



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of Industry and Security
Washington, D.C. 20230

JAN 13 2009

Dear Mr. [REDACTED]:

This Advisory Opinion is issued to you in response to your request, received by the Bureau of Industry and Security (BIS) on October 15, 2008, regarding the application of the Export Administration Regulations (EAR) to grid and cloud computing services. In your letter, you stated that companies have begun providing computational capacity to customers for storing data or running pre-determined programs using data provided by the customer. Two methods of providing computational capacity include "grid computing" and "cloud computing." Grid computing allows a customer to run applications on a "group of loosely coupled, sometimes heterogeneous and geographically dispersed computers." Customers use the internet to access the grid. Cloud computing is also accessed through the internet; however, computational capacity under cloud computing is further interconnected via the internet.

In addition, you stated that grid computing and cloud computing require customers to download certain software to enable use, but such software is generally "open source." Also, you stated that the customer may access computational capacity without any information or expertise on grid or cloud computing and that the company offering the service has no visibility to the actual application run by the customer.

On November 14, 2008, you responded to a BIS request for additional information. In your e-mail, you stated that systems shipped under License Exception APP may be connected to a cloud computing service, and it would be impossible to determine whether an individual user was accessing a system shipped under License Exception APP due to the nature of the software to seek available resources on a dynamic basis under cloud computing. Consequently, you argued that the computational access restrictions found in § 740.7(b)(2) of License Exception APP apply only to individual systems accessed remotely rather than a group of systems for which it is impossible to distinguish individual system access.

In your request, you asked BIS to address five questions: (1) whether grid and cloud computing services, in the absence of any transfer of software or technology subject to the EAR, is subject to the EAR under part 734; (2) whether grid and cloud computing services constitute an "activity unrelated to exports" under § 744.6 of the EAR; (3) whether grid and cloud computing service providers are "exporters" of any derivative data resulting from the use of the computational capacity and liable for export screening on that basis alone; (4) whether computational access restrictions found in § 740.7(b)(2) of License Exception APP apply to grid and cloud computing service providers; and (5) whether the grid or cloud computing service provider must inquire about the nationality of the customer (or user).



(1) Whether Grid and Cloud Computing Services, in the Absence of any Transfer of Software or Technology Subject to the EAR, Is Subject to the EAR.

The service of providing computational capacity would not be subject to the EAR as the service provider is not shipping or transmitting any commodity, software, or technology to the user. If the service provider ships or transmits software to enable use of the grid or cloud computing and that software is publicly available under § 734.3(b)(3), the software is not subject to the EAR. However, if the service provider ships or transmits software that is subject to the EAR, an “export” would occur. Similarly, if the service provider ships or transmits technology in the form of technical data (i.e., manuals, instructions, plans, etc.) or technical assistance (i.e., instructions, consulting services, etc.) that is not publicly available in order to give the user knowledge on how to access and use the computational capacity provided by grid or cloud computing, then that technology would be subject to the EAR.

(2) Whether Grid and Cloud Computing Services Constitute an “Activity Unrelated to Exports” Under § 744.6 of the EAR.

Section 744.6(a)(2) states that a U.S. person must obtain a license from BIS before performing “any contract, service, or employment that the U.S. person knows will directly assist in the design, development, production, or use of missiles in or by a country listed in Country Group D:4” and that a U.S. person must obtain a license from BIS before performing “any contract, service, or employment that the U.S. person knows will directly assist in the design, development, production, stockpiling, or use of chemical or biological weapons in or by any country or destination, worldwide.”

In your request, you describe the activity of providing computational capacity as a “service,” and BIS does not contest that description based on the information you provided. Section 744.6(a)(2) can have broad application because it applies to activities unrelated to exports, such as services. Moreover, § 744.6(a)(2) can have broad application because it can apply to items that are not subject to the EAR. Thus, even if one provides a service that is not subject to the EAR, the act of providing the service may still be subject to the provisions of § 744.6(a)(2) if one knows¹ that the service will assist in certain activities described in that section. Consequently, providing grid and cloud computing services is subject to the restrictions set forth in § 744.6(a)(2) of the EAR. However, service providers must have knowledge, as that term is defined in § 772.1, that the service will directly assist in those activities described in § 744.6(a)(2) before that restriction will apply.

