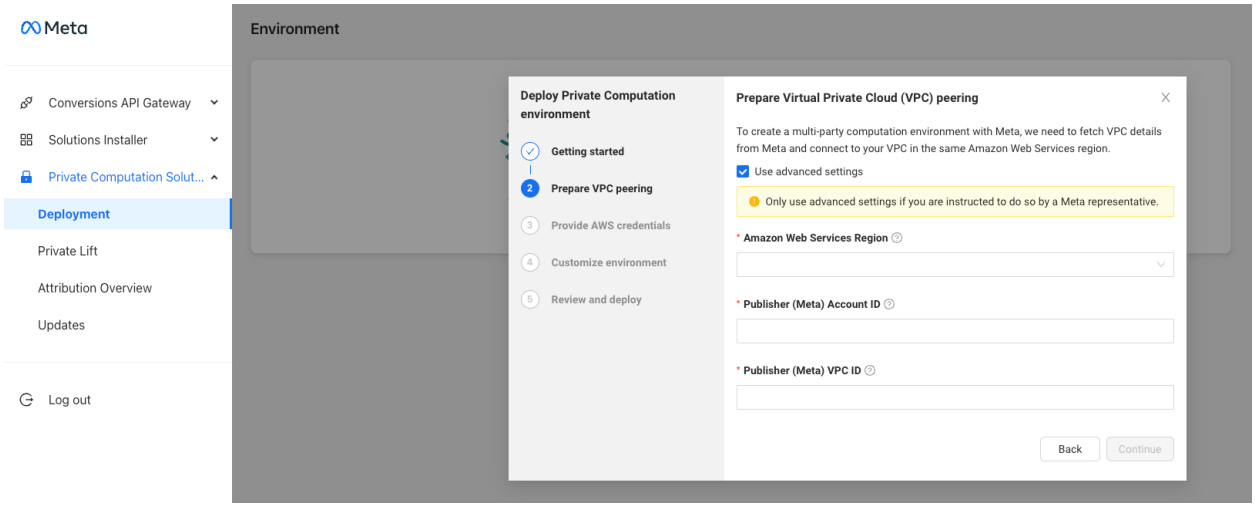
A8: [FYI] New Requirements on Graph API Access Token Permissions are Enforced

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”

