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Onsite and Remote Data Access with Oracle Analytics Cloud

2020 Analytics and Data Summit

Jonathan Clark

2/25/2020

@VlamisSoftware

Vlamis Software Solutions

Specializes in Oracle-based:

➢ Enterprise Business Intelligence

➢ Data Warehousing

➢ Data Mining and Predictive Analytics

➢ Data Visualization

ORACLE Gold Partner

Specialized
Oracle Business Analytics
Cloud Platform

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Presenter Background

Jonathan Clark – Senior Consultant

- I joined Vlamis Software Solutions in 2000.

- I have over 25 years of experience in Information Technology and have been involved in dozens of business intelligence implementations.

- I have worked very hard to gain experience in all facets of business computing possible, including, but not remotely limited to, desktop support, physical networking, server administration onsite and cloud, database administration, datawarehousing, PL/SQL programming, user and data security, requirements gathering, business intelligence/business rules and KPI creation, documentation and creation of best practices, building custom data visualizations, application server programming, project management, and providing training/mentoring.

- In my spare time, I am the Lord Mayor and assistant street cast director for the Kansas City Renaissance Festival and volunteer through the Kansas City Beard and Mustache Club.

Presenter Background

Cathye Pendley – VP Consulting Services

- 25+ years in business intelligence and dimensional modeling
- Successfully lead and implemented 50+ business intelligence projects
- Serves on Analytical and Data Summit committee
- Presents at numerous conferences
- Mentor women interested in working in the technology industry

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Drawing for Free Book

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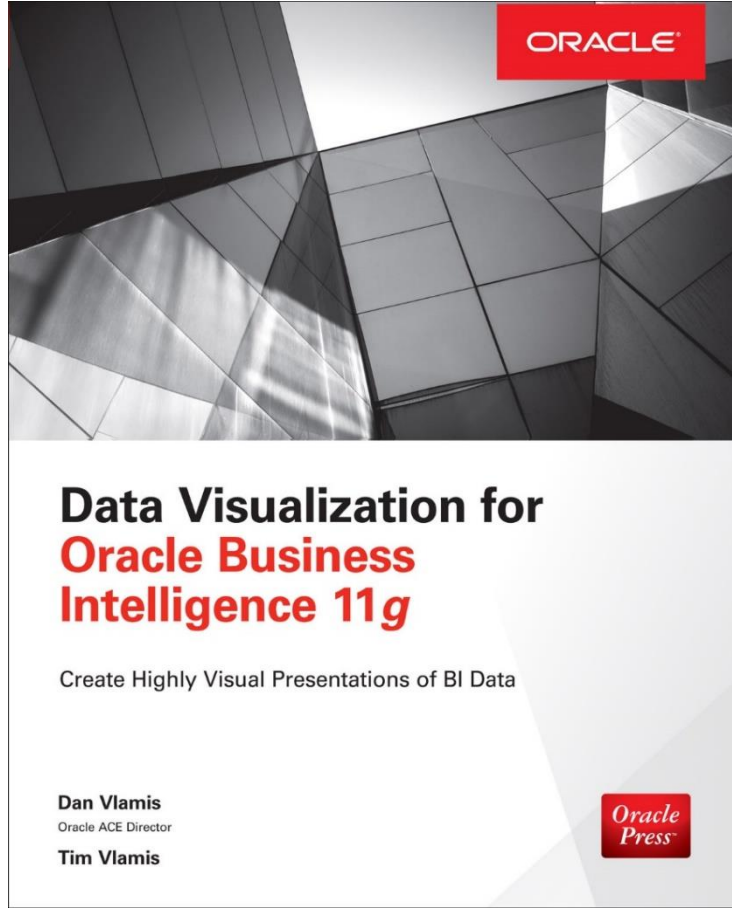
Vlamis Presentations

Presenter	Location	Time	Title
Dan Vlamis Mike Caskey	1710	Tuesday 11:15am	Architecting Analytic Warehouses for Analytics
Cathye Pendley Rich DuSatko	1710	Tuesday 3:35pm	Fueling Retail Loyalty: Cloud Data Warehousing and Analytics at Drop Tank
Jonathan Clark Cathye Pendley	1710	Tuesday 4:20pm	Onsite and Remote Data Access with Oracle Analytics Cloud
Tim Vlamis Derek Hayden	1740	Wednesday 1:00pm	Category 5 Analytics: How OUTFRONT Media Maps Hurricane Risk
Tim Vlamis Doug Schieder	1720	Wednesday 3:25pm	Data Visualization in the Real World
Tim Vlamis Charlie Berger Brendan Tierney	2100	Thursday 1:30pm	(HOL) Learn to use SQL Developer's Oracle Data Miner Workflow UI

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Presentation Agenda

- Do you need to access your on-site data with Oracle Analytics Cloud?

- What if your data is in another cloud?

- What if your data is hosted in *gasp* not an Oracle database?

- Let's talk about your options!

- This presentation will give an overview and comparison of the various remote data access options for Analytic Cloud.

- We will go over Firewalls, IPSEC tunnels, SSL Connections

- Other database connections like DB2, and Postgres.

