Welcome to Advantages of Cloud Computing.

What you will learn

At the core of the lesson

You will learn how to:

- Identify the advantages of cloud computing
- Analyze the difference between capex and variable expense
- Summarize the concept of economics of scale

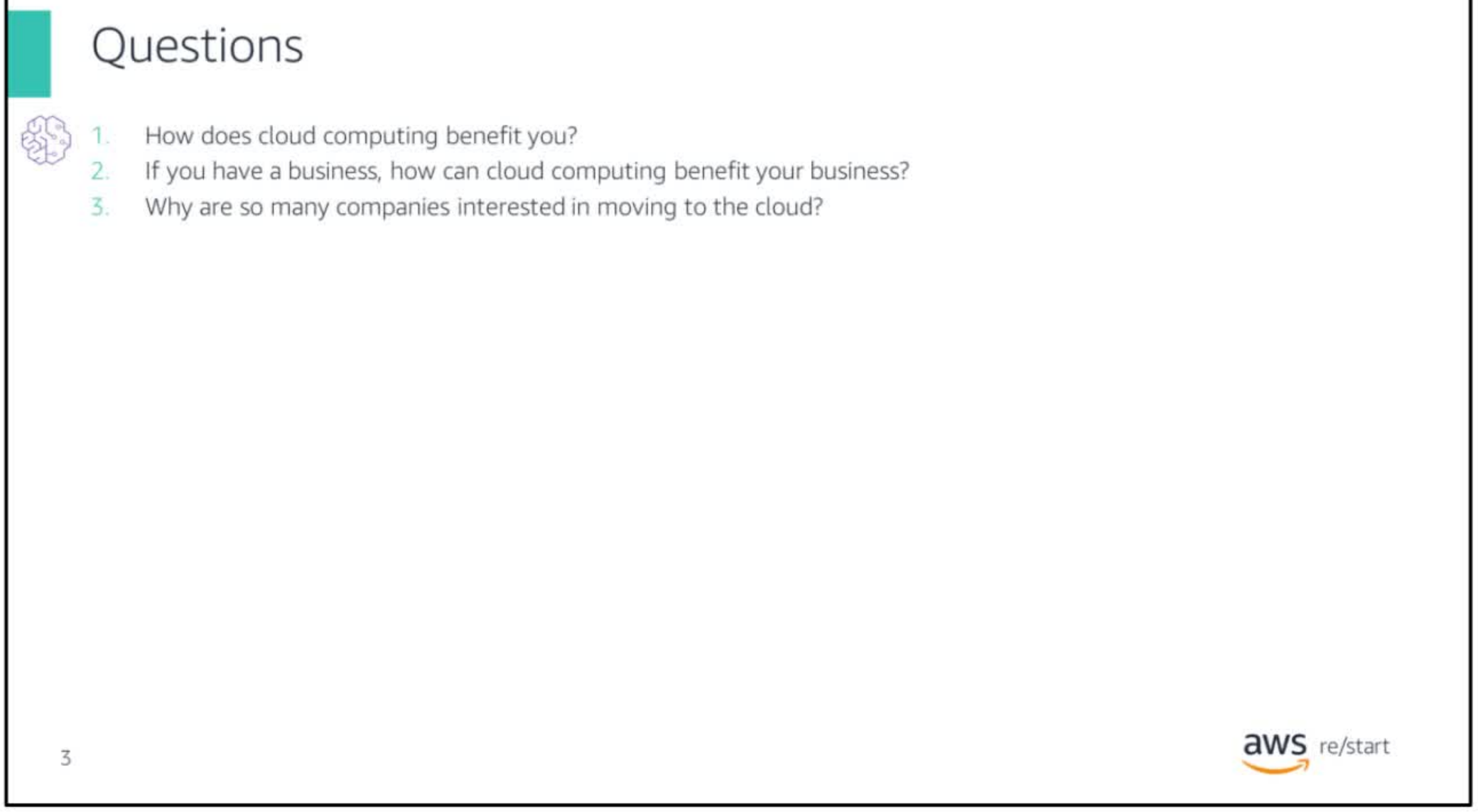
You will discuss:

- The benefits of cloud computing
- The advantages of moving to the cloud

Key terms:

- Capital expense (capex)
- Variable expense
- Economies of scale

This module explains the advantages of cloud computing, along with cloud computing terms such as capital expense, variable expense, and economies of scale. It also poses the question: what are the benefits of cloud computing?

