TELEOPTI INC

Teleopti WFM - Amazon Connect Integration Requirements

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Version 1.0

Who	Version	Change
Krista Crout, Teleopti Inc	1.0	First Version
David Jonsson, Teleopti Inc	1.1	Added Teleopti Word Template
David Jonsson, Teleopti Inc	1.2	Describe Standard Report vs. Interaction Data
Krista Crout, Teleopti Inc	1.3	Add AWS Configuration
David Jonsson, Teleopti Inc	1.4	Use Interaction Data only Add RTA details
David Jonsson, Teleopti Inc	1.5	Switch agent identifier, add RTA logic

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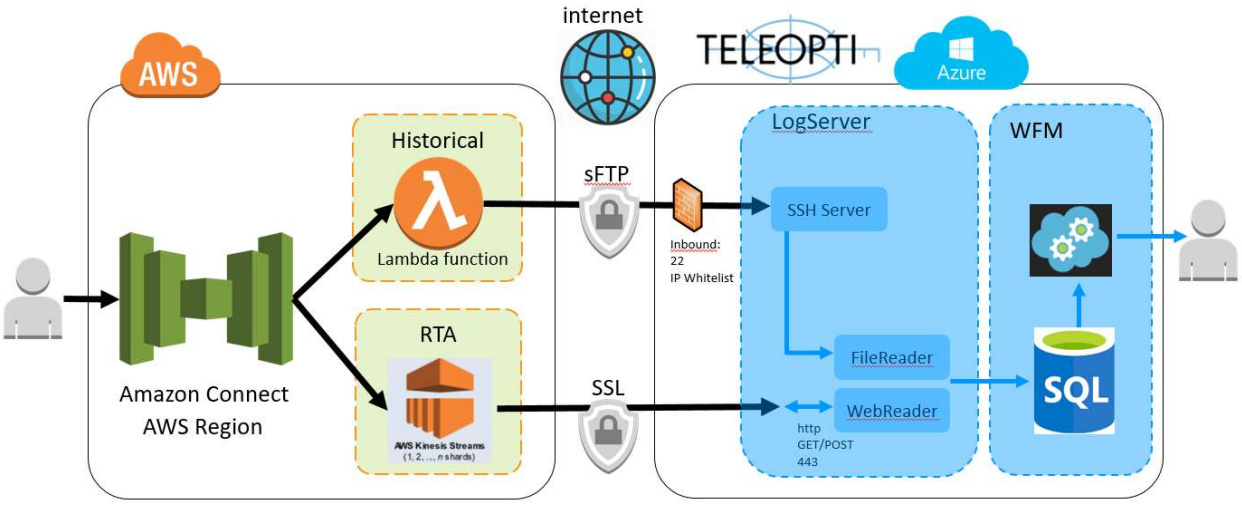
2 Architecture Overview



The picture above demonstrates the basic architecture of the integration. Reports are saved from Amazon Connect every 15/30 minutes into an Amazon S3 storage bucket, where they transformed into .csv files by a Lambda function and then transmitted via sFTP to Teleopti. The Teleopti sFTP server receives the reports and uses them to generate reports and forecasting models.

Agents and resource planners continue to use Connect, and now also have access to Teleopti via the web for scheduling, forecasting, intraday monitoring, and viewing reports.

This integration requires that the customer has an existing Amazon Connect instance, a RealTime stream setup and will require configuration of a few other Amazon Services as outlined in the Appendix.

3 Data integrations

3.1 Historical feed

The Teleopti AWS Cloud Formation Template will implement a “Amazon firehose” that will export all interactions into a S3 bucket. A Lambda-script transforms the data into .csv-files which are pushed to Teleopti sFTP. The data is at this point still on a call (interaction) level and Teleopti will do the aggregation of the data into *intervals* using SQL Azure code given the customer’s choice of interval length, usually by 15 minute.

Agents are identified using the Agent ***UserName*** from AWS
Queue are identified using the Queue ***ARN*** from AWS

Teleopti will provide a QuickStart template, Teleopti will provide the customer with the following as input to the QuickStart:

- sFTP hostname
- sFTP username
- sFTP password
- SSH Access Key??

3.2 RTA feed

Teleopti will use the Kinesis Data Streams in AWS. The AWS stream output is shared between all (other) integrations the customer might have. “Scale out” of the stream is done using “shards”, see: https://docs.aws.amazon.com/streams/latest/dev/service-sizes-and-limits.html

Every 5 sec Teleopti will pull the latest available state for all agents. The delta (agents that changed state since last pull) are passed on to the Teleopti WFM RTA web service to be displayed on the RTA web tools.

Teleopti will need to know

- Access Key ID
- Secret Access Key
- Stream ARN
  the ARN of the stream dictates what **region** and **name** Teleopti will use to connect to the stream

Agents are identified using the Agent ***UserName*** from AWS

4 Historical feed – details

The data pushed through the firehose into the S3 bucket every x minute should match the interval length configured in the TeleoptiAnalytics datamart for a close(r) to real-time experience. Note the interval needs to end before Teleopti can aggregate it. Add a few more minutes for processing and timing f events; the aggregated numbers should be available 10min after the interval ended.

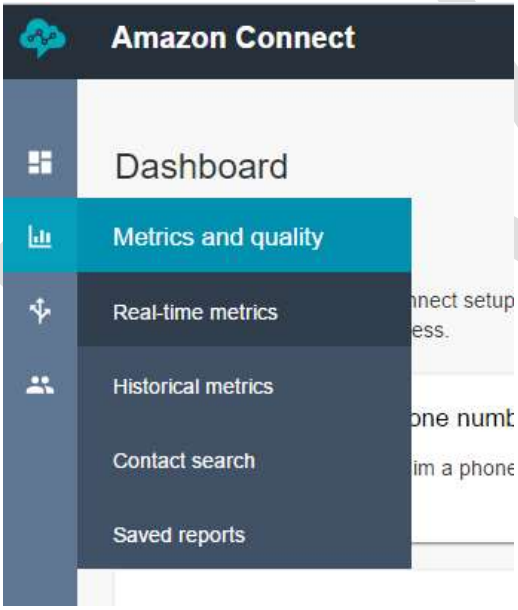
Note:

- Data transformations are done according to section **Data Mapping**
- Agent data – interval length matters!
  Agent data is not available in the firehose but is pulled from AWS Standard Reports. That data is currently only available at a **30min level** from AWS. Teleopti have to pick this data up as is and usually split the data down to a 15min level.

4.1 Setting up and Scheduling Reports

4.1.1 Login

a. Login to Connect and choose *Historical Metrics*. We will use Queue & Agent Metrics for all our reports.



b. Configure your reports to include only to the Metrics Teleopti needs:
Agent Performance Statistics

4.1.2 Agent Performance Statistics

i. From the Historical Metrics page, click Queues, then click the gear in the upper right corner of the default report to open the Table Settings.

ii. On the Interval and Time Range tab, set the Interval to 30 minutes, leaving the Time Zone UTC and the Time Range Last 24 Hours.
iii. On the Groupings tab, ensure that “Interval” and “Agent” are selected.
iv. On the Metrics tab, ensure the following options are selected:
    1. Agent idle time
    2. Non-Productive Time
    3. Online time
v. Click Apply.
vi. Click the arrow next to Save in the upper right corner, and select “Schedule.”
vii. Give the report a unique name and click “Continue.”
viii. Publish the report by clicking “Publish.”
ix. Schedule the report to be delivered to the S3 bucket. On the Recurrence tab, set the report to be generated every half hour for the previous 2 hours.
x. After clicking Create, Amazon will display a summary screen. The report has been successfully scheduled.

c. Make sure the Reports are published to the S3 Bucket at the required times (Bucket names are configured under Data storage option in connect).