¹ “Knowledge of a circumstance...includes not only positive knowledge that the circumstance exists or is substantially certain to occur, but also an awareness of a high probability of its existence or future occurrence.” See 15 C.F.R. § 772.1.

(3) Whether Grid and Cloud Computing Service Providers Are “Exporters” of Any Derivative Data Resulting from the Use of the Computational Capacity and Liable for Export Screening on that Basis Alone.

Under § 772.1 of the EAR, an “exporter” is the “person in the United States who has the authority of a principal party in interest to determine and control the sending of items out of the United States.” A “principal party in interest” is a party in a transaction that receives the “primary benefit, monetary or otherwise, of the transaction” (see § 772.1). The exporter must determine whether any licensing requirements apply and obtain the proper license or other authorization (see § 758.3 for responsibilities of parties in a standard export and routed export transaction). If a user of the grid or cloud computing service should export data stored on the computational capacity or export data resulting from use of the computational capacity, then the user would receive the primary benefit of doing so, as opposed to the provider of the computational capacity. Therefore, the user would be the principal party in interest, but cannot be the exporter because the user is not located in the United States. Absent any agency relationship between the provider and a foreign principal party in interest in a routed export transaction under the EAR, the provider of the computational capacity would not be considered to be the “exporter” under the EAR when the user exports data stored on the computational capacity or exports data resulting from use of the computational capacity.

(4) Whether Computational Access Restrictions Found in § 740.7(b)(2) of License Exception APP Applies to Grid and Cloud Computing Service Providers.

Section 740.7(b)(2)(i) prohibits nationals of Cuba, Iran, North Korea, Sudan, and Syria from accessing (either physically or computationally) computers and software under License Exception APP. If a computer or software has been exported or reexported to a grid or cloud service provider, and the export or reexport was done under License Exception APP or a license that contains conditions similar to § 740.7(b)(2), then the access restrictions would still apply, even if the computer or software will be used to provide a service that is not subject to the EAR.

The access restrictions in § 740.7(b)(2), however, were intended to apply to individual systems for which access on those individual systems can be identified. Since grid and cloud computing utilize a combination of systems at any one time among a larger set of systems, the provisions in § 740.7(b)(2) become impractical as systems that were not exported or reexported under License Exception APP could be impacted by those restrictions. Therefore, § 740.7(b)(2) does not apply to grid and cloud computing when multiple systems may be accessed at any given time, and it is impossible to distinguish individual system access.

(5) Whether the Grid or Cloud Computing Service Provider Must Inquire About the Nationality of the Customer (or User).

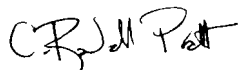
Since the service of providing computational capacity through grid or cloud computing is not subject to the EAR, the service provider is not required to inquire about the nationality of the customer. However, in order to comply with the § 744.6(a)(2)(i) restriction affecting countries

listed in Country Group D:4, the service provider should take into account the location of the user if the service provider knows that the user will be involved in certain missile activities. Please note, though, that the service provider would not be required to inquire about the nationality of the user because § 744.6(a)(2)(i) applies to activities in or by a country in Country Group D:4 and not to nationals of D:4 countries who are located outside of D:4 countries.

Additionally, please note that you may need to obtain a license under the regulations maintained by the U.S. Department of Treasury's Office of Foreign Assets Control to provide services for certain destinations or persons.

In rendering this opinion, BIS has relied upon information and representations included in your letter received on October 15, 2008 and in your e-mail sent on November 14, 2008. Any deviation from the factual circumstances as stated in this opinion may result in different regulatory obligations. Should you have further questions concerning this Advisory Opinion, you may contact me at 202-482-0707 or cpratt@bis.doc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Randall Pratt". The signature is stylized with a large "C" and "R" and a long horizontal stroke at the end.

C. Randall Pratt
Director, Information Technology Controls Division
Office of National Security and Technology Transfer Controls