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**Foreign investment in China's Cloud
Industry: A Case Study of Microsoft
Azure's Expansion**

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前言

“数据是新石油”。在现代社会中，一切皆为数据。从订购外卖到预订航班，从与朋友聊天到听音乐，每一项活动，只要在数字设备上进行，都会产生数据，对经济产生影响的每项活动都如此。数据需要存储，需要处理，就像石油一样，只有在经过精炼后才有价值。不同层次的推理和各种方面构成了数字经济广泛的主题，鉴于新技术的开发和商业化所需的时间在过去几十年中急剧减少。这一趋势正如摩尔定律所描述的那样，该定律观察到，在1965年，计算机芯片上的晶体管数量每18个月翻一番。尽管技术的物理限制迟早会出现，而摩尔定律很可能在不久的将来被证明是错误的，因为晶体管无法无限缩小，但同样的逻辑可以应用于整个技术创新领域。事实上，以越来越快的速度发现和开发的新技术突破，使其他技术设备在前所未有的时间内变得过时。在这种背景下，新技术对社会产生了巨大的社会影响，远远超出了工具本身，并为人们的非物质文化框架设定了框架，改变了人们的思维方式和相互关系。源自此，新的商业模式应运而生，增强了原本被认为无法剥离和改变的巩固业务流程的效率。

诸多技术企业的经验表明，消费方式的改变是不可避免的，应对这种改变的最佳方式是拥抱变革，改进当前的商业模式并使其适应技术创新。同样的逻辑也适用于数据的存储和管理。从历史角度来看，数据一直存储在硬盘上，这些硬盘物理存在并位于客户的设施中。这种存储方法随着时间的推移不断改进，硬盘的容量也不断增加，达到了只要有财务能力支付物理设备的费用，就可以满足每个存储需求的程度。关于这种传统存储方法，有很多优点和缺点。将数据存储在其家或公司设施内允许您在不依赖任何第三方公司的情况下物理管理这些数据，并根据个人或公司的需求进行组织。同时也存在一些缺点。事实上，在物理硬件内存储所有数据存在明显的风险因素，如果发生自然灾害或其他类似事件，数据将会丢失，除非公司有预见性地实施了备份计划，这并不是理所当然的事情。需要指出的是，在这种情况下，唯一的解决方案是从以前的备份中恢复数据。

第一个类似于云计算概念的想法可以追溯到 1961 年，当时美国计算机科学家和认知专家约翰·麦卡锡教授参加了麻省理工学院当年的百年庆典。在他的演讲中，麦卡锡提出了“计算可能有一天会像电话系统一样被组织成公共事业”的想法。他还有远见，想象了云计算服务的订阅系统的未来，即“每个订户只需支付他实际使用的容量，但他可以访问与一个非常大系统特征的所有编程语言”。加拿大技术专家、前研究部长道格拉斯·帕克希尔在他 1966 年的书《计算机公用事业的挑战》中广泛探讨了云计算的几乎所有现代特性。作者预见了我们今天理解的云的许多特征：工具的灵活使用，具有无限资源的幻觉，其中计算能力甚至特定应用程序可以按照公用事业的经济模型出售。在这个背景下，云计算被提出作为解决上述问题的方案，彻底改变了传统的数据存储方式和计算资源使用方式。“云计算并不存在，它只是别人的电脑。”从这句具有挑战性的话中，可以轻松理解整个问题背后的基本逻辑，这是与仅在用户设施内存储数据和利用计算资源的传统方式相比的一大飞跃。为什么不利用别人的计算能力呢？大公司有财力向客户提供各种与存储和计算相关的服务，而单个人可能需要多年才能实现。理解云概念的关键就在这里，许多效率低下的数据中心将减少到更少但更高效的大规模数据中心，产出将增加。这代表了云计算为用户提供的三个好处之一，即更便宜的基础设施。基础设施成本的降低通过经济规模的经济概念来解释，即“导致生产某物的平均成本随着其产量的增加而降低的因素。”云计算的第二个好处是其“无需操心”的方法，即客户无需亲自管理硬件和软件。有经验的云服务提供商承担了这一工作的负担，他们负责为客户提供适当的解决方案，并使客户只需关注实际需要完成的实际业务活动，而无需担心管理 IT 基础设施或更新软件。最后，云计算的第三个好处是，与传统的数据存储和计算资源利用方式相比，它提供了更安全的解决方案，不仅在备份和将所有必要和关键信息的副本存储在系统内方面，而且在网络安全方面也是如此。国防信息系统局（DISA）证明了私有云网络内的假想恶意软件攻击可以很容易地被检测出来，因为后者允许技术人员对整个系统有更广泛的全局视图，而不仅仅是传统的本地系统的碎片化视图。中国在全球云计算环境的发展和创造过程中发挥着重要作用，因此来自世界各地的公司开始将中国市场视为扩展业务的目标市场。尽管如此，中国的背景特点、政治环境和文化特点与西方有所不同，对于愿意进军中国市场的国际公司来说，这些特点构成了一些无法忽视的障碍。本论文旨

