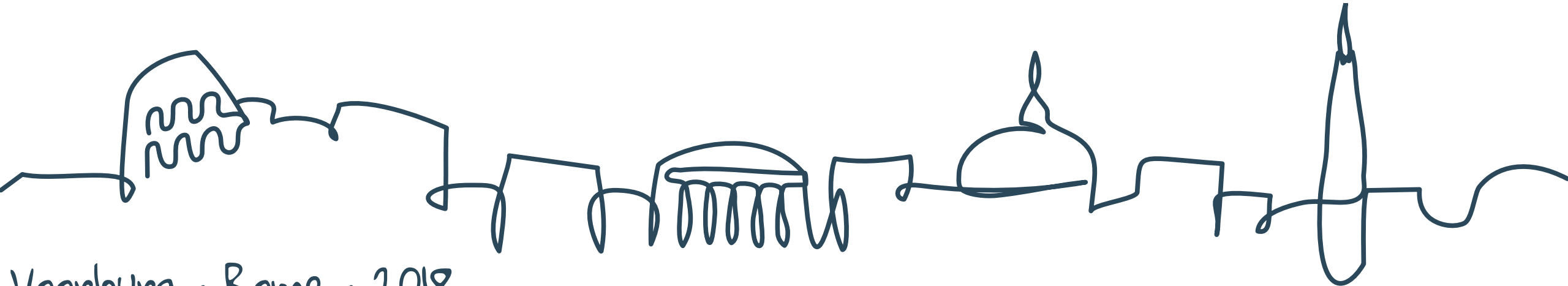




# ISIC 6311 Data processing, hosting, and related services

ROME  
24 | 28  
SEPTEMBER  
2018

ANDREW BAER  
Census Bureau - United States



Voorburg · Rome · 2018

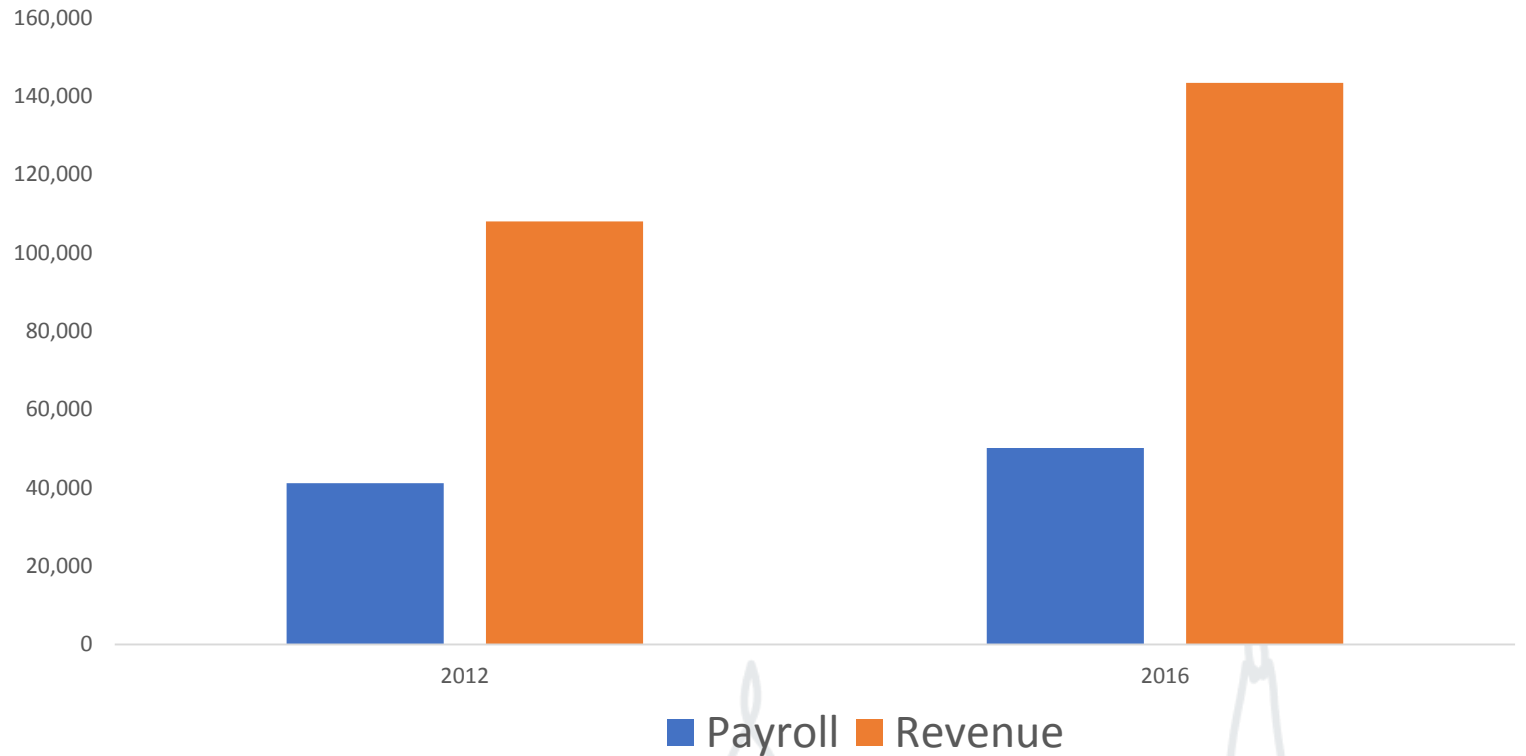


# Market Conditions in the U.S.

- Industry revenue estimated at \$143 billion in 2016
- Industry payroll estimated at \$50 billion in 2016

Source – Services Annual Survey, US Census Bureau

Data Processing, Hosting, and Related Services  
U.S. Payroll and Revenue (\$ millions)



