

Availability Set

Availability Sets ensure that the Azure virtual machines are deployed across multiple isolated hardware nodes in a cluster.

By deploying your vms across multiple hardware nodes Azure ensures that if hardware or software failure happens within Azure, only a sub-set of your virtual machines are impacted and your overall solution is safe and in working condition.

Availability set provides redundancy for your virtual machines.

Availability set spreads your virtual machines across multiple fault domains and update domains.

Fault Domain

A fault domain is a physical grouping of resources that share a common physical hardware platform, such as a rack, server, or power source. In other words, all resources in a fault domain share the same failure domain.

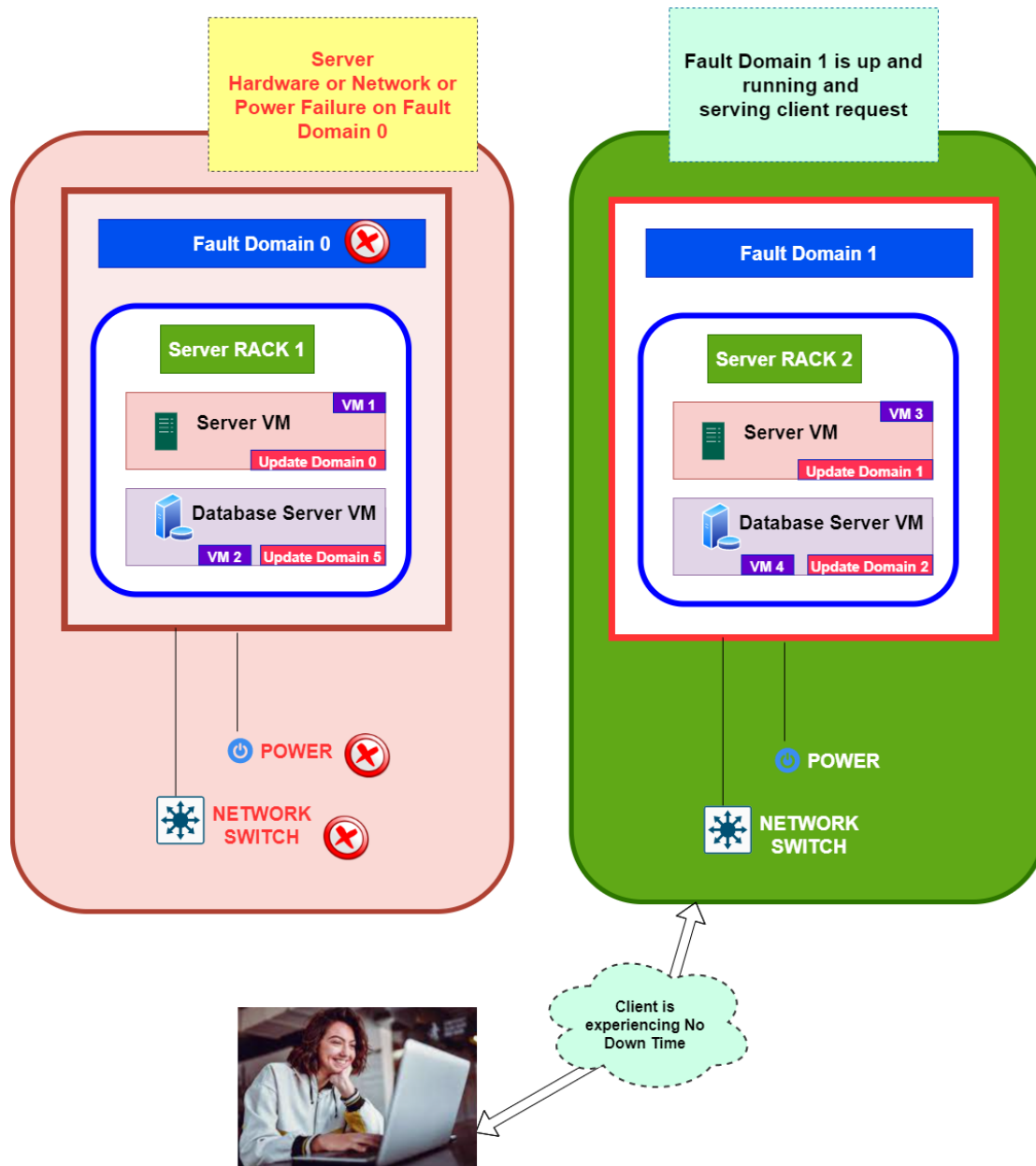
Fault domains define the group of virtual machines that share a common power source and network switch.

Each and every fault domain contains some racks and each rack contains virtual machine.

Each of these Fault domain shares a power supply and a network switch.

If there is a failure in the fault domain then all the resources in the fault domain become unavailable.

You should place your vms such a way that each fault domain get one web server, one database server and like that.



Update Domain

An update domain is a logical group of underlying hardware that can undergo maintenance or be rebooted at the same time. As you create VMs within an availability set, the Azure platform automatically distributes your VMs across these update domains.

Update domains comprises of groups of VMs and underlying physical hardware

that can be rebooted at the same time.