4.2 Required Lambda Functions

a. The Lambda function resides on a central repository, where it will be referenced by the Cloud Formation Template.
b. The Lambda code package consists of multiple .js modules, the dependencies bluebird, ssh2, and node-s3-encryption-client, while the dependency aws-sdk is provided natively by the Amazon environment.
c. A trigger created by the Cloud Formation Template calls the Lambda any time a .csv file is created on the user S3 location.
    a. The file is compared to known names, and is determined to be an interactions file if it starts with “connectCTR” and an Agent Performance file is it starts with “TeleoptiAgentPerformance.”
        i. Interactions files are transformed from JSON to .csv and sent through SFTP to the Teleopti integration server.
        ii. Agent Performance files are sent through SFTP to the Teleopti integration server as-is.
d. TeleoptiLogServer then aggregates the collected data, after which the ETL service pushes it to the data mart, making it available to the customer.

4.3 AWS Additional Requirements

For Lambda to access the S3 buckets to read and write files, an IAM role with those permissions for all the relevant S3 buckets is created by the Cloud Formation Template.

The Lambda functions are provided the S3 bucket names for the incoming Connect reports and the client KMS key if encryption is requested by the Cloud Formation Template.

The SFTP server information for the Teleopti destination server is configured as input parameters by the Cloud Formation Template.

4.4 Data Mapping

4.4.1 Queue Statistics

Teleopti Field	Amazon Field	Notes
talking_call_dur	Agent_AgentInteractionDuration	
wrap_up_dur	Agent_AfterContactWorkDuration	
overflow_in_call_cnt	Count (TransferredToEndpoint)	
overflow_out_call_cnt	Count(TransferCompletedTimestamp)	
aband_call_cnt	Count(Agent_ConnectedToAgentTimestamp = null)	
answ_call_cnt	Count(Agent_ConnectedToAgentTimestamp)	
queued_and_answ_call_dur	Sum(Queue_Duration)	Filtered on answered as defined above
queued_and_aband_call_dur	Sum(Queue_Duration)	Filtered on abandoned as defined above
queued_answ_longest_que_dur	Max(Queue_Duration)	Filtered on answered as defined above
queued_aband_longest_que_dur	Max(Queue_Duration)	Filtered on abandoned as defined above
avg_avail_member_cnt		Not available

ans_servicelevel_cnt	Count(Queue_Duration < SLA)	SLA provided by customer, same for all Queues
wait_dur		Not available
aband_short_call_cnt	Count (Queue_Duration < 5)	Short call Threshold is 5 seconds by Teleopti default, a different value can be requested by customer
aband_within_sl_cnt	Count(Queue_Duration < SLA)	SLA provided by customer, same for all Queues

4.4.2 Agent Queue Statistics

Note: this report is based off the AWS Standard Repor

Teleopti Field	Amazon Field	Notes
talking_call_dur	Agent_AgentInteractionDuration	
wrap_up_dur	Agent_AfterContactWorkDuration	
answ_call_cnt	Count(Agent_ConnectedToAgentTimestamp)	
transfer_out_call_cnt	Count(TransferCompletedTimestamp)	

4.4.3 Agent Performance Statistics

Teleopti Field	Amazon Field	Notes
tot_work_dur	Online time	
pause_dur	Non-Productive Time	
avail_dur	Online time - Non-Productive Time	
wait_dur	Agent idle time	
admin_dur		Not available

direct_out_call_cnt		Not available
direct_out_call_dur		Not available
direct_in_call_cnt		Not available
direct_in_call_dur		Not available

5 RTA feed - details

5.1 Shards

An AWS Kinesis data stream is divided into Shards for performance reasons. Each Shard has a limited amount of throughput. See: https://aws.amazon.com/kinesis/data-streams/faqs/, currently: 2MB/sec data output and 1000 PUT records per second per Shard

Q: What is a shard?

Shard is the base throughput unit of an Amazon Kinesis data stream. One shard provides a capacity of 1MB/sec data input and 2MB/sec data output. One shard can support up to 1000 PUT records per second. You will specify the number of shards needed when you create a data stream. For example, you can create a data stream with two shards. This data stream has a throughput of 2MB/sec data input and 4MB/sec data output, and allows up to 2000 PUT records per second. You can monitor shard-level metrics in Amazon Kinesis Data Streams and add or remove shards from your data stream dynamically as your data throughput changes by resharding the data stream.

5.2 Performance consideration

Many clients might share the stream but as the shard has a limitation on the throughput the customer need to consider planning number of shards. Given the data stream only servers the Teleopti RTA client, Teleopti suggest adding one Shard per 500 agents as a starting point.

5.3 Logic

At Startup the Teleopti Log Server (TLS) will pull all available data (for the last 24h) from each shard, this generates a big enough dataset to cover most agents, that either were active or logged off during the past 24h. Agents not available in that dataset will be given a default “logged out” state by Teleopti.

Once the first data 24h is collected by TLS it will start to fetch all states changes for the past 5 seconds. If multiple states is found for one agent TLS will post only the most recent RTA state change to the Teleopti WFM system. TLS sort the state changes by a AWS *SequenceNumber* which are global within each Shard. TLS will keep track of the last known SequenceNumber for

the next 5 second data pull in memory - but will also persist the SequenceNumber to the database every 10 minutes - in case the Teleopti Integration service needs a restart.

The TLS will run the integration code for all Shards in parallel for better performance. Each agent (“username” used as identifier) will only be connected to one shard at any given point in time.

6 Appendix – Setting up Amazon Services

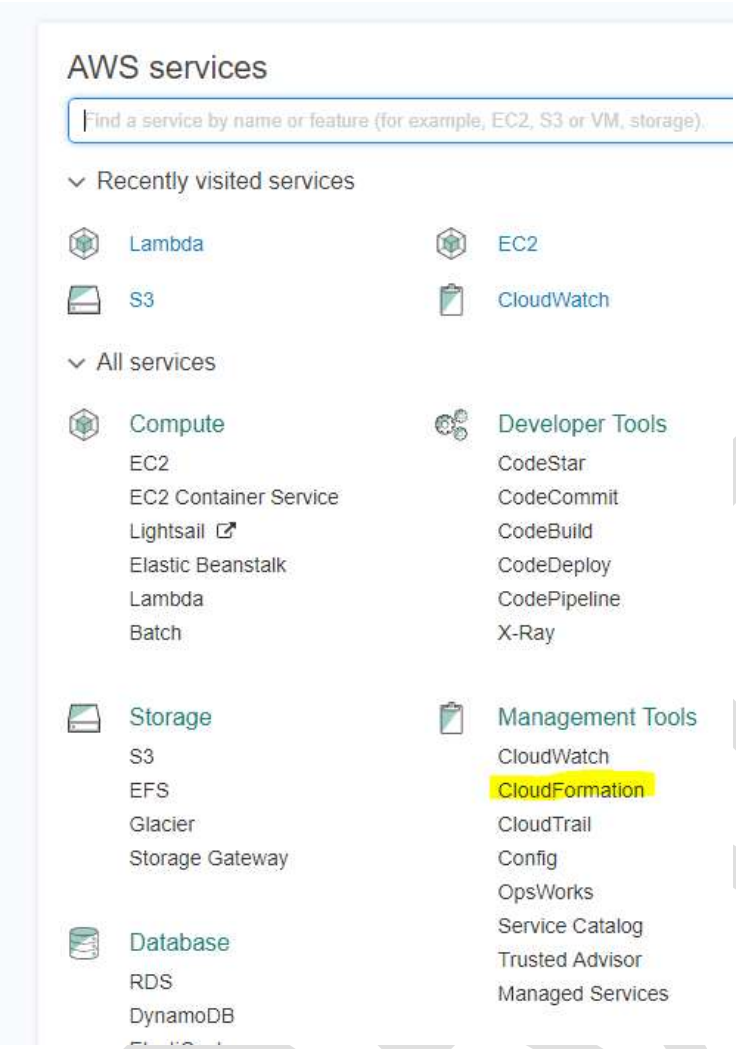
6.1 Services required

To complete the integration, the customer will be required to use the following Amazon Services:

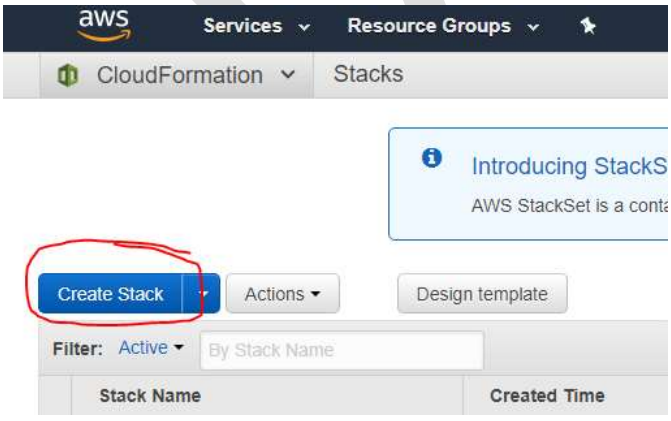
- Amazon Connect – configuration already covered
- Amazon S3
- Amazon Cloud Formation

6.2 CloudFormation Deployment

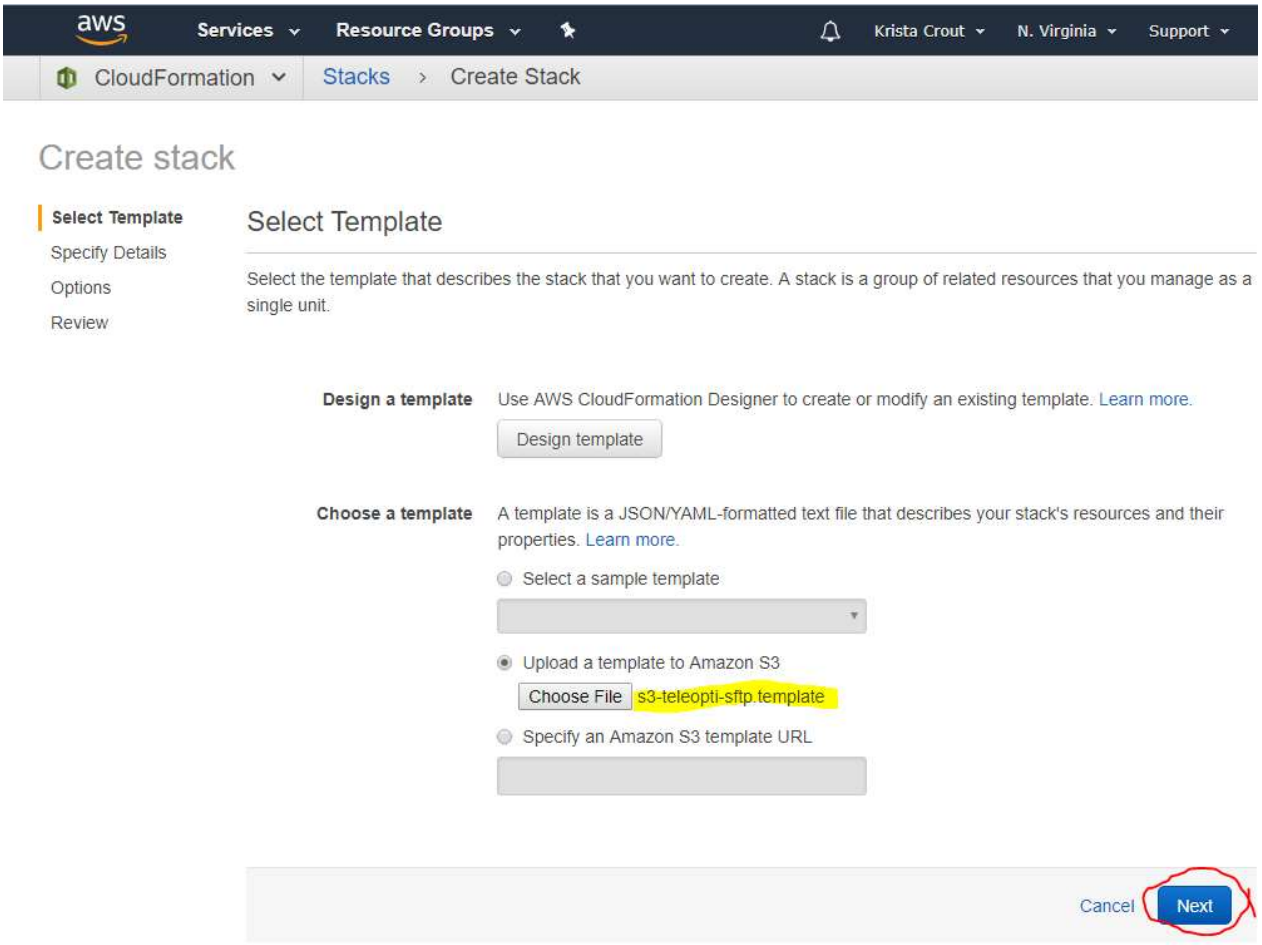
From the Amazon Web Services Console Homepage, Select CloudFormation.



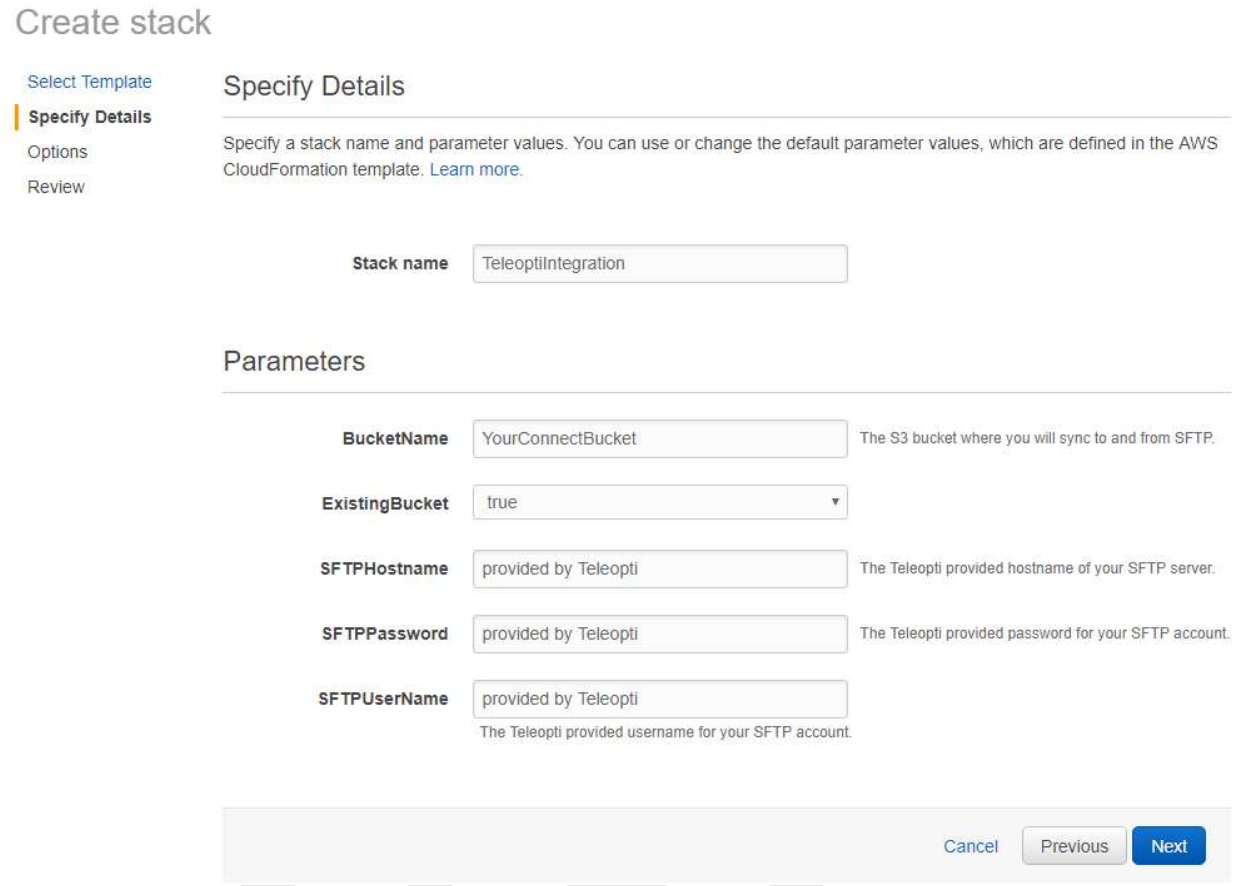
On the CloudFormation Page, click Create Stack.