- We will conclude with a live demonstration of a secure connection between Oracle Analytic Cloud and an AWS-hosted Postgres Cluster created with undocumented features of the Remote Data Gateway connector.

Oracle Analytic Cloud - Basics

- I presume you are here because you know what the Analytic Cloud service is.

- Oracle Analytic Cloud is a Platform as a Service (PAAS) provided by Oracle Cloud

- We will be discussing the Enterprise Edition with Data Visualization, Answers, and BI Publisher

- Much of this applies to the Professional (DV Only) version

- Essbase cloud is called Analytics Cloud, too for whatever reason

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Oracle Analytic Cloud - Networking

- Oracle Analytic Cloud is Platform as a Service NOT Infrastructure

- You cannot deploy it in a Virtual Private Cloud (VPC)

- Nor can you direct-connect it to a Virtual Cloud Network (VCN)

- OAC instances are provided through a public IP address

- You can deploy Oracle Analytic Server (OBIEE) on Infrastructure as a Service but that isn't Oracle Analytic Cloud

- Analytic Cloud Classic exists and is different from all of this and isn't being sold anymore but does work with FastConnect (but Oracle has to do it for you)

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Securing OAC

- You get a static IP and specific domain name

- Everything is over SSL

- Everything goes through the Identity Cloud Service (IDCS)

- You can secure it to your corporate gateway with a network perimeter and sign-on policy in the IDCS administration panel

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Architecture Impact

- You will have to consciously route your queries to your data sources
- The Remote Data Connector will help route your queries securely

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The Multi-Cloud Deployment

Private Connection

Customer Data Center

Oracle Cloud Infrastructure FastConnect/VPN

Third-Party Cloud

Custom Application

Internet

Multicloud Interconnection

Oracle Cloud Intrastructure Region

Database

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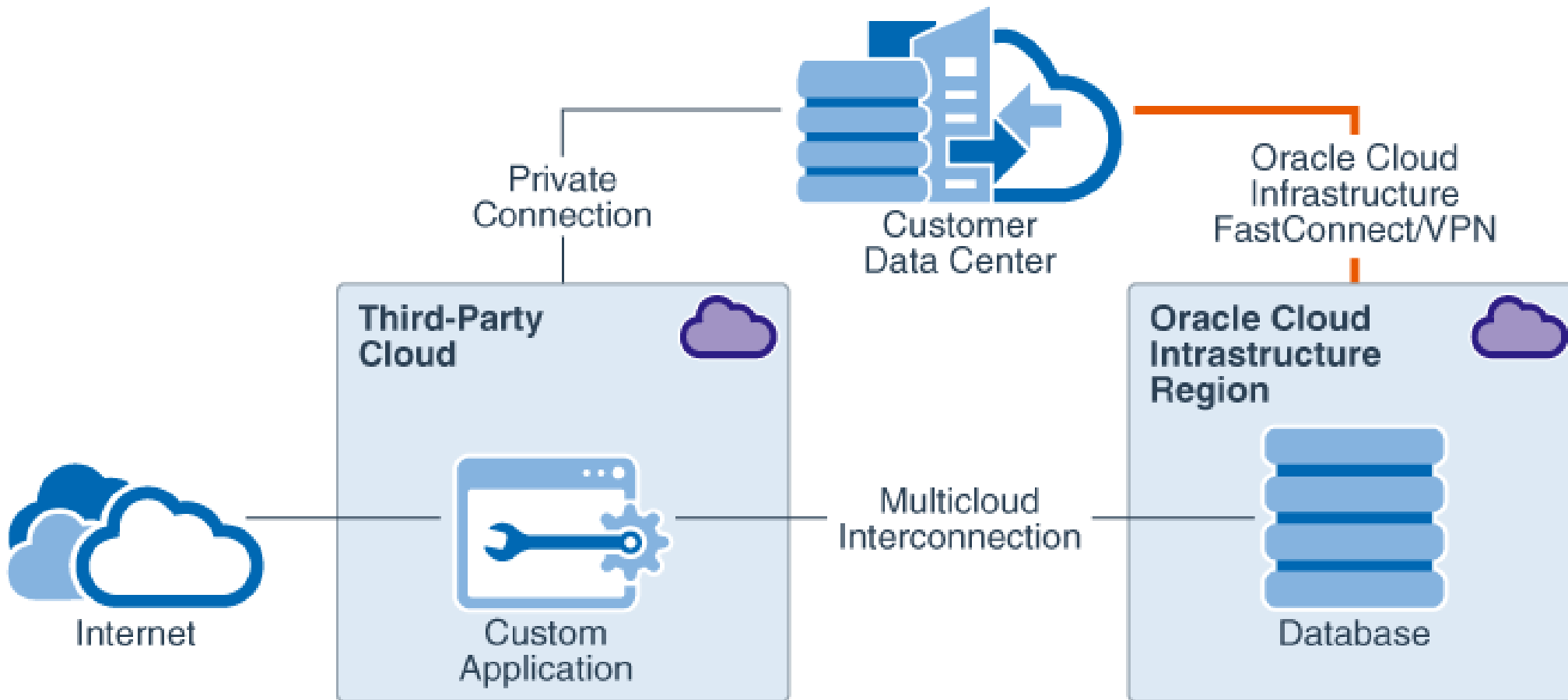
Access Requirements

- To administer and maintain the resources in the cloud, you need private access to both the clouds.
  - You can set up a private connection from your data center to Oracle Cloud by using either Oracle Cloud Infrastructure FastConnect virtual circuits or IPSec VPN connections.
  - FastConnect provides a dedicated connection that bypasses the public internet.
  - IPSec VPN connections are secure tunnels through the public internet.
- To administer the resources in the other cloud providers, you need similar private access.

