

[Open in app](#)

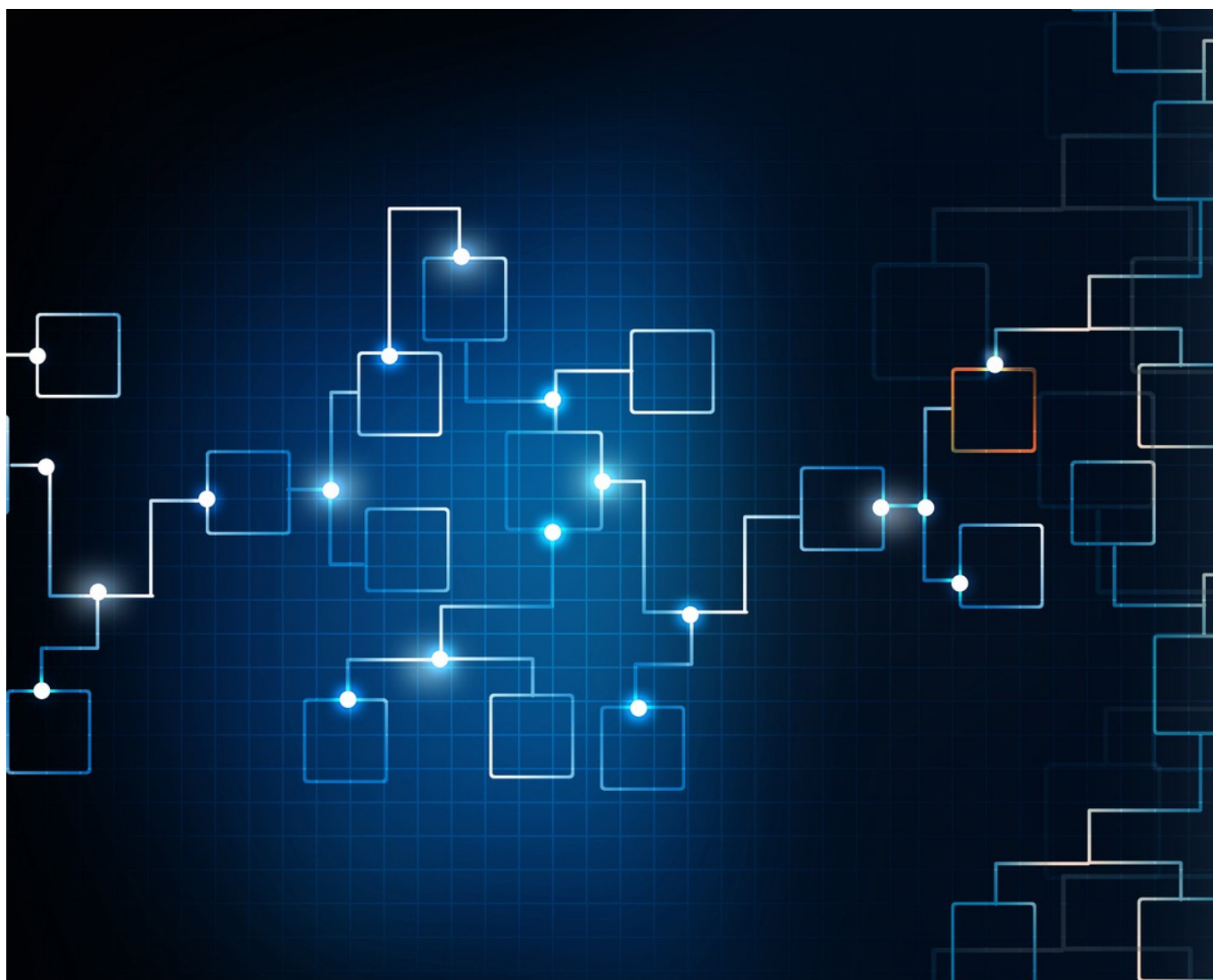
This account is under investigation or was found
in violation of the Medium Rules.

[Following](#)2.1K Followers [About](#)

Multi-Org Visibility for Work.com



Dan Mehlman Nov 11, 2020 · 11 min read

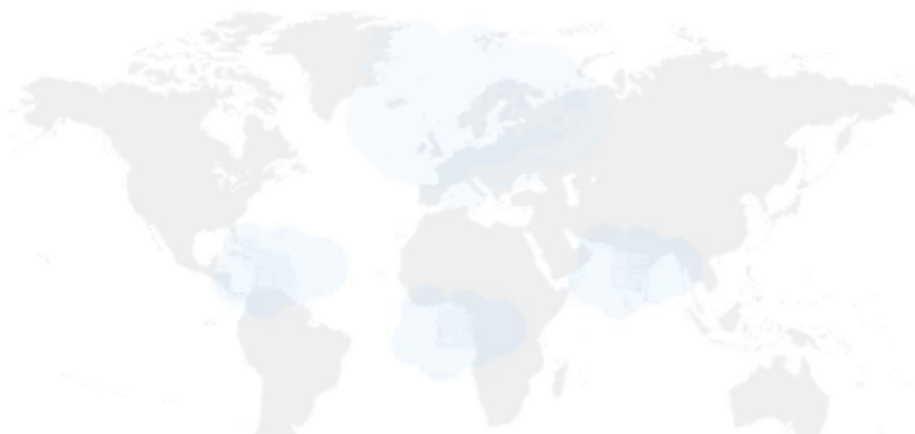


This account is under investigation or was found
in violation of the Medium Rules.

