[1]

There are several essential characteristics, which make Cloud computing an attractive concept to both providers and consumers. The Cloud is an on-demand self-service environment with broad network access. For example, a consumer in Vermont could purchase software from an online company who hosts server space in a remote location in Nevada. As a consumer, one does not need to wait for the product to be delivered (or travel to pick it up); the product is instantaneously distributed to the consumer thousands of miles away. [2]

Under the Cloud, providers are able to pool resources using the multi-tenant model; utilizing

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The National Institute on Standards and Technology (NIST) identifies three different service models utilized by the Cloud. The first, Software as a Service (SaaS), involves the consumer utilizing the applications contained on the provider's Cloud infrastructure. [4]

A Cloud infrastructure is the collection of hardware and software that enables the five essential characteristics of Cloud computing. The Cloud infrastructure can be viewed as containing both a physical layer and an abstraction layer. The physical layer consists of the hardware resources that are necessary to support the Cloud services being provided, and typically includes server, storage and network components. The abstraction layer consists of the software deployed across the physical layer, which manifests the essential Cloud characteristics. Conceptually the abstraction layer sits above the physical layer.[5]

The consumer has no mechanism for control over any of the software, networks, servers, or resources of the product provider.

The second service model is called Platform as a Service (PaaS). This model allows the consumer to deploy consumer created or developed programs and applications onto the Cloud infrastructure. This is possible by resources, such as language, services, and tools, supported and generated by the provider. The consumer does not have control over the underlying Cloud infrastructure (network, servers, and/or systems); however, they do have control over the applications they deploy.

The final service model is Infrastructure as a Service (IaaS). This is the capability provided to the consumer for provision processing, networks, and other essential resources in order to run software, including the basics such as operating systems and applications.[6] The consumer has no control over the underlying Cloud infrastructure; however, he or she can manage operating systems, storage, and other networking components not directly related to the server provider. Essentially, the consumer can control uploaded applications and programs, but cannot manage the server, which makes these products available.[7]

Goods versus Services

The Cloud Tax debate centers on whether "companies that sell software and data accessed through the Cloud are peddling a taxable good or a nontaxable service."[8] Therefore, the

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precise definitions of goods and services play a large role in discussing the Cloud tax debate.[9] Goods and services are defined as "the objects that people value and produce to satisfy human wants," with goods being "physical objects such as golf balls" and services being "tasks performed for people such as haircuts."[10] Services are the largest sector of the U.S. economy, while goods make up a much smaller portion.[11]

Streamlined Sale and Use Tax Act

The Streamlined Sales Tax Governing Board (SSTGB) was formed by the National Governor's Association (NGA) and the National Conference of State Legislatures (NCSL) in 1999 to explore various solutions for the complexity in state sales tax systems that resulted in the U.S. Supreme Court decision *Bellas Hess v. Illinois and Quill Corp. v. North Dakota* (1992).[12] In this Inurt de

Indiana: Defines personal property as anything that can be perceived by the senses, which includes water, gas, and steam. Taxes do not extend to 'virtual property' because this form of property cannot be 'perceived.'[26]

Texas: Texas sales and use tax law specifically addresses what type of digital services fall subject to a tax. Title 2, Chapter 151 of the Texas Tax Code states that telecommunications constitute a taxable service.[27] Telecommunications services are further defined as, "the storage of data or information for subsequent retrieval or the processing, or reception and processing, of data or information intended to change its form or content."[28] To more easily explain telecommunication taxation Texas has issued Tax Publication 94-127; outlining taxable data processing services. Tax Publication 94-127 outlines data storage, data conversion services, transcription services, and other identified Cloud computing services as taxable services under the Texas Sales, Excise, and Use Tax.[29]

States with laws addressing Cloud taxation

Kentucky: According to the Kentucky Department of Revenue, "Digital Property accessed or transferred electronically by the Kentucky purchaser is subject to a six percent sales and use tax." Digital books, photographs, audio works, and code are all considered digital property. Video games, electronic games, magazines, newspapers, and periodicals are also subject to the tax.[30]

Idaho: Idaho's Department of Administration has set rules on how "canned software" is taxed. Canned software is any software that is not custom made and is sold multiple times. If there is any "transfer of title, possession, or use," the software is subject to tax. These taxes do not apply to any custom made software.[31]

Tennessee: Tennessee has a seven percent sales tax comprising of a combination of the state and local tax. Recently the state expanded the sales tax to encompass digital goods. Digital products are electronically transferred to the purchaser or accessed electronically by the purchaser. All sales, leases, licensing, and usage of specified digital products are subject to the