Considerations

- The method that you use to interconnect the third-party cloud with Oracle Cloud depends on your
  - Security constraints
  - Latency requirements
  - Budget

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Cloud Access

- Major Cloud Providers typically allow these network connectivity options:
  - Public internet
  - IPSec VPN
  - Dedicated connections
- Depending on the workloads and the amount of data that must be transferred, you will use one or more of these

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Cloud Network Connectivity Options

	Max (Mb/s)	Latency	Jitter	Cost	Secure
Public internet	< 10,000	Variable	Variable	Variable	No
IPSec VPN	< 250	Variable	Variable	Variable	Yes
Dedicated connections like FastConnect	< 100,000	Predictable	Predictable	Predictable	Yes

Cloud Network Connectivity Options

	Speed	Latency	Jitter	Cost	Secure
Public internet	Fast-ish	Variable	Variable	Variable	No
IPSec VPN	Slower	Variable	Variable	Variable	Yes
Dedicated connections like FastConnect	Really Fast	Predictable	Predictable	Predictable	Yes

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Public Internet and IPSEC

- The Public Internet – Just using ip addresses to route around

- IPSEC – The same thing, only with a VPN

- These are cheap and pretty easy to set up.

- If you are just doing a POC just to see how it works, this is probably fine.

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Dedicated Connections

- Dedicated connections are having a 'hard line' between one place on the internet and another.

- Your packets get dedicated and direct routing between physical points.

- There is a rich and competitive market of connection providers

THEY CUT THE HARD LINE. IT'S A TRAP! GET OUT!

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Networking & Content Delivery

Oracle Cloud	AWS	Azure	Google
FastConnect	AWS Direct Connect	Azure ExpressRoute	Cloud Interconnect

Companies that would gladly trade currency to transport your bits and bytes from one of these services to another and to and from your own network:

- Megaport
- f5
- Massive
- Zayo
- Many, many others

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Cloud Interconnect Option Pros and Cons

	Pros	Cons
Using a virtual router service	• Easy to deploy • Provides bandwidth on demand • Is cost-effective to deploy and maintain	• Flexibility to make routing changes is within the scope of support from the cloud exchange • Non-availability of public IP communication
Using a dedicated physical router	• Provides flexibility in managing routing functions • Gives you the ability to deploy your choice of hardware	• Long deployment times • Scaling limitations • Hardware maintenance and associated monetary costs

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Oracle Cloud and Microsoft Azure

Azure and Oracle Cloud have a partnership

For cross-cloud networking between Oracle Cloud and Microsoft Azure, set up a connection between a FastConnect circuit in Oracle Cloud and an ExpressRoute circuit in Microsoft Azure.
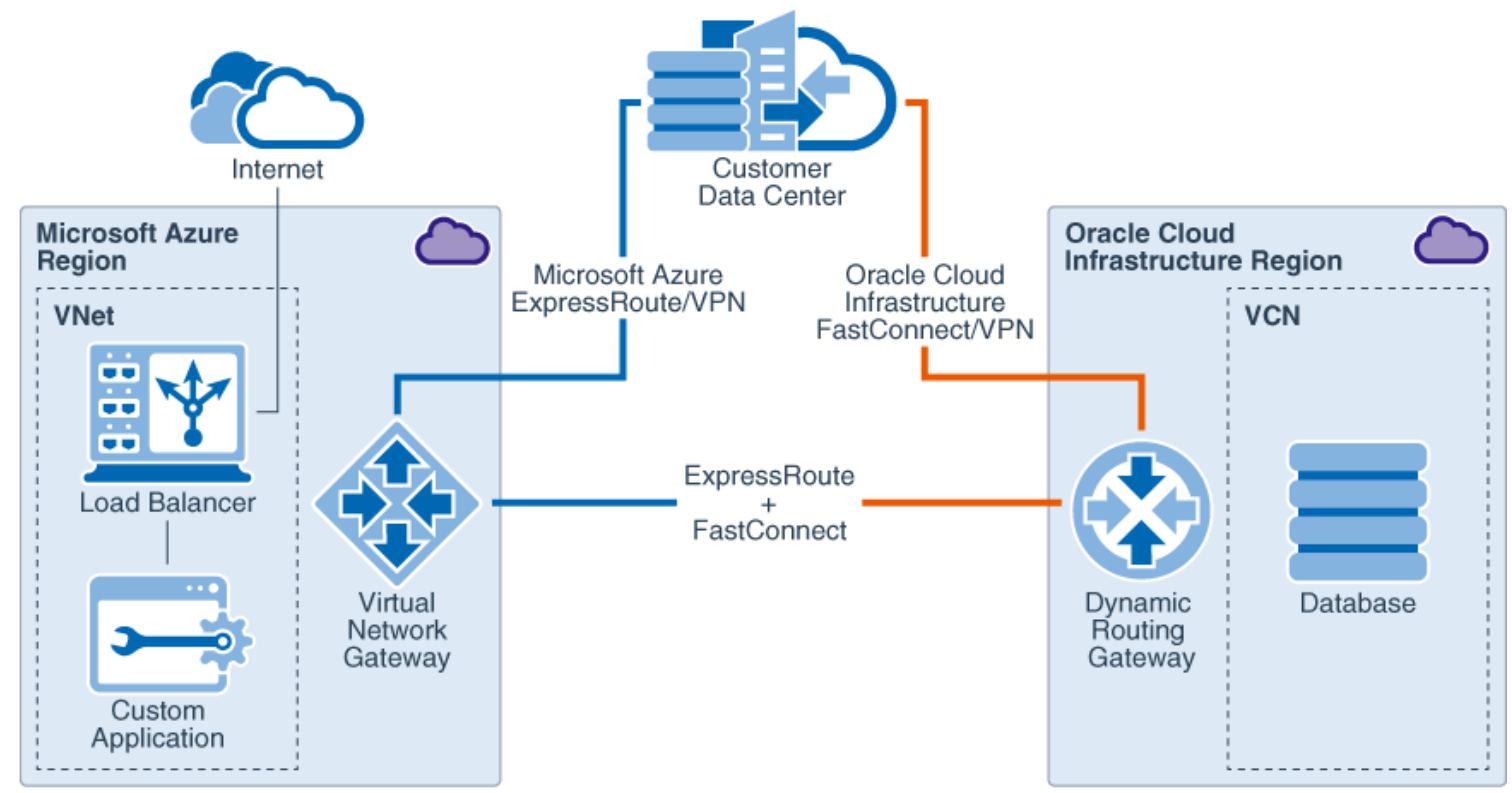
It's All About Routing

