Microsoft Azure Problem Statement with Solution

Migrating On-Premises Applications to Azure

You work for a company that has 2 data centers in North America, and two data centers Europe. You identified 6 different customer facing applications maintained by 2 different business units that you want to migrate to Azure as a pilot. The basic architecture for the applications are as follows:

- App1, App2, App3, and App4 are web applications hosted on Linux servers running Ubuntu. Each application connects to a separate application server that hosts RESTful services on Linux servers. The RESTful services connect to a back-end MySQL database.
- App5 and App6 are web applications hosted on Windows servers running Windows Server 2012 R2. Each application connects to a back-end SQL Server database.
- All apps are currently hosted in one of the company's data centers in North America.
- The on-premises data centers use the 10.0.0.0/8 address space.

You need to design a virtual network solution that meets the following requirements:

- Each business unit should not be affected by resource consumption of other business units.
- You should minimize the amount of VNets and subnets to make management easier.
- Each business unit should have a single test/development VNet used for all applications.
- Each application is hosted in 2 different Azure data centers per continent (North America and Europe).
- Each application is completely isolated from each other.
- Each application can be accessed by customers over the Internet using HTTP.
- Each application can be accessed by users connected to the on-premises data centers by using an encrypted tunnel.
- Connection to on-premises data centers should use existing VPN devices.
- The company's networking group should have full control over the VNet configuration.
- Developers in each business unit should only be able to deploy VMs to existing subnets.
- All applications will be migrated as they are to Azure (lift-and-shift).
- The databases in each location should replicate to other Azure locations once a day.
- Each application should use 5 front end web servers, 2 application servers (when necessary), and 2 database servers.

You should answer the following planning questions and also provide the required architecture in Azure.

1. What Azure locations will you use to host VNets?
2. Do you need to provide communication between these Azure locations?
3. Do you need to provide communication between your Azure VNet(s) and your on-premises data center(s)?
4. How many IaaS VMs do you need for your solution?
5. Do you need to isolate traffic based on groups of VMs (i.e. front end web servers and back end database servers)?
6. Do you need to control traffic flow using virtual appliances?
7. Do users need different sets of permissions to different Azure resources?

Design Requirements

The following requirements are related to subscriptions and VNets:

- Each business unit should not be affected by resource consumption of other business units.
- You should minimize the amount of VNets and subnets.
- Each business unit should have a single test/development VNet used for all applications.
- Each application is hosted in 2 different Azure data centers per continent (North America and Europe).

Requirement for Subnets and Network Security Groups

Number of subnets and NSGs

The following requirements are related to subnets and NSGs:

- You should minimize the amount of VNets and subnets.
- Each application is completely isolated from each other.
- Each application can be accessed by customers over the Internet using HTTP.
- Each application can be accessed by users connected to the on-premises data centers by using an encrypted tunnel.
- Connection to on-premises data centers should use existing VPN devices.
- The databases in each location should replicate to other Azure locations once a day.