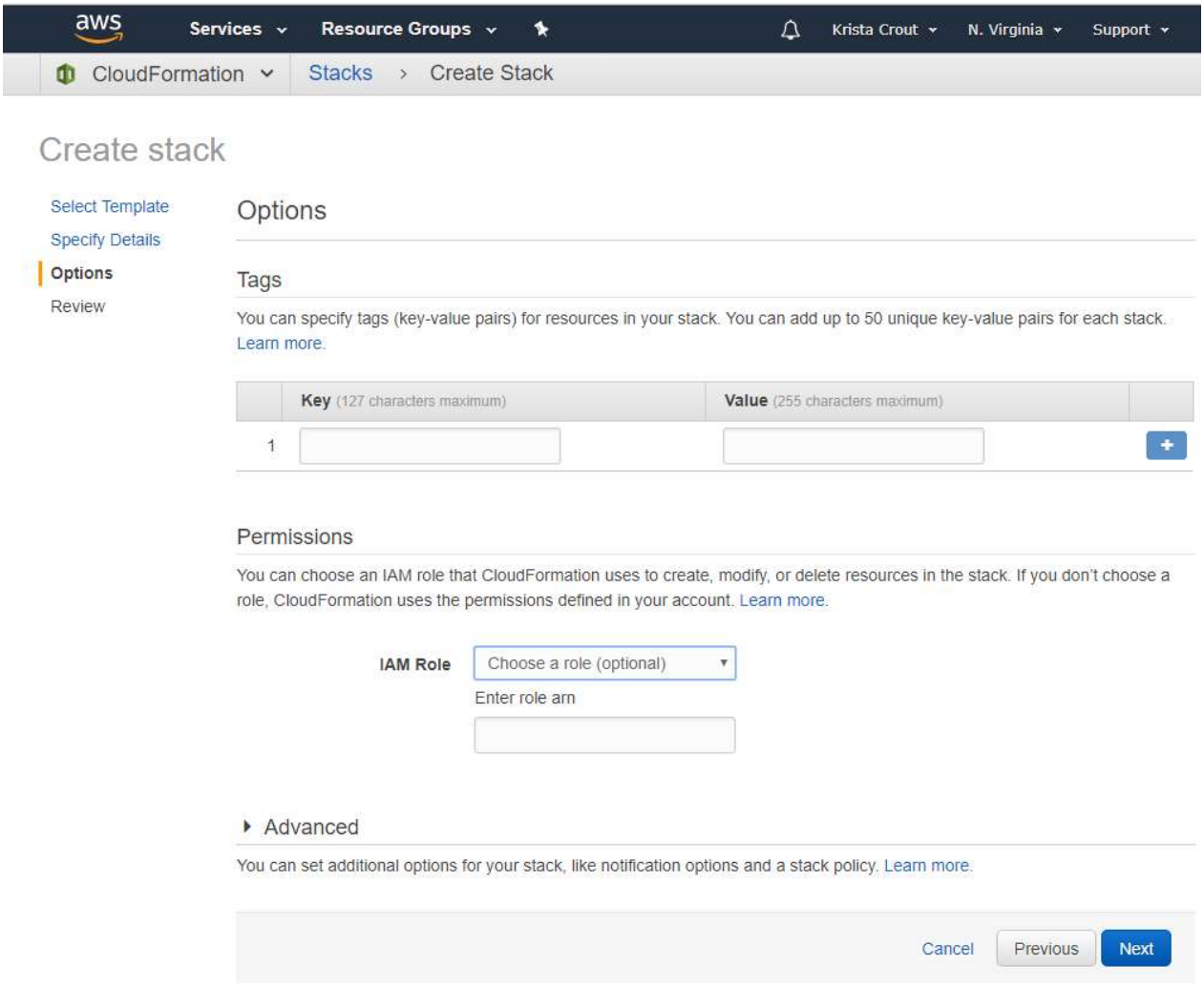
Select the file for the template provided by Teleopti. Then click Next.



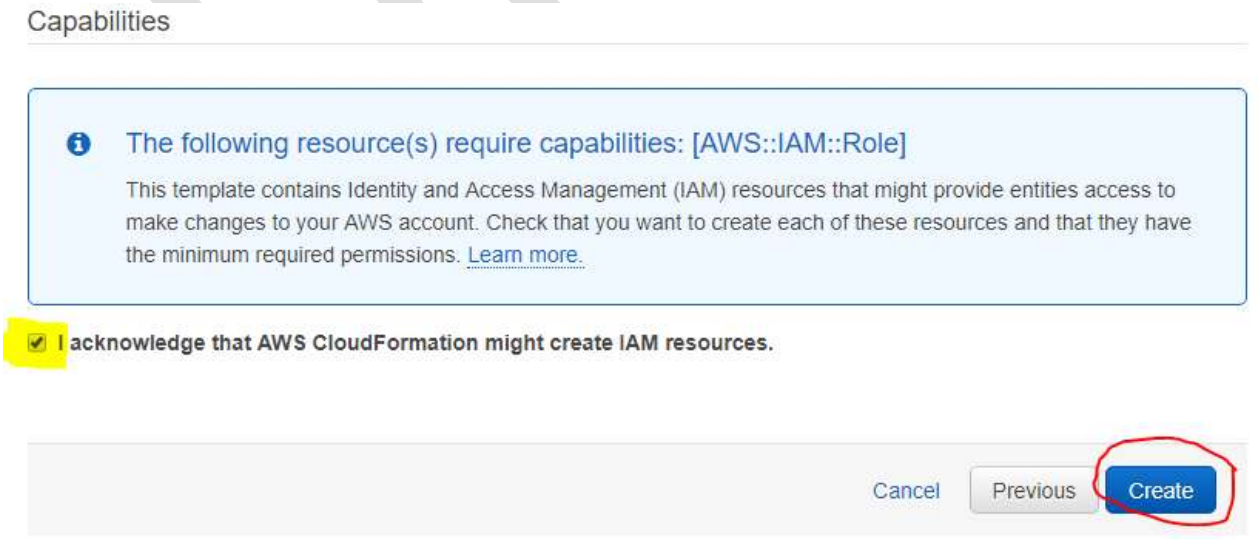
On the details page, name the stack, enter the name of your existing S3 bucket, and enter the SFTP connection details provided by Teleopti.