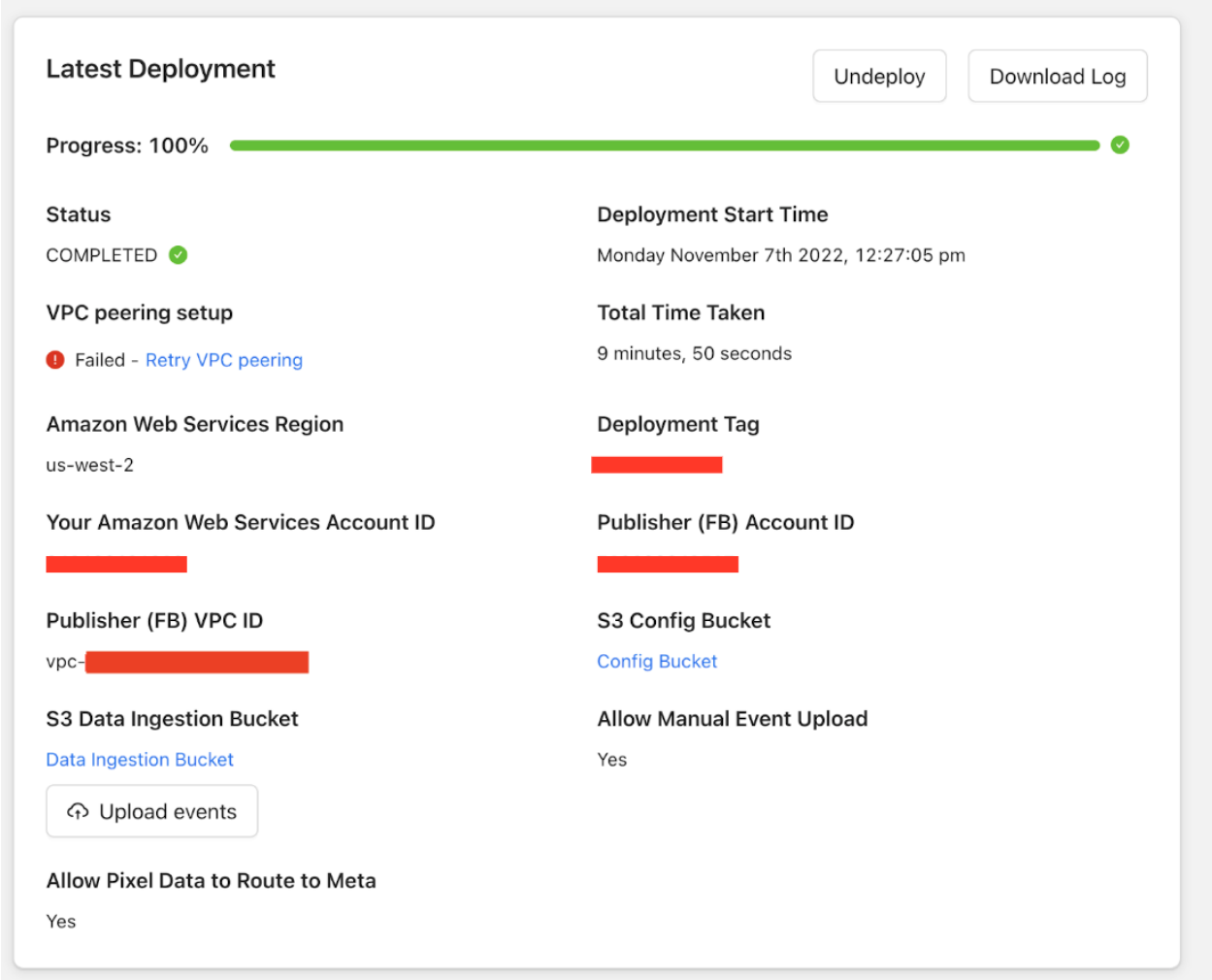
While deploying, if instructed by a meta representative ,you can use advance option in getting VPC details as shown below:



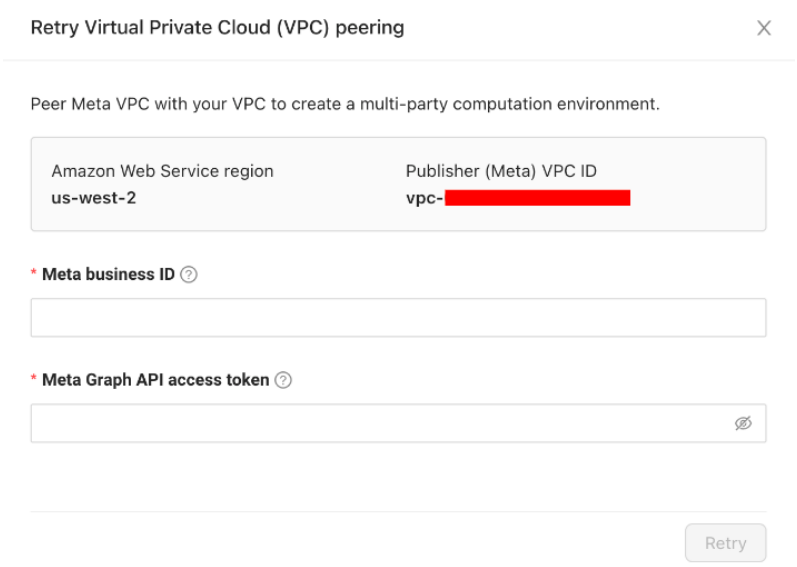
- Please fill in the required fields and click on Next:
  Amazon Web Services Region: This is the AWS region where the resources would be deployed. It should be the same as the region used for Conversions API Gateway deployment. (This region should also match the META side AWS region)
  Publisher (Meta)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



