ENERGY STAR Data Center Storage Template

Description: Information for certification bodies to provide to EPA on products certified as meeting the eligibility criteria for the ENERGY STAR® Program Requirements for Data Center Storage Version 1.0. Additional instructions for submitting this information to EPA are available at www.energystar.gov/qpx.

	Name	Description	Required/ Optional	Multiple Select	Data Type	Restrictions	Enumerations
	ENERGY STAR Core Data Requirements (Applicable to all ENERGY STAR Product Categories)						
1	ENERGY STAR Manufacturing Partner	The ENERGY STAR Manufacturing Partner is the organization that has signed an ENERGY STAR Partnership Agreement and labels the model. This organization is typically the brand owner.	R	N	Text	Min Length: 1 Max Length: 80	
2	ENERGY STAR Manufacturing Partner's EPA-issued Organization ID	This EPA-issued ID is the number assigned to the ENERGY STAR Manufacturing Partner. This ID can be located via the certification body's My ENERGY STAR Account (MESA) and searching for the organization's name.	R	N	Integer		
3	Partner Contact Name for This Model	Provide the ENERGY STAR Manufacturing Partner contact responsible for this certified model.	R	N	Text	Min Length: 1 Max Length: 200	

4	Type of Transaction	Include the Type of Transaction associated with the certified model. Only the options included in the enumeration list may be provided. Initial certification must only be used if the model has never been submitted and does not have an ENERGY STAR Model Identifier. Registration must only be used for select types of models where EPA allows certification bodies to add previously qualified models to their programs for purposes of verification testing only. Modification must be used for administrative changes, including rerating the model(s). Certification withdrawn must be used when the model is no longer certified as ENERGY STAR. Recertification will rarely be used and must be approved by EPA prior to the transaction.	R	N	Enumeration on Data		• Initial Certification • Modification • Certification Withdrawn • Recertification • Registration

5	Reason for Transaction	Include the Reason for Transaction associated with the Type of Transaction. Only the reasons included in the enumeration list may be provided. If "other" is provided, list further details in the notes field. The certification body will determine when it is appropriate to use the reasons associated with "Initial Certification," "Registration" or "Modification." The reasons "Manufacturer Voluntary Withdrawal" and "No Longer Available" may be determined by the certification body and must only be associated with the transaction type "Certification Withdrawn." For all other cases of "Certification Withdrawn" or "Recertification," EPA must determine the appropriate reason and provide direction to the certification body.	R	N	Enumeration on Data		• Initial Certification: Model Meets ENERGY STAR Requirements • Registration: Included in Verification Testing Pool • Modification: Added Model Name/Number • Modification: Removed Model Name/Number • Modification: Changed Model Name/Number • Modification: Changed Data • Modification: Rerated Models • Modification: Other (If Other, List in Notes Field) • Certification Withdrawn: No Longer Available • Certification Withdrawn: Manufacturer Voluntary Withdrawal • Certification Withdrawn: Delisted - Issue with Partnership • Certification Withdrawn: Disqualified Model - Failed Testing • Certification Withdrawn: Other (If Other, List in Notes Field) • Recertification: Model Meets ENERGY STAR Requirements • Recertification: Other (If Other, List in Notes Field)
6	Date of Transaction Type	This date must be the same as the date when the Type of Transaction occurred. For example, the initial certification date must be the date the certification body notified the partner of model certification.	R	N	Date		

7	ENERGY STAR Model Identifier	ENERGY_STAR_Model_Identifier is a unique string of characters generated by certification bodies in accordance with EPA's ENERGY_STAR_Model_Identifier standard. ENERGY_STAR_Model_Identifier serves to distinguish models with non-identical performance characteristics. A unique ENERGY_STAR_Model_Identifier must be assigned to each set of performance data that represents a model. Models in a family, series, or DOE basic model group that differ by one or more performance characteristics must be assigned different and unique ENERGY_STAR_Model_Identifiers. ENERGY_STAR_Model_Identifier is different from Certification_ID or Family_ID, which may apply to several models that differ in terms of reported attributes. Naming convention is as follows: ES_[[ManufacturerOID]]_[[MODELNUMBER]]_[[MMDDYYYYH24MISS]]_[[7 Digit-randomnumber]] Note : Total Max length of this must not exceed 400 characters. [[ManufacturerOID]] = Provide Manufacturer EPA issued O_ID [[MODELNUMBER]] = Provide Model Number of the model [[MMDDYYYYH24MISS]] = Create date time string in the format where MM= month number, DD - Day number, YYYY = Year number, H24 hours (0-23), MI minute number, SS seconds. This typically indicates the date of certification, but there are no validations performed on it. [[7 Digit-randomnumber]] = Provide a random number of seven digits.	R	N	Text	Min Length: 1 Max Length: 400	