- When linking multiple networks together the system needs to know where to send the packets

- Make a plan

- Know your IP ranges
  - VCN IP ranges and where you deployed can't easily be changed later

- Cloud networking is just networking

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OAC Connection Options

- Direct Database Connections
  - Connections created in DV/Analytic Desktop
  - Connections in Analytic Publisher/BI Publisher

- RPD / Data Model Connections
  - RPD Physical Layer
  - Online/Lightweight Data Modeler

- Connectivity with Remote Data Connector

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OAC – Database Connections

- Database connections are connections created from the DV and Console and are separate from the RPD/Data Model connections.

- Data connections to specific data marts and analyses can be built off of these connections and other queries can be created from these 'one off' type connections.

- Use them in your DV projects

- Use them in your Answers

- You can create similar connections for BI Publisher for pixel-perfect (printed) reporting

- Thin Client Modeler

Data Modeled Connections via the RPD

- From the BI Admin Tool or the thin client data modeler.

- This works with thin client modeler as well.

- Just like OBI!

- But it isn't. You have -no- access to the server enough to use the built-in data direct drivers. (Unless you are still using Analytic Classic)

- This means you also can't install any weird drivers. ☹

- Remote Data Connector has Data Direct Drivers!

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Remote Data Connector

- The Remote Data Connector

- It's a hero.

- Install it in the same network as your DB you want it to connect to

- It creates a pre-shared key encrypted connection to OAC to safely transport your data

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RDG – The Process

- RDG initiates the connection to OAC

- User connects to OAC which may include authenticating with IDCS

- User issues a query

- OAC passes the query to RDG via the RDG connection

- RDG passes the query to the database.

- Database returns the data to RDG

- RDG passes the result data to OAC via the RDG connection.

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Remote Data Gateway OCI Public Subnet Installation

