



Hewlett Packard Enterprise

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Bureau of Industry and Security
U.S. Department of Commerce
1400 Constitution Avenue, NW
Washington, DC 20220

RE: Comments on 88 Fed. Reg. 73458 (October 25, 2023); BIS-2022-0025; Docket No. 231013-0248, RIN 0694-A194

Assistant Secretary Kendler:

Hewlett Packard Enterprise (HPE) appreciates the opportunity to comment on the 25 October 2023 Interim Final Rule, *"Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections"* (the "Rule").

HPE is a global edge-to-cloud company that helps organizations accelerate outcomes by unlocking value from all of their data, everywhere. Built on decades of reimagining the future and innovating to advance the way people live and work. HPE is a global market leader in compute and supercomputing.

As a global leader in supercomputing and compute platforms that power AI, HPE ships two servers every 60 seconds to customers around the world. With the explosive growth of AI, many of these servers are impacted by the Rule. As such we are deeply interested in working with BIS to achieve the national security policy objectives of the Rule while minimizing compliance burdens on companies. We appreciate the opportunity to provide written comments to the Rule itself in addition to comments on the Rule's questions posed by BIS, and welcome further dialogue and working sessions with BIS toward advancing the policy objectives of the rule while protecting US technology leadership in supercomputing.

Comments on the Rule

HPE would like to offer BIS comments on the clarity, practicality, and unintended consequences of the Rule. Rules most likely achieve their policy objective, with minimum unintended consequences, when they have both clarity and practicality. Unfortunately, we have found that the rule lacks in

these areas thus creating a significant compliance burden for industry and undermining the policy objectives identified by BIS.

Clarity: The rule proved to be exceptionally difficult to understand. Not only is the Rule complex, but it contained several apparent errors and ambiguities. Furthermore, attempts to resolve these issues were frustrated by BIS's lack of responsiveness to inquiries and on-going delays in issuing FAQs.

Apparent Errors: HPE previously communicated under separate cover (as pre-submitted questions for the public briefing, transmitted to bis_briefingquestions@bis.doc.gov) regarding the following apparent errors in the Rule.

- 3A090's circular reference to Note 3 and reference to a non-existent Note 4
- 740.2's structural updates where:
 - 740.2(a)(9) was inserted into 740.2(a)(9)(ii), leaving the current 740.2(a)(9) text (referring to China and Macau) untouched.
 - 740.2(a)(9) was indicated to be kept intact, resulting in organizational mismatch.
 - 740.2(a)(9)(ii) referring to a paragraph A that does not exist.
- Technical Note on APP containing pointers to ECCN's that do not exist (4A003.z.1 and 4A003.z.3).
- 4A003 contains a Note to List Based Exceptions referring to ECCN's that do not exist (4A003.z.2 and 4A003.z.4).

HPE also notes an apparent error in 3A090, Technical Note 2, where the word "annual" seems to mistakenly used instead of "manual" *"the highest value the manufacturer claims in **annual** or brochure."*

Ambiguities: HPE previously communicated under separate cover (as pre-submitted questions for the public briefing, transmitted to bis_briefingquestions@bis.doc.gov) regarding the following apparent ambiguities in the Rule.

- Multiple ambiguities concerning eligibility for License Exception NAC. A few examples follow:
 - Why is there clarity on NAC eligibility created by the ECCN structure of 3A090.a vs. 3A090.b items, but then then there is no similar clarity in 4A090 and .z items that contain a 3A090 item?
 - In a related phenomenon to the previous bullet, it's unclear which ECCNs are eligible for NAC.
 - Some interpret that 3A090.a.1 and 3A090.a.2 are ineligible, while 3A090.b.1 and 3A090.b.2 are eligible for NAC. Others interpret that that only 3A090.a.1 is ineligible.
 - This leads to further confusion when going to the next level of assembly into 4A090 and .z items. Some interpret that the 4A090 and .z items are ineligible. Others find the eligibility of these items driven by their interpretation of the 3A090 item within, based on either of the two approaches in the bullet above.
 - It appears that NAC would allow certain exports of certain .z items (particularly 5A002 and 4A003) that would not be authorized by the "normal" license exception structures for these ECCNs, ENC and APP.
 - It appears that 3A090.b items may experience 25-day delays under NAC. 3A090.b capability is much more in-reach for non-US sources. This tilts the market of the 3A090.b items in favor of the non-US items that do not have this burden.
 - An outcome of the NAC process can be that the exporter must seek an export license. In these cases, the exporter is now even further behind in the lengthy licensing process. If exporters could be given the criteria where a NAC will result in a

license requirement, the exporter can go directly to the licensing process. Can BIS provide further information that would allow exporters to predict these scenarios and bypass delays introduced by NAC?