8	Certification ID	Certification_ID is a unique string of characters generated by certification bodies in accordance with EPA's Certifcation_ID standard. Certification_ID serves to distinguish one or more models with differing performance characteristics under a single certification in order to track models associated with that certification. Naming convention for Certification_ID is as follows: CER_[[ManufacturerOID]]_[[MMDDYYYYH24MISS]]_[[7 Digit-randomnumber]] Note : Total Max length of this must not exceed 400 characters. [[ManufacturerOID]] = Provide Manufacturer EPA issues O_ID, [[MMDDYYYYH24MISS]] = Create date time string in the format where MM= month number, DD - Day number, YYYY = Year number, H24 hours (0-23), MI minute number, SS seconds. This typically indicates the date of certification, but there are no validations performed on it. [[7 Digit-randomnumber]] = Provide a random number of seven digits.	R	N	Text	Min Length: 1 Max Length: 400	

9	Family ID	Family_ID is a unique string of characters generated by certification bodies in accordance with EPA's Family_ID standard. Family_ID serves to identify models under the same certification that are part of the same model family, series, or DOE basic model group. Family_ID may only be included for models where the ENERGY STAR specification supports families. *NOTE* Under a single certification, certification bodies may or may not have a Family_ID listed. A Family_ID must not be listed if the certification is comprised of only a single model. If there is a Family_ID listed, all models within the certification listed must also have the same Family_ID. Naming conventions for Family_ID are as follows: FAM_[[ManufacturerOID]]_[[MMDDYYYYH24MISS]]_[[7 Digit-randomnumber]] Note : Total Max length of this must not exceed 400 characters. [[ManufacturerOID]] = Provide Manufacturer EPA issues O_ID, [[MMDDYYYYH24MISS]] = Create date time string in the format where MM= month number, DD - Day number, YYYY = Year number, H24 hours (0-23), MI minute number, SS seconds. This typically indicates the date of certification, but there are no validations performed on it. [[7 Digit-randomnumber]] = Provide a random number of seven digits.	O	N	Text	Max Length: 400	
10	Model Name	Provide the Model Name of the certified model. If the certified model is part of a model family, include the family model name. The use of wildcards is allowed, but may limit the ability to search for a specific model name.	R	N	Text	Min Length: 1 Max Length: 255	
11	Model Number	Provide the Model Number of the certified model. If the certified model is part of a model family, include the family model number. The use of wildcards is allowed, but may limit the ability to search for a specific model name.	R	N	Text	Min Length: 1 Max Length: 255	

12	Brand Name	Provide the model Brand Name in this field. To aid with consumer model searches, use consistent spelling, punctuation, and capitalization when providing brand names.	R	N	Text	Min Length: 1 Max Length: 200	
13	Tested Model Name	Provide the model name of the specific model that was tested. This will be the same as the Model Name unless this is a model family or private labeling submission.	R	N	Text	Min Length: 1 Max Length: 255	
14	Tested Model Number	Provide the model number of the specific model that was tested. This will be the same as the Model Number unless this is a model family or private labeling submission.	R	N	Text	Min Length: 1 Max Length: 255	
15	**Additional Models Represented by Family, Series, or DOE Basic Model**						
16	Additional Models Represented by Family, Series, or DOE Basic Model	Additional Models Represented by Family, Series, or DOE Basic Model allows the listing of multiple additional models that are part of the same certification where performance characteristics are the same. The additional models may be identified by multiple sets of a model name and/or model number and/or additional identifying information. Each uniquely identified additional model name/number/identifier set must be listed as a separate entry within this field and must not be a comma-separated list. The use of wildcards is allowed, but may limit the ability to search for specific additional model names/numbers/identifiers.	O	Y			
17	Additional Model Name	Provide each Additional Model Name as a separate data entry.	O	N	Text	Max Length: 255	
18	Additional Model Number	Provide each Additional Model Number as a separate data entry.	O	N	Text	Max Length: 255	