Legend
1. HTTP RDG Download
2. RDG Install and Windows Configuration
3. HTTP RDG Linux Config
4. HTTPS OAC Connection
5. HTTPS IDCS Authentication
6. HTTPS OAC Confirmation
7. RDG Key Copy Paste
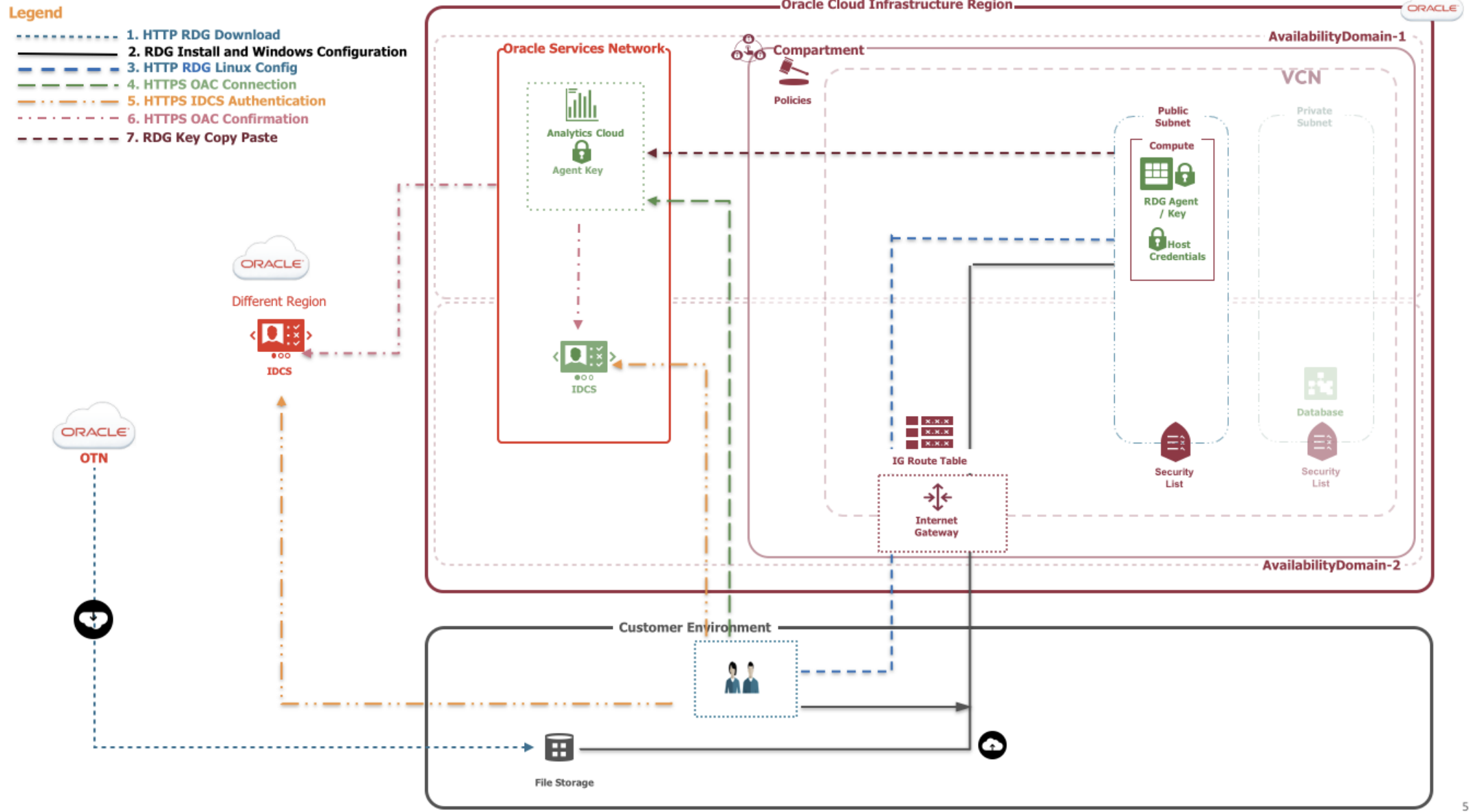
Simplified and easy to read
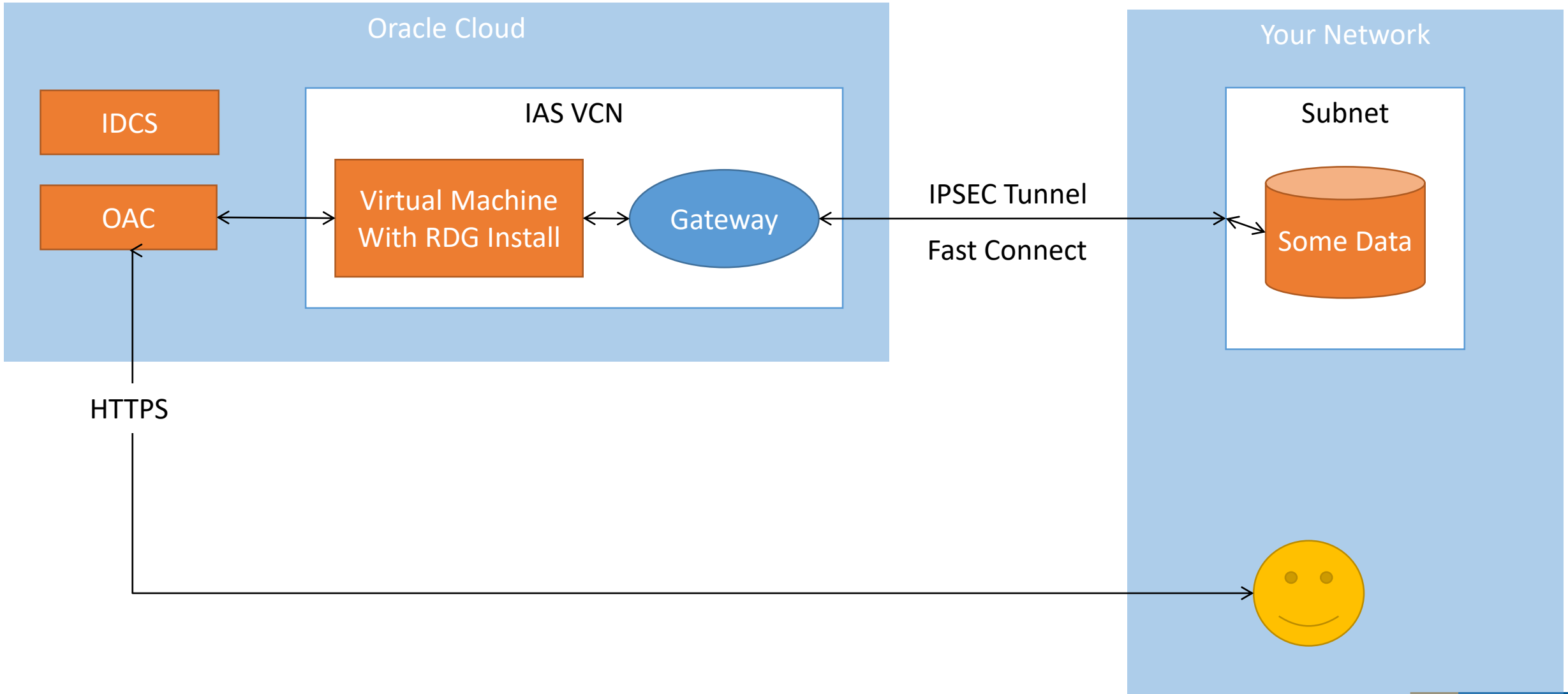
Not a big leap to another cloud