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

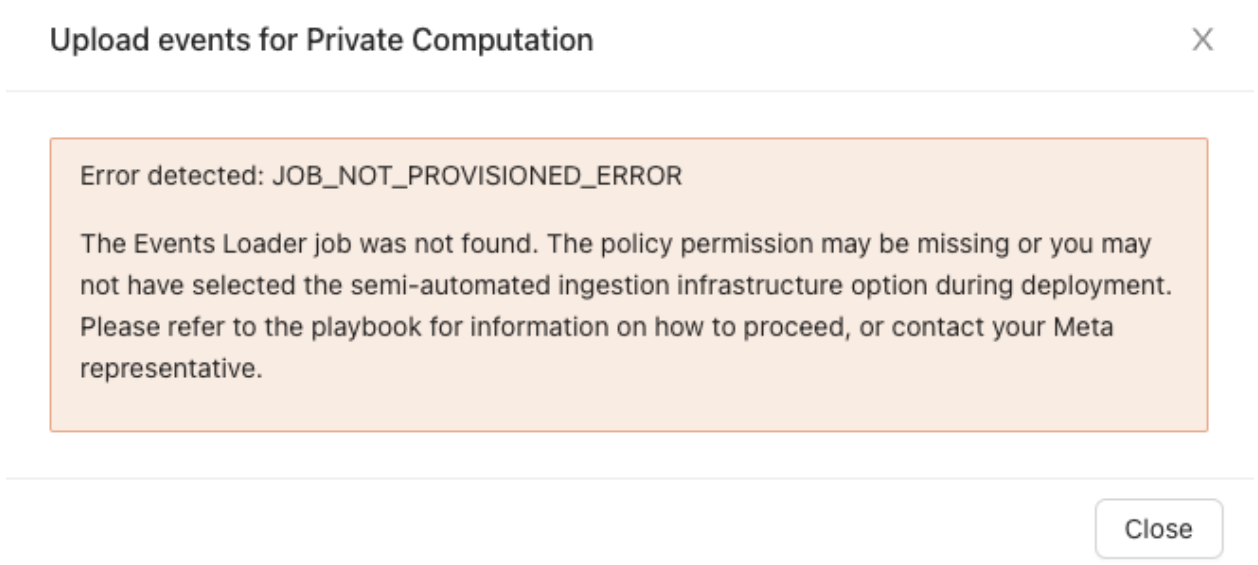


Please input your business ID and graph API token obtained from Step 2 which you would have obtained earlier, and click on retry.

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:



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>"
            ]
```

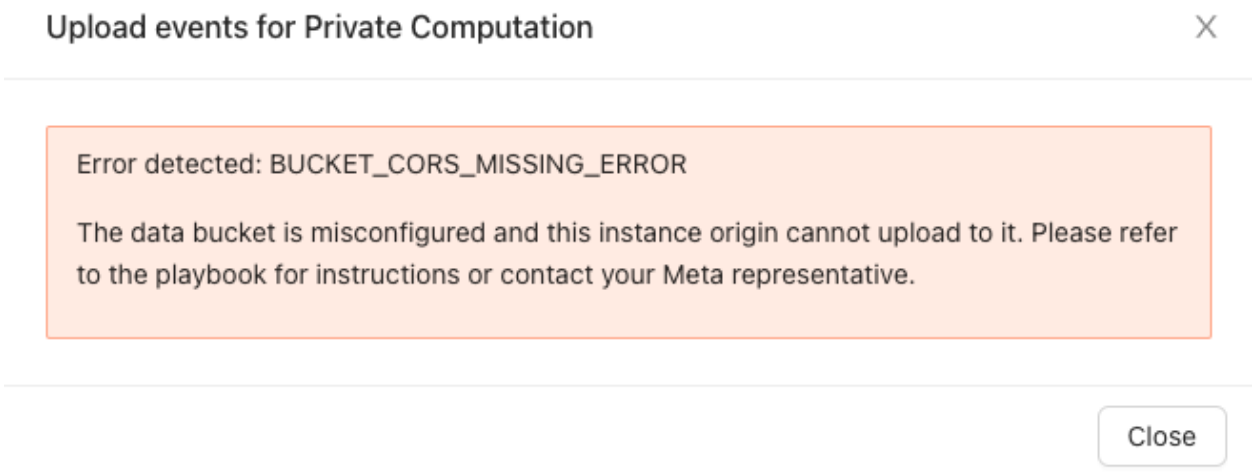
```
        }
```

- Example of Resource name: "arn:aws:glue:**us-west-2**:**0123456789**:job/glue-ETL-**mydeployment-123**"
- **Do not** update the 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:



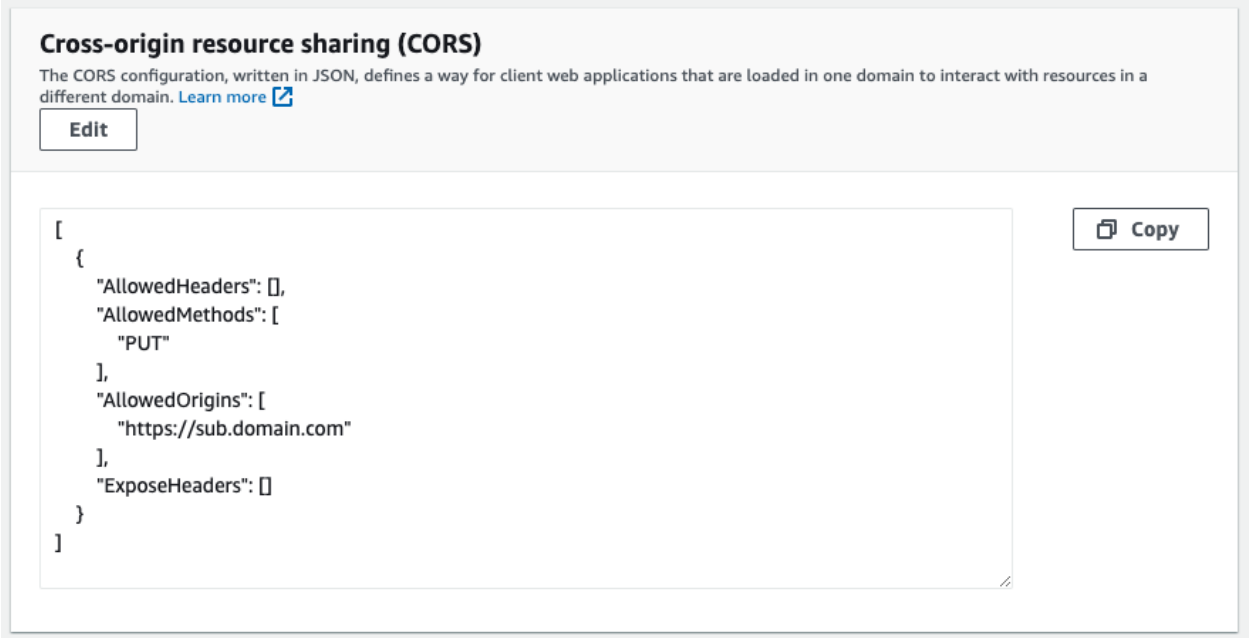
Then follow these instructions to resolve the error:

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:



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

A13: Private Computation Infrastructure upgrade guideline and questions.

Q: What if I have an old instance of Private Computation Infrastructure 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.

Q: After upgrading, I see a popup dialog box showing “Share diagnostic data with Meta”. What should I do?

A: 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 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. More details can be found in A6: Sharing diagnostic data with Meta
We recommend enabling the checkbox, and then saving. You can also change the setting later in the Environment tab.
If you click the 'X' button to close the dialog without saving your choice, the popup dialog will come up again when you refresh any pages in the Private Computation Solution app.

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