19	Additional Identifying Information	Provide any Additional Identifying Information associated with the Model Name and/or Model Number. The identifying information may be used by consumers, incentive programs, or retailers to identify this model or model family. This includes, but is not limited to, SKUs, UPC codes, retail numbers, and/or descriptions of models included/not included in the reported Model Family. Provide each Additional Identifying Information as a separate data entry.	O	N	Text	Max Length: 255	
20							
21	Is the Partner Listed the Original Equipment Manufacturer (OEM)?	Indicate whether or not the ENERGY STAR Manufacturing Partner that labels this model also manufactures this model.	R	N	Enumeration Data		• Yes • No
22	If the Partner is not the Original Equipment Manufacturer, Who Is?	In the case that the manufacturer partner listed is not the original equipment manufacturer (OEM), provide the name of the OEM. The OEM is the organization that has manufactured the model.	O	N	Text	Max Length: 80	
23	Currently Available on Market?	If model is currently available, indicate "Yes." Otherwise, indicate "No." Note that all available models are displayed on an ENERGY STAR qualified product list and are subject to verification testing.	R	N	Enumeration Data		• Yes • No
24	Date Available on Market	Date model is first sold within one or more markets.	R	N	Date		
25	Date Tested	Date of laboratory test. If multiple test reports, provide the most recent date.	R	N	Date		
26	Date Certification Body Notified Partner of Model Certification.	The date the certification body notifies the manufacturer that the model is certified as ENERGY STAR.	R	N	Date		
27	Certification Body Contact Name for this Model	The name of the primary certification body contact responsible for any questions concerning the certification of the model.	R	N	Text	Min Length: 1 Max Length: 200	
28	**Laboratory**						

29	Laboratory	Include information about one or more laboratories in which the model was tested.	O	Y			
30	Laboratory's EPA-issued Organization ID	This EPA-issued ID is the number assigned to the EPA-recognized laboratory that tested the model. This ID can be located via the certification body's My ENERGY STAR Account (MESA) and searching for the laboratory's name. This field is required for all certified models.	O	N	Integer		
31	Laboratory Contact for this Model	The name of the primary laboratory contact responsible for any questions concerning the testing of the model. This information is required for each laboratory indicated.	O	N	Text	Max Length: 200	
32	**Data Center Storage Product-specifc System Information**						
33	ENERGY STAR Specification Version		R	N	Enumeration on Data		• 1.0
34	Storage Model Connectivity	According to Section 2.2.2.v. of the specification, if the storage model has Network Attached Storage (NAS) connectivity, it must also have the ability to perform block I/O in order to qualify under the scope of Version 1.0.	R	Y	Enumeration on Data		• Network Attached Storage (NAS) • Block I/O
35	SNIA Online Taxonomy Category		R	N	Enumeration on Data		• Online 2 • Online 3 • Online 4
36	Type of Submission	Indicate the type of product being submitted for certification.	R	N	Enumeration on Data		• Single Device Submission • Product Family
37	Physical Data Submission Only	Indicate if only physically tested data points are being submitted. If modeled data is being submitted in addition to the required physical testing points, select No.	R	N	Enumeration on Data		• Yes • No
38	Storage Power Management Enabled in Hardware on Shipment		R	N	Enumeration on Data		• Yes • No
39	Storage Power Management Additional Information	Provide any additional information on the storage power management that is enabled on shipment, including what power management options are deployed.	O	N	Text	Min Length: 0 Max Length: 1000	