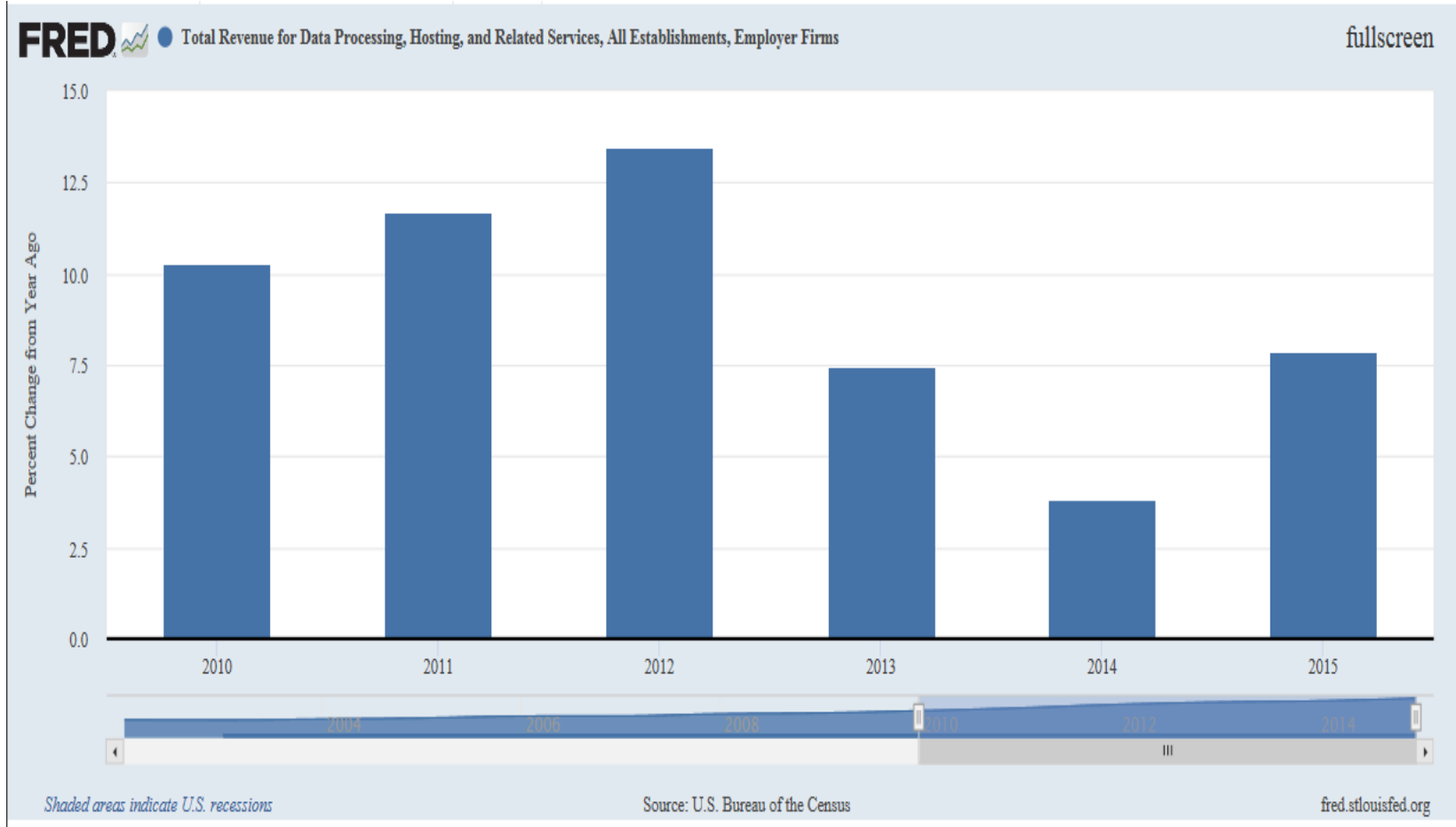


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# Market Conditions in the U.S.

- Industry revenue increased more than 5% in all but 1 year between 2010 and 2015
- Industry revenue increased more than 10% each year between 2010 and 2012





