Microsoft Azure Service Fabric 6.5 First Refresh Release Notes

This release includes the bug fixes and features described in this document. This release includes runtime, SDKs and Windows Server Standalone deployments to run on-premises.

The following packages and versions are part of this release

Service Fabric Runtime	Ubuntu	*6.5.454.1*
	Windows	*6.5.641.9590*
Service Fabric for Windows Server	Service Fabric Standalone Installer Package	*6.5.641.9590*
.NET SDK	Windows .NET SDK	*3.4.641*
	Microsoft.ServiceFabric	*6.5.641*
	Reliable Services and Reliable Actors	*3.4.641*
	ASP.NET Core Service Fabric integration	*3.4.641*
Java SDK	Java for Linux SDK	*1.0.5*
Service Fabric PowerShell and CLI	AzureRM PowerShell Module	*0.3.15*
	SFCTL	*8.0.0*
Service Fabric Tooling	Visual Studio Tooling	*2.5.20615.1*
	Eclipse Tooling	*2.0.7*

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Breaking announcements

- **Protecting system entities from runaway 'user' code**: From 6.5 version onwards, users can set up resource protection between the system and user services on a node. Service Fabric will enforce these hard resource limits for user services to guarantee that all the non-system services on a node will never use more than the specified amount of resources. Please refer to this **section** for configuration details.

Upgrade requirements for Docker Compose customers

For any customers running a Docker Compose application on their cluster. Please follow the guidance given below for each scenario,

- ***Cluster had been upgraded to version 6.5.435.1 for Ubuntu or version 6.5.639.9590 for Windows and experiencing cluster availability issues***: Please reach out to us through Azure Portal Help for assistance with this issue. Here are your general support options for Service Fabric: https://docs.microsoft.com/azure/service-fabric/service-fabric-support.

- ***Cluster had been upgraded to version 6.5.435.1 for Ubuntu or version 6.5.639.9590 for Windows and are not experiencing any issues***: Need to upgrade the cluster to this 6.5 refresh release version as soon as possible.

- ***Cluster had not been upgraded to version 6.5.435.1 for Ubuntu or version 6.5.639.9590 for Windows***: Need to first upgrade the cluster to the latest version of 6.4. This would be version *6.4.664.9590+* for Windows and 6.4.661.1+ for Ubuntu. Once you have upgraded to this version, you can safely upgrade to this 6.5 refresh release version.

Service Fabric Common Bug Fixes

Versions	IssueType	Description	Resolution
Ubuntu 6.5.454.1	**Bug**	When creating compose application, one more "fabric:/" is added to the application instance name. This name is used to generate log driver in Linux. The wrong name with two "fabric:/" prefix used by log driver causes compose application creation to fail.	**Impact**: Compose application in Linux cannot be created. **Fix**: Remove the additional "fabric:/" when creating compose application instance.
Ubuntu 6.5.454.1 Windows 6.5.641.9590	**Bug**	Compose applications are migrated to use new workflow in Cluster Manager in 6.5. If compose applications are upgraded before, Cluster Manager will crash when cluster is upgrading to 6.5.	**Impact**: If compose applications are upgraded before, then Cluster Manager will crash if cluster is upgrading to 6.5. **Fix**: The issue is if compose application is upgraded before, it will reset its upgrade description to null. When migrating, the description is used to creating new data for compose application, and null causes migration failed. Fix to check null upgrade description before migration.
Ubuntu 6.5.454.1 Windows 6.5.641.9590	**Bug**	Version 6.5 of Service Fabric introduced a regression in calculating placement constraints.	**Impact**: In cases when the placement constraint for a service contains operator "==" and has a property value starting with the letter P, the placement property expression will not be calculated correctly and will be ignored. **Fix**: This refresh release fixes this problem and removes the regression.

Ubuntu 6.5.454.1
Windows 6.5.641.9590
	Bug	**Protecting system entities from runaway 'user' code**	Few customers encountered problems due to runaway user services consuming all the resources on Service Fabric nodes. The resource exhaustion (spinning CPU, memory exhaustion, hammering disk IO, disk space exhaustion) resulted in several bad effects including starving other services on the nodes, nodes ending up in a bad state, complex mitigation and recovery steps, and unresponsive cluster management APIs.
			
			With this version of Service Fabric, you can now set up resource protection between the system and user services on a node. Service Fabric will enforce these hard resource limits
			for user services to guarantee that all the non-system services on a node will never use more than the specified amount of resources.
			