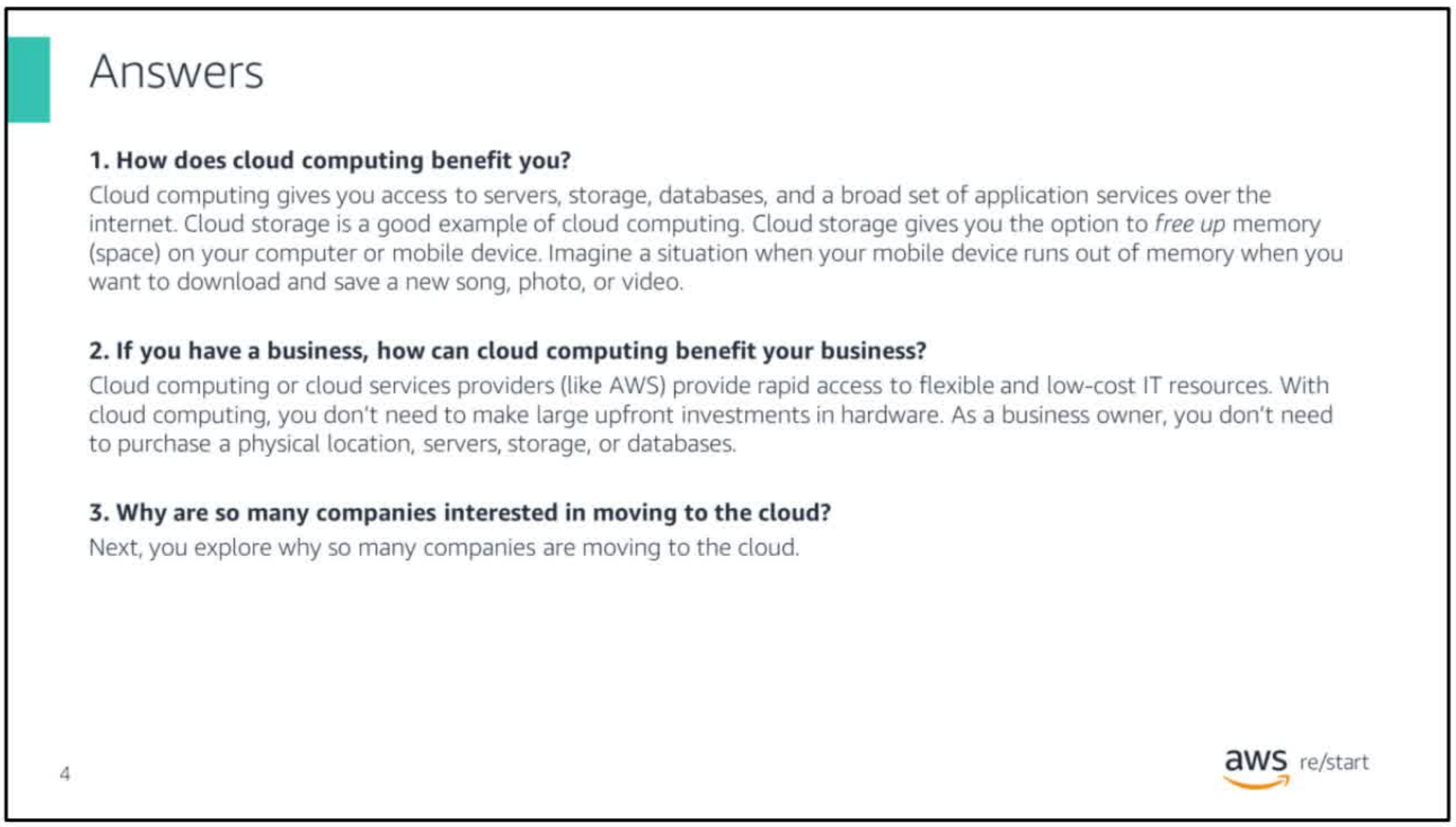


Review the following questions, and share them with a peer.

1. How does cloud computing benefit you?

2. If you have a business, how can cloud computing benefit your business?

3. Why are so many companies interested in moving to the cloud?



1. How does cloud computing benefit you?

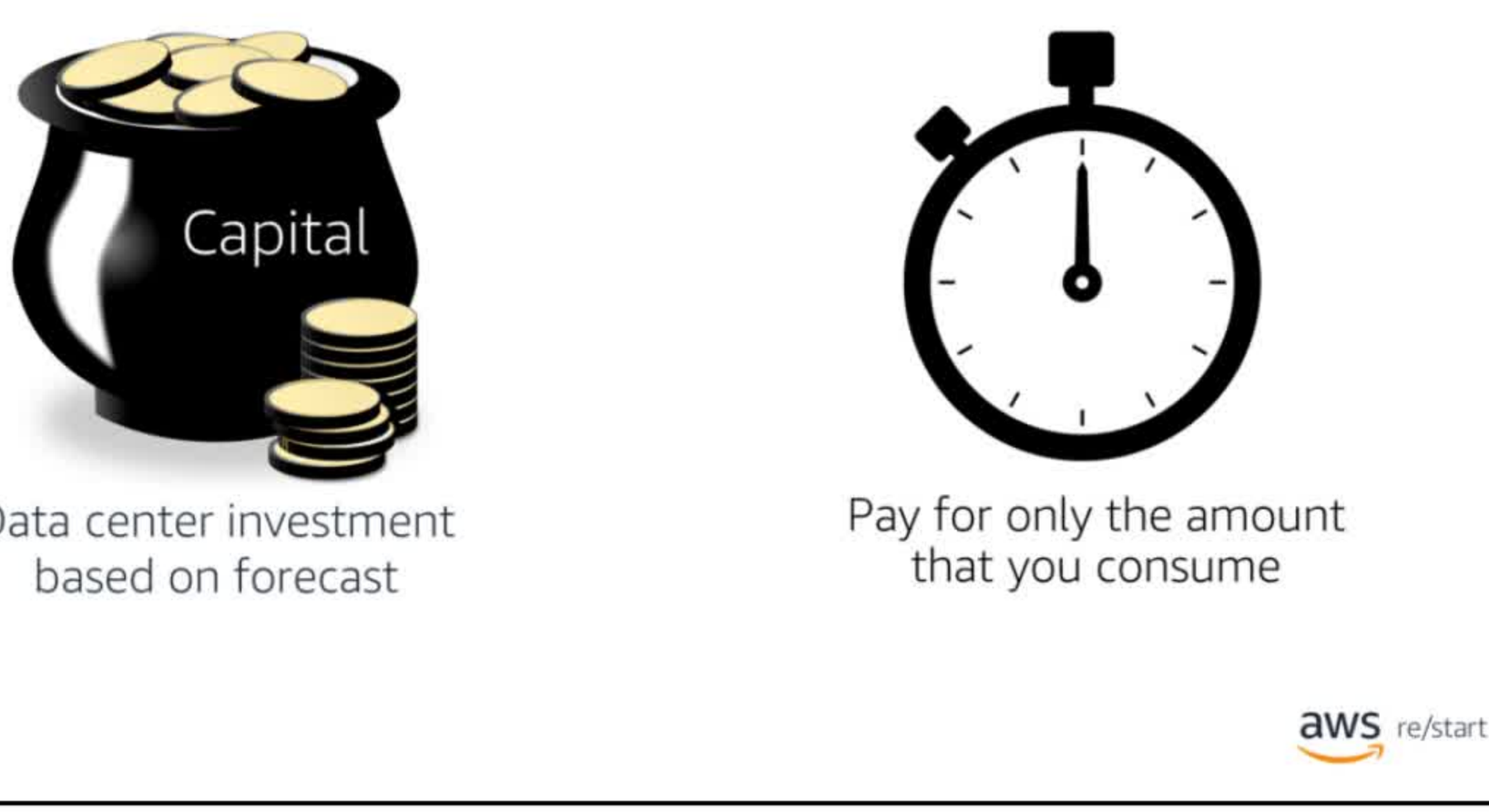
Cloud computing gives you access to servers, storage, databases, and a broad set of application services over the internet. Cloud storage is a great example of cloud computing. Cloud storage gives you the option to *free up* memory (space) on your computer or mobile device. Imagine that your mobile device runs out of memory when you want to download and save a new song, photo, or video.

