Final Project

Service Fabric

Lim, Isaac

Deep Azure@McKesson

Dr. Zoran B. Djordjević

Introduction

- Microsoft Azure Service Fabric gives the user the ability to easily package and deploy applications and services. As well, Service Fabric clusters provide high scalability and reliability for these applications and services.
- Service Fabric is highly customizable. For instance, you can create a cluster that has multiple VMs each being a node, or you can have a single VM with multiple nodes attached.
- Applications can be deployed quickly once a Service Fabric cluster is created, unlike traditional deployments where a VM needs to be created every time.

Problem Statement

- A Company is wanting to expand their infrastructure, and one of the initiatives is to create a scalable service fabric for their client facing web service. Create a service fabric cluster containing 1 node and deploy a web service application which will return a row from the dataset.

Steps

- Install Service Fabric SDK
- Create Service Fabric Cluster
- Create sample application
- Deploy application to Service Fabric Cluster
- Run application web service

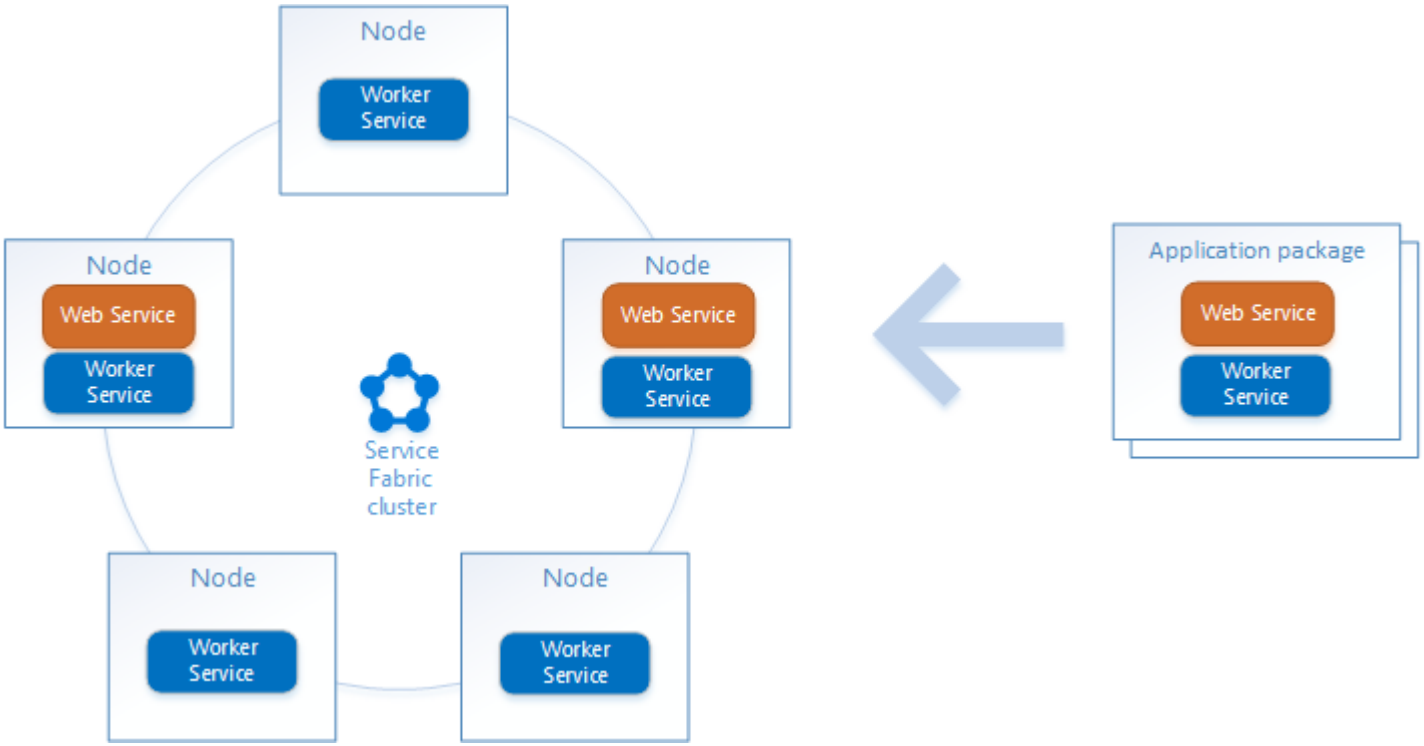
Dataset

- Dataset used was leading causes of deaths in the US
- https://catalog.data.gov/dataset/age-adjusted-death-rates-for-the-top-10-leading-causes-of-death-united-states-2013

1	Year	113 Cause Name	Cause Name	State	Deaths	Age-adjusted Death Rate
2	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Alabama	2313	52.2
3	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Alaska	294	55.9
4	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Arizona	2214	44.8
5	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Arkansas	1287	47.6
6	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	California	9198	28.7
7	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Colorado	1519	39
8	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Connecticut	1034	29.3
9	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Delaware	267	35.3
10	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	District of Columbia	161	28.4
11	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Florida	5961	35.7
12	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Georgia	3078	41.5
13	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Hawaii	293	24.3
14	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Idaho	597	48.3
15	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Illinois	4125	33.7
16	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Indiana	2309	38.4
17	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Iowa	1123	35.2
18	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Kansas	1126	40.7
19	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Kentucky	1730	43.3
20	1999	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	Unintentional Injuries	Louisiana	1940	44.7