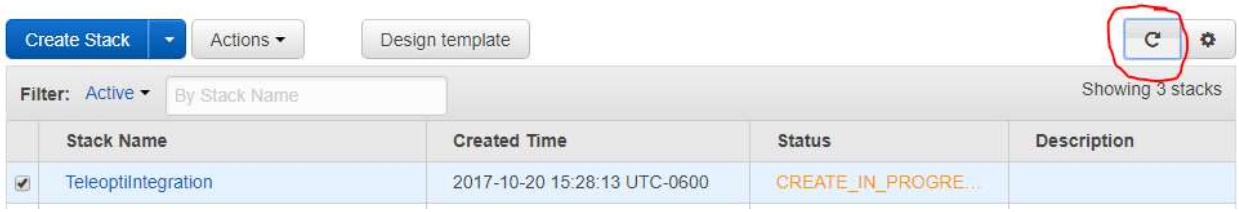
On the options page, leave everything default. Click Next.



On the Review page, make sure to check the box giving the stack permissions to create a new role. Click Create.

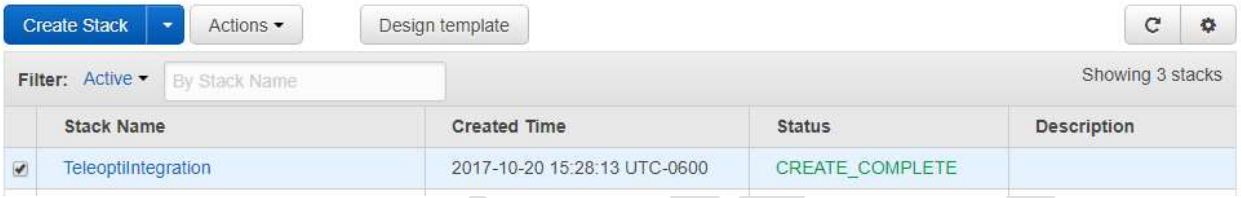


The creation of the stack will take a few minutes. You can hit the refresh button to check progress.



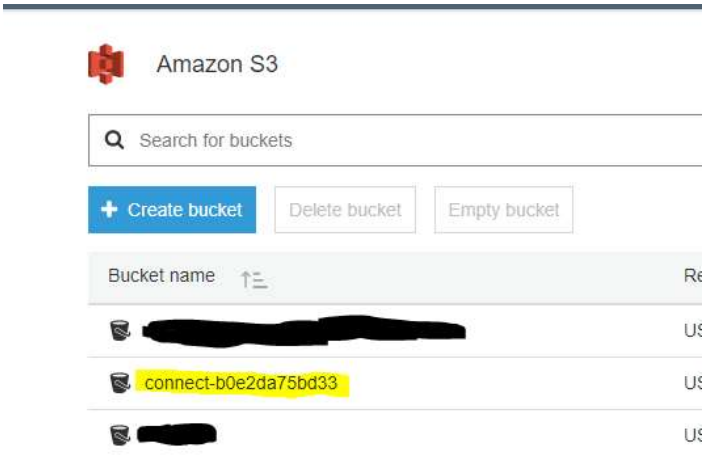
Once creation is complete, the page will automatically refresh.

6.3 Amazon S3 Configuration



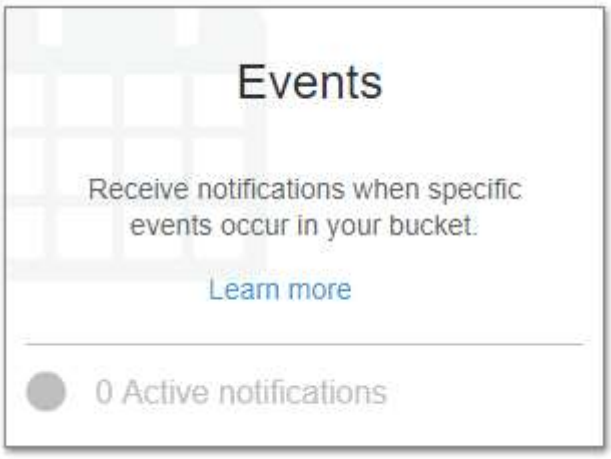
Return to the AWS homepage and select S3.

Open your Connect Bucket.

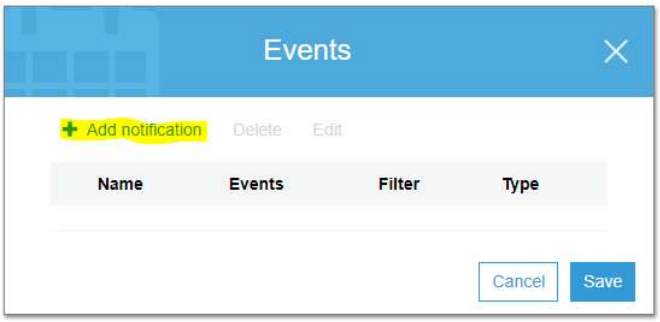


Select the Properties Tab.

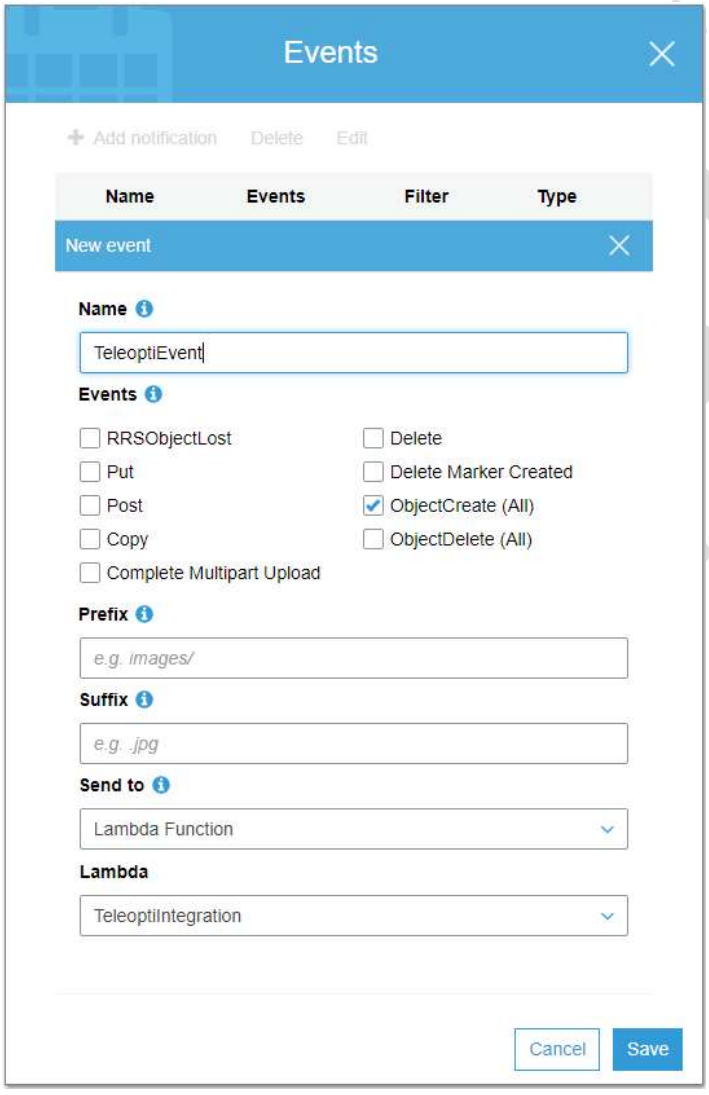
Select Events.