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[26] Indiana Department of State Revenue, "Revenue Ruling #2008-14ST," last modified December 3, 2008, accessed April 9, 2012, http://www.in.gov/dor/reference/legal/rulings/pdfs/rr200814st.pdf.
[27] State of Texas, "Tax Code: Title 2. State Taxation, Subtitle E. Sale, Excise, and Use Tax, Chapter 151: Limited Sales, Excise, and Use Tax," last modified October 1, 2001, accessed April 23, 2012, http://www.statutes.legis.state.tx.us/Docs/TX/htm/TX.151.htm, Section 151.0101.
[28] State of Texas, "Tax Code: Title 2. State Taxation, Subtitle E. Sale, Excise, and Use Tax, Chapter 151: Limited Sales, Excise, and Use Tax," Subsection 151.0103.
[29] State of Texas, "Data Processing Services are Taxable," last modified August 1997, accessed April 23, 2012, http://www.window.state.tx.us/taxinfo/taxpubs/tx94_127.html.
[30] Kentucky Department of Revenue, "Kentucky Sales Tax Facts," accessed April 9, 2012, http://revenue.ky.gov/NR/rdonlyres/39D1ACD0-9143-4D25-8F5B-7AE65557397E/0/SalesTaxFactsJune2011.pdf.
[31] Idaho Department of Administration, "Idaho Sales and Use Tax Administration Rules," accessed April 9, 2012, http://adminrules.idaho.gov/rules/current/35/0102.pdf.

customer provides the vendor with all necessary data and the vendor merely operate the software.[41] However, if the customer purchases and operates the aforementioned software, resulting in tangible personal property than it is subject to this sales tax.[42]

States using Tax Exemption(s) on Cloud purchases

Colorado: In Colorado, Cloud software purchases are exempt from taxation. Colorado's tax code explicitly states that intangible personal property is exempt from the levy and collection of property tax. Under 39-3-118 "intangible personal property" includes, but is not limited to, computer software.[43] Intangible property is also exempt from the sales tax, as the sales tax applies only to tangible property.[44]

West Virginia: West Virginia offers tax exemptions for certain digital goods and services. Sales of tangible personal property and software that are considered the following are exempt from taxation: computer hardware and software directly incorporated into manufactured products; computer hardware and software directly used in communication; electronic data processing service; educational software; Internet advertising goods or services; high-technology business services directly used in fulfillment of a government contract; tangible personal property for direct use in a high-technology business or internet advertising business.[45]

Future of Cloud-Based Industry in Vermont and Its Effects on Government Revenue

The global market for Cloud computing is expected to increase from $40.7 billion in 2011 to $241 billion in 2020.[46] Technology seems to be outpacing state tax codes. State revenue departments are concerned of the affect this may have on their tax bases. [47]

The Vermont Department of Taxes has attempted to solve this issue with Technical Bulletin 54.[48] The bulletin extends the existing six percent sales tax to products sold through the Cloud.[49] It has collected $2 million in government revenue so far.[50] The bulletin applies the tax

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[41] Ken Jones, "Technical Bulletin 54: Treatment of Computer Software and Services," p. 2.
[42] Ken Jones, "Technical Bulletin 54: Treatment of Computer Software and Services," p. 2.
[43] Michie's Legal Resources, "39-3-118. Intangible personal property – exemption," Lexis Nexis, last modified 2011, accessed April 23, 2012, http://www.michie.com/colorado/lpext.dll?f=templates&fn=main-h.htm&cp=.
[44] Michie's Legal Resources, "39-26-104. Property and services taxed," http://www.michie.com/colorado/lpext.dll?f=templates&fn=main-h.htm&cp=
[45] West Virginia Legislature Office of Reference and Information, "West Virginia Code Chapter 11: Taxation, Article 11-15-9h," accessed April 10, 2012, http://www.legis.state.wv.us/WVCODE/ChapterEntire.cfm?chap=11&art=15&section=9H#15#15. .
[46] Richard Rubin and Juliann Francis, "States Pursue Sales Tax Revenue Vanishing Into Computing Cloud."
[47] Richard Rubin and Juliann Francis, "States Pursue Sales Tax Revenue Vanishing Into Computing Cloud."
[48] See "Vermont," p. 8.
[49] Kirk Carapezza, "Lawmakers Enter Vermont's Cloud Tax Debate," *Vermont Public Radio*, April 4, 2012, accessed April 5, 2012, http://www.vpr.net/news_detail/94023/lawmakers-enter-vermonts-Cloud-tax-debate/.
[50] Kirk Carapezza, "Lawmakers Enter Vermont's Cloud Tax Debate."

In many instances, the property transfer that would elicit taxation does not occur because the transfer is fundamentally different from a conventional retail transaction. Instead of the original software being sent through the Cloud, ownership and the product's identity are shifted to the purchaser of the software. This transfer of data creates an entirely new unit of the original software to be used in the purchaser's own interests.[59]

Conclusion

Cloud technology poses a problem to tax collection at the state level due to variance in language of tax codes, which does not address digitally purchased products. Some states have addressed this issue, as previously mentioned above, while others have still yet to pass any legislation surrounding Cloud taxation. Vermont has formally taken action through its Technical Bulletin, which extends the 6% sales tax to include digital goods. This has created internal conflict between business owners opposing the tax and the Department of Taxes, who rely on taxes for state revenue. Everyday commerce points to an increased reliance on digital goods and services, meaning that widespread taxation over these products will indeed remain a relevant issue in the near future. It is not possible to determine at this time whether a Cloud tax would impact revenue and/or business locations without quantitative data on the effect of such taxes over time.

This report was completed on April 24, 2012, by Alexander Rosenblatt, Evan 'Deal' McDaniel, Michael Gibson, and Suzannah Balluffi-Fry under the supervision of graduate student Kate Fournier and Professor Anthony Gierzynski.

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[59] Richard Rubin and Juliann Francis, "States Pursue Sales Tax Revenue Vanishing Into Computing Cloud."