			This release adds an additional configuration option: EnforceUserServiceMetricCapacities. This config is in the PlacementAndLoadBalancing section of your ClusterManifest/ClusterConfig, and is OFF by default (to prevent unexpected surprises for existing customers during upgrades).
			
			<Section Name="PlacementAndLoadBalancing">
			<Parameter Name="EnforceUserServiceMetricCapacities" Value="true" />
			</Section>
			
			{
			"name": "PlacementAndLoadBalancing",
			"parameters": [{
			"name": "EnforceUserServiceMetricCapacities",
			"value": "true" }]
			}
			
			This feature depends on Node Capacities for the Service Fabric resource governed https://docs.microsoft.com/en-us/azure/service-fabric/service-fabric-resource-governance metrics (as of this writing Memory and CPU Cores) being set. These capacities can be set either automatically (AutoDetectAvailableResources flag is false) or manually. If no capacities are set, the node is considered to have infinite capacity for the given metric, and hence this feature cannot be used (since SF doesn't know how much resources to reserve for system services).
			SF will issue a health warning if "EnforceUserServiceMetricCapacities" is true but capacities are not specified.
			
			The specified metric capacity for the node is then divided between the user services defines and the rest of the system. The amount dedicated to the user services vs. the amount dedicated to the system is controlled by the following settings:

			<Section Name="PlacementAndLoadBalancing"> <!-- 0.0 means 0%, and 1.0 means 100%--> <Parameter Name="CpuPercentageNodeCapacity" Value="0.8" /> <Parameter Name="MemoryPercentageNodeCapacity" Value="0.8" /> </Section> These ratios are defined by default. By default 80% of node capacity is used for user services and 20% will be left to allow enough resources for the SF system services (and also for any other processes/apps running on the node that are not visible to SF). These settings are static and upgrades to change them will require node restarts. User service capacity is enforced only for governed SF metrics (Memory and CPU Cores as of this writing). For non-governed metrics, it's treated as a soft guarantee (violations are possible, but if they happen, load balancer will trigger and attempt to fix the violation by moving services around, just like normal capacity violations). The SF system services are effectively **ungoverned**, and they can go beyond of their quota. Effectively constraining the system components and preventing them from growing beyond their allotment will be handled in an upcoming release. With this change, user services metric capacity can also be defined per Node Type. T At the NodeType level, a new section is added named *UserServicesMetricCapacity*. Within this section, the same setting names and behavior can be defined and will result in the same behavior as described for the Cluster Manifest level settings. If metric capacity is defined in both places, node type definition takes precedence. <NodeTypes> <NodeType Name="NodeType0"> <UserServicesMetricCapacity> <Parameter Name="CpuPercentageNodeCapacity" Value="0.5"/> <Parameter Name="MemoryPercentageNodeCapacity" Value="0.7"/> </UserServicesMetricCapacity> </NodeType> </NodeTypes>

This release also fixes an issue in the calculation of node capacities. The rule for calculating capacity has changed to account for percentage value (User Services Capacity = Node Capacity * User Services Capacity Percentage)

Previously, if user provided an override value for node capacity in NodeType, the % value was ignored. This could be surprising to some users.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Node capacity auto-detected value	100	100	100	100
Node capacity user override	-	90	-	90
User services capacity default in cluster manifest	0.7	0.7	0.7	0.7
User services capacity default in Node Type	-	-	0.5	0.5
User services capacity - actual value	70	90	50	90

With this release, if user provides an override for the absolute capacity in NodeType, the % value is NOT ignored, and will further discount the available resources on the node.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4

			Node capacity auto-detected value	100	100	100	100	
			Node capacity user override	-	90	-	90	
			User services capacity default in cluster manifest	0.7	0.7	0.7	0.7	
			User services capacity default in Node Type	-	-	0.5	0.5	
			User services capacity - actual value	70	63	50	45	

Repositories and Download Links

The table below is an overview of the direct links to the packages associated with this release.