40	Storage Controller Implementation		R	N	Enumeration on Data		• Scale-Up Storage • Scale-Out Storage
41	Storage Controller Manufacturer Name		R	N	Text	Min Length: 1 Max Length: 1000	
42	Storage Controller Model Name		R	N	Text	Min Length: 1 Max Length: 1000	
43	Storage Controller Model Number		R	N	Text	Min Length: 1 Max Length: 1000	
44	Storage Controller Advanced Data Recovery Capable		R	N	Enumeration on Data		• Yes • No
45	Workload Optimization Type	Indicate which workload types, transaction, streaming, and/or capacity are being submitted.	R	Y	Enumeration on Data		• Transaction • Streaming • Capacity
46	Qualification Range Submission Type		R	N	Enumeration on Data		• Fixed Size Qualification Range • Flexible Size Qualification Range • Mixed Qualified Range
47	Automated Storage Tiering Capable	Indicate if the storage model is capable of automated storage tiering.	R	N	Enumeration on Data		• Yes • No
48	Automated Storage Tiering Enabled in Hardware on Shipment	Required if Automated Storage Tiering Cabable is Yes. Indicate if the storage model has automated storage tiering enabled in its hardware on shipment.	O	N	Enumeration on Data		• Yes • No
49	Firmware Name		R	N	Text	Min Length: 1 Max Length: 1000	

50	Firmware Version		R	N	Text	Min Length: 1 Max Length: 1000	
51	Intelligent Power Distribution Unit (iPDU) Used During Testing	Indicate if an iPDU was used during testing.	R	N	Enumeration on Data		• Yes • No
52	Adaptive Active Cooling Enabled in Hardware on Shipment	Indicate if storage model utilizes adaptive cooling technologies that reduce the energy consumed by the cooling technology in proportion to the current cooling needs to the storage product. This is not applicable to devices that employ passive cooling. For devices employing passive cooling, indicate No.	R	N	Enumeration on Data		• Yes • No • N/A
53	**Standard Performance Data Measurement and Output Requirements**						
54	Input Power Rolling Average Capability	Indicate if the product is capable of a rolling average input power measurement.	R	N	Enumeration on Data		• Yes • No
55	Length of Rolling Average for Input Power (s)	If Input Power Rolling Average Capable is Yes, indicate the length of the rolling average in seconds. If the rolling average is a user-selectable feature, indicate user-selectable.	R	N	Text	Min Length: 1 Max Length: 1000	
56	Inlet Air Temperature Rolling Average Capability	Indicate if the product is capable of a rolling average inlet air temperature measurement.	O	N	Enumeration on Data		• Yes • No
57	Length of Rolling Average for Inlet Air Temperature (s)	If Inlet Air Temperature Rolling Average Capable is Yes, indicate the length of the rolling average in seconds. If the rolling average is a user selectable feature, indicate user-selectable.	O	N	Text	Min Length: 1 Max Length: 1000	
58	**Transaction Optimization**						

59		***Note for Stakeholder Review:*** *Workload optimization type data requirements will be replicated for all three workload transactions. In order to reduce stakeholder time necessary to review fields, only transaction optimization data requirements have been provided below. Stakeholders are encouraged to review and provide comments for transaction, streaming, and capability workload type optimizations.*					
60	Trans Model Number or Config ID for Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Integer	Min Length: 1 Max Length: 1000	
61	Trans Raw Capacity for Optimal Configuration (GB)	Required if Workload Optimization Type is Transaction. Raw capacity refers to the sum total amount of addressable capacity of the storage devices in a storage product.	O	N	Decimal	No. of Decimal: 2	
62	Trans Installed Storage Controllers Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of installed storage controllers for the optimal or single configuration.	O	N	Integer	Min Length: 1	
63	Trans Installed Redundant Controllers Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate of the total number of installed storage controllers, the number that is redundant capable.	O	N	Integer	Min Length: 1	
64	Trans Power Supply Unit (PSU) Type Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Enumeration on Data		• Single-Output • Multi-Output
65	Trans PSU Manufacturer Name Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Text	Min Length: 1 Max Length: 1000	
66	Trans PSU Model Name Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Text	Min Length: 1 Max Length: 1000	