- 734.9(h)(2)(i), (h)(2)(ii), and the Note to Paragraph (h)(2) are inconsistent with the country group scoping references in Supplement No 1 to Part 734 (Model Certification). The former does not discount Country Group A:5 or A:6, while the latter does.
- Items in 5A002.z are under RS controls, without the regimen of License Exception ENC seen with items under 5A002.
- Items in 4A003.b and 4A003.c require export licenses to several destinations for destinations that do not qualify for License Exception APP (e.g., India). However, by inserting a 3A090, 4A090 or .z item into this 4A003, it is transformed into 4A003.z. The transformed 4A003.z item can be exported to many of these same destinations without a license.
- Applicability of license exception RPL is confusing. The regulatory text is a double-negative logic structure, which can be read to allow or disallow RPL for items under 090 or .z ECCN's.
- Country Group A:5 is discounted from the control structure, but there appear to be no nations in A:5 that are also in D:1, D:4 or D:5.
- There is no definition for the term "headquartered." It is difficult to understand how exporters can be held to an undefined standard that is applied to all exports of 090 and .z items. The Rule should have been released with a definition, then sought comments on the definition.

New ambiguities were created, rather than resolved, in the 6 November 2023 public briefing.

- *"One additional point to make on ECCN 4A090. As drafted, it does not fully parallel 3A090....if we publish a change....correction"* (recorded session time mark 10:40 of 32:30). This stated 4A090 is not parallel to 3A090 but did not elaborate on what "not parallel" means, suggesting BIS might publish a change and allow time for correction.
- *"Licenses are also required to export, re-export and make in country transfers of these red zone chips to entities that are headquartered in or who's ultimate parent company is headquartered in China or Macau."* (recorded session time mark 15:19 of 32:30). This verbal statement is incongruent with the regulatory text, which places headquartering clauses on D:5 plus Macau – not only China and Macau.

Frustrated Attempts to Resolve Ambiguity: HPE has made major investments in posing questions to BIS to address clarity issues. Unfortunately, these attempts have not been addressed by BIS.

- HPE submitted 19 question sets (containing 43 specific questions) to the bis_briefingquestions@bis.doc.gov, by the required deadline, hoping to get answers in the public briefing. None were answered during the briefing. None had been answered in a public (e.g., FAQ) or private manner, as of 10 January 2024.
- More than a dozen additional written questions have been posed to BIS, in addition to three telephone calls to the BIS helpdesk. None had been answered in a public (e.g., FAQ) or private manner, as of 10 January 2024.
- BIS has repeatedly encouraged questions about the rule, but BIS has been either unwilling or unable to answer the questions. This has increased the compliance burden, as issues remain open to interpretation, resulting in the need for significant manual discussion for each exporter, with each export.

We urge BIS to address these errors and ambiguities expeditiously either in published FAQs or directly with HPE.

Practicality: The Rule would have greatly benefitted from collaboration with industry, to anticipate practical limits of the market, the impact of other regulations, and timelines that permitted reasonable implementation.

Delivery Chain: The Rule appears to be written with expectation that end users obtain their chips directly from the chip manufacturers, without consideration for the actual delivery chain to customers. For example, License Exception NAC places a strict requirement on a written Purchase Order from the customer. However, most customers have no such direct route. Customers typically place orders with resellers, who then place orders with distributors, who then place orders with computer system manufacturers/integrators, who then place orders with the chip manufacturers. While export regulations require lines of visibility to the end customer or end user (e.g. Part 744 of the EAR), it is unclear how this would be reflected in the Purchase Order delivery chain described above.

One-to-Many Explosion of SKUs: While the list of 3A090 integrated circuits appears to be relatively finite (at this time), this neglects the relative explosion of stock keeping units ("SKU", commonly called part numbers) that must be tracked. Most of the chip companies market these 3A090 items already configured on an industry standard expansion card (e.g. PCIe, SXM). Each variation of these expansion formats gets a new SKU. These industry standard expansion cards can go into almost any computer. Each combination of the industry standard expansion card and computer gets yet another SKU. For each of these, there are new production SKUs and field support SKUs (including repaired, used units). What started as a list of a few dozen chip SKUs rapidly becomes several thousand system-level SKUs, all of which must be traced and classified appropriately. This massive effort required retraining and redeployment of resources to carry out a manual effort. This was particularly onerous because many of the chip manufacturers did not have updated ECCNs available until Rule implementation (or very close to it), forcing a massively-parallel human effort to update HPE's SKUs in a few days.