Disclaimer: This application in this blog post may enable access to potentially sensitive or regulated data, including in the form of self-reported employee wellness data. Customers and users are responsible for ensuring that their use of this application to access or process that information complies with all applicable laws and regulations, including any applicable employee data protection laws and regulations.

If I were to describe Heroku in a single sentence, I'd say "Heroku is a set of capabilities that makes it easy to build solutions." And while is this true, it's hardly comprehensive. Elsewhere in the [Heroku blog](#), my colleagues have discussed features such as Heroku Connect, which, simply put, is the "easy button" for exposing Salesforce data across your enterprise while providing relief for API management and Salesforce governor limits. Heroku Connect is a prime example of what Heroku is beyond a set of capabilities that makes it easy to *build* solutions: Heroku is also a platform that makes it easy to *extend* solutions.

In this post, we'll address an important need of our customers to provide data visibility across their multiple Salesforce organizations using Heroku capabilities. Why is this relevant? Any number of Salesforce customers have multiple Salesforce organizations for reasons such as acquisitions — where one Salesforce customer acquired another Salesforce customer — or data locality concerns as countries have addressed growing privacy concerns by requiring the storage of certain data with their country's borders. And where multiple environments do exist, somewhere within the business there will be the need for an enterprise-level view of the company's data.



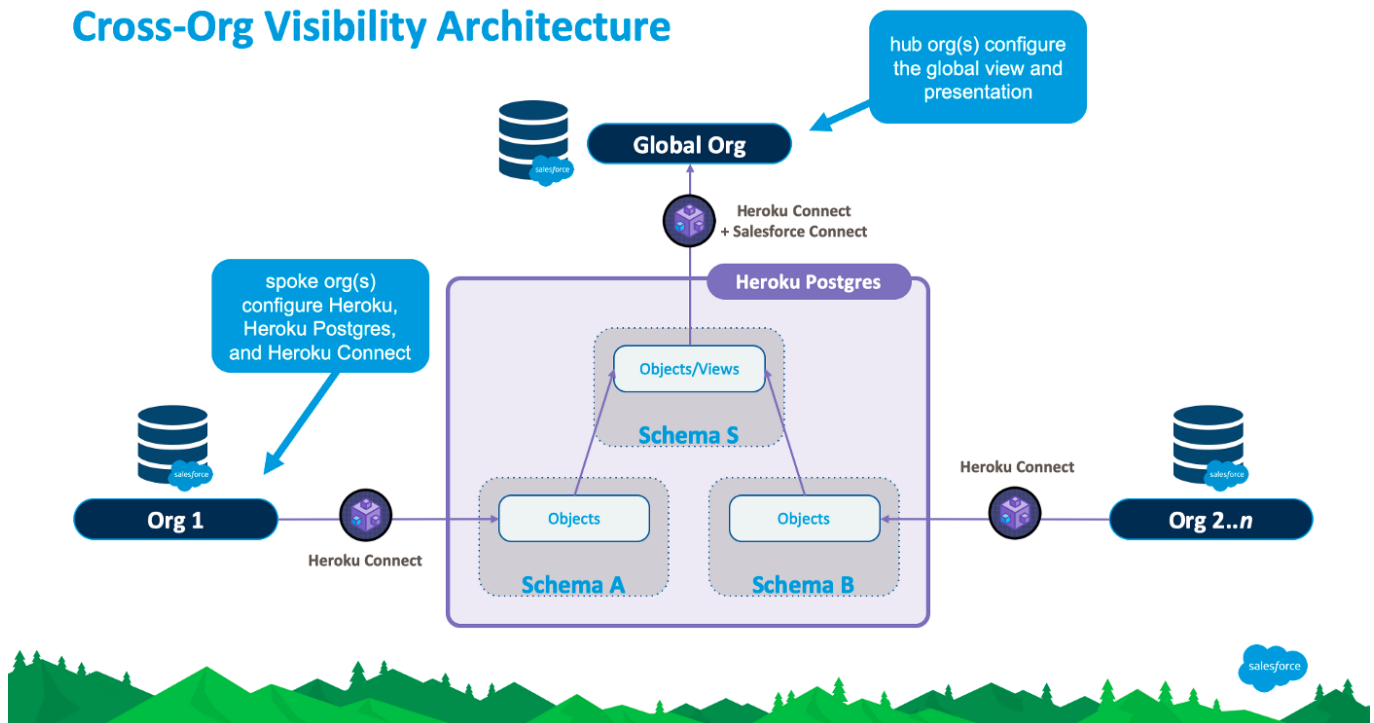
This account is under investigation or was found in violation of the Medium Rules.