67	Trans PSU Model Number Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Text	Min Length: 1 Max Length: 1000	
68	Trans PSU Rated Output Optimal Configuration (W)	Required if Workload Optimization Type is Transaction.	O	N	Decimal	No. of Decimal: 2	
69	Trans PSUs 80PLUS Silver Certified for Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate if the power supply unit meets the criteria for the 80Plus Silver Certification.	O	N	Enumeration on Data		• Yes • No
70	Trans Total amount of Cache in Optimal Configuration (GB)	Required if Workload Optimization Type is Transaction.	O	N	Decimal	No. of Decimal: 2	
71	Trans Name Devices Used for Cache in Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	Y	Enumeration on Data		• DRAM • SSD • Other
72	Trans Capacity Optimizing Methods (COMs) Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate the type of COMs used in this configuration. If there are multiple types used in the same configuration, indicate all options present. If no COMs available, indicate N/A.	O	Y	Enumeration on Data		• Thin Provisioning • Data Deduplication • Compression • Delta Snapshots • N/A
73	**Most Commonly Sold Device Information**						
74	Trans Device Model Name	Required if Workload Optimization Type is Transaction. Indicate the Device that is the most commonly sold drive.	O	N	Text	Min Length: 1 Max Length: 1000	
75	Trans Device Model Number	Required if Workload Optimization Type is Transaction. Indicate the Device that is the most commonly sold drive.	O	N	Text	Min Length: 1 Max Length: 1000	
76	Trans Device Type	Required if Workload Optimization Type is Transaction. Indicate the type of storage device.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
77	Trans Device Form Factor	Required if Workload Optimization Type is Transaction. Indicate the form factor of the most commonly sold storage device.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other

78	Trans Device Rated Speed (RPM)	Required if Workload Optimization Type is Transaction. Indicate the speed of the most commonly sold storage device.	O	N	Decimal	No. of Decimal: 2	
79	Trans Device Raw Capacity (GB)	Required if Workload Optimization Type is Transaction. Indicate the raw capacity for the most commonly sold storage device.	O	N	Decimal	No. of Decimal: 2	
80	Trans Total Num Installed Storage Devices Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of installed storage devices with addressable storage (not used for cache).	O	N	Integer	Min Value: 1	
81	Trans Installed Solid State Devices in Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of Solid State Devices (SSDs) contained in this configuration with addressable storage (not used for cache).	O	N	Integer	Min Value: 0	
82	Trans Installed Rotational Devices in Optimal Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of rotational drives contained in this configuration (not used for cache).	O	R	Integer	Min Value: 0	
83	Trans Number of PSUs in Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Integer	Min Occurs: 0 Min Value: 0	
84	Trans Number of Redundant PSUs in Optimal Configuration	Required if Workload Optimization Type is Transaction.	O	N	Integer	Min Occurs: 0 Min Value: 0	
85	Trans Auto Tiering Enabled Most Commonly Sold Drive	Required if Workload Optimization Type is Transaction. Indicate if automated tiering was enabled during workload testing of the most commonly sold drive.	O	N	Enumeration on Data		• Yes • No
86	Trans Optimal Configuration Hot Band Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the hot band measurement for the single or multiple device optimal configuration point in I/O Per Second (IOPS) per watt.	O	N	Decimal	No. of Decimal: 2	
87	Trans Optimal Config Hot Band Workload Test Response Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

88	Trans Optimal Configuration Random Read Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random read measurement for the single or multiple device optimal configuration point in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
89	Trans Optimal Config Random Read Wrkld Test Response Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
90	Trans Optimal Configuration Random Write Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random write measurement for the single or multiple device optimal configuration point in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
91	Trans Optimal Config Random Write Wrkld Test Response Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
92	Trans Optimal Configuration Seq Read Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential read measurement for the single or multiple device optimal configuration point in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
93	Trans Optimal Config Seq Read Workload Test Response Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
94	Trans Optimal Configuration Seq Write Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential write measurement for the single or multiple device optimal configuration point in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
95	Trans Optimal Config Seq Write Workload Test Response Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
96	Trans Optimal Configuration Ready Idle Workload Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the ready idle measurement for the single or multiple device optimal configuration point in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