2. If you have a business, how can cloud computing benefit your business?

Cloud computing or cloud services providers (like AWS) provides rapid access to flexible and low-cost IT resources. With cloud computing, you don't need to make large upfront investments in hardware. As a business owner, you do not need to purchase a physical location, servers, storage, or databases.

3. Why are so many companies interested in moving to the cloud?

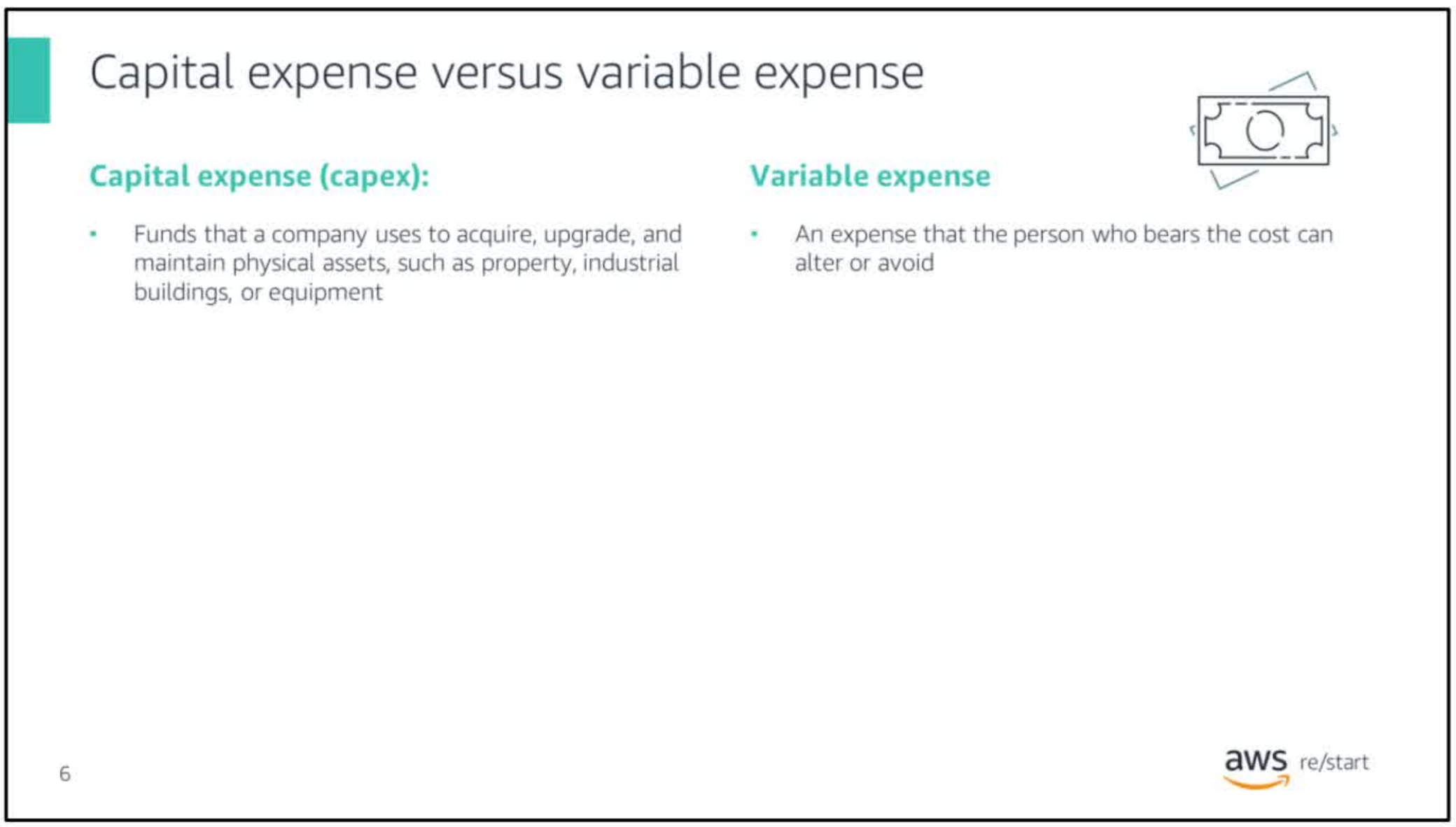
Next, you explore why so many companies are moving to the cloud.



Advantage 1 – Trade capital expense (capex) for variable expense:

You don't need to invest in data centers and servers before you know how you will use them. Instead, you can pay only when you use computing resources, and pay for how much you use.

To learn more, refer to: AWS Overview.