Ironically, while our customers have been looking for simple solutions that enable the data visibility across organizations, Heroku's Salesforce organization itself was an example. Heroku was a Salesforce customer at the time of the acquisition and we maintained our Salesforce environment, which was customized for how we ran our business. After the acquisition, there was the need to roll up sales and customer data into the master Salesforce environment. Over the years, a number of customizations were put in place to enable visibility between Salesforce's Salesforce organization and Heroku's Salesforce organization, which enabled the sales and business development teams to effectively do their jobs. The Salesforce multi-org solution described in this post could have simplified this integration, had the solution existed at the time.

Where we are today

Perhaps no recent challenge has emphasized the need for cross-org visibility and reporting as readily as Work.com. Maintaining security and privacy around employee wellness data is of paramount importance, and many countries have standards requiring data locality. At the same time, organizations across the globe are faced with the challenge of monitoring the health of a globally distributed workforce.

Cross-Org Visibility Architecture



In the remainder of this post, we will build a solution that will aggregate data from multiple Salesforce organizations into a single Heroku Connect database. As the disclaimer above states, please ensure access to this data remains restricted only to the individuals who require access to it.

One final word before we get started

While the example use case is specific to Work.com, this multi-org solution is generic and applicable to all Salesforce organizations. We chose the Employee and EmployeeCrisisAssessment objects for this demo because they're less likely to be customized than objects like Account or Opportunity would be, and therefore are easier to work with from the perspective of a generic demo. Using this solution, you can create aggregated datasets from any Salesforce organizations based on any Salesforce objects, and easily virtualize your data into any Salesforce instances to take advantage of features such as the drag-and-drop report builder, list views, and other Salesforce functionality.

Please contact your Salesforce Account Executive if you have any questions, or wish to be put in contact with one of our implementation partners.

Getting started

To successfully complete this solution, you will require:

1. Access to a Heroku account. If you do not have an account and wish to sign up for a free developer environment, you can do so here.
2. Administrative-level access within the Salesforce organizations containing the employee wellness data.
3. Unfortunately Work.com trial organizations are not yet available. When they are, we will update this post appropriately. In the meantime, as an alternative, you can complete this exercise using the Account and Contact objects. **UPDATE: Work.com trial orgs are available here.**
4. You can create two or more scratch organizations to simulate your data producing organizations. See the App Development with Salesforce DX Trailhead module for details on how to create a scratch organization.

5. Administrative-
aggregated em
also be necessa
for this purpose.

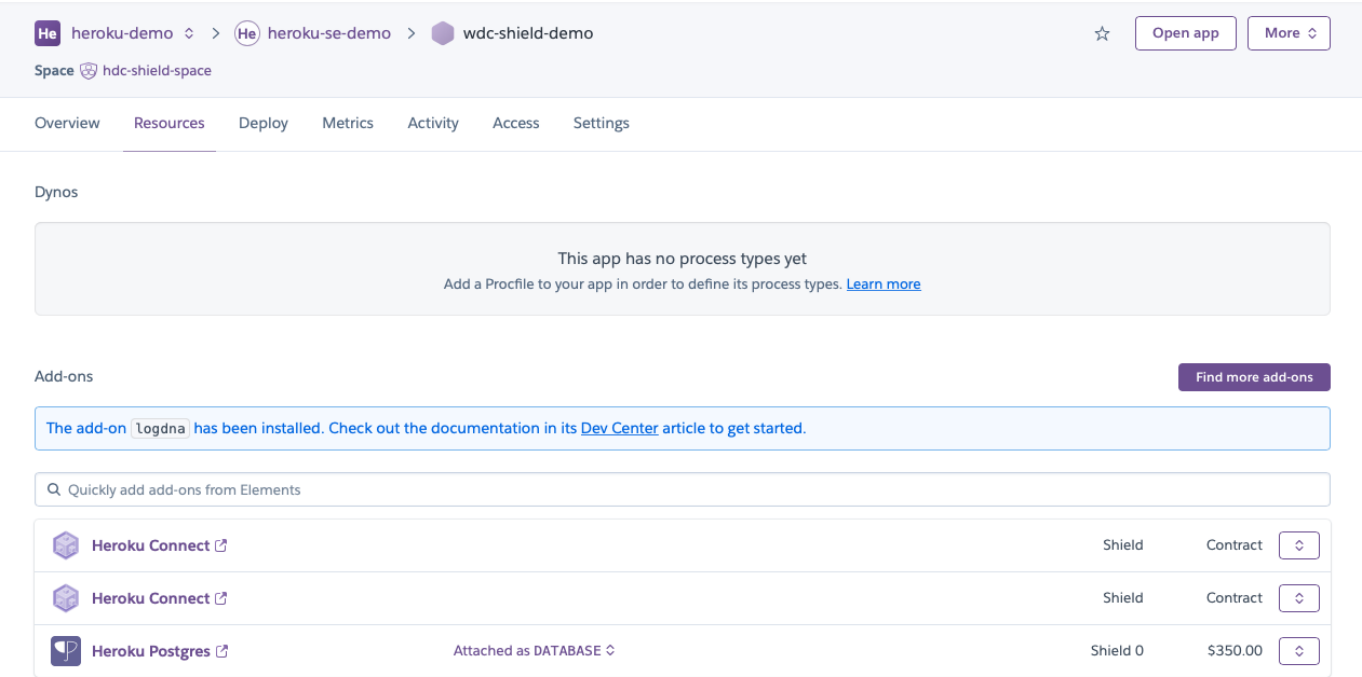
This account is under investigation or was found
in violation of the Medium Rules.
within this organization. You can also use a scratch organization
for this purpose.