97	Trans Largest Device Count Configuration Form Factor	Required if Workload Optimization Type is Transaction. Indicate the form factor of the largest storage device count configuration.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
98	Trans Largest Device Count Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction. Indicate the rated speed of the largest storage device count configuration.	O	N	Decimal	No. of Decimal: 2	
99	Trans Largest Device Count Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction. Indicate the raw capacity of the largest storage device count configuration.	O	N	Decimal	No. of Decimal: 2	
100	Trans Num of Devices in Largest Device Count Configuration	Required if Workload Optimization Type is Transaction. Indicate the number of storage devices contained in the largest device count configuration.	O	N	Integer	Min Occurs: 0 Min Value: 0	
101	Trans Num of Controllers in Largest Device Count Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of controllers contained in the largest device count configuration.	O	N	Integer		
102	Trans Num Redundant Controllers Largest Device Count Config	Required if Workload Optimization Type is Transaction. Indicate the total number of redundant controllers contained in the largest device count configuration.	O	N	Integer	Min Occurs: 0 Min Value: 0	
103	Trans Largest Dev Count Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the hot band measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
104	Trans Largest Dev Count Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
105	Trans Largest Dev Count Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random read measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
106	Trans Largest Dev Count Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

107	Trans Largest Dev Count Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random write measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
108	Trans Largest Dev Count Config Rand Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
109	Trans Largest Dev Count Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential read measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
110	Trans Largest Dev Count Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
111	Trans Largest Dev Count Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential write measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
112	Trans Largest Dev Count Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
113	Trans Largest Dev Count Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the ready idle measurement for the largest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
114	Trans Smallest Device Count Configuration Form Factor	Required if Workload Optimization Type is Transaction. Indicate the form factor of the smallest storage device count configuration.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
115	Trans Smallest Device Count Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction. Indicate the speed of the smallest storage device count configuration.	O	N	Decimal	No. of Decimal: 2	
116	Trans Smallest Device Count Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction. Indicate the raw capacity of the smallest storage device count configuration.	O	N	Decimal	No. of Decimal: 2	

117	Trans Num Devices Smallest Storage Device Count Configuration	Required if Workload Optimization Type is Transaction. Indicate the number of storage devices contained in the smallest device count configuration.	O	N	Integer	Min Occurs: 0 Min Value: 0	
118	Trans Num Controllers Smallest Device Count Configuration	Required if Workload Optimization Type is Transaction. Indicate the total number of controllers contained in the smallest device count configuration.	O	N	Integer	Min Occurs: 0 Min Value: 0	
119	Trans Num Redundant Controllers Smallest Device Count Config	Required if Workload Optimization Type is Transaction. Indicate the total number of redundant controllers contained in the smallest device count configuration.	O	N	Integer	Min Occurs: 0 Min Value: 0	
120	Trans Smallest Dev Count Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the hot band measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
121	Trans Smallest Dev Count Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the smallest device count configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
122	Trans Smallest Dev Count Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random read measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
123	Trans Smallest Dev Count Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the smallest device count configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
124	Trans Smallest Dev Count Config Rand Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the random write measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
125	Trans Smallest Dev Count Config Rand Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the smallest device count configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
126	Trans Smallest Dev Count Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential read measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

127	Trans Smallest Dev Count Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the largest device count configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
128	Trans Smallest Dev Count Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the sequential write measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
129	Trans Smallest Dev Count Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction. Indicate the response time for the smallest device count configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
130	Trans Smallest Dev Count Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction. Indicate the ready idle measurement for the smallest storage device count configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
131	**If Modeled Data for Transaction**						
132	Trans Accuracy for All Physical Measurements Above Within 5%	Required if Workload Optimization Type is Transaction. Indicate if the accuracy of the modeled data is within 5% of the physically tested points above.	O	N	Enumeration on Data		• Yes • No
133	**Additional Storage Device Information (not required for Single Submission)**						
134	Trans Storage Device 1 Type	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the type of storage device 1.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
135	Trans Storage Device 1 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the form factor of storage device 1.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
136	Trans Storage Device 1 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the speed of storage device 1.	O	N	Decimal	No. of Decimal: 2	
137	Trans Storage Device 1 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the raw capacity for storage device 1.	O	N	Decimal	No. of Decimal: 2	

138	Trans Num Devices Storage Device 1 Optimal Configuration	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 1.	O	N	Integer	Min Occurs: 0 Min Value: 0	
139	Trans Physical or Modeled Data Device 1 Optimal Configuration	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate if the data submitted for storage device 1 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled
140	Trans Automated Tiering Enabled During Testing Device 1	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 1.	O	N	Enumeration on Data		• Yes • No
141	Trans Device 1 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the hot band measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
142	Trans Device 1 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the response time for storage device 1 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
143	Trans Device 1 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the random read measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
144	Trans Device 1 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the response time for storage device 1 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