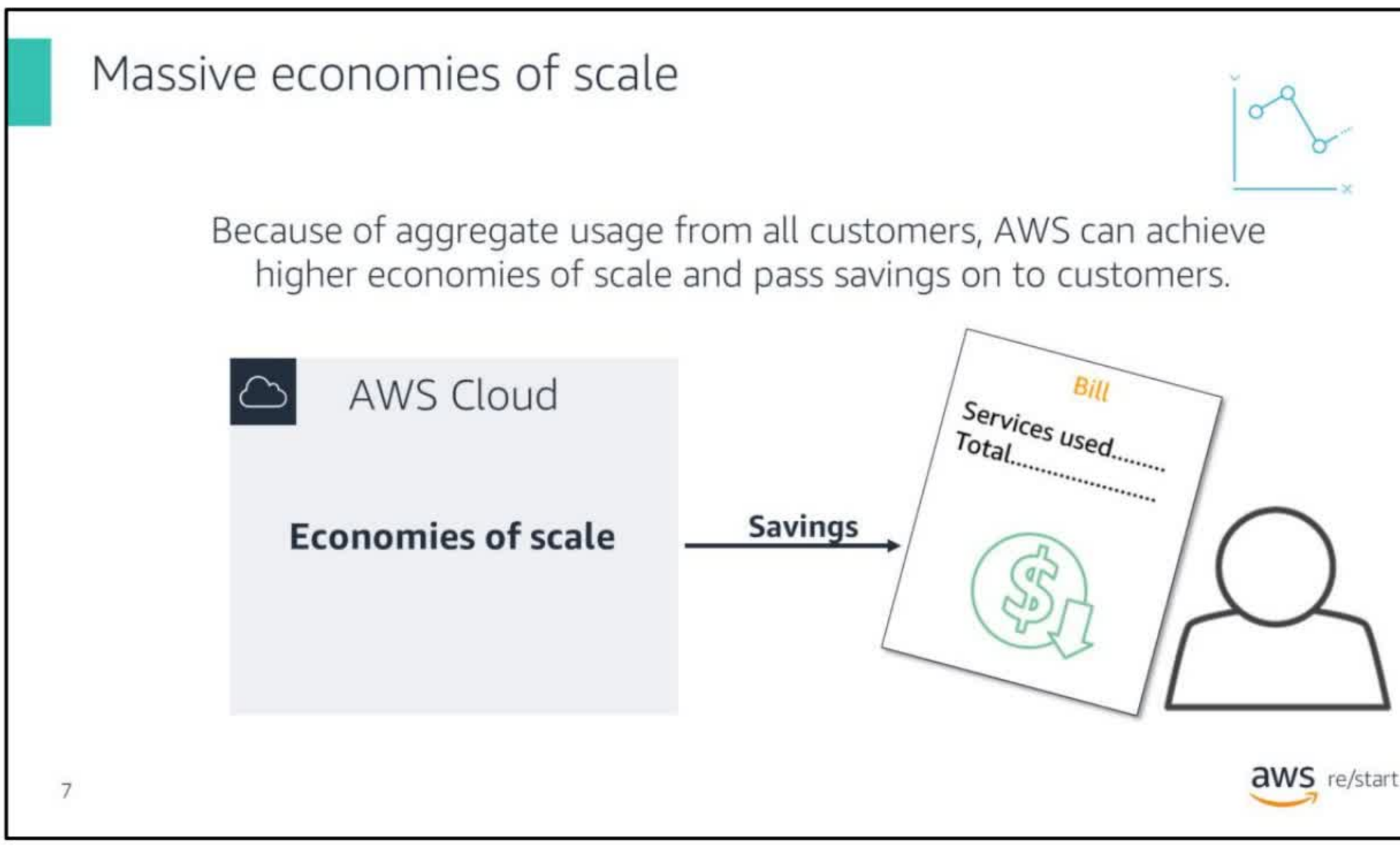
Capital expense (capex): Capex consists of funds that a company uses to acquire, upgrade, and maintain physical assets such as property, industrial buildings, or equipment.

Variable expense: A variable expense is an expense that the person who bears the cost can alter or avoid.

Recall the earlier data center example where you racked and stacked the hardware, and then needed to manage all of the resources. You must pay for everything in the data center, whether or not you use it.

By using the cloud, businesses don't need to invest money into data centers and servers. They can pay for only what they use, and pay only when they use these resources (which is also known as *pay as you go*). Businesses save money on technology. They can adapt to new applications with as much space as they need in minutes, instead of weeks or days. Maintenance is reduced so that the business can focus on its core goals.

To learn more about capital expenditure, refer to the following resource: Capital expenditure (capex).



Advantage 2 – Benefit from massive economies of scale:

By using cloud computing, you can achieve a lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers is aggregated in the cloud, providers such as AWS can achieve higher economies of scale. These economies translate into lower, pay-as-you-go prices.

Economies of scale

Hardware solutions are physical and require:

- Space
- Staff
- Physical security

Significant cost to procure and house these resources:

- No purchasing power
- Cloud providers use hundreds of thousands of customers to achieve economies of scale

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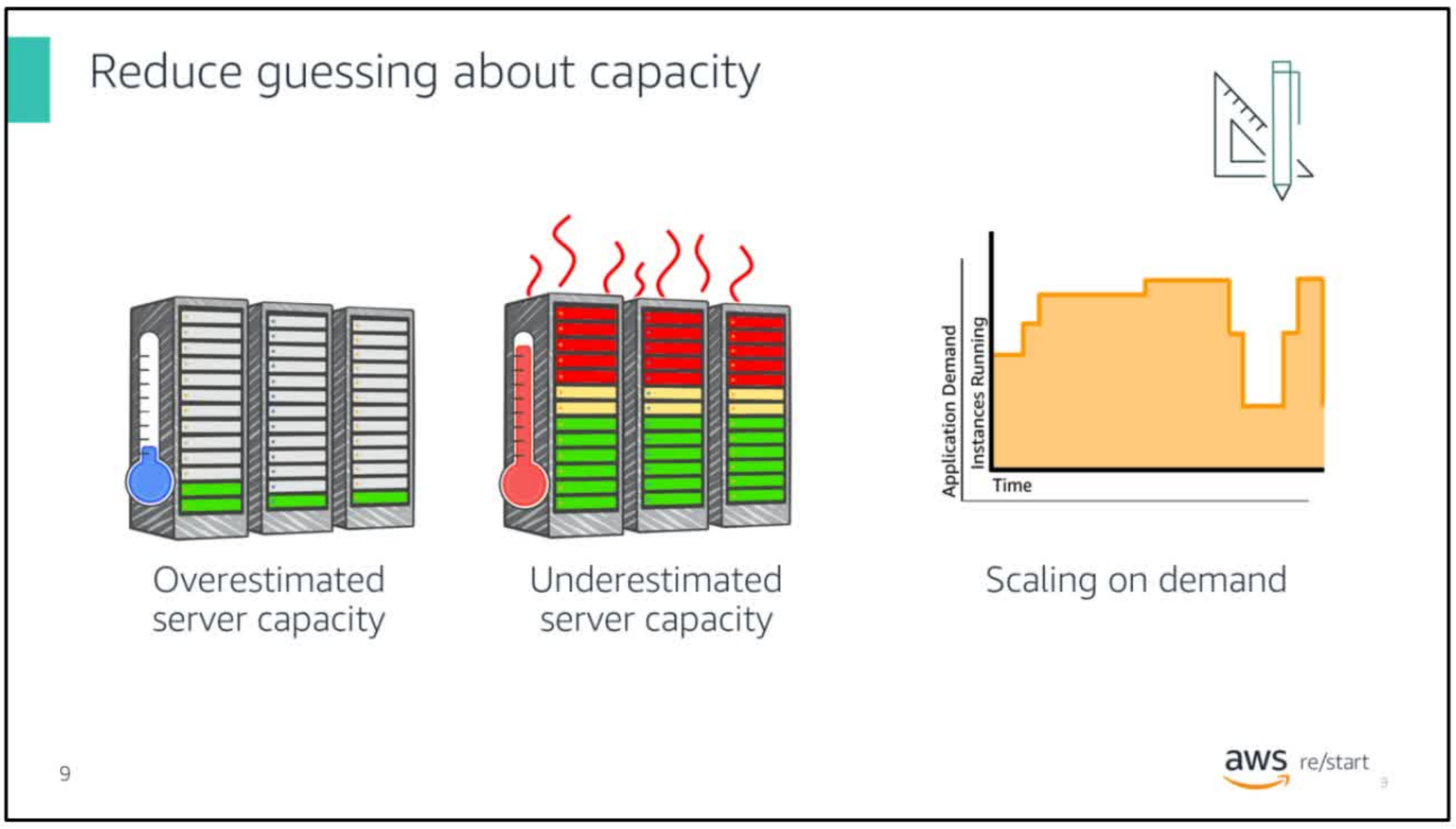
aws re/start