; consuming the
rce Connect will

Step 1: Provision the Heroku app

The first step is to provision a Heroku app from the Heroku Dashboard, and include the Heroku Connect and Heroku Postgres add-ons.

Heroku Connect creates a connection between one Salesforce instance and a Heroku Postgres database. We require multiple Heroku Connect instances for this demo because we’re pulling data from multiple Salesforce organizations, but we’ll sync our data to a single database.



In this screenshot, you can see we’ve created a Heroku app and provisioned a Heroku Postgres database and two instances of Heroku Connect. You can create your own Heroku app using one of the links in step 1a below, or alternatively, create the Heroku app and provision the add-ons via the Heroku dashboard or CLI. Regardless of how you create your app, it should be similar to the one shown here, although the number of Heroku Connect instances can vary, depending on the number of Salesforce orgs you’re drawing data from. The demo pulls data from two Salesforce organizations, so it has two instances of Heroku Connect. The links in step 1a also provision two Heroku

Connect instances,
complete.

This account is under investigation or was found in violation of the Medium Rules.

ing step is

In the example above, the app is deployed within a Shield Private Space using Shield tiers for Heroku Postgres and Heroku Connect. While not required, these high-compliance resources provide the highest level of security controls and provide auditing capabilities. As you go through this exercise, the use of a Heroku Private Space, or a Heroku Shield Private Space, is strongly recommended but not required.

Step 1a: An optional shortcut

To automatically deploy a Heroku app matching the above configuration within the Common Runtime, use [this template](#). Alternatively, if you wish to deploy the same app within a Shield Private Space you can use [this template](#). Please note that if you are deploying into a Heroku Enterprise Team or other shared environment, appropriate access controls should be used to ensure that access is limited to the Postgres database when production data is involved.

The above deployment setups will also provision a single Heroku dyno when the app is deployed to an Enterprise Team or a Shield Private Space. You can reduce the dyno count to zero after the deployment has completed because dynos are not needed for this exercise.

Step 2: Configure the Heroku Connect instances

heroku-demo > heroku-se-demo > wdc-shield-demo

Space hdc-shield-space

Overview Resources Deploy Metrics Activity Access Settings

Dynos

This app has no process types yet
Add a Profile to your app in order to define its process types. [Learn more](#)

Add-ons Find more add-ons

The add-on Logdna has been installed. See the Logdna Dev Center article to get started.