145	Trans Device 1 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the random write measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
146	Trans Device 1 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the response time for storage device 1 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
147	Trans Device 1 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
148	Trans Device 1 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the response time for storage device 1 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
149	Trans Device 1 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
150	Trans Device 1 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the response time for storage device 1 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
151	Trans Device 1 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and one or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 1 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

152	Trans Storage Device 2 Type	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the type of storage device 2.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
153	Trans Storage Device 2 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the form factor of storage device 2.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
154	Trans Storage Device 2 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the speed of storage device 2.	O	N	Decimal	No. of Decimal: 2	
155	Trans Storage Device 2 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the raw capacity for storage device 2.	O	N	Decimal	No. of Decimal: 2	
156	Trans Num Devices Storage Device 2 Optimal Configuration	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 2.	O	N	Integer	Min Occurs: 0 Min Value: 0	
157	Trans Physical or Modeled Data Device 2 Optimal Configuration	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate if the data submitted for storage device 2 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled
158	Trans Automated Tiering Enabled During Testing Device 2	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 2.	O	N	Enumeration on Data		• Yes • No
159	Trans Device 2 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the hot band measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

160	Trans Device 2 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the response time for storage device 2 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
161	Trans Device 2 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the random read measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
162	Trans Device 2 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the response time for storage device 2 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
163	Trans Device 2 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the random write measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
164	Trans Device 2 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the response time for storage device 2 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
165	Trans Device 2 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
166	Trans Device 2 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the response time for storage device 2 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

167	Trans Device 2 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
168	Trans Device 2 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the response time for storage device 2 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
169	Trans Device 2 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and two or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 2 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
170	Trans Storage Device 3 Type	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the type of storage device 3.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
171	Trans Storage Device 3 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the form factor of storage device 3.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
172	Trans Storage Device 3 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the speed of storage device 3.	O	N	Decimal	No. of Decimal: 2	
173	Trans Storage Device 3 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the raw capacity for storage device 3.	O	N	Decimal	No. of Decimal: 2	
174	Trans Num Devices Storage Device 3 Optimal Configuration	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 3.	O	N	Integer	Min Occurs: 0 Min Value: 0	

175	Trans Physical or Modeled Data Device 3 Optimal Configuration	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate if the data submitted for storage device 3 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled
176	Trans Automated Tiering Enabled During Testing Device 3	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 3.	O	N	Enumeration on Data		• Yes • No
177	Trans Device 3 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the hot band measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
178	Trans Device 3 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the response time for storage device 3 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
179	Trans Device 3 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the random read measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
180	Trans Device 3 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the response time for storage device 3 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
181	Trans Device 3 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the random write measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

182	Trans Device 3 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the response time for storage device 3 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
183	Trans Device 3 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
184	Trans Device 3 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the response time for storage device 3 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
185	Trans Device 3 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
186	Trans Device 3 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the response time for storage device 3 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
187	Trans Device 3 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and three or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 3 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
188	Trans Storage Device 4 Type	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the type of storage device 4.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)

189	Trans Storage Device 4 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the form factor of storage device 4.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
190	Trans Storage Device 4 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the speed of storage device 4.	O	N	Decimal	No. of Decimal: 2	
191	Trans Storage Device 4 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the raw capacity for storage device 4.	O	N	Decimal	No. of Decimal: 2	
192	Trans Num Devices Storage Device 4 Optimal Configuration	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 4.	O	N	Integer	Min Occurs: 0 Min Value: 0	
193	Trans Physical or Modeled Data Device 4 Optimal Configuration	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate if the data submitted for storage device 4 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled
194	Trans Automated Tiering Enabled During Testing Device 4	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 4.	O	N	Enumeration on Data		• Yes • No
195	Trans Device 4 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the hot band measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
196	Trans Device 4 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the response time for storage device 4 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

197	Trans Device 4 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the random read measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
198	Trans Device 4 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the response time for storage device 4 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
199	Trans Device 4 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the random write measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
200	Trans Device 4 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the response time for storage device 4 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
201	Trans Device 4 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
202	Trans Device 4 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the response time for storage device 4 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
203	Trans Device 4 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