Data centers require hardware solutions, which are physical. They require space, staff, and physical security. Procuring these resources often require significant costs and amounts of time. Additionally, each customer has a different purchasing power.

Cloud services providers can offer lower pay-as-you-go prices. Having hundreds of thousands of customers enables them to offset their capex costs and pass savings on to customers.



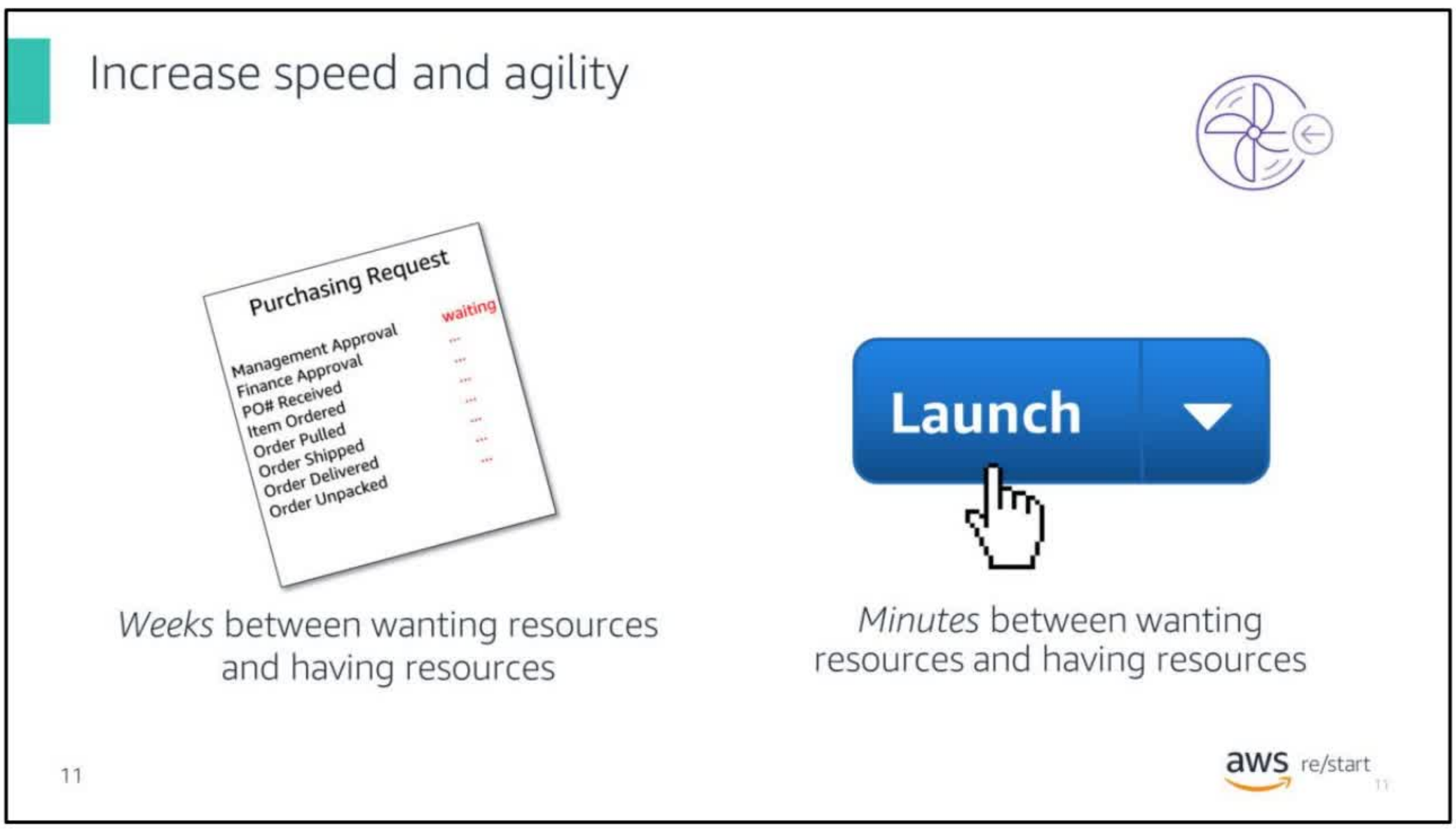
Advantage 3 – Reduce guessing about capacity:

You can reduce guessing about your infrastructure capacity needs. When you make a capacity decision before you deploy an application, you often have either expensive idle resources or insufficient capacity. Cloud computing reduces these problems. You can access as many or as few resources as you need, and you can scale up and down as required with only a few minutes' notice.