Quickly add add-ons from Elements

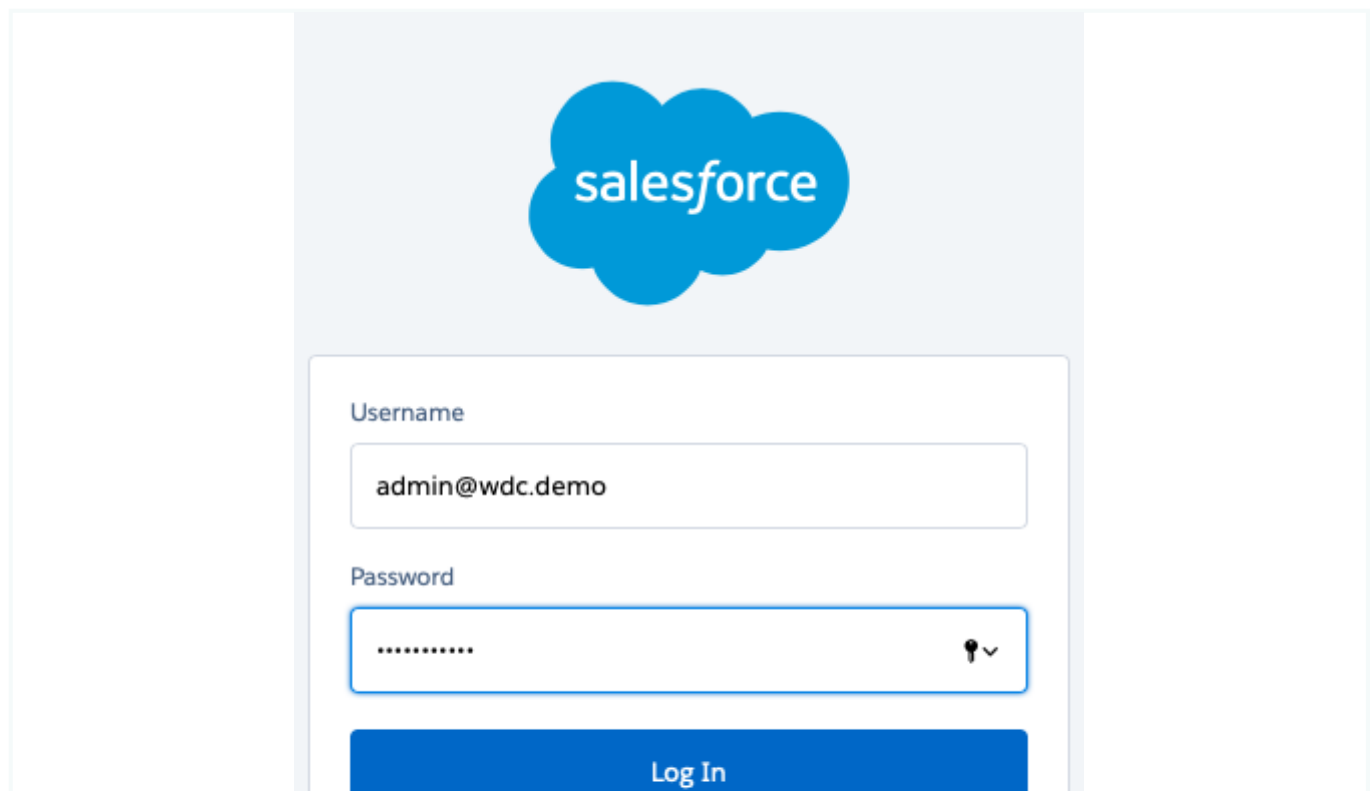
Add-on	Plan	Contract
Heroku Connect	Shield	Contract
Heroku Connect	Shield	Contract
Heroku Postgres	Attached as DATABASE	Shield 0 \$350.00

This account is under investigation or was found
in violation of the Medium Rules.

In this step, we're at the connections between our Heroku Postgres database and our Salesforce instances. We'll do this one instance at a time and repeat the process for each of the Heroku Connect instances, specifying a different Salesforce organization each time. It will be easier to complete steps 2 and 3 of this guide for one of the Heroku Connect instances before repeating both steps for each subsequent instance. To stress this point: *complete steps 2 and 3 for one geography, and then repeat as necessary for each additional geography.*

Because we're syncing all of our Salesforce data to a single Heroku Postgres database, we will need to use unique schemas for each of our Heroku Connect instances. In the example below, the schema name reflects the geography where the Salesforce data resides.

As a best practice, this example also adheres to the principle of least privilege. The user specified as the administrative user has been created with "Read All" access to the objects that we're syncing as part of this exercise (either Employee and EmployeeCrisisAssessment or Account and Contact). Access to other data is restricted.

The image shows a Salesforce login interface. At the top, there is a blue cloud logo with the word "salesforce" in white. Below the logo, there is a login form with two input fields: "Username" and "Password". The "Username" field contains the text "admin@wdc.demo". The "Password" field is masked with dots and has a small key icon and a dropdown arrow on the right. Below the password field is a blue "Log In" button.

This account is under investigation or was found in violation of the Medium Rules.

[Forgot Your Password?](#)

[Use Custom Domain](#)

You will need to provide access credentials to your data-producing organizations — either the Work.com instances if you have them, or the scratch organizations you created earlier.

You can obtain the password for your scratch organizations via the CLI:

```
sfdx force:user:display -u <username provided by the Scratch Org>
```

Cancel Provision Connection Next

✓ 1. You are adding Heroku Connect to app: dandemo99
2. Select the Postgres database and enter the schema name for storing your data

Database Config Vars	Database Plan Name
DATABASE_URL	heroku-postgresql:hobby-dev

Enter schema name:

Specify the schema name in step 1 of the Heroku Connect configuration

Step 3: Map objects

Cancel Edit Mapping: Employee Save

Warnings
Note: Accelerated polling is not available for Employee because it is not supported by the Salesforce Streaming API.

Salesforce → Database
Set the frequency and method used to synchronize data moving from Salesforce to your database.
[More Info](#)

Database → Salesforce
Enable updates to data stored in Salesforce when your database is updated.
[More Info](#)

Mapped Fields
Select which fields to synchronize.
[More Info](#)

Standard Fields

Sync	Field Name	Type	Length	Indexed
<input checked="" type="checkbox"/>	AlternateEmail	email	80	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CreatedById	reference to: User	18	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CreatedDate	datetime	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CurrentWellnessStatus	picklist	255	<input type="checkbox"/>
<input checked="" type="checkbox"/>	DateOfBirth	date	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Email	email	80	<input type="checkbox"/>

Options:
☐ Accelerate Polling
☐ Write database updates to Salesforce using The unique identifier functions as a secondary, external key prior to their having a Salesforce ID
☐ [More Info](#)

Poll Frequency: minutes
 Optionally reduce the poll frequency to the smallest number.
 This will be 5 minutes when using the free tier of Heroku Connect.