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# Cloud Computing

“A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

U.S National Institute of Standards and Technology

**Andrew Baer**

Census Bureau – United States

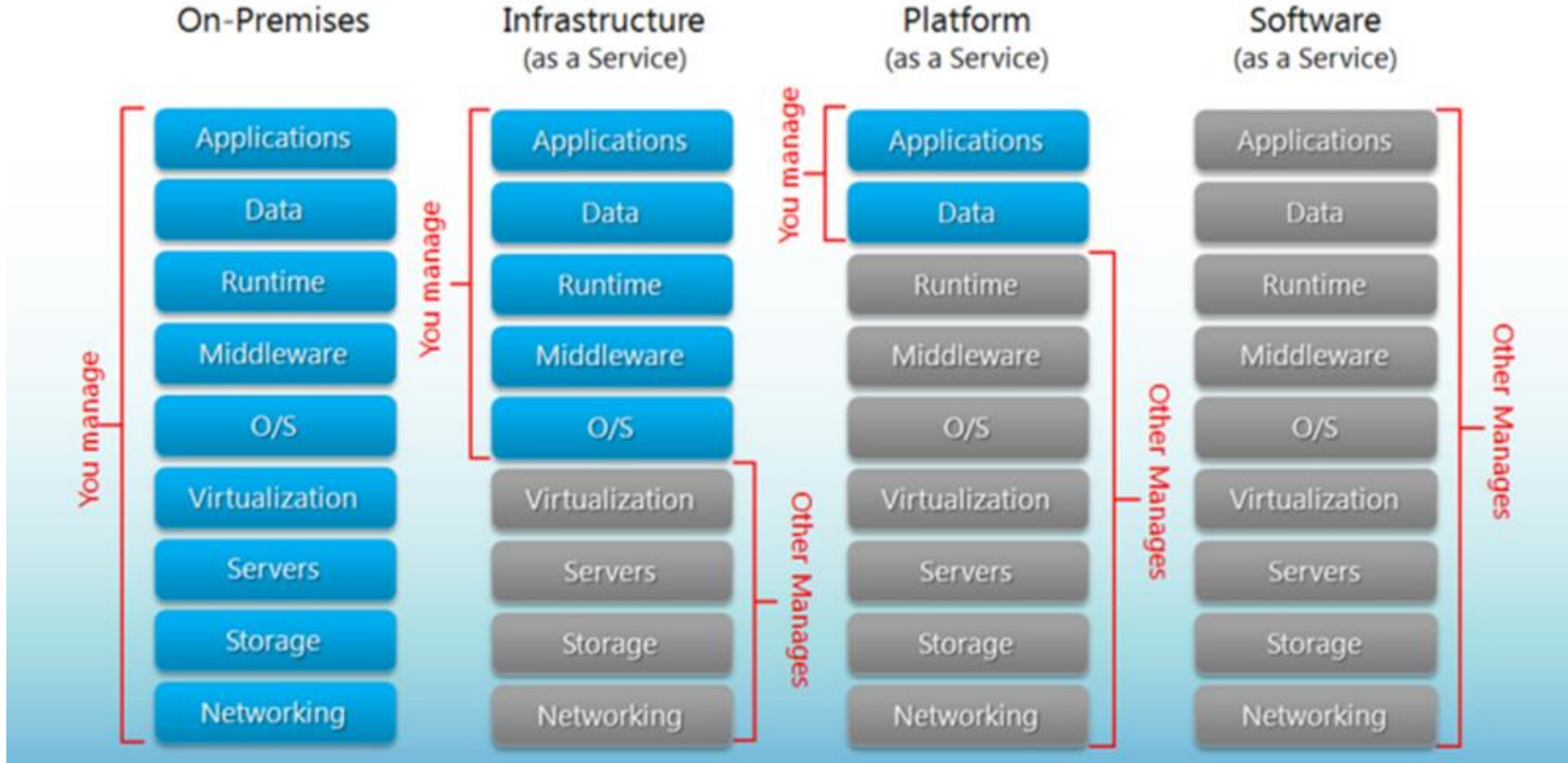


# Cloud Service Offerings

- Software as a service (SAAS)
  - Remote access to software.
  - Nothing installed on client's machines.
- Platform as a service (PAAS)
  - Remote access to a programming execution environment, operating system, and database.
  - Used by software developers.
- Infrastructure as a service (IAAS)
  - Remote access to computing resources and computing infrastructure.