Update domains are a logical part of each data center and are implemented with software and logic.

The Update Domains tells us how it is going to be patched when Azure does update to those machines.

Virtual machines get update domains automatically once they are put inside availability set.

All virtual machines within that update domain will reboot together.

Update domains are used for patching of the virtual machines.

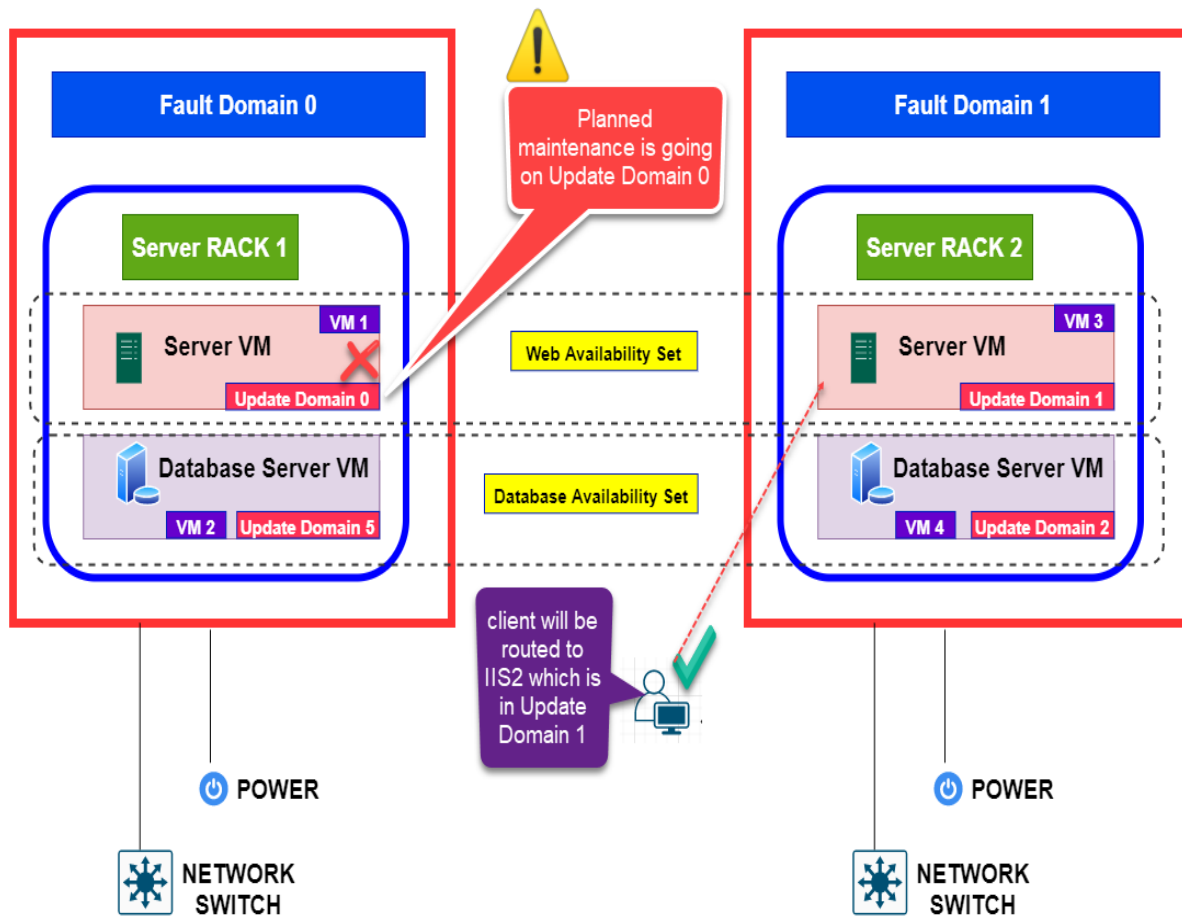
Only one update domain would be updated at the time

How many Fault Domains and How many Update Domains we can have?

In Azure Resource Manager(ARM) portal, we have three Fault domains and 5 update domains but we can upgrade our update domains from 5 to 20.

VMs are assigned sequentially in the update domains and fault domains.

Virtual Machines	Fault Domain	Update Domain
	(3 Fault domains)	(5 Update domains)
VM 1	0	0
VM 2	1	1
VM 3	2	2
VM 4	0	3
VM 5	1	4



Azure Fault and Update Domains Comparison

Azure Fault Domains

A logical grouping of resources that share a common physical hardware platform

Helps minimize the risk of downtime due to hardware failures

Resources in the same fault domain are spread across different physical hardware platforms

Azure ensures that no two resources in the same fault domain are running on the same physical hardware platform

Supports up to three fault domains

Can be changed at any time

Included in the standard Azure service offering and do not require any additional fees

Azure Update Domains

A logical grouping of resources that share a common software update policy

Helps minimize the risk of downtime due to software updates

Resources in the same update domain are not updated at the same time

Azure ensures that no two resources in the same update domain are updated at the same time

Supports up to 20 update domains

Can be changed at any time

Included in the standard Azure service offering and do not require any additional fees