Data Required for ECCN Determination: The Rule determines the ECCN of certain chips (and higher-level assemblies) based on the Total Processing Performance and Performance Density of the chips. Total Processing Performance can be readily determined by the chip designer but must be furnished by the chip designer to other parties further down the delivery chain; it cannot be easily or reliably determined by these parties. Performance Density is a far more difficult subject. Performance Density requires knowledge of the die area, which (insofar) all chip designers consider to be competitively sensitive information. The chip designers will not openly provide the die area or the Performance Density (because the Performance Density can easily be reverse engineered to reveal the die area). This makes it difficult or even impossible for HPE to independently determine classifications, license determinations, NAC eligibility or file for licenses/NAC. As of 7 December 2023, HPE has yet to receive both data points for any integrated circuit, forcing HPE to submit license applications and NAC notifications without this data. Furthermore, it came as a surprise to exporters that this technical information would be required for license exception NAC notifications. Rather than this requirement being expressed in the Federal Register notice on 17 October 2023, it was stated as a requirement on the NAC website upon publication 29 November 2023. Exporters could not prepare for this requirement.

Export Control Software: The Rule modifies ECCNs 3A090 and 4A090, while creating the new .z ECCNs. Furthermore, it exerts new control, license exception, and licensing requirements depending on destination, end use/user and headquartering scenarios. For large exporters, these changes require major software changes that must be developed, tested, debugged, and then put into production. The publication-to-implementation window was insufficient for this cycle, resulting in impractical and expensive manual workarounds – many of which will be in place for several months.

Commercial Invoices: The issue with software is compounded by requirements for specific ECCN information in Commercial Invoices. While BIS already required similar information for commercial invoices related to 9x515 and 600-series items, these requirements were moot to exporters that did not engage in this trade area. This also requires software-driven solutions that require development and testing. Furthermore, commercial invoice contents in foreign jurisdictions are determined by those jurisdictions; the invoices may only contain what that jurisdiction approves. Even if an exporter “codes in” the required ECCN information, the local jurisdiction can overrule and require the removal of this information. Navigating these complexities, jurisdiction by jurisdiction, is also time-consuming.

License Exception NAC Readiness: Finally, license exception NAC was not operationally available to exporters on time. NAC was not functional on SNAP-R until 29 November, 12 days after the Rule’s implementation. Not only was NAC tardy, but the NAC online application had specific data requirements that were not communicated in the rule. The online NAC application requires the specific Total Processing Performance and Performance Density values. As previously mentioned, obtaining this information is difficult or even impossible for exporters downstream from chip designers. As of the time of this comment, HPE has yet to receive the specific Performance Density value for any chip, from any manufacturer. Exporters were unprepared and their efforts were further hampered.

At the time of this comment, it was unclear if AES has been configured to accept License Exception NAC. Given that NAC submittals started on 29 November 2023, with a 25-day cycle for some clearances, this will become critical no later than 24 December 2023. Further compounding the issue is this date falling on a holiday timeframe, with reduced escalation support available at BIS, Census, or industry.

Unintended Consequences: Given the clarity issues of the Rule and the lack of BIS public clarifications, individual exporters are interpreting the Rule in remarkably different ways. While most exporters are interpreting with a conservative bias to ensure a margin for compliance, some are interpreting aggressively. These more aggressive interpretations are being rewarded by the market, causing financial loss to conservative interpreters, all while frustrating the policy objective.

HPE is also aware of shifting interest by customers, indicating a slide to foreign suppliers that are not subject to the EAR or the Foreign Direct Product Rule. If this trend grows, the targets of the policy objective will be unaffected by the Rule while the market eschews companies subject to the EAR.

BIS Questions Seeking Comments

1. Addressing access to “development” at an infrastructure as a service (IaaS) provider by customers to develop or with the intent to develop large dual-use AI foundation models with potential capabilities of concern, such as models exceeding certain thresholds of parameter count, training compute, and/or training data. This AC/S IFR seeks public comments on what additional regulations or other requirements may be warranted to address this national security concern relating to AI. BIS also seeks input from IaaS providers on the feasibility for them in complying with additional regulations in this area, how they would identify whether a customer is “developing” or “producing” a dual-use AI foundation model, and what actions would be needed to address this national security concern while minimizing the business process changes that would be required to comply with these regulations.