Guessing about capacity

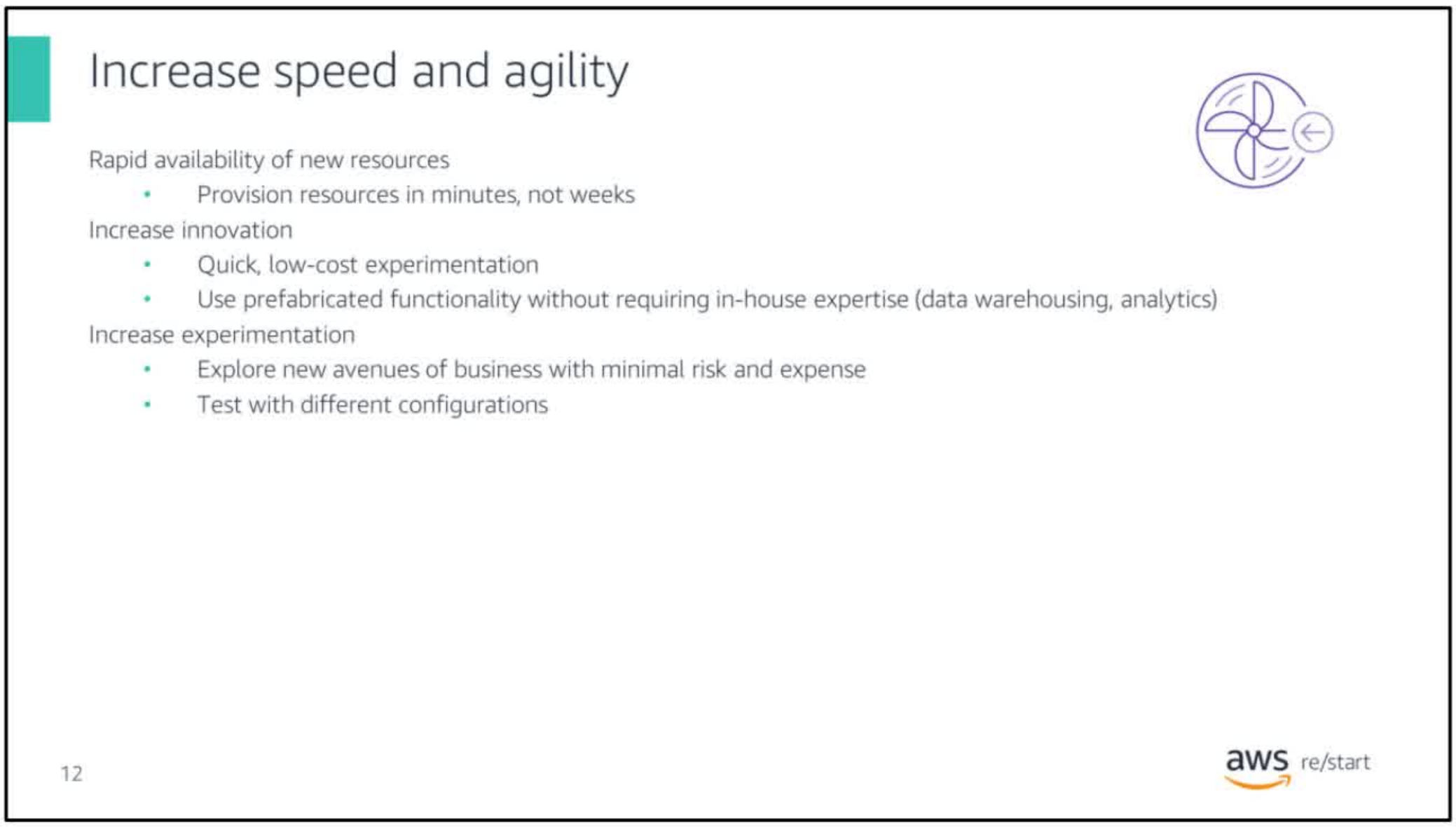
1. What are the potential maximum peaks in usage?
2. Is the resource capacity sufficient at peak?
3. Is the amount of storage sufficient?

Before cloud computing, you needed to guess how many resources would be required to accommodate maximum usage peaks. That method also assumed that you could accurately predict the usage peaks, and whether the resource capacity and amount of storage would be sufficient. When you guess, you are likely to buy either too much or too little. If you buy too much, you waste money. If you buy too little, you have downtime.



Advantage 4 – Increase speed and agility:

In a cloud computing environment, new IT resources are only a click away. Thus, you reduce the time that it takes to make those resources available to your developers from weeks to minutes. The result is a dramatic increase in agility for the organization. The cost and time that are needed to experiment and develop are much lower.

