Cloud bursting of on-premises workloads

Overview

In recent years, many organizations are adopting cloud computing as their core IT strategy, moving workloads to the cloud. The cloud transition provides a number of benefits, from faster deployment and cost saving to higher scalability and availability. Most applications are easily switchable but some cases may require re-architecting or modernization.

Still, some applications that require low latency or local data processing remain on-premises. As applications need to exist in both the cloud and on-premises, hybrid cloud architecture emerged for an organic connection between the two.

SDS Cloud provides a variety of hybrid cloud connection methods and a number of use cases based on consistent operation of cloud and on-premises resources.
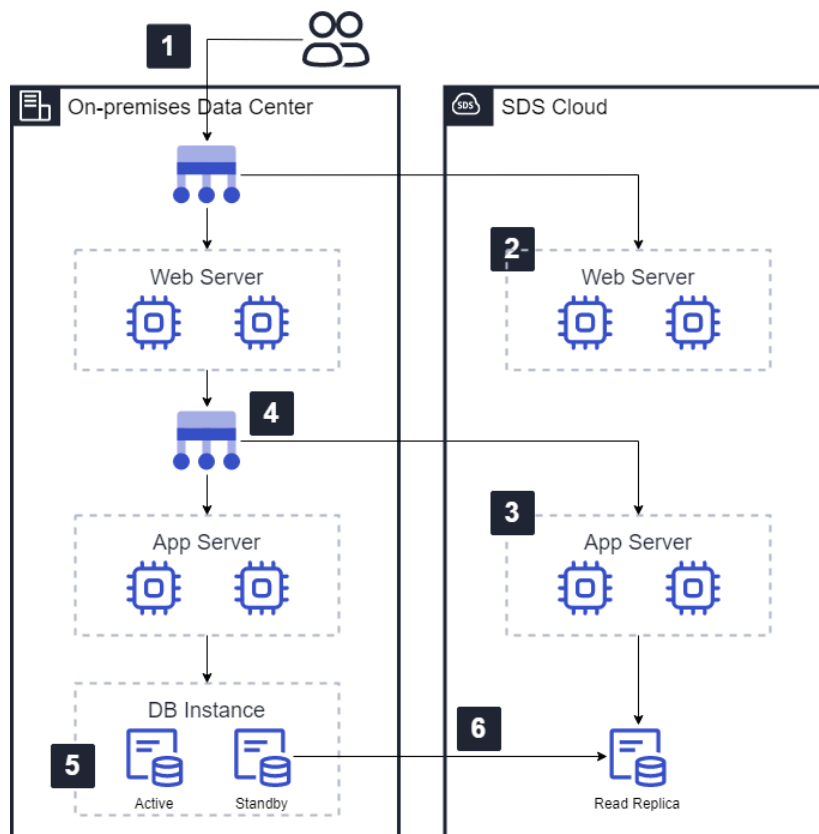
Architecture Diagram

Figure 1. Cloud bursting of on-premises workloads

1. A client makes a request to the web service representative IP of the on-premises data center through DNS.

2. When the on-premises web server computing resources become insufficient due to an increase in requests, create additional web servers using **Virtual Server** service of SDS Cloud and distribute the load using the Hybrid Cloud connection.

3. When the on-premises application server computing resources become insufficient due to an increase in the amount of requests, create additional application servers using **Virtual Servers** and distribute the load using the Hybrid Cloud connection.

4. Load Balancer distributes pages with database writing to the on-premises application server, and pages with reading workload to the application server in SDS Cloud.

5. The main database is located on-premises and updated as the application server writes.

6. The secondary database transmits the changes to the Read Replica in SDS Cloud through the Hybrid Cloud connection, and the Read Replica responds to the read request from the app server based on the synchronized database.

Use Cases

A. On-premises resource expansion in response to large system load

The basic execution of the application performs in the on-premises infrastructure but in some cases, such as events where a large-scale traffic explosion is expected, the infrastructure can be expanded by utilizing SDS Cloud resources.

B. Transition your application to SDS Cloud

Moving large-scale applications from an on-premises data center to SDS Cloud needs a lot of considerations and a long transition period. Hybrid Cloud configuration is needed to sustain service and support smooth transition during the process.

C. Use a data platform in an appropriate location for each data type

Applications that require low-latency or local data processing are stored on-premises. Applications that are not sensitive to response speed and have flexible resource usage, such as asynchronous processing, archiving, business analytics processing, or machine learning-based predictive analytics, can be stored in SDS Cloud to increase efficiency.

Pre-requisites

Hybrid Cloud connection between on-premises and SDS Cloud using **VPN** or Dedicated **VPC** must be configured in advance.

Limitations

A service request is required to configure Hybrid Cloud connection using Dedicated **VPC**.

Services such as **DB Service**, **Kubernetes Engine** and **VM Auto-Scaling** cannot be provided in the customer subnet IP band within the VPC.

Considerations

Hybrid Cloud connection includes a VPN connection method through the Internet and a Dedicated VPC configuration using a leased line. What to consider in order to choose a more suitable configuration model is listed below.

A. Implementation schedule

For a **VPN** connection over the Internet, deployment can take as short as a few hours or can take days, depending on your on-premises environment readiness. On the other hand, in order to connect through Dedicated **VPC**, it may take several weeks to build a dedicated line for the customer, as a leased line for each customer and a request for the network resource configuration are needed.

B. Communication security

VPN secures a certain level of security in case of data leakage through encryption, but it still poses a potential security risk since the basic transmission medium is the Internet. In contrast, the Dedicated **VPC** is more protective in terms of security because it uses a dedicated line for the customer for transmission.

C. Connection stability

The Internet does not provide any service-level agreements (SLAs). The best way to ensure connection stability is to maintain **VPN** connections through different Internet providers (ISPs), but it is impossible to adjust network resources beyond the scope of SDS Cloud's management or contracted ISP. Leased lines, on the other hand, offer strict SLAs for reliability.

D. Transmission performance

If a large amount of two-way throughput is required or if there is a standard for maximum latency or jitter performance indicator between on-premises and SDS Cloud, a dedicated line is recommended.

E. Cost

There may be a cost difference between the Internet and leased lines depending on the monthly data usage from on-premises toward SDS Cloud, usage in the opposite direction, and whether or not the maintenance period is temporary. Cost analysis is required to make a more economical choice.

Related Products

- VPC
- VPN
- DB Service

Related Documents

- [Cloud extension of on-premises customer networks](#)