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WHITE PAPER

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Licensing ArcGIS Enterprise Deployments in Virtualized and Cloud Environments

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Table of Contents

Summary....4

License Model of ArcGIS Enterprise....4

Cores in Cloud Environments....5

Licensing ArcGIS Enterprise Deployments in Virtualized and Cloud Environments

Summary

Many businesses are using virtualized and cloud infrastructure to run enterprise software and solutions. Electing to virtualize may have implications with respect to software licensing — authentication and business rules. This white paper will explain considerations when using ArcGIS Enterprise on virtualized infrastructure whether on-premises or in the cloud.

License Model of ArcGIS Enterprise

The ArcGIS Server component of ArcGIS Enterprise is licensed by CPU cores. Cores are part of the computer's CPU (Central Processing Unit) that determines the number of instructions that can be processed at a given time. A 4-core processor can handle four sets of instructions at once. Many modern CPUs further support a technology known as hyper-threading that allows a single core to run multiple concurrent sets of instructions. Hyper-threads do not count towards the licensed cores.

Licensed cores can be counted by physical cores or virtual cores, whichever is more advantageous to you. The minimum purchase for ArcGIS Enterprise is an "up-to-4 core" license* which can be installed on a two or four core machine. If your machine has more than 4 cores (physical or virtual), you can purchase additional cores, or virtualize the machine so that the 4-core license of ArcGIS Enterprise is only installed on 4 (virtual) cores and thereby satisfies the license requirement.

If a 4-core license is installed on an 8-core physical machine without virtualization, then ArcGIS Enterprise will use all 8 cores and would be in violation of the license agreement until you purchase a license for the four "additional cores".

The following are some examples:

1) A 4-core physical machine would use an “up-to-4 core” license for ArcGIS Enterprise.

2) If that same machine is virtualized using hyper-threading technology whereby the virtual core count is equivalent to 8 cores, it would still only require an “up-to-4 core” ArcGIS Enterprise license since there are only 4 physical cores on the machine.

1) An 8-core physical machine would use and “up-to-4 core” license for ArcGIS Enterprise plus 4 “additional cores” so that all 8 cores are licensed.

2) If that same machine is virtualized so that there are equivalent to two (2) 4-core virtual machines, a 4-core ArcGIS Enterprise license could be installed on one of the virtual machines, leaving the other 4-core VM for other uses.

Cores in Cloud Environments

Cloud infrastructure vendors such as Amazon Web Services (AWS), Microsoft Azure, and others provide a variety of virtual servers to meet the different computing needs of their customers. Though the standard options list often provides the number of “vCPUs” of each type of instance offered, keep in mind that one vCPU does not always equate to one physical core. A primary reason for this is that the physical core can support multiple vCPUs using hyper-threading technology. A vCPU represents processing time on the physical CPU. Since a CPU has multiple cores, there is a formula to figure out the physical core equivalency. Therefore, it is simplest to search for the provider’s physical core equivalency list. At the time this document was written, the following examples (links) provided this information:

Amazon Web Services: https://aws.amazon.com/ec2/physicalcores/

Microsoft Azure: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/acu

Note that early generations of Microsoft Azure VMs used physical core equivalents, listed in terms of “cores”, whereas later generation Microsoft Azure VMs use vCPUs that correspond to a hyper-thread. It is important to calculate the physical core equivalent correctly based on the specific generation of VM that is chosen.

*Note: ArcGIS Enterprise requires a minimum initial license purchase of 4 cores per physical location. The minimum for ArcGIS Enterprise Workgroup is 2 cores. Additional cores may be licensed in 2-core increments. ArcGIS Enterprise Workgroup is not licensed for multi-machine environments.

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