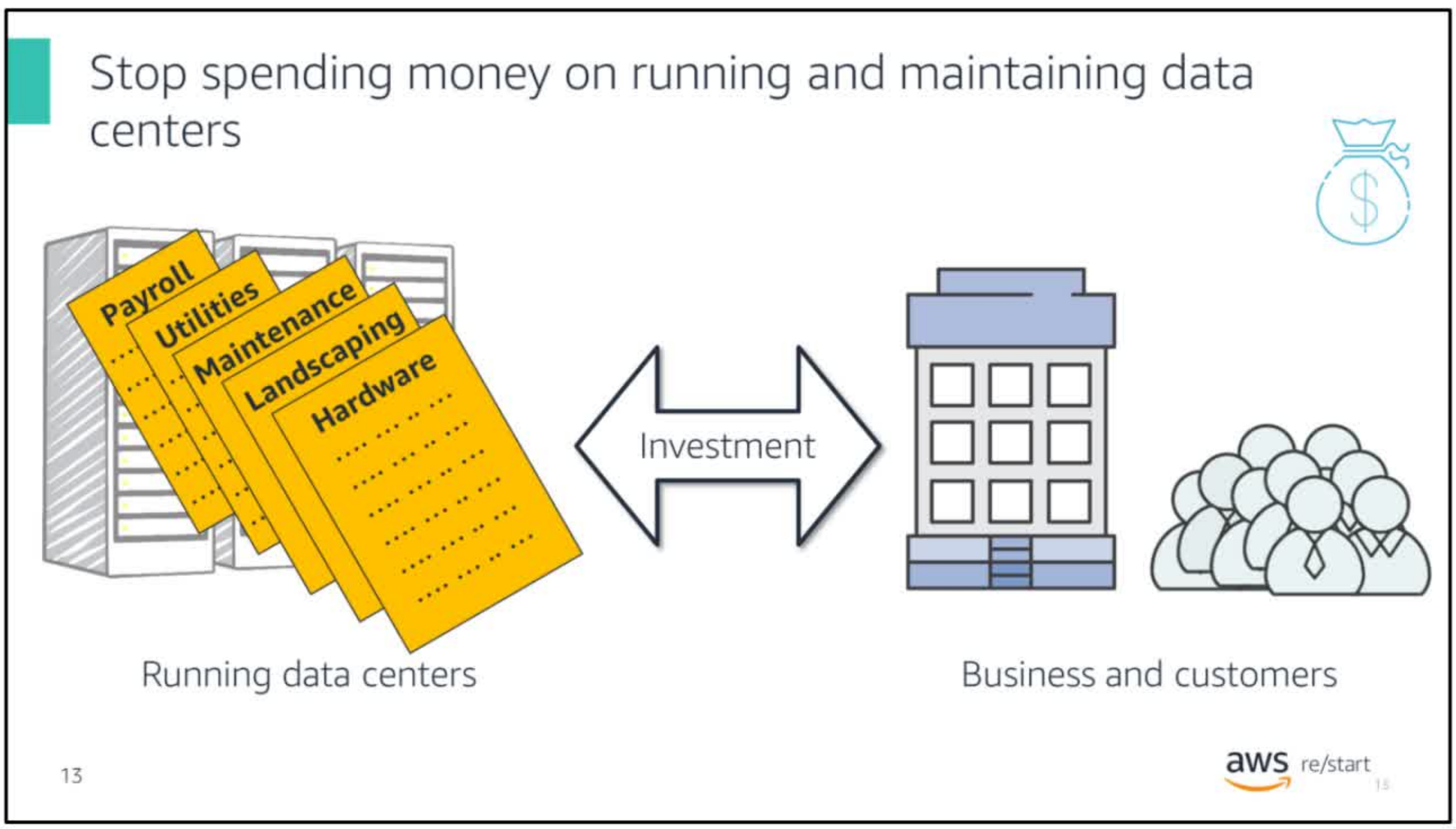


Cloud services provide global reach and the rapid availability of new resources. You can quickly change or scale your technology in minutes, not weeks.

Organizational agility is a core differentiator in today's rapidly changing business environment. For organizations to succeed in a constantly changing world, they must improve their ability to change and adapt.

You can safely experiment with new ideas and encourage innovation at a low cost. You can use prefabricated functionality without requiring in-house expertise, such as data warehousing and analytics.

You might even find success with ideas that weren't feasible in the past because of hardware or budget constraints. You can explore new avenues of business with minimal risk and expense, and you can test with different configurations.



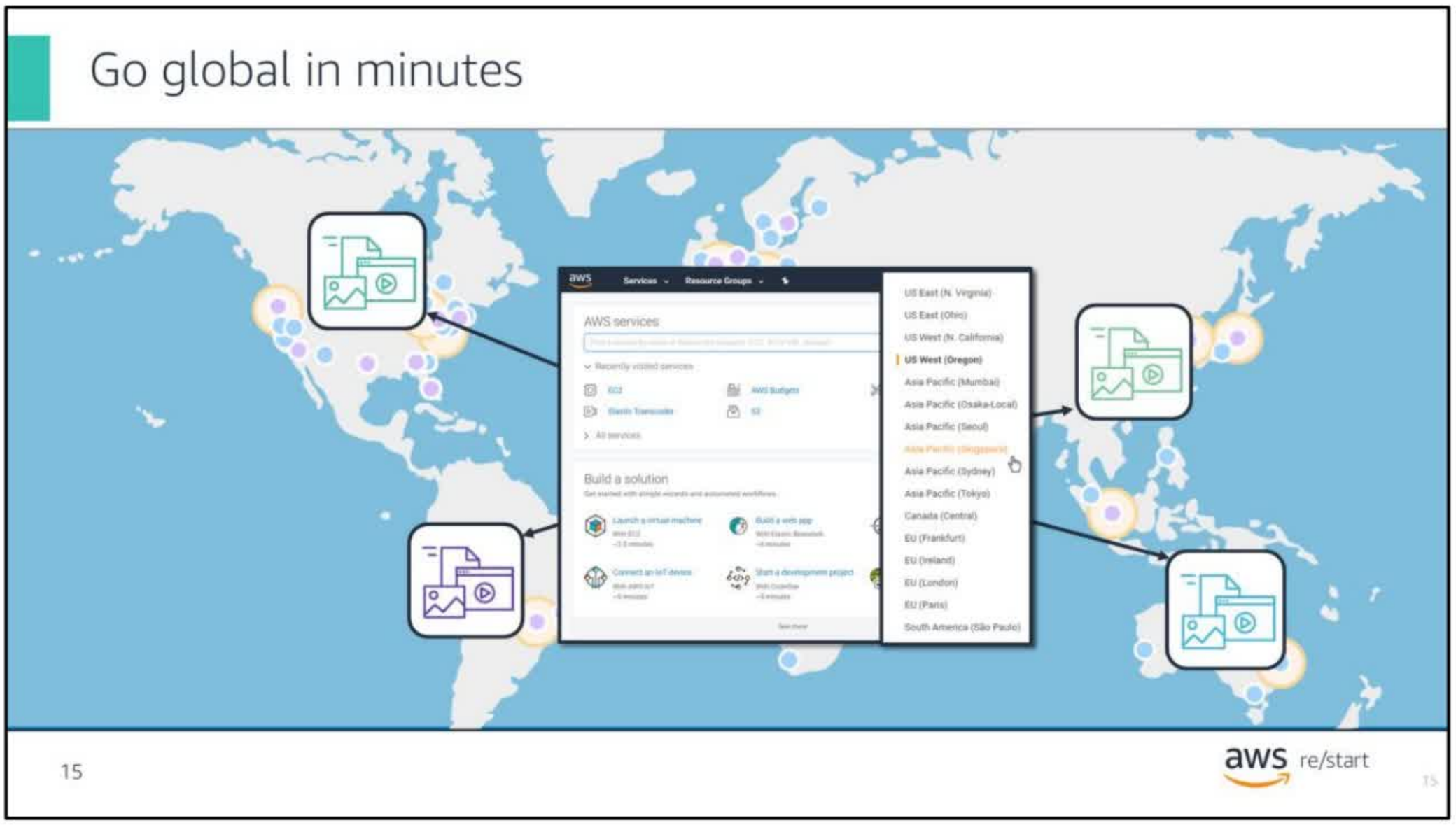
Advantage 5 – Stop spending money on running and maintaining data centers:

Running and maintaining data centers is expensive and time consuming. Focus on projects that differentiate your business, instead of focusing on the infrastructure. Cloud computing enables you to focus on your customers, instead of focusing on the tasks of racking, stacking, and powering servers.