Select all fields (you'll need to check each of these boxes separately)

From the Heroku Console, you want to select the EmployeeCrisisAssessment object against this screenshot and then click Save.

This account is under investigation or was found in violation of the Medium Rules.

Create Mapping. You'll be able to click your settings

Next you'll want to do the same thing for the EmployeeCrisisAssessment object.

Connections > dan-wdc-demo (dan-wdc-demo:amer) Virginia (US)

Overview Mappings Logs Explorer External Objects Settings

All Mappings

(All) + Create Mapping

Status	Object	Mapped Fields	Salesforce Rows	Database Rows	Pending Writes to SF	Errored Rows
✓ OK	Employee	44	6	6	-	-
✓ OK	EmployeeCrisisAssessment	17	-	-	-	-
Totals:		61	6	6	-	-

When you're done, your screen will again look similar to this screenshot, although the numbers in the Salesforce Rows and Database Rows will vary since we're looking at the record count of data with your Salesforce organization and row count within the Heroku Postgres table.

Reminder: Complete steps 2 and 3 for each of your Salesforce instances that will be providing data to the aggregated view. In this example, we have Salesforce organizations representing the AMER and EMEA geographies, so these steps need to be completed twice.

Step 4: Create the aggregated data view

In this step we're accessing Heroku Postgres directly. We have `pgweb` running on a dyno within the Shield Private Space, which provides access to the data tier of the Heroku app directly (of note, you may want to dial the dynos down to zero when you're not using this app to avoid unnecessary expenses). If you're building this demo in the multitenant environment (which can be done, but is not recommended due to the privacy concerns surrounding the data), you can use the command `heroku pg:psql --app <app name>` from the Heroku CLI and access the database from the command line if you have `psql` installed locally on your machine.

Now, we need to create a couple of considerations (or, more specifically, as a Heroku External Object, is simple!). There are some data at your OData endpoint (or, more specifically, as a Heroku External Object).

- Heroku Connect requires External Objects have a column named 'id'
- The contents of the 'id' column must be unique
- We're using a 'geo' column to keep track of where the data originated

You can easily meet these requirements as you create the view. The syntax is as follows:

```
1 CREATE OR REPLACE VIEW global_assessment as
2 SELECT employeecrisisassessment.sfid AS id,
3 employeecrisisassessment.assessment,
4 employeecrisisassessment.assessmentdate,
5 employee.lastname, employee.firstname,
6 'geo designation' AS geo
7 FROM <schema name>.employeecrisisassessment, <schema name>.employee
8 WHERE employeecrisisassessment.employeeid = employee.sfid
9 UNION [repeated select for each of our other schemas];
```

heroku_aggregated_data_view.sql hosted with ❤ by GitHub

[view raw](#)

Specific to this example, which has two Salesforce regions (and consequently two schemas in the Heroku Postgres database — AMER and EMEA), the command to create the view looks like this:

```
1 CREATE OR REPLACE VIEW global_assessment as
2 SELECT employeecrisisassessment.sfid AS id,
3 employeecrisisassessment.assessment,
4 employeecrisisassessment.assessmentdate,
5 employee.lastname, employee.firstname,
6 'AMER' AS geo
7 FROM amer.employeecrisisassessment, amer.employee
8 WHERE employeecrisisassessment.employeeid = employee.sfid
9 UNION
10 SELECT employeecrisisassessment.sfid AS id,
11 employeecrisisassessment.assessment,
12 employeecrisisassessment.assessmentdate,
```

```
13 employee.lastna
14 'EMEA' AS geo    This account is under investigation or was found
15 FROM emea.emplo  in violation of the Medium Rules.
16 WHERE employeec, isassessment.employeeid = employee.sfid,
```

heroku_data_view_amer_emea.sql hosted with ❤ by GitHub

[view raw](#)

