



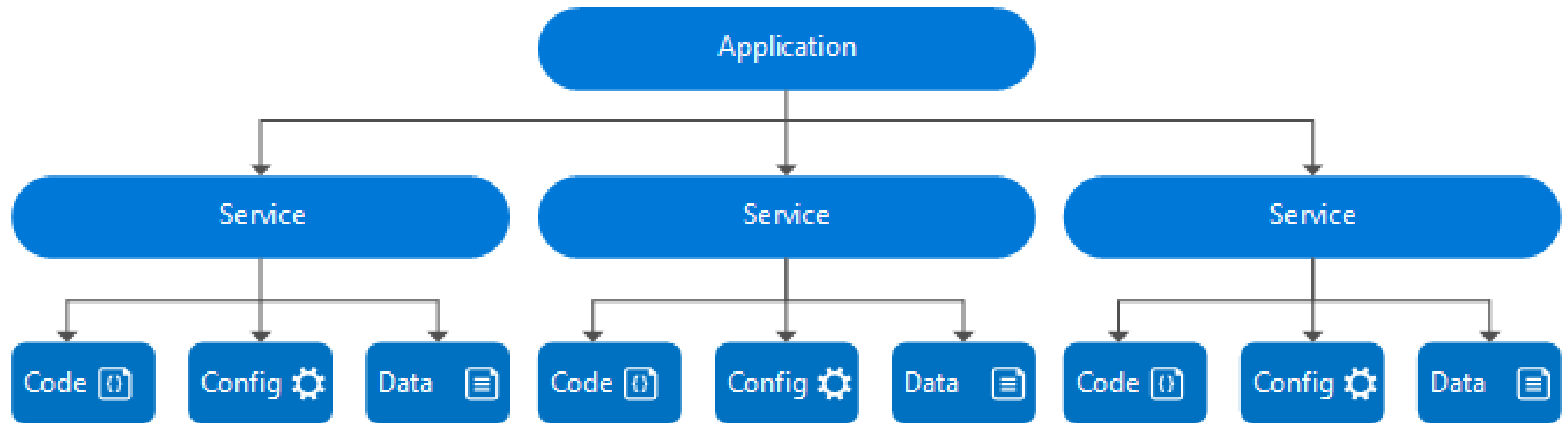
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Azure Service Fabric

Sonu Sathyadas

Application Model



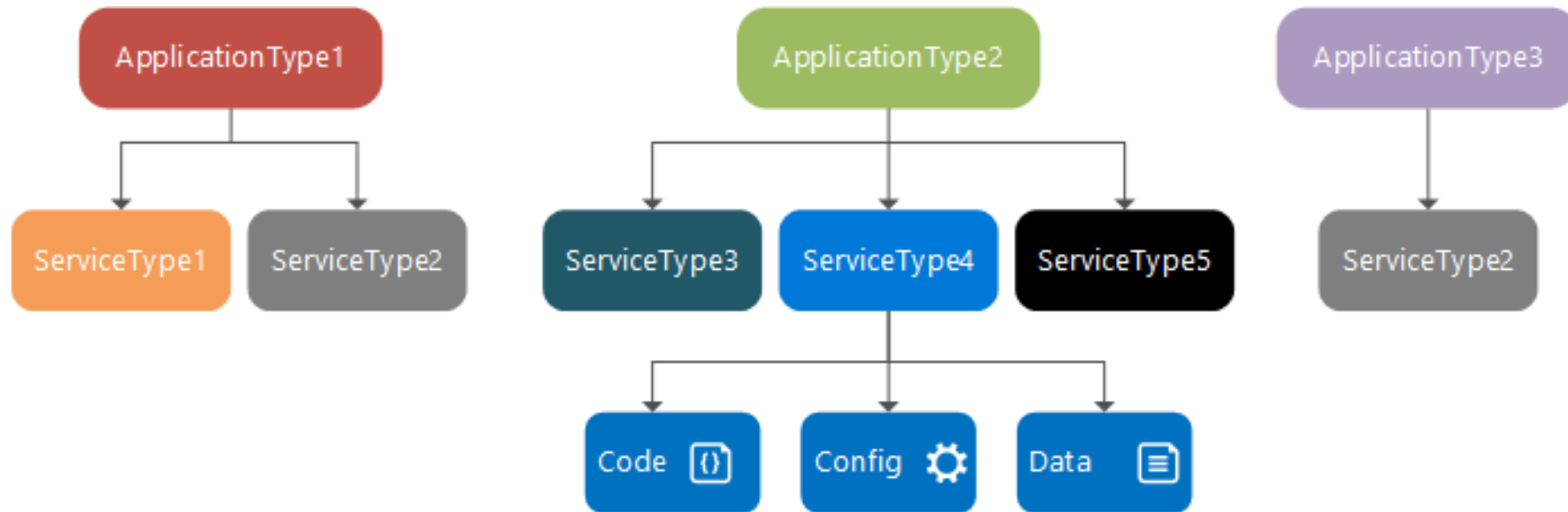
- Application is a collection of constituent services that perform a certain function or functions.
- A service performs a complete and standalone function and can start and run independently of other services.
- A service is composed of code, configuration, and data.
- Code - executable binaries
- Configuration - service settings that can be loaded at run time
- Data - arbitrary static data to be consumed by the service