204	Trans Device 4 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the response time for storage device 4 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
205	Trans Device 4 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and four or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 4 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
206	Trans Storage Device 5 Type	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the type of storage device 5.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
207	Trans Storage Device 5 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the form factor of storage device 5.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
208	Trans Storage Device 5 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the speed of storage device 5.	O	N	Decimal	No. of Decimal: 2	
209	Trans Storage Device 5 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the raw capacity for storage device 5.	O	N	Decimal	No. of Decimal: 2	
210	Trans Num Devices Storage Device 5 Optimal Configuration	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 5.	O	N	Integer	Min Occurs: 0 Min Value: 0	
211	Trans Physical or Modeled Data Device 5 Optimal Configuration	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate if the data submitted for storage device 5 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled

212	Trans Automated Tiering Enabled During Testing Device 5	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 5.	O	N	Enumeration on Data		• Yes • No
213	Trans Device 5 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the hot band measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
214	Trans Device 5 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the response time for storage device 5 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
215	Trans Device 5 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the random read measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
216	Trans Device 5 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the response time for storage device 5 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
217	Trans Device 5 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the random write measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
218	Trans Device 5 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the response time for storage device 5 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

219	Trans Device 5 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
220	Trans Device 5 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the response time for storage device 5 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
221	Trans Device 5 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
222	Trans Device 5 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the response time for storage device 5 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
223	Trans Device 5 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and five or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 5 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
224	Trans Storage Device 6 Type	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the type of storage device 6.	O	N	Enumeration on Data		• Hard Disk Drive (HDD) • Solid State Drive (SSD)
225	Trans Storage Device 6 Optimal Configuration Form Factor	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the form factor of storage device 6.	O	N	Enumeration on Data		• 2.5 inch • 3.5 inch • Other
226	Trans Storage Device 6 Optimal Configuration Rated Speed (RPM)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the speed of storage device 6.	O	N	Decimal	No. of Decimal: 2	

227	Trans Storage Device 6 Optimal Configuration Raw Capacity (GB)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the raw capacity for storage device 6.	O	N	Decimal	No. of Decimal: 2	
228	Trans Num Devices Storage Device 6 Optimal Configuration	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the number of storage devices in the optimal configuration for storage device 6.	O	N	Integer	Min Occurs: 0 Min Value: 0	
229	Trans Physical or Modeled Data Device 6 Optimal Configuration	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate if the data submitted for storage device 6 optimal configuration is physically tested or produced by a modeler.	O	N	Enumeration on Data		• Physical • Modeled
230	Trans Automated Tiering Enabled During Testing Device 6	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate if automated tiering was enabled during workload testing for storage device 6.	O	N	Enumeration on Data		• Yes • No
231	Trans Device 6 Optimal Config Hot Band Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the hot band measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
232	Trans Device 6 Optimal Config Hot Band Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the response time for storage device 6 optimal configuration hot band workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
233	Trans Device 6 Optimal Config Random Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the random read measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	

234	Trans Device 6 Optimal Config Random Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the response time for storage device 6 optimal configuration random read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
235	Trans Device 6 Optimal Config Random Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the random write measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
236	Trans Device 6 Optimal Config Random Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the response time for storage device 6 optimal configuration random write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
237	Trans Device 6 Optimal Config Seq Read Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the sequential read measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
238	Trans Device 6 Optimal Config Seq Read Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the response time for storage device 6 optimal configuration sequential read workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	
239	Trans Device 6 Optimal Config Seq Write Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the sequential write measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	
240	Trans Device 6 Optimal Config Seq Write Wrkld Resp Time (ms)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the response time for storage device 6 optimal configuration sequential write workload test in milliseconds.	O	N	Decimal	No. of Decimal: 2	

241	Trans Device 6 Optimal Config Ready Idle Wrkld Test (IOPS/W)	Required if Workload Optimization Type is Transaction and six or more additional devices are included in configuration. Indicate the ready idle measurement for storage device 6 optimal configuration in IOPS per watt.	O	N	Decimal	No. of Decimal: 2	