# Cloud Service Offerings

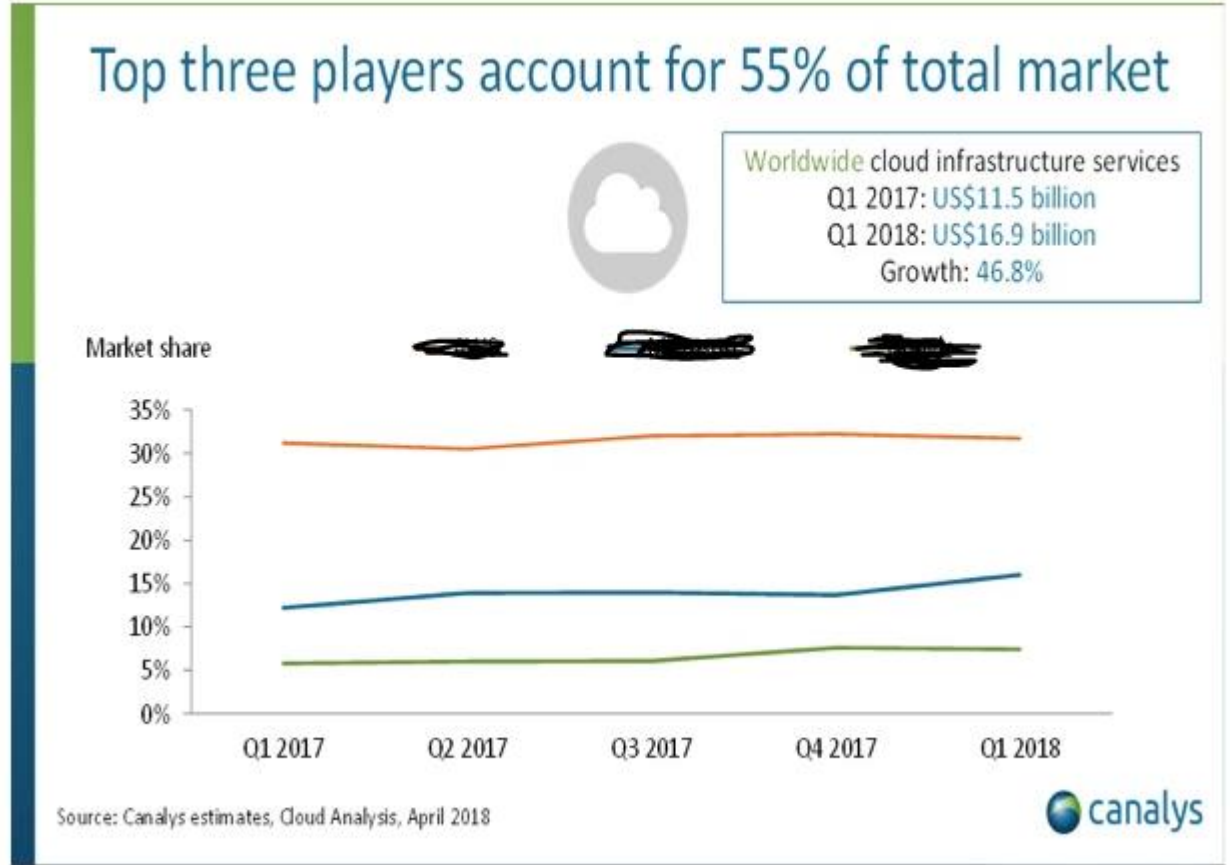


Source: [www.hostingadvice.com](http://www.hostingadvice.com)



# Market Conditions in the U.S.

- 2012 Economic Census indicated top 4 firms generated 16% of ~\$108B total industry receipts
- Latest reports estimate cloud infrastructure market as generating ~\$70B of revenue, with top 3 firms generating 55% of sales
- Software as a service estimated by Gartner to represent an additional ~\$60B of worldwide revenue





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# Cloud Deployment Models

- Private cloud – infrastructure for single organization
- Public cloud – shared infrastructure
- Community cloud – infrastructure shared by a group of affiliated users
- Hybrid cloud – some data/applications on private server, other data/applications on public cloud





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# Output Measurement in U.S.

	<b>Economic Census</b>	<b>Services Annual Survey</b>	<b>Quarterly Services Survey</b>
<b>Frequency</b>	Every 5 years	Annual	Quarterly
<b>Survey Unit</b>	Establishment	Kind-of-activity unit	Kind-of-activity unit
<b>Sample</b>	–	Stratified simple random	Stratified PPS sub-sample
<b>Geographic detail</b>	State, County, Area	None	None
<b>Product detail</b>	NAPCS	Limited	None
<b>Benchmarked to</b>	–	Economic Census	Services Annual Survey



# NAPCS products (broad lines)

- Web hosting services
  - Providing the infrastructure to host a customer's web site and related files in a location that provides fast, reliable connection to the Internet.
- Application service provisioning
  - Providing leased software applications from a centralized, hosted, and managed computing environment.
  - Software as a service
- Business process management services
  - A bundled service package that combines information-technology-intensive services with labor, machinery, and facilities to support, host and manage a business process for a client.



# NAPCS products (broad lines)

- Collocation services
  - Providing rack space within a secured facility for the placement of servers and enterprise platforms. Clients are responsible for the management of the operating system, hardware, and software.
  - Cloud computing has made this service less prevalent.
- Data storage services
  - Managing or administrating the storage and back-up management of data such as remote back-up services, storage, or hierarchical storage management.
- Data management services
  - Providing ongoing management and administration of data as an organizational resource. May include performing data modeling, data mobilization, data mapping/rationalization, data mining and system architecture.