Application Type & Service Type

- **Application type** is a categorization of an application and consists of a bundle of service types.
- **Service type** is a categorization of a service.
- The instances of a service are the different service configuration variations of the same service type.

- Classes (or "types") of applications and services are described through XML files (**application manifests** and **service manifests**).
- The manifests are the templates against which applications can be instantiated from the cluster's image store.
- The code for different application instances run as separate processes even when hosted by the same Service Fabric node.
- Lifecycle of each application instance can be managed (for example, upgraded) independently.

- The diagram shows how application types are composed of service types, which in turn are composed of code, configuration, and data packages.



- Declaratively defines the service type and version.
- Specifies service metadata such as
 - service type
 - health properties
 - load-balancing metrics
 - service binaries
 - configuration files
- In another way, it describes the code, configuration, and data packages that compose a service package

ServiceManifest.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<ServiceManifest Name="MyServiceManifest" Version="SvcManifestVersion1" xmlns="...">
  <Description>An example service manifest</Description>
  <ServiceTypes>
    <StatelessServiceType ServiceTypeName="MyServiceType" />
  </ServiceTypes>
  <CodePackage Name="MyCode" Version="CodeVersion1">
    <SetupEntryPoint>
      <ExeHost> <Program>MySetup.bat</Program> </ExeHost>
    </SetupEntryPoint>
    <EntryPoint>
      <ExeHost> <Program>MyServiceHost.exe</Program> </ExeHost>
    </EntryPoint>
    <EnvironmentVariables>
      <EnvironmentVariable Name="MyEnvVariable" Value=""/>
      <EnvironmentVariable Name="HttpGatewayPort" Value="19080"/>
    </EnvironmentVariables>
  </CodePackage>
  <ConfigPackage Name="MyConfig" Version="ConfigVersion1" />
  <DataPackage Name="MyData" Version="DataVersion1" />
</ServiceManifest>
```


- **ConfigPackage** declares a folder, named by the **Name** attribute, that contains a *Settings.xml* file.
- Settings file contains sections of user-defined, key-value pair settings that the process reads back at run time.
- During an upgrade, if only the **ConfigPackage version** has changed, then the running process is not restarted.
- Instead, a callback notifies the process that configuration settings have changed so they can be reloaded dynamically.

```
<Settings xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://schemas.microsoft.com/2011/01/fabric">
  <Section Name="MyConfigurationSection">
    <Parameter Name="MySettingA" Value="Example1" />
    <Parameter Name="MySettingB" Value="Example2" />
  </Section>
</Settings>
```

- Declaratively describes the application type and version.
- Specifies service composition metadata such as
 - stable names
 - partitioning scheme
 - instance count/replication factor
 - security/isolation policy
 - placement constraints
 - configuration overrides
 - constituent service types.
- Describes elements at the application level and references one or more service manifests to compose an application type.

ApplicationManifest.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<ApplicationManifest ApplicationTypeName="MyApplicationType"
  ApplicationTypeVersion="AppManifestVersion1"
  xmlns="http://schemas.microsoft.com/2011/01/fabric"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Description>An example application manifest</Description>
  <ServiceManifestImport>
    <ServiceManifestRef ServiceManifestName="MyServiceManifest"
      ServiceManifestVersion="SvcManifestVersion1"/>
    <ConfigOverrides/>
    <EnvironmentOverrides CodePackageRef="MyCode"/>
  </ServiceManifestImport>
  <DefaultServices>
    <Service Name="MyService">
      <StatelessService ServiceTypeName="MyServiceType" InstanceCount="1">
        <SingletonPartition/>
      </StatelessService>
    </Service>
  </DefaultServices>
</ApplicationManifest>
```