Click Add notification.



To Configure The event, give it a name, check the box for ObjectCreate (All), select Lambda Function from the Send to dropdown, and select the name of your new stack in the Lambda dropdown. Then click Save. This will complete the configuration.



7 Appendix – Setting up a ReadOnly account for RTA stream

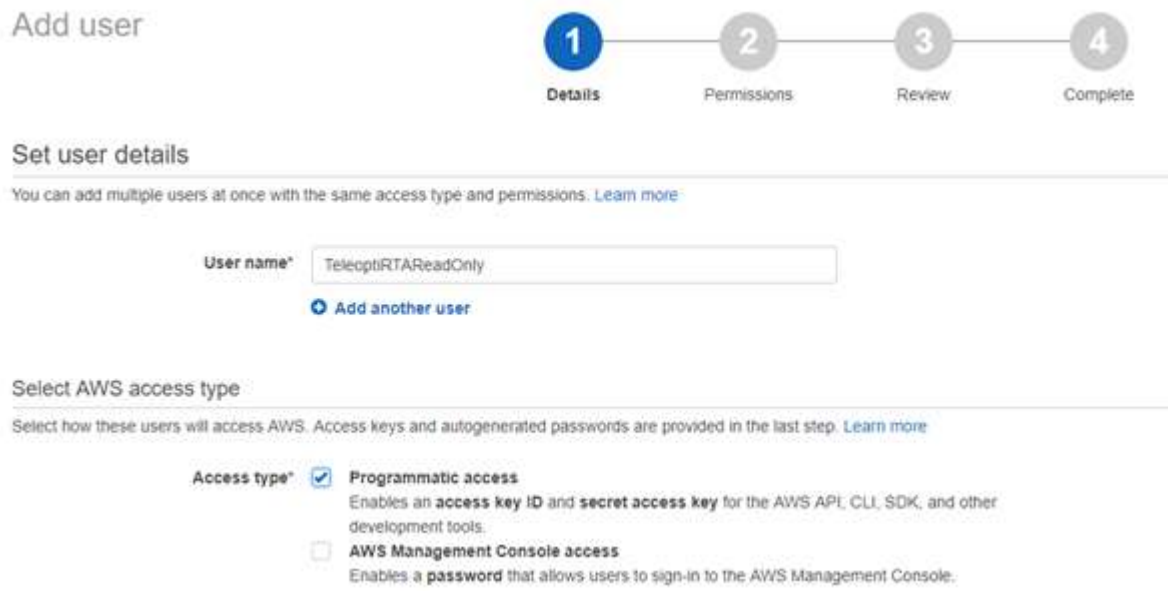
7.1 Create User

https://console.aws.amazon.com/iam/home#/users

use "**Add User"** to create a new User

User Name: TeleoptiRTAReadOnly (or similar)

Access type: "Programmatic access"



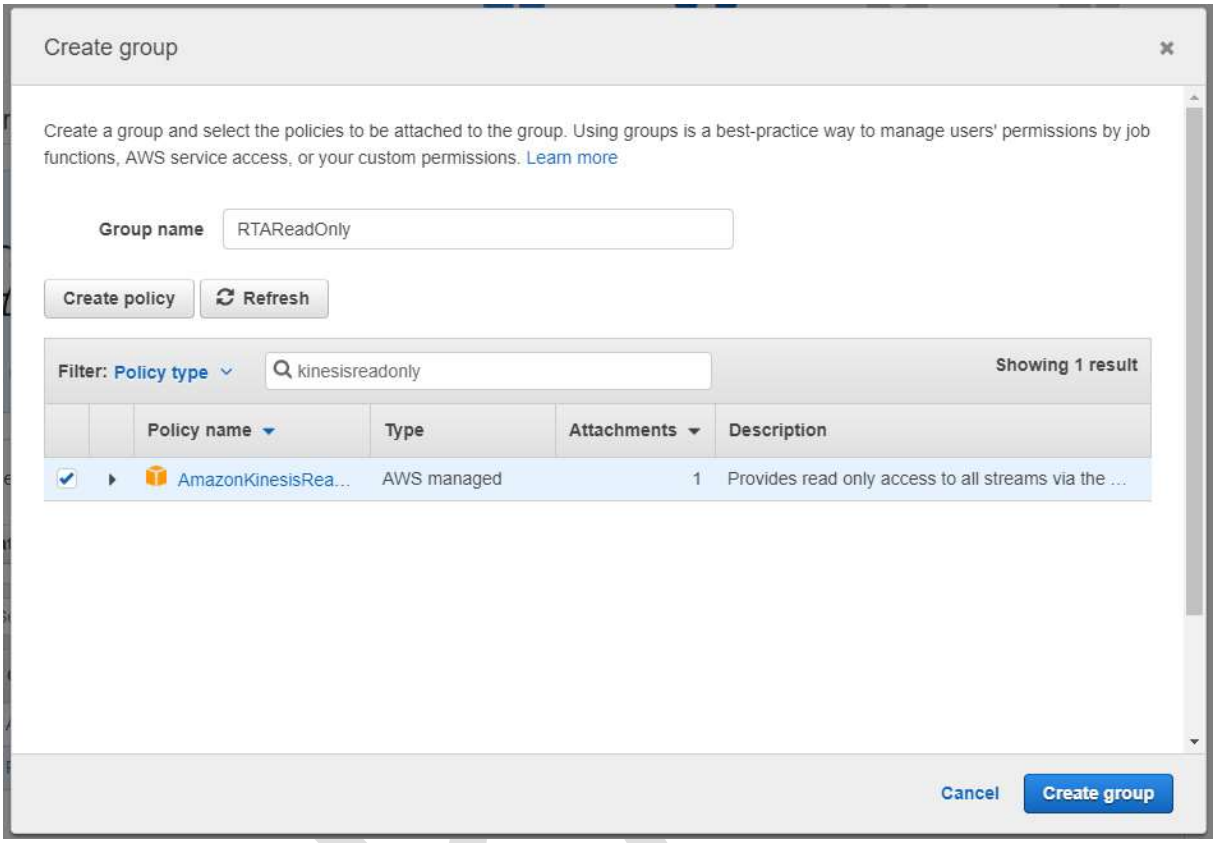
7.2 Handle permission

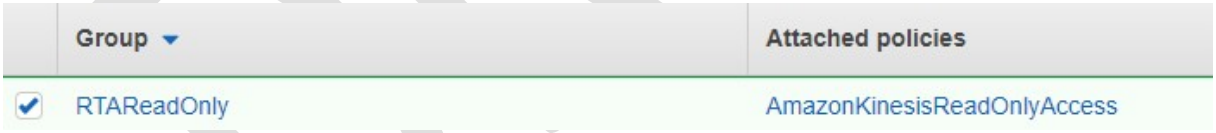
Attach the AmazonReadOnlyAccess policy to it the new group