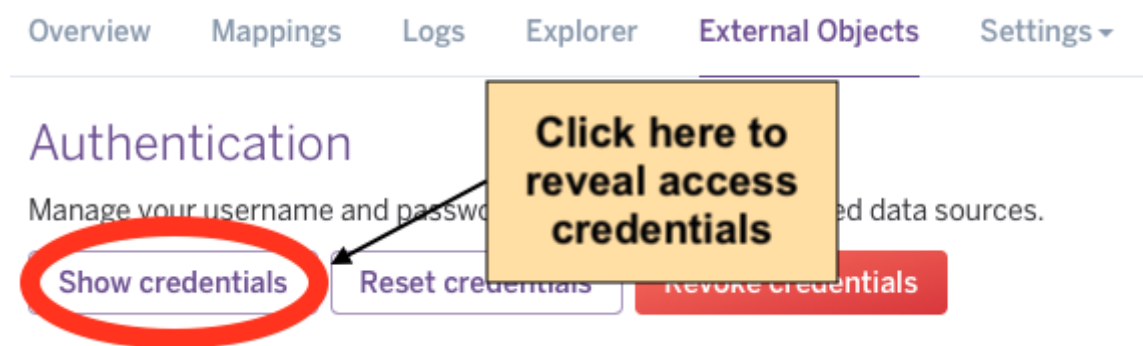
Alternatively, if you're using Accounts and Contacts:

```
1 CREATE OR REPLACE VIEW global_assessment as
2 SELECT contact.sfid as id, industry, account.name, phone, fax,
3 lastname, firstname, email, mobilephone,
4 'AMER' AS geo
5 FROM amer.account, amer.contact
6 WHERE amer.account.sfid = amer.contact.accountid
7 UNION
8 SELECT contact.sfid as id, industry, account.name, phone, fax,
9 lastname, firstname, email, mobilephone,
10 'EMEA' AS geo
11 FROM emea.account, emea.contact
12 WHERE emea.account.sfid = emea.contact.accountid;
```

heroku_data_view_for_accounts_contacts.sql hosted with ❤ by GitHub

[view raw](#)

Step 5a: Expose the aggregated view via Heroku External Objects



1. From the External Objects tab within the Heroku Connect Dashboard, click Show Credentials.
2. Make note of the User, Password, and Service URL parameters, which will be required to consume the aggregated data set within the Salesforce organizations that need access to the global data.

3. Click the checkmark in the previous step

This account is under investigation or was found in violation of the Medium Rules.

/view you created in

Connections > dan-wdc-demo (dan-wdc-demo:amer) Virg

Overview Mappings Logs Explorer External Objects Settings

Authentication

Manage your username and password for accessing your shared data sources.

Hide credentials

Reset credentials

Revoke credentials

User: 42484fc36733451599e439e7f66f2cc4

Password: c545f8b67c9d47558c60c41417296420

You'll need these credentials in the next step

Server URL

The URL endpoint your OData consumer will call to access your shared Heroku Connect data sources.

Service URL

https://odata-3-virginia.heroku.com/odata/v4/f145cc188b5145949ded2c4026e10704/

OData Version

4

Access

read/write

Format

JSON

Data Sources

Select the database tables or views you wish to share:

Warning: One or more objects below have sharing disabled because they lack a column that can function as a primary key.

Shared	Name	Schema	Type
<input type="checkbox"/>	employee	amer	table
<input type="checkbox"/>	employeeecrisisassessment	amer	table
<input type="checkbox"/>	employee	emea	table
<input type="checkbox"/>	employeeecrisisassessment	emea	table
<input checked="" type="checkbox"/>	global_assessment	public	view

Here we're exposing the aggregated dataset at the OData endpoint (Service URL) specified above

Note: Unlike steps 2 and 3, this step only needs to be completed once. The External Objects feature of Heroku Connect can potentially expose any of the tables within the Salesforce instance. The global_assessment view will be visible from any of them.

Step 5b: Consume the aggregated view from your Salesforce instance

To virtualize the aggregated view within a Salesforce instance, you'll need an instance of Salesforce Connect within your Salesforce instance. As noted earlier, you can use a scratch organization for this purpose.

To configure the External Data Source:

- 1 1. Click the gear icon in the upper-right corner.
- 2 2. Click Setup.
- 3 3. Enter "External" in the Quick Find box and click External Data Sources.
- 4 4. Click New External Data Source. For the New External Data Source screen, fill in the

- 5 a. External
- 6 b. Type: Sa This account is under investigation or was found ill add a set of param
- 7 c. URL: Thi in violation of the Medium Rules. Objects page, as highl
- 8 d. Identity Type: Named Principal
- 9 e. Authentication Protocol: Password Authentication
- 10 f. Username: The value from the User field, as highlighted in step 5a.
- 11 g. Password: The value from the Password field, as highlighted step 5a.
- 12 5. Click Save.
- 13 6. Click Validate and Sync.

configure_external_datasource.txt hosted with ❤ by GitHub

[view raw](#)

Steps to configure the External Data Source in Salesforce

Validate External Data Source: Multi Org Demo

Confirm that you can connect to the external system, and synchronize its schema with your Salesforce org.

« [Back to External Data Source: Multi Org Demo](#)

Name	Multi_Org_Demo
External Data Source	Multi Org Demo
Status	Success

Sync

Select	Table Name	Table Label	Synced
<input type="checkbox"/>	public\$global_assessment	public\$global_assessment	<input type="checkbox"/>

- When the sync completes, you'll see a screen similar to this. Click the Select checkbox next to "public\$global_assessment." At this point, the object name is reflected as <schema name>\$<table name>. We'll give this a more meaningful name in the next step.
- Click "Sync." (The Sync button will be greyed out until a table is selected.)

Step 6: Enable reporting (and other fine tuning)

External Data Source: Multi Org Demo

Connect to another Salesforce org or a third-party database or content system.