Stop spending money on data centers

- Focus on customers
- Focus on projects that differentiate the business
- Delegate the racking, stacking, and powering of servers to the cloud services provider

Cloud computing enables you to focus on your customers and your core business—what you are good at—instead of focusing on managing infrastructure.



Advantage 6 – Go global in minutes:

You can deploy your application in multiple AWS Regions around the world with a few clicks. As a result, you can provide a lower latency and better experience for your customers simply, and at minimal cost.

To learn more about specific locations, refer to: Global infrastructure.

Research activity

Visit the AWS Customer Success page.

Group into teams of 2–3 students.

As a group, select an AWS customer and review their success story.

Review the use case or customer success story by using the links that are provided.

As a group, identify and discuss your customer success story.

To avoid redundancy between groups, write your group's chosen customer on a board.

Prepare a short presentation on your group's customer success story. Identify any challenges that an organization might have, and explain how the customer benefits from implementing an AWS solution.

Overview of activity:

In this group activity, you prepare a short presentation on a company that moved to AWS. Visit AWS Customer Success. Choose a business, read a customer story, and prepare a short presentation.

Share who the customer is. What was their reason for moving to AWS? How did the move to AWS benefit their organization?

Directions:

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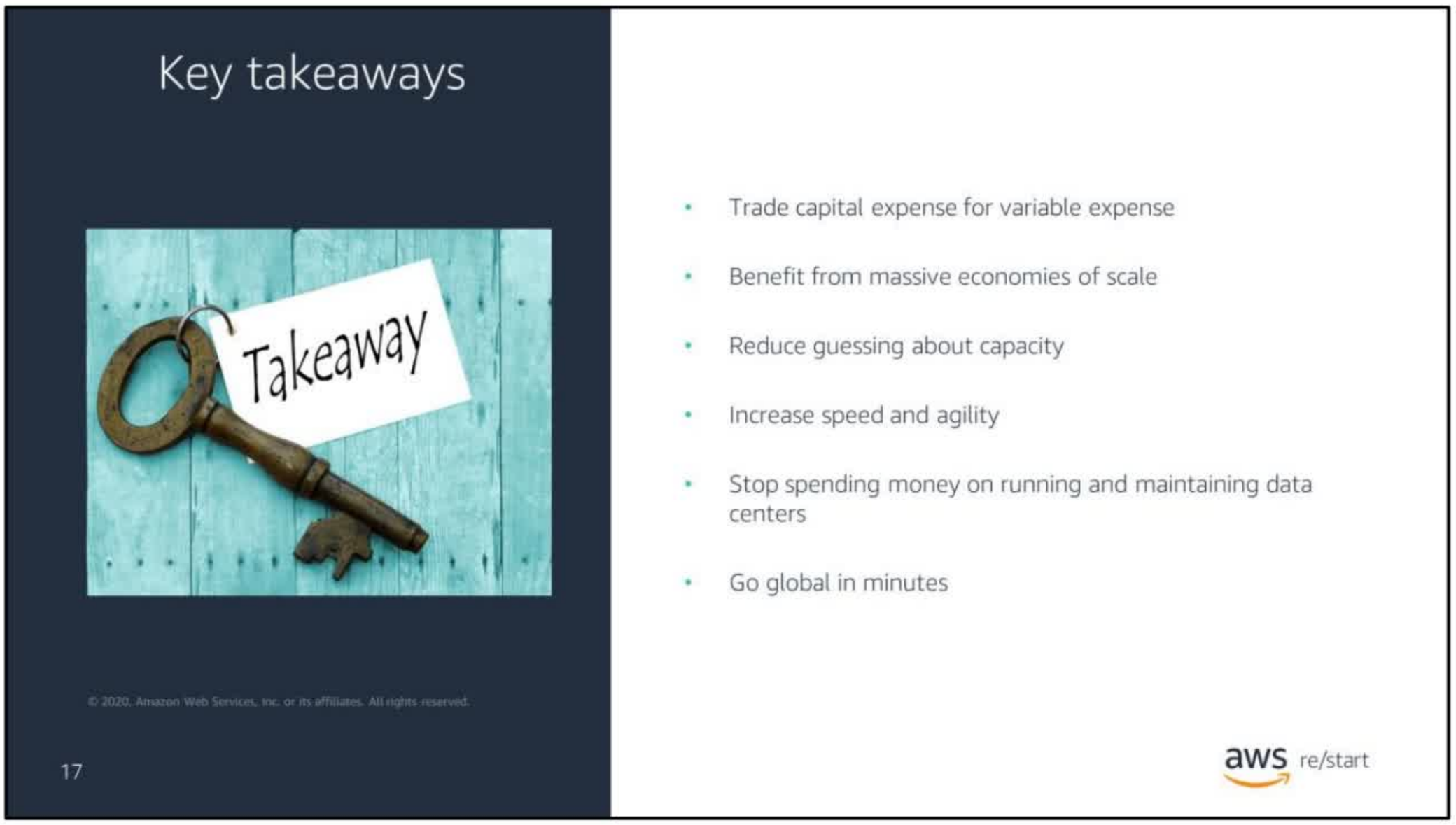

The key takeaways from this lesson are the six advantages of cloud computing:

- Trade capital expense for variable expense
- Benefit from massive economies of scale
- Reduce guessing about capacity
- Increase speed and agility
- Stop spending money on running and maintaining data centers
- Go global in minutes