HPE Comment: HPE appreciates the U.S. Government’s work to protect U.S. technological leadership while balancing national security concerns and its approach to the safe, secure, and trustworthy development of AI. HPE’s technology spans the AI value chain—from the hardware to

power AI development to software that enables responsible AI to services that make AI accessible for enterprises of all sizes. As such, we are keenly interested in helping the Administration's dual goals of preserving technological leadership and protecting national security.

As an enterprise services provider, HPE's offerings and business models are contract-based. As part of our existing compliance processes, all new customers are checked against relevant lists, including the Entity List, Specially Designated Nationals list, and other "bad actors" lists from multiple governments. HPE implements 'know your customer' best practices for all customers purchasing HPE solutions, either directly from HPE or through a reseller.

HPE's IaaS contracts are based on capacity and duration of use which does provide us with visibility into the number of floating point operations a customer could perform. Notably, however, our customers run a variety of workloads and contracted -aaS compute could be used for non-AI workloads. For example, a customer may wish to run a weather simulation that could exceed "computational thresholds" without being an AI or dual-use foundation model workload.

HPE has not identified a technically feasible way to determine whether a customer is "developing" or "producing" a dual-use AI foundation model while also allowing our customers to protect their proprietary information. Given industry needs and best practices surrounding 'zero trust' architecture, by design we do not have the ability to have insight into the specific workloads and applications our customers are running. If compute capacity thresholds are used as the metric for the development of dual-use foundation models this may implicate many customers, even those not running AI or LLM workloads. Proposals related to parameter count or training data set would be even more difficult for providers such as HPE to track and report against, as this would require deep knowledge of customer workloads which violates expectations of privacy and data security in -aaS offerings.

If BIS is considering using the metrics proposed in Section 4.2 of President Biden's Executive Order (EO) on the Safe, Secure, and Trustworthy Development and Use of AI to develop additional regulations, BIS should work with industry to clarify the definitions in the EO in order to eliminate ambiguity, provide compliance certainty, and properly address intended scope. The current definitions and metrics in the EO could lead to a wide range of interpretations of what is in scope and what is not. HPE would be happy to further engage with BIS on these details.

Given the impact regulations in this space could have on businesses processes and the competitiveness of U.S. IaaS providers, HPE urges that BIS work closely with industry to determine the technical feasibility of requirements in this fast-moving technology landscape and to work with trading partners and allies to address security concerns while ensuring a level playing field for U.S. companies.

2. Developing technical solutions to exempt items otherwise classified under ECCNs 3A090 and 4A090. This AC/S IFR seeks public comments on proposed technical solutions that limit items specified under ECCN 3A090 or 4A090 from being used in conjunction with large numbers of other such items in ways that enable training large dual-use AI foundation models with capabilities of concern. Such items could then be exempted from these ECCNs. An example approach would be to limit a product that contains a set of ICs, including ECCN 3A090 AI accelerators, CPUs, and network interface cards—which could form a high-bandwidth domain including up to 256 AI accelerators, from communicating outside the product or set beyond 1 GB/s in at least one of the input or output direction. In one possible implementation of this concept, each device in the set might provide a cryptographic signature to other devices in the set, and then have a tamperproof silicon root-of-trust in each device that would hold the private keys for the cryptographic signatures. This approach could constrain a 3A090 item from being used to train large dual-use AI foundation models with

capabilities of concern, while allowing AI training capabilities at a small or medium scale. In particular, the AC/S IFR seeks specific technical proposals that would be difficult to circumvent; comments on the timeline and costs to bring such proposals to market; and comments on the demand for such ICs and products. The AC/S IFR also seeks additional proposals for exemptions involving hardware-based technical solutions that create the ability to limit training of large dual-use AI foundation models with capabilities of concern.

HPE Comment: HPE questions the validity of any such solution on the basis of the technology and business ecosystem. Such solutions would require expensive and complex collaboration between chip designers and computer system manufacturers across the delivery chain. This collaboration would be required to assure the scale limitations, prevent abuse, and to address parts movements associated with repair/replacement.

There is no market incentive to do this.