My demo environment

Oracle Cloud

IDCS

OAC

HTTPS

Some other Cloud

Virtual Machine
With RDG Install

VCN

Some Data

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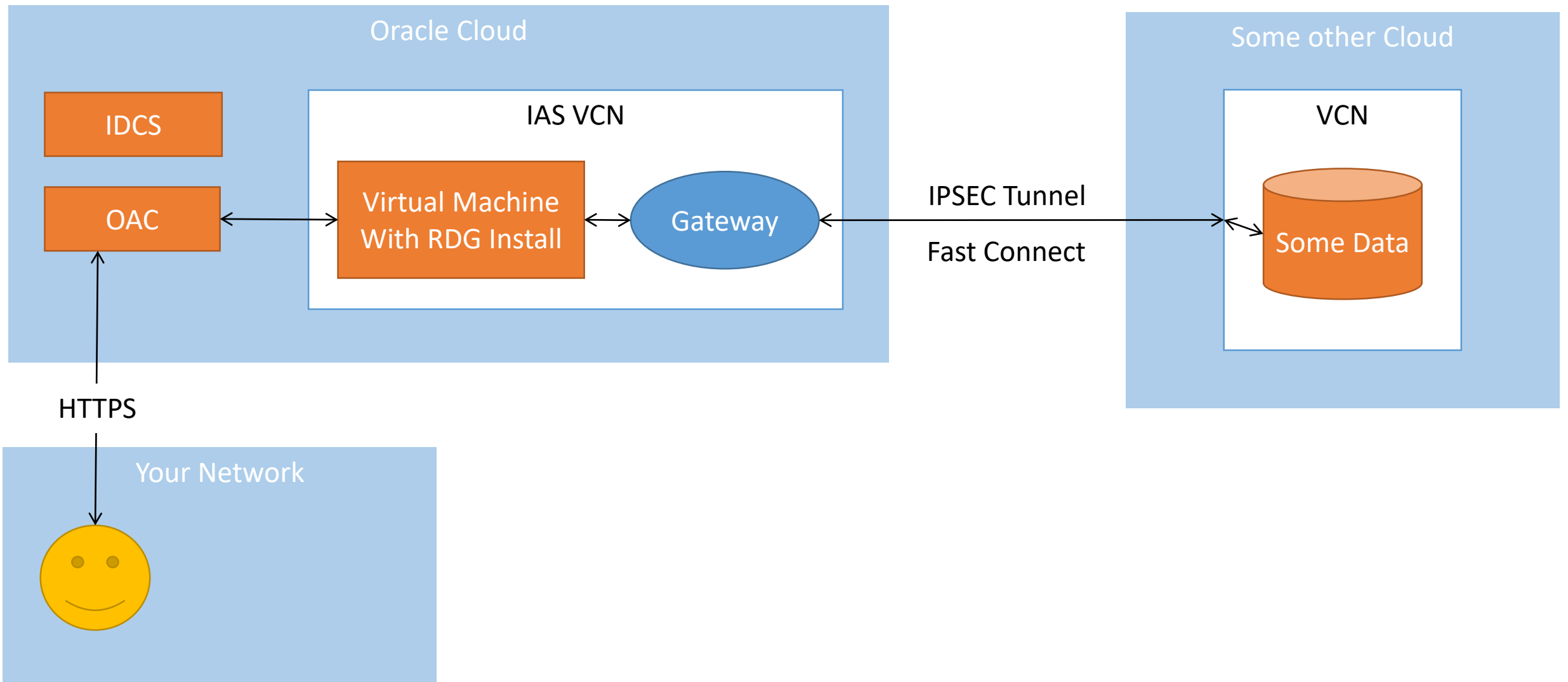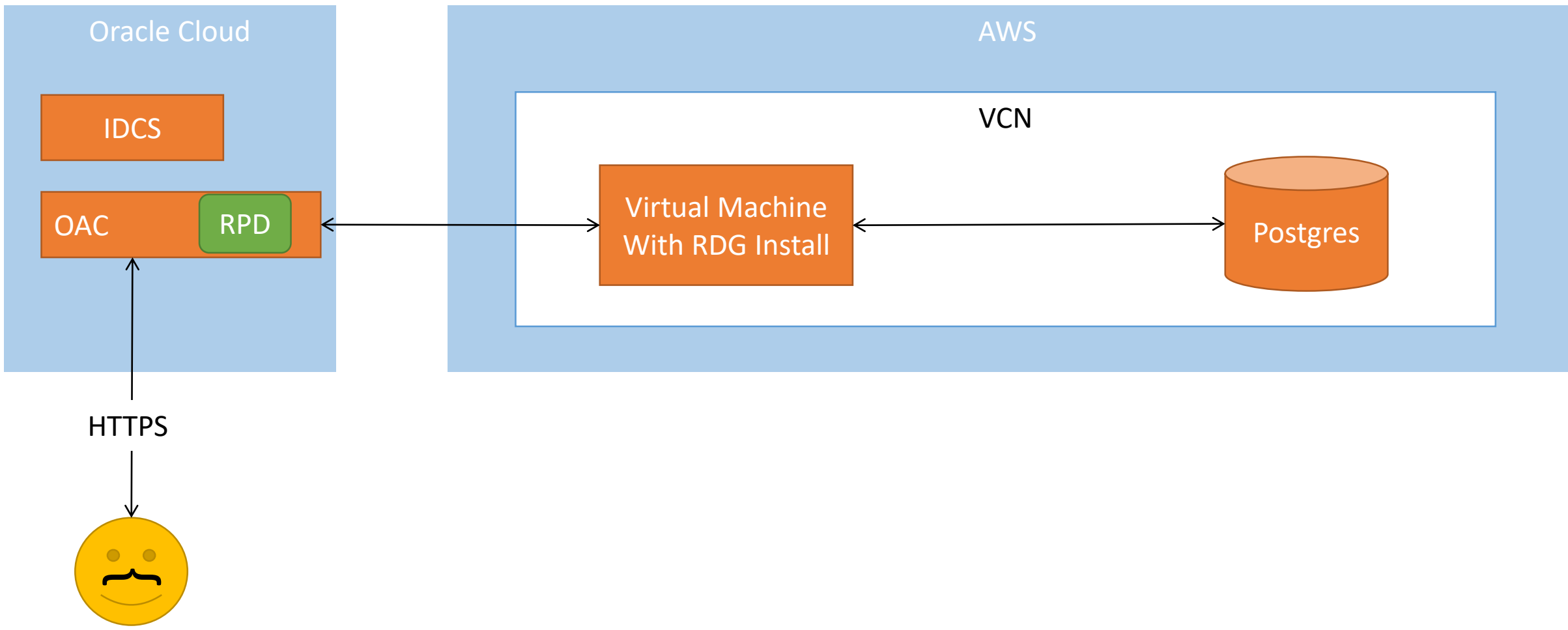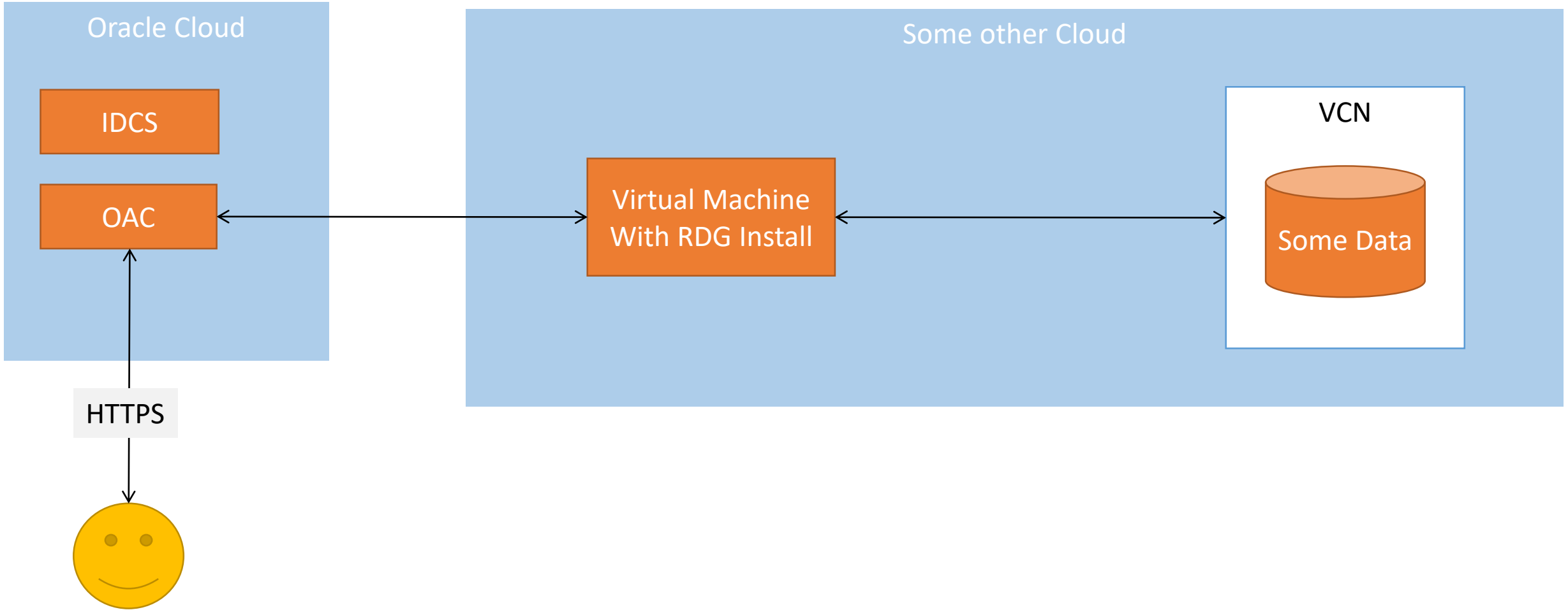
Analytic Cloud Client Developer Tools

