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ENTR Lot 9: Enterprise servers and data equipment: Task 3

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Task 3	Table 6	24	Processor Product Type and Spec	Core count is also an important indicator of TDP with higher TDP processors tending to have higher core counts	Add the core count in each of the processor descriptors in the table.
Task 3	Table 8	25	Maximum power draw	The heading on the second column of the table is incorrectly listed as "Idle (in watt)".	Should be labelled "maximum power draw (in watt)"
Task 3	1.1.2.4	27	Idle Power Consumption as an indicator for efficiency.	Idle power is very dependent on configuration size and component loading. A highly virtualizable server will need to have high quantities of memory to provide the memory capacity to support multiple images and they will tend to use higher power, higher core count processors.	There needs to be some discussion in this section of the fact the items considered in the discussion to more properly contextual the thought that idle power is an efficiency indicator. Digital Europe continues to advocate that it is not appropriate as a stand- alone indicator and needs to be integrated with other indicators to prevent undesirable outcomes. This discussion was covered in detail in Digital Europe's comment to the draft document.
Task 3	1.1.2.5	28-29	Hypervisors	The hypervisor market is expanding beyond VMWare and Microsoft. See the following references for details on KVM and Xen.	Expand the discussion of the hypervisors to include KVM and Xen.

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				<p>http://blog.unitedlayer.com/infographic-hypervisor-market-vmware</p> <p>http://www.techradar.com/us/news/software/applications/is-it-time-to-give-kvm-hypervisor-a-go--1150037</p> <p>There are also developments occurring with what are referred to as container systems or dockers which enabled simplified, low overhead management of images, which are likely to expand and should be considered in the BNAT section.</p>	
Task 3	1.1.2.5	28-29	Power Management for servers	<p>This section is incomplete. It does not cover the range of power management capability available and some of the potential pitfalls of power management techniques.</p>	<p>Several topics should be covered here:</p> <ol style="list-style-type: none"> 1. Memory devices can have power management capabilities. 2. Power supply shutdown can have implications for the balance and stability of enterprise data center with truly dual sourced feeds. 3. Power management capability and benefit differs processor socket count, processor TDP, large configurations, and other characteristics of the server product. 4. Power management functions may have significant impacts on

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					latency and response time which may be deemed unacceptable by the data center or IT equipment operator.
Task 3	1.1.3.1	32	Tape storage systems	Digital Europe agrees that tape systems should be excluded from further analysis in this study.	
Task 3	3.2	47	Repair and Maintenance	The operating and end of life analysis is not representative of the marketplace and requires additional study over the motivations for replacement and repair.	Perform additional study on the repair and maintenance functions if they are deemed to be significant product aspects. Digital Europe takes the position that they are not significant product aspects and should be excluded from the study.
Task 3	1.1.3.2	33	Sleep Mode	A comment needs to be added here to discuss the impact of COMS and storage device maintenance routines on limiting or minimizing the presence of idle time on storage systems.	Digital Europe provide a detailed set of comments regarding that: <ol style="list-style-type: none"> 1. COMS functions can utilize a significant amount of potential idle time to perform de-duplication, compression, and other COMS functions. 2. There is a significant quantity of maintenance activity which also consumes idle time. 3. Most enterprise customers, including small and medium enterprises do not turn off their

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					<p>storage systems as their employees work 24 hours and customers and employees need to access data. Shut down or enhanced idle settings are not achievable on these systems.</p> <p>4. Cloud applications and software defined network and storage systems are making it almost impossible to do shutdowns, as a given drive is supporting multiple tenants and so there is less likelihood that all users of the pooled system will not access</p>
Task 3	1.1.3.3	34	Operating cycle	The statements in this section are incorrect per the discussion on section 1.1.3.2. You also do not have a one to one relationship between server and storage systems.	Digital Europe provided data on the impact of COMS and maintenance function on idle. While storage workloads may mirror server workload, the low utilization or demand times will be used to complete COMS and maintenance function and no true idle will be reached. In addition, 30% utilization has no meaning in storage systems, as HDDs are powered on at all times and controllers are operating as well. Digital Europe recommends additional discussion on this topic between SNIA /ITI/Digital Europe and the consultant.

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Task 3	1.1.3.6	36	Hardware Maintenance and Failure Rates	<p>TGG has received additional information from a manufacturer of HDD with regards to failure rates of HDDs if they are turned on and off periodically over the course of a day. This manufacturer indicated that current specifications call for a HDD to spin-up/down a maximum of 50,000 times over the life of the drive. This data indicates that you can turn drives up and down several times a day without risk of additional failures. As Digital Europe has indicated previously, if a drive is shutdown, there is a period of one to five minutes to return the drive to service. This extensive latency is inappropriate for enterprise and cloud applications. Please see the comments on section 1.1.3.2 and 1.1.3.3. There are also drives becoming available which can reduce the drive rpm to lower speeds if no workload is present.</p> <p>While some manufacturers produce HDDs that can be slowed down or spun down without an increased risk of drive failures, not all drives offer this capability and work has only just begun on how this capability can be effectively integrated into products at a system level in a way that meets the requirements and expectations of data center operators and users. Given the extensive development and testing required to integrate these kinds of capabilities into products, incorporation of these capabilities into a product is speculative and may not occur. These capabilities should be discussed in Section 4 Task 6 document.</p>	<p>Acknowledge in this section that drives can be slowed down or turned off without increasing the risk of hardware failure but note that integration of this capability into products at a system level in a way which insures execution against Service Level Agreements will require two to three technology generations for these capabilities to appear in products. It should be also be noted that previous products which offered this capability are no longer offered on the market.</p> <p>This capability should be discussed in the Task 6 document under Section 4 “Long term potential (BNAT) & Systems Analysis” as it is likely two to three product generation cycles before these capabilities might be integrated at the system level.</p>
Task 3	Table 9	35	HDD Idle power	HDD idle power is comparable to maximum power, as the majority of the power use is from the drive rpm.	Indicate that HDD idle power is 90 to 100% of the HDD maximum power. The only thing that will idle is the

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					armature movement.
Task 3	5.2	57	Network exemption	If the ecodesign analysis of network equipment is excluded, as indicated by its absence in the discussion in this section, then it seems logical that all network equipment should be excluded from this Lot 9 study.	Make network exclusion recommendation consistent between the task documents and exclude consideration of all network products under this study.