- Chip designers prefer to make chips that slip under the control thresholds – ending the concern entirely, without the complex and expensive collaboration and complexity.
- Parties who want the chips in the nations of concern are looking for sources that are not subject to the EAR (thus evading the control entirely), seeking diversion opportunities that exploit the ambiguity of the Rule, and/or countering with larger numbers of sub-control chips.
- Parties who want the chips in the nations of concern will not accept what they will see as a “backdoor” or “kill switch” that can be imposed on their operation – at any time.

3. Identifying ways to assist semiconductor fabrication facility compliance in recognizing “direct products.” As discussed further under section C.10 above, this AC/S IFR adds new red flag 19 in supplement no. 3 to part 732 of the EAR to assist any facility where “production” of “advanced node ICs” occurs to follow guidance to recognize “direct products.” New red flag 19 will assist semiconductor fabrication facilities to more easily identify “direct products” that they are or will be producing that are subject to the EAR on the basis of the FDP rule. In order to be most effective, this enhanced FDP guidance or any additional guidance that is developed needs to identify criteria that (1) are already “knowable” or easily determined by the semiconductor fabrication facilities and (2) should be highly indicative of an IC that will meet the FDP scope under § 734.9(h)(1)(i)(B)(2) and (h)(1)(ii)(B)(2). BIS believes that the criteria added under new red flag 19 meets this two-part test and will assist semiconductor manufacturing facilities to more easily identify their regulatory obligations under the EAR. However, in addition to the criteria BIS included in new red flag 19 in supplement no. 3 to part 732, BIS also seeks any refinements to those criteria or alternative criteria that would better achieve those two objectives.

HPE Comment: The purpose of these red flag checks is to identify chip foundries that have certain advanced capabilities that trigger export control requirements under 734. HPE finds this red flag to provide no benefit to compliance operations. In the normal course of business, HPE has little or no knowledge of the **detailed** IC production capabilities at customers’ facilities. Furthermore, HPE’s core competency does not span into integrated circuit production and process capabilities. Even if some conditionally useful information were made available by the customers, HPE may not have the specific technical competence to infer any of the implied capabilities. Therefore, this red flag is used as an upfront question to the customer. If they answer they have these capabilities, further examination follows. If they answer they do not have these capabilities, absent knowledge of a misrepresentation, further examination is futile.

4. Deemed exports and deemed reexports. BIS specifically seeks public comment on the applicability of deemed exports and deemed reexports in § 742.6(a)(6)(iv). Commenters are asked to provide feedback regarding the impact of this provision on their business and operations, in particular, what if

any impact companies would experience if a license were required for deemed exports and deemed reexports. Commenters are also asked to provide guidance on what, if any, practices are utilized to safeguard technology and intellectual property and the role of foreign person employees in obtaining and maintaining U.S. technology leadership.

HPE Comment: HPE is pleased the Rule does not extend to deemed export. Any reconsideration of deemed export should first strive to clarify ambiguities.

Most items under 090 and .z hardware controls (thus the relevant technology controls) are marketed as industry-standard expansion cards (e.g., PCIe form factor). As such standardized parts, these items can be installed into virtually any computer, ranging from desktop PCs to the most powerful supercomputers. Inserting a 090 or .z item into a standard (i.e., not 090 or .z) computer, that computer becomes a 4A090 or .z item. It is paramount that the technology control does not extend to the entire computer. The technology control should extend only to the 3A090 item and not have any further “see through” impact to higher level assemblies. If the scope extends beyond the 3A090 item’s technology, the deemed export impact would likely be exceptionally large.

5. Control parameters under 3A090, in particular Note 2 to 3A090. In response to this AC/S IFR, BIS seeks comments on how to refine the parameters under ECCN 3A090 to more granularly cover only ICs that would raise concerns for use in training large-scale AI systems and to and to more specifically define ICs not designed or marketed for use in datacenters.

HPE Comment: The essence of this issue is awareness of the size, scale, and complexity of large-scale AI systems of strategic concern. Industry can provide better advice if the government shares the characteristics that trigger this concern. Absent this data, any guidance is merely speculation. BIS can initiate a more effective engagement with industry by sharing this information across a broad base of impacted IC and computer companies. Industry can advise better measures that are effective, implementable, and reasonably future-proofed.

Future-proofing should not be underestimated. Technology changes rapidly; Today’s most advanced capabilities become mainstream commodities in just a few years. Furthermore, foreign designers, beyond the reach of the EAR, are well-funded (often by the governments of concern) to indigenously close the gap. The control parameters and thresholds must take these future-looking concerns into account.