Follow this guidance for setting up your developer environment:

- Linux: https://docs.microsoft.com/en-us/azure/service-fabric/service-fabric-get-started-linux
- Mac: https://docs.microsoft.com/en-us/azure/service-fabric/service-fabric-get-started-mac
- Windows: https://docs.microsoft.com/en-us/azure/service-fabric/service-fabric-get-started

Area	Package	Version	Repository	Direct Download Link
Service Fabric Runtime	Ubuntu Developer Set-up	6.5.454.1	N/A	Cluster Runtime: https://apt-mo.trafficmanager.net/repos/servicefabric/pool/main/s/servicefabric Service Fabric SDK for local cluster setup: https://apt-mo.trafficmanager.net/repos/servicefabric/pool/main/s/servicefabricsdkcommon/ Container image: https://hub.docker.com/r/microsoft/service-fabric-onebox/
	Red Hat Developer Set-up	6.1.189.1	N/A	Cluster Runtime: https://packages.microsoft.com/yumrepos/microsoft-rhel7.4-prod/

				Service Fabric SDK for local cluster setup: https://packages.microsoft.com/yumrepos/microsoft-rhel7.4-prod/servicefabric_sdkcommon_1.1.2.rpm
	Windows Developer Set-up	6.4.641.9590	N/A	https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftServiceFabric.6.5.641.9590.exe
Service Fabric for Windows Server	Service Fabric Standalone Installer Package	6.4.641.9590	N/A	https://download.microsoft.com/download/8/3/6/836E3E99-A300-4714-8278-96BC3E8B5528/6.5.641.9590/Microsoft.Azure.ServiceFabric.WindowsServer.6.5.641.9590.zip
	Service Fabric Standalone Runtime	6.4.641.9590	N/A	https://download.microsoft.com/download/B/0/B/B0BCCAC5-65AA-4BE3-AB13-D5FF5890F4B5/6.5.641.9590/MicrosoftAzureServiceFabric.6.5.641.9590.cab
.NET SDK	Windows .NET SDK	3.4.641	N/A	https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftServiceFabricSDK.3.4.641.msi
	Microsoft.ServiceFabric	6.4.641	N/A	https://www.nuget.org
	Reliable Services and Reliable Actors • Microsoft.ServiceFabric.Services • Microsoft.ServiceFabric.Services.Remoting	3.4.641	https://github.com/Azure/service-fabric-services-and-actors-dotnet	https://www.nuget.org

	• Microsoft.ServiceFabric.Services.Wcf • Microsoft.ServiceFabric.Actors Microsoft.ServiceFabric.Actors.Wcf			
	ASP.NET Core Service Fabric integration Microsoft.ServiceFabric.Services.AspNetCore.*	3.4.641	https://github.com/Azure/service-fabric-aspnetcore	https://www.nuget.org
.NET SDK	Data, Diagnostics and Fabric transport • Microsoft.ServiceFabric.Data • Microsoft.ServiceFabric.Data.Interfaces • Microsoft.ServiceFabric.Diagnostics.Internal Microsoft.ServiceFabric.FabricTransport.Internal	3.4.641	N/A	https://www.nuget.org
.NET SDK	Microsoft.ServiceFabric.Data.Extensions	1.4.641	N/A	https://www.nuget.org
Java SDK	Java SDK	1.0.5	N/A	https://mvnrepository.com/artifact/com.microsoft.servicefabric/sf-actors/1.0.0
Visual Studio	Visual Studio 2017 Tools for Service Fabric	2.5.20608.1	N/A	Included in Visual Studio 2017 Update 7 (15.7) and above
	Visual Studio 2015 Tools for Service Fabric	2.5.20615.1	N/A	See localized download links below
Eclipse	Service Fabric plug-in for Eclipse	2.0.7	N/A	N/A
Yeoman	Azure Service Fabric Java generator	1.0.7	https://github.com/Azure/generator-azuresfjava	N/A

	Azure Service Fabric C# generator	1.0.9	https://github.com/Azure/generator-azuresfcsharp	N/A
	Azure Service Fabric guest executables generator	1.0.1	https://github.com/Azure/generator-azuresfguest	N/A
	Azure Service Fabric Container generators	1.0.1	https://github.com/Azure/generator-azuresfcontainer	N/A
CLI	Service Fabric CLI	8.0.0	https://github.com/Azure/service-fabric-cli	https://pypi.python.org/pypi/sfctl
Power Shell	AzureRM.ServiceFabric	0.3.15	https://github.com/Azure/azure-powershell/tree/preview/src/ResourceManager/ServiceFabric	https://www.powershellgallery.com/packages/AzureRM.ServiceFabric/0.3.15

Visual Studio 2015 Tool for Service Fabric – localized download links

NOTE: The below download links are for the 2.5.20615.1 release of Visual Studio 2015 Tools for Service Fabric.

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.de-de.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.en-us.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.es-es.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.fr-fr.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.it-it.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.ja-jp.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.ko-kr.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.ru-ru.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.zh-cn.msi

https://download.microsoft.com/download/9/2/0/920B15E6-8CC1-4413-8978-123B77288B40/MicrosoftAzureServiceFabricTools.VS140.zh-tw.msi