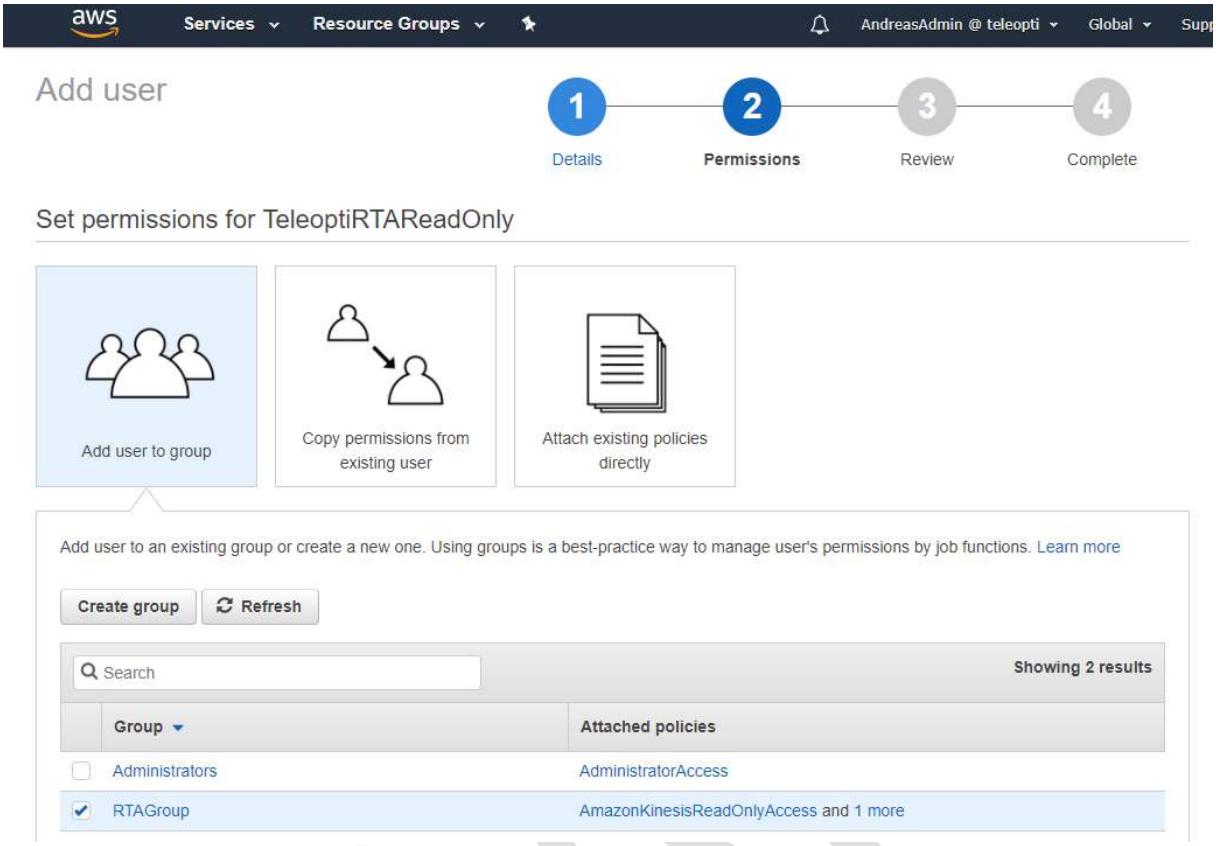
Create New Group

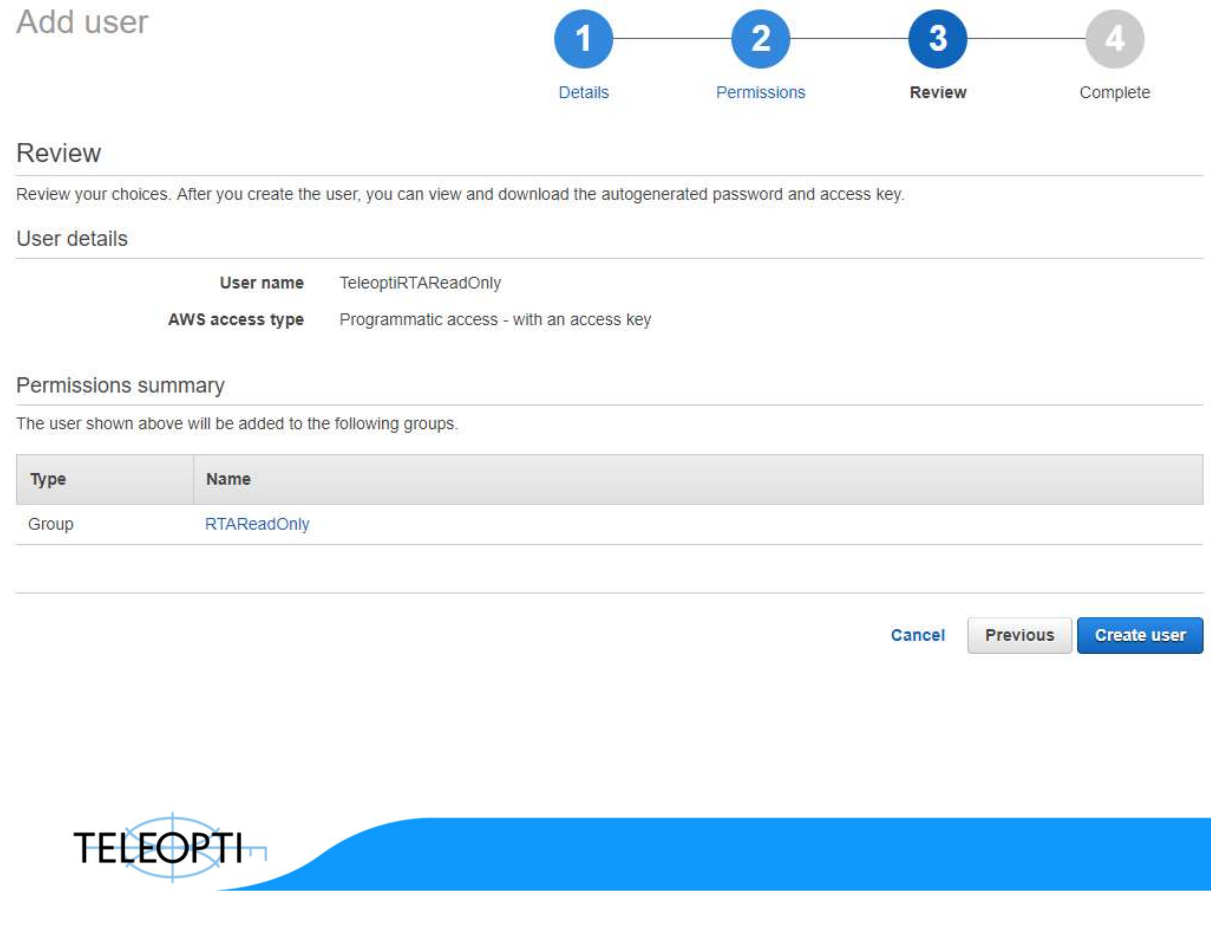
Create New Group

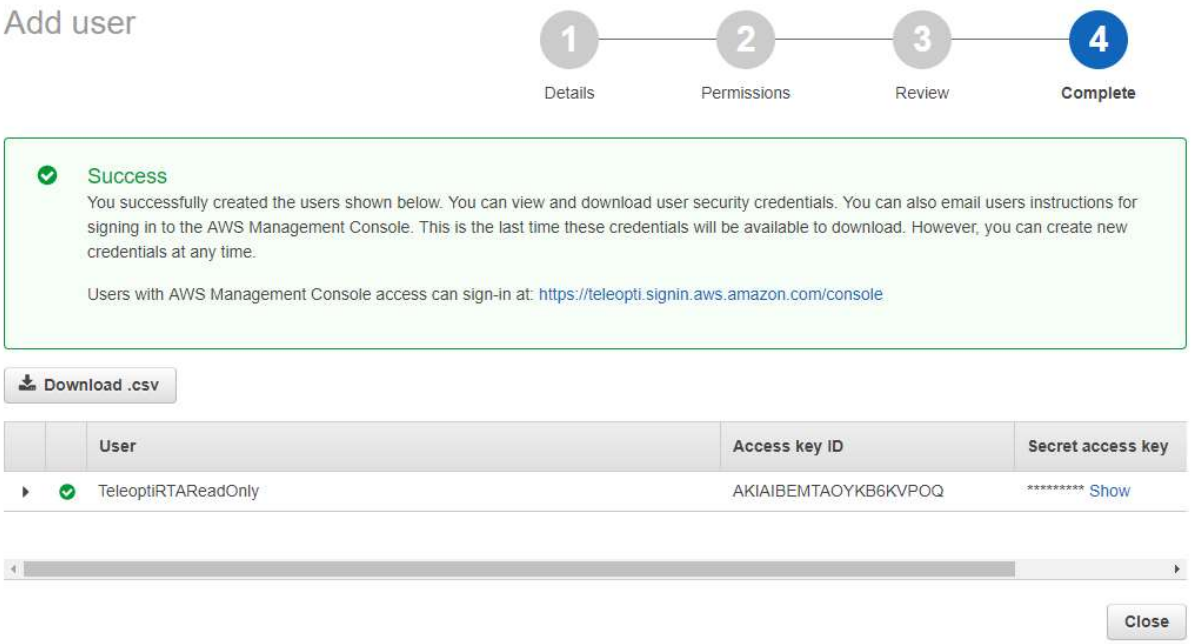
Create New Group





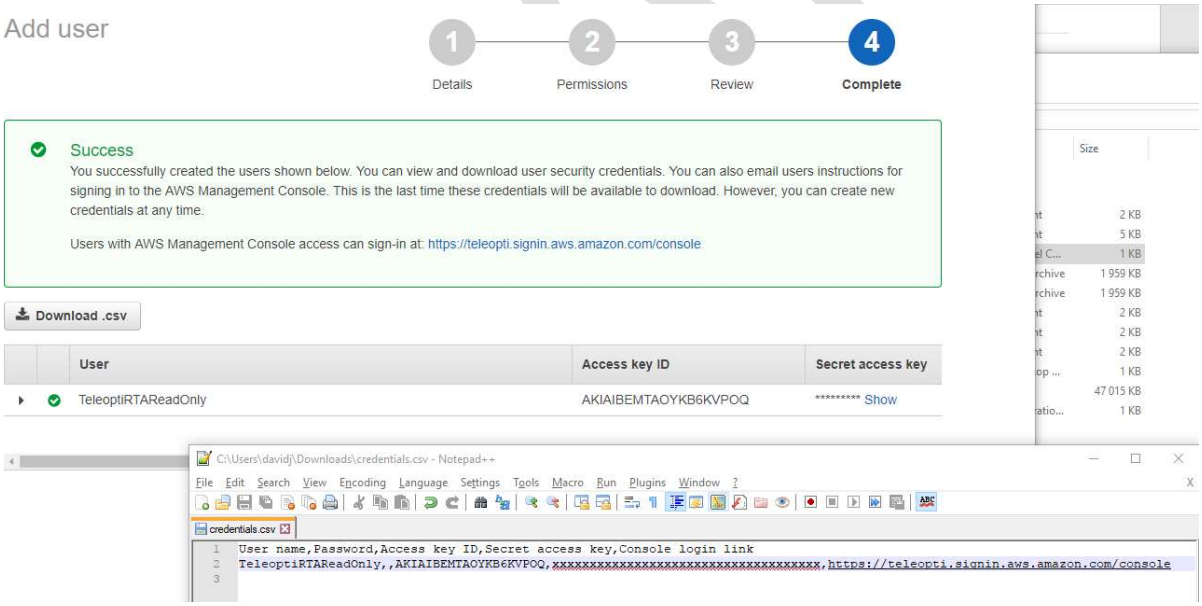

aws
Services
Resource Groups
AndreasAdmin @ teleopti
Global
Add user
1 Details
2 Permissions
3 Review
4 Complete
Set permissions for TeleoptiRTAReadOnly
Add user to group
Copy permissions from existing user
Attach existing policies directly
Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. Learn more
Create group
Refresh
Search
Showing 2 results
Group
Attached policies
Administrators
AdministratorAccess
RTAGroup
AmazonKinesisReadOnlyAccess and 1 more


Add user
1 Details
2 Permissions
3 Review
4 Complete
Review
Review your choices. After you create the user, you can view and download the autogenerated password and access key.
User details
User name TeleoptiRTAReadOnly