In HPE’s assessment of the chip designers/manufacturers, HPE notes the undefined distinction between “data center” and “non data center” devices are not well-matched to industry practices. The industry does not appear to embrace a binary between “data center” and “non data center”, but instead, three classes – Data Center, Professional, and Consumer. Data Center is relatively self-explanatory, Consumer is oriented at the gaming market, with Professional straddling these two classes. Professional items are targeted at graphics rendering in workstations but are also sought out for consumer gaming graphics while retaining data center utility. BIS should more closely engage the chip designers and manufacturers to make distinctions based on quantitative, rather than qualitative, characteristics.

6. Definition of headquartered companies. BIS seeks comments on the definition entities headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5, including comments on the ability to access information required to assess the status of a foreign party and any other factors that would support the policy goal of limiting access to advanced computing capability by Macau parties or a destination specified in Country Group D:5 parties.

HPE Comment: HPE would like to express concerns with BIS implementing the Rule without this key definition. Without a standard definition, each exporter will define as it fits their risk-tolerance profile. Those who are willing to accept aggressive risks and being outside the future definition are financially rewarded. Those who choose conservative interpretations lose market share.

There are several tools used to identify headquarters and parent relationships. Unfortunately, we are finding their results to be inconsistent. HPE has utilized Dunn & Bradstreet, Sayari, Kharon and even manual internet searches. These tools are showing inconsistencies, particularly regarding these relationships in nations of concern.

The definition should stress simplicity to ensure consistency of application, applicability of systematic software-driven solutions, and the standard of knowledge. Furthermore, BIS should have a closed-loop system, where companies that are known to BIS to have license-requiring headquarter relationships are placed on the Entity List or some other publicly available mechanism. The definition should:

- Be so that determinations can be readily and consistently made from publicly available information, without the need for complex investigation that may have conditionally different results.
- Explicitly reject the concept of ownership (particularly collective ownership), as an ever-changing moving target.
- Clarify the role of incorporation location versus headquartering. For example, several corporations that are presumed to be “China headquartered” are incorporated in the Cayman Islands.
- Clarify how to address multiple headquarter location scenarios.
- The terms “parent” and “headquarters” are used almost interchangeably. These should be distinct concepts, with distinct logical paths to determine control impacts, particularly considering the undefined term “ultimate parent.” For example, there are many companies outside the nations of concern that have a “parent” or “grandparent” or “great-grandparent” relationship with a company that is headquartered in a nation of concern.

7. BIS is interested in receiving public comments in response to this AC/S IFR on the technical parameters included in the definition of “supercomputer” and how those relate to the end-use control under § 744.23(a)(1). BIS is particularly interested in whether the definition of “supercomputer” may result increasingly in commercial datacenters falling under the definition of “supercomputer” and the end-use control under § 744.23(a)(1). BIS welcomes comments on the definition of “supercomputer,” as well on what additional criteria could be added to § 744.23(a)(1) to better focus the control to ensure that supercomputers used to support foreign government agencies would be caught under the end-use control, but other datacenters strictly involved in the commercial sector would not be covered.

HPE Comment: BIS has repeatedly noted concerns with civil-military fusion in the nations of concern. Any separation criteria between civil/commercial data centers and government/military application is not likely not be well-received by BIS. Therefore, HPE has no suggestion for this criteria.

The definition remaining unchanged for a year is of greater concern. Data from the Top500 (top500.org, a voluntary and public measure) suggests there were less than five such computers in the world in 2022. While this data is inconclusive (particularly in terms of physical space occupied by the computer), the data suggests 5-10 such systems exist in 2023 and will only expand every year. It is simply a matter of time before commercial datacenters – which serve a large plurality of users, rather than a sole user – begin to become defined as “supercomputers.” This requires regular

adjustments of either the numeric thresholds or selection of new criteria. BIS should aggressively consult with industry to maintain a definition that scopes only the most exceptional systems.

Unfortunately, Part 744 of the EAR does not show a history of such active engagement. Part 744.17 has maintained the same numeric thresholds for nearly 20 years. If BIS follows the pattern of 744.17, most large data centers will quickly become “supercomputers”, followed by all data centers and eventually, all computers.

HPE appreciates the opportunity to share these comments, concerns, and recommendations as we strive to comply with the national security policy objectives of the Rule. We welcome the opportunity for further dialogue on these comments and on overall policy approaches to controls on supercomputers.