« [Back to External Data Sources](#)

This account is under investigation or was found in violation of the Medium Rules.

Type Salesforce Connect: OData 4.0

Parameters

URL <https://odata-3-virginia-heroku.com/odata/v4/3b17b2db24d04b5dbf06292d3a83566c/>

Connection Timeout (Seconds) 120

Writable External Objects ☐

High Data Volume ☐

Server Driven Pagination ☐

Request Row Counts ☒

Compress Requests ☐

Enable Search ☒

Use Free-Text Search Expressions ☐

Format JSON

Special Compatibility None

Eligible for External Change Data Capture ☐

Authentication

Certificate

Identity Type Named Principal

Authentication Protocol Password Authentication

Username 9e9ede7a9c3341c98d36a768f0fa06e5

Click "edit" here to modify the External Object.

Custom HTTP Headers

No records to display

External Objects

	Label	Namespace Prefix	Description
Edit Delete Validate	public\$global_assessment		public\$global_assessment

When the sync process is complete, the External Object will appear at the bottom of the screen. Click Edit to give the object a more meaningful name and enable reporting.

Edit External Object
public\$global_assessment

External Object Definition Edit

Save Save & New Cancel

External Object Information

The singular and plural labels are used in tabs, page layouts, and reports. Be careful when changing the name or label as it may affect existing integration and merge templates.

Label Global Assessment Example: Account

Plural Label Global Assessments Example: Accounts

Starts with vowel sound ☐

The Object Name is used when referencing the object via the API.

Object Name public_global_assessment Example: Account

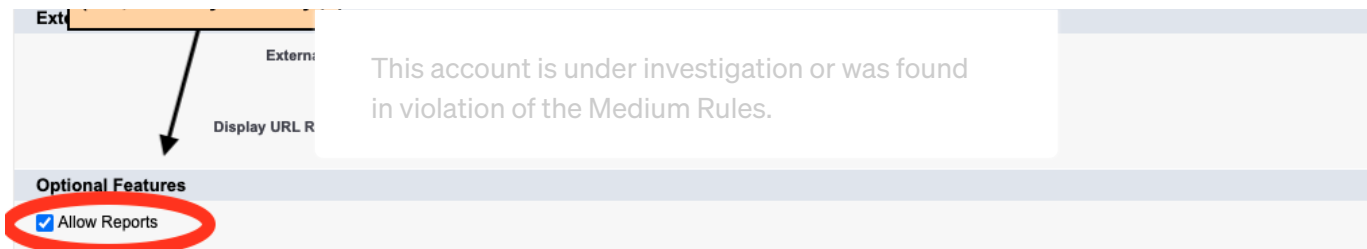
Description public\$global_assessment

Help Setting ☒ Open the standard Salesforce.com Help & Training window ☐ Open a window using a Visualforce page

Content Name --None--

Enable reporting on the object by clicking this box. (Yes, it's really that easy!)

Here we're giving the external object a more meaningful name. The "Plural Label" is what will appear if you put the object on a tab.



Step 7: Enjoy!

With reporting enabled, you have the opportunity to use the drag-and-drop report builder and the drag-and-drop dashboard builder. Additionally you can put the External Object on a tab and take advantage of Salesforce features such as list views to view and filter records at the console.

Note: In this example, the geo field is initially created as a long text field. You can change the data type to a short text field of length 15. This allows the field to be used as a filter for list views, which is not possible with the long text field.

But wait! There's more!

We've kept the above example simple, and while we didn't account for global challenges such as multiple currencies, languages, timezone differences, or evolving data definitions there wasn't a need to. Real world challenges are likely to be more complicated, but the ease with which similar frameworks can be implemented enables to you focus on these details — the parts that are most useful to your customers or employees — while not having to worry about the infrastructure.

We're building this solution in a managed package that will soon be available on AppExchange. This Labs package will do everything we've walked through in the post, from creating and deploying a Heroku application to configuring multiple Salesforce instances to creating the unified view of the Work.com employee wellness data. Please keep an eye out for updates!

Conclusion

The app described in this post shows the value of the Salesforce Platform. As you develop solutions, you should be focused on engaging and delighting your customers, whoever they happen to be, and spending your time where it matters most. In this post, we've created reports containing data that spans multiple Salesforce environments. Heroku Connect will continue to sync data to Heroku Postgres and our

join will update automatic
data. Best of all, no c

This account is under investigation or was found
in violation of the Medium Rules.

contain up-to-date
hired.

About the Author



Once upon a time, Dan Mehlman was a developer and experienced sleepless nights plagued by the very challenges Heroku readily solves. He's much happier these days (in general) and well-rested (specifically) and is known to spend his time talking about the many wonderful capabilities of Heroku (specifically) and the Salesforce Platform (in general). Today he is the Heroku Director of Technical Architecture.

[Heroku](#)[Inside Salesforce](#)[Data Visualization](#)[Salesforce Architect](#)[Careers](#)[About](#) [Help](#) [Legal](#)

Get the Medium app