AWS access type Programmatic access - with an access key
Permissions summary
The user shown above will be added to the following groups.
Type
Name
Group
RTAReadOnly
Cancel
Previous
Create user



7.3 Share the credentials with Teleopti

Share this info with your Teleopti Tech Consultant

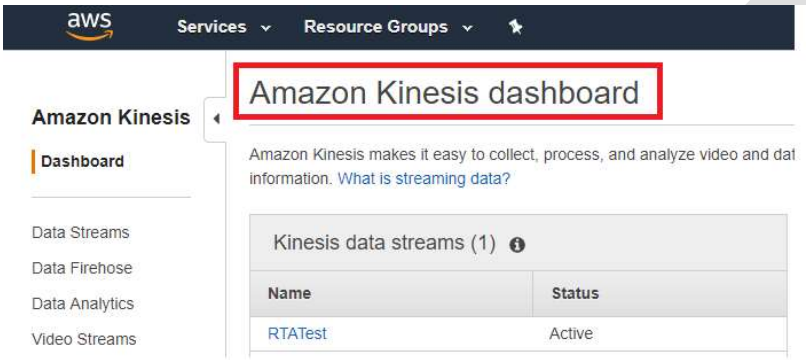


7.4 Share the Stream with Teleopti

The “Kinesis data streams” can be found here: https://console.aws.amazon.com/kinesis/

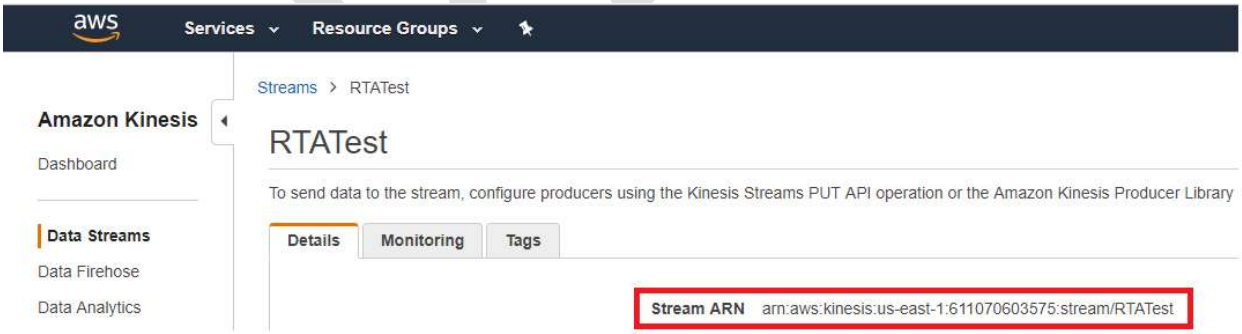
The stream should capture Agent Events.

Please Note: The Secret access key is only available on demand when logged into AWS - but can be exported to .cvs to be shared with your Teleopti Consultant. See below.



Click your stream **Name**

Send the stream ARN to Teleopti



Please leave the Stream encryption “Disabled”, Teleopti will not be able to decrypt the data. However the traffic, known as “data in transit”, is still encrypted using https/SSL.