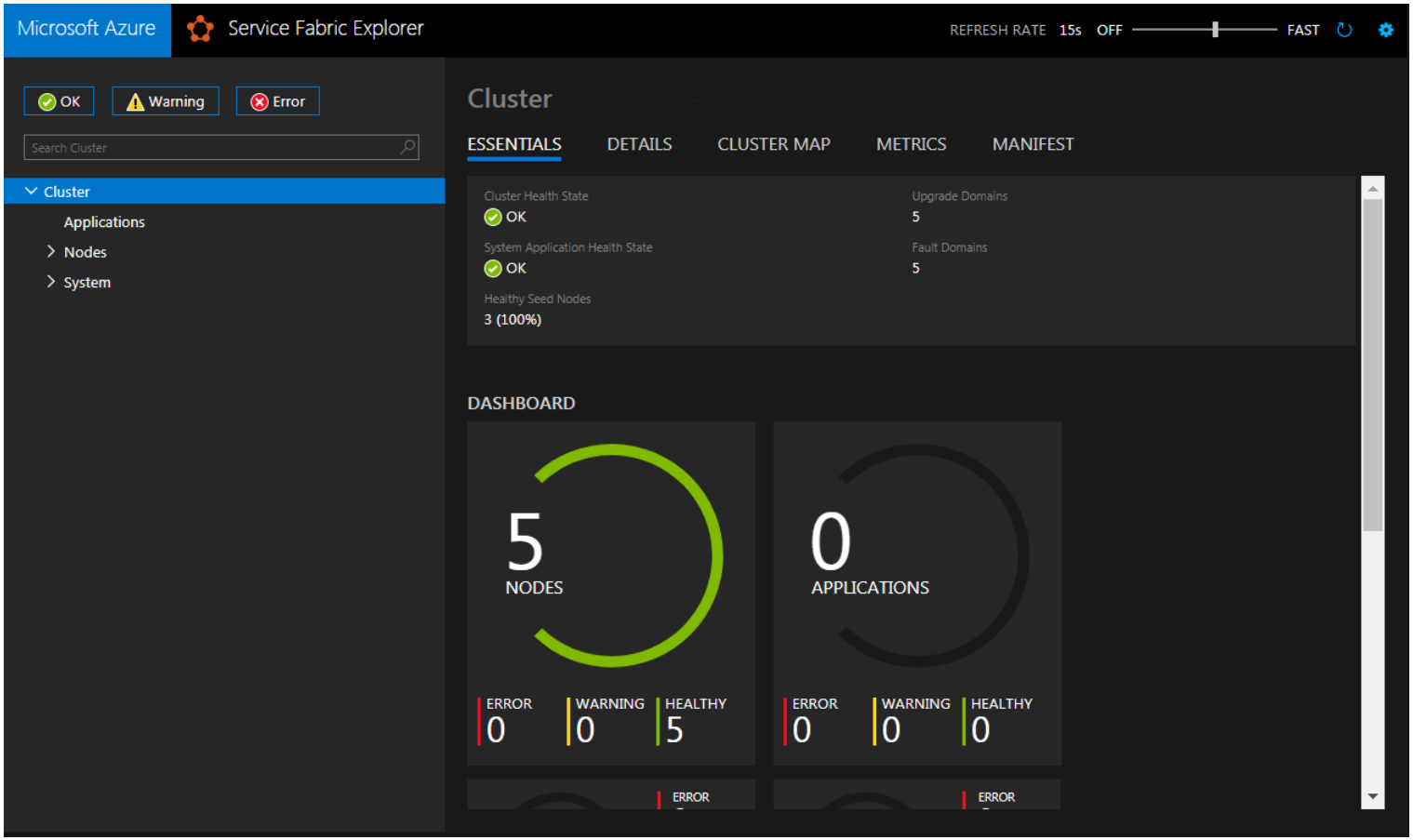
Service Fabric Cluster

- The Service Fabric cluster created in Azure gives flexibility with how applications are distributed



Service Fabric Cluster

- The Service Fabric Cluster dashboard explorer



Code

- The application that is then deployed to the cluster grabs a random row in the dataset and presents it to the client

```
namespace isaacService.Controllers
{

    class Cause
    {
        public String Year { get; set; }
        public String Name { get; set; }
        public String State { get; set; }
        public String Deaths { get; set; }
        public String Age { get; set; }
    }
   [Route("api/[Controller]")]
    public class isaacController : Controller
    {

        List<Cause> causes = new List<Cause>();

        public IActionResult IndexIsaac()
        {
            var fileName = @"NCHS_-_Leading_Causes_of_Death__United_States.csv";
            var file = System.IO.File.ReadLines(fileName).ToList();
            int count = file.Count();
            Random rnd = new Random();
            int skip = rnd.Next(0, count);
            string line = file.Skip(skip).First();
            String[] contents = line.Split('|');

            Cause cause = new Cause()
            {
                Year = contents[0],
                Name = contents[2],
                State = contents[3],
                Deaths = contents[4],
                Age = contents[5]
            };

            causes.Add(cause);

            return new JsonResult(causes);

        }
```

Lessons Learned, Pros/Cons

- Azure Service Fabric provide for a very customizable and fast deployment of applications which can alleviate the problem of standing up VMs for every need
- For secured clusters, the need to distribute a certificate was necessary. This was something that I could not get the client computer to communicate properly
- The cluster deployment can sometimes take a long time, and every time there was a change in the configuration it seemed to take a long time to update

YouTube URLs, GitHub URL, Last Page

- Two minute (short): N/A
- 15 minutes (long): N/A
- GitHub Repository with all artifacts: https://github.com/mck-isaac/azurefinal