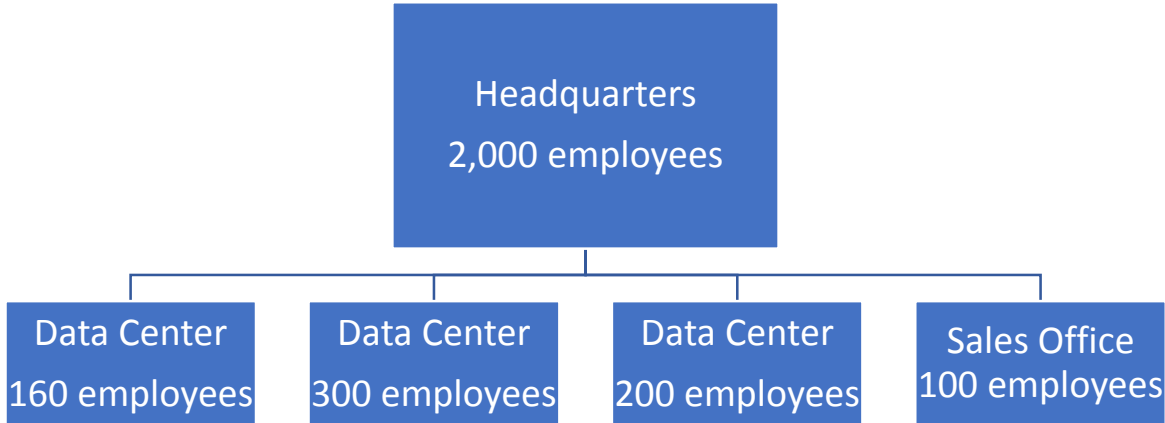
# NAPCS products

- North American Product Classification System lines for this industry were developed in the early 2000's
- Product lines will need to be updated for 2022 Economic Census to more clearly delineate where specific cloud computing service offerings are to be classified
- Particularly notable is that there is a product line for data storage, but not the other remote processing services associated with IAAS



# Measurement Issues – Establishment Data

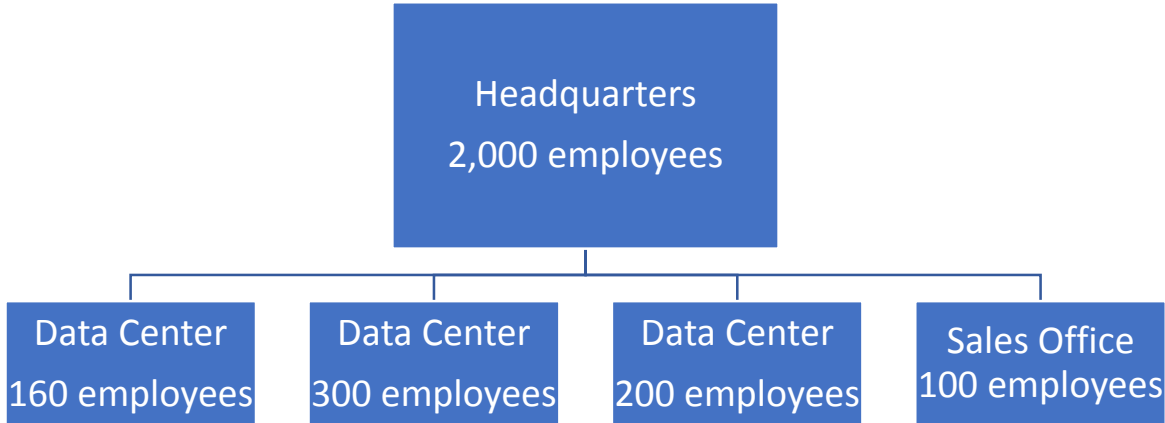
- Traditional Census procedure is to classify each establishment individually based on production process



- Cloud computing companies usually have most employees at headquarters – where they design functions and features
- These employees may also work on non-cloud activities, like traditional software programming
- Plus headquarters also includes general management functions



# Measurement Issues – Establishment Data



- Cloud computing companies typically cannot report distinct sales figures by location
- Typical Census practice is to allocate sales to each location based on employment or payroll.
- Not clear where service is provided “from”



# Measurement Issues – Establishment Data

Adding in the international dimension makes it even harder!





# Measurement Issues - Bundling

- Transactions are typically bundles of computing, storage, and application services
- Currently the large providers have transparent prices for each granular service that allows them to record revenue separately
- As service models continue to evolve, need to monitor for price bundles and composite services covering multiple product lines.





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