- Did you know that when you use the Admin Tool *cough* I mean the Analytic Cloud client developer tools, that the computer you run it on has no way to pull data from the same place that OAC does?

- This can be a bit confusing and sometimes makes diagnosing connectivity issues hard.

- When the RPD is being used by Analytics to connect to data, it uses the connection information and its own drivers to connect to data sources. in the RPD and those connections, drivers, and software to go get the data.

- Your laptop does not have the ability to use those same connections, drivers, and software, because they are on the OAC hardware, NOT your laptop.

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The Demo RPD

It worked when I practiced this at home.

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My Demo Showed

- A step-by-step process of how to connect the RDG to OAC

- The RPD edits necessary to connect to Postgres via the RDG

- The RDG environment

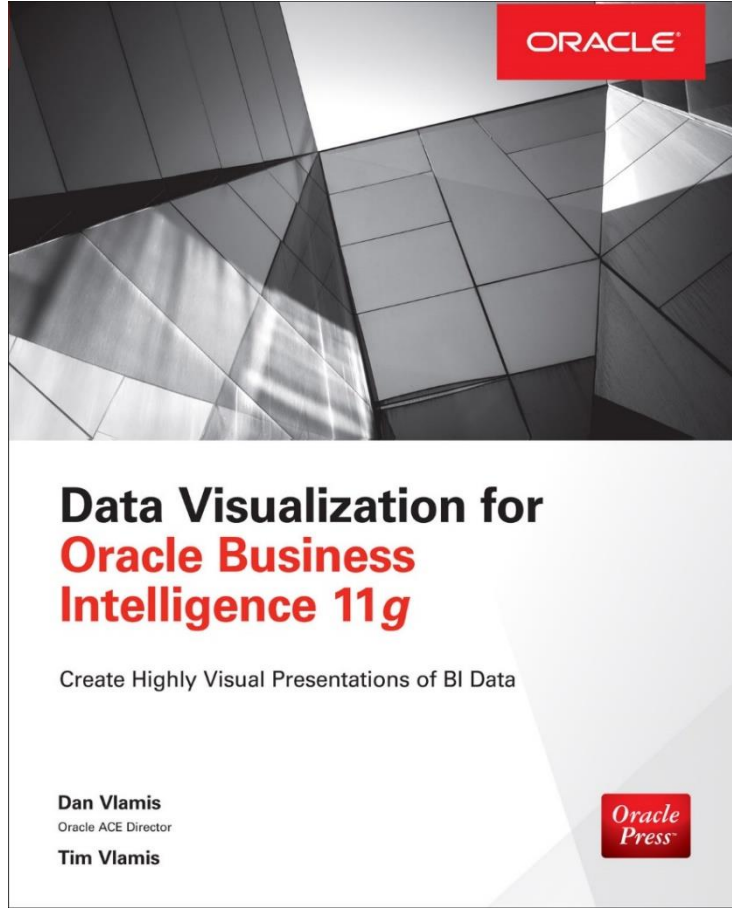- Data from Postgres modeled by the RPD in OAC

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Stump The Consultant Time!

Here is where I answer your questions with confidence, grace, intellect, and wit.

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If you win, Dan and Tim love
to be asked to sign the book

Credits and Resources

Some of this presentation is sourced from or otherwise owes credit to:

- The A Team blog is an amazing resource!
  https://www.ateam-oracle.com/deploying-oracle-analytics-cloud-remote-data-gateway-in-a-public-subnet

- Oracle's A Team - "Deploying Remote Data Gateway in Oracle Analytics Cloud for Data Visualization"

- http://www.ateam-oracle.com/deploying-remote-data-gateway-in-oracle-analytics-cloud-for-data-visualization

- Oracle's A Team - " Deploying Remote Data Gateway in Oracle Analytics Cloud for Metadata Repositories"

- http://www.ateam-oracle.com/preparing-linux-for-oracle-remote-data-gateway

- Oracle Documentation

- https://docs.oracle.com/en/solutions/learn-cross-cloud-interconnect/index.html

- Oracle Product Documentation - "Preparing Data in Oracle Analytics Cloud"

- https://docs.oracle.com/en/cloud/paas/analytics-cloud/acabi/you-start-data-gateway.html#GUID-47C8EFE0-A652-49AA-BBB3-89080B622D47

Thank You!

Presenter Information

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