在全面介绍云领域的各个不同方面，特别关注中国的背景和要求，旨在指导潜在的投资人进军中国市场，但对该市场所带来的挑战有着狭窄的视角和了解。我们在云世界的探索将使读者了解云计算背后的基本概念，从基础开始全面解释新技术，直到更复杂的实施措施和中国政府制定的法律限制，以控制和规范这个领域，无论是针对外国还是国内企业。

第一章中，我们将以一般术语介绍主题，明确定义云计算是什么以及主要的服务和部署模型是什么。这种技术性的观点将使读者建立起理解后续章节的基础，为专家和初次接触该主题的人提供了深入了解云计算各个方面的机会。本章还将引导读者了解中国云计算行业的演变，分析制定行业发展路径的政策和指导方针，并介绍市场上的主要参与者。法规框架将从法律分类和云服务提供商的许可制度、数据治理和合规要求方面进行考虑。在第一层面的分析中，我们将以国内企业为基础来探讨中国云行业。

在第二章中，我们将把重点转向愿意在中国云服务市场扩展业务的外国投资者，从广泛的国际法律环境开始，然后到达中国政策制定者为控制云行业外国投资而采取的具体法规，遵循从一般到具体的中国传统方式。本章还将介绍外国投资者在遵守政府规定并避免特定限制的情况下采取的一些最流行的投资策略，有时这些策略甚至会触及法律的边界。

最后，第三章提供了一个关于电信和信息技术领域全球领先企业 Microsoft 的案例研究，分析了这家跨国公司在中国市场扩张的过程。该章节对 Microsoft Azure 进行了全面介绍，Microsoft 云服务部门，并介绍了其中国合作伙伴 VNET Group。随后分析了国际版 Azure 服务与面向中国市场的定制版本之间的主要区别，强调了这家跨国公司提供的服务如何根据其运营的区域而有所不同。重点将转移到中国合作伙伴 VNET Group 及其组织结构上，该结构具有独特性，因为它还采用了第二章中提出的一种策略，用于在海外市场筹集资金，这在遵守中国法规方面引发了矛盾和悖论。因此，

第三章的最后部分将专注于 Azure China 在个人信息的收集和处理、个人信息的存储和转移以及与 GDPR 和 PIPL 的合规性方面的问题分析。

阅读完这篇论文后，读者将完全了解影响中国云服务业务的主要因素。他们将能够识别中国体制中常见的法规模式，以及外国公司在中国云行业取得成功所能采取的可行替代方案。因此，这篇论文是为尽可能广泛的读者群体编写的，但它可以为正在评估进入中国云服务市场并对这一决定可能带来的影响没有明确概念的国际公司提供实际用途。这篇论文将有助于读者（一）了解云计算的基本概念和发展历程；（二）理解中国云计算行业的政策和法规框架；（三）掌握国内云计算公司和国际公司在中国市场的角色和地位；（四）了解外国公司在中国云服务市场取得成功的策略和挑战；（五）分析国际公司在中国云计算领域的实际案例，例如 Microsoft Azure 和其合作伙伴 VNET Group。

这篇论文将有助于国际公司更全面地了解进入中国云服务市场的机会和挑战，以便他们能够做出明智的商业决策，并为成功进入这个潜力巨大的市场做好准备。

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CHAPTER I

The Cloud industry in China:

evolution of the domestic market and requirements for foreign traders

1. Essential characteristics of cloud computing

1.1 Definition of cloud computing

“Data is the new oil”.¹ Everything in the modern world is data. From ordering food delivery to booking a flight, from texting with your friends to listening to music. Every activity that has an impact on the economy, and not only that, produces data, as long as these activities are carried out on digital devices. Data needs to be stored, needs to be processed, and in the same way as the oil, they are valuable only after being refined.² Different levels of reasoning and various aspects compose the vast subject of the digital economy, given that the period in which new technologies are developed and commercialized has reduced drastically in the past decades. This tendency is well depicted by the Moore’s law, which observed that, in 1965, the number of transistors on computer chips doubled every 18 months.³ Even though the physical limitations of technology will show up soon or later, and Moore’s law is likely to be proved wrong in the near future, as transistors cannot be scaled down infinitely, the same logic can be applied to the whole category of technological innovation. Indeed, the new technological breakthroughs that are discovered and developed in faster and faster timing, make other technological devices outdated in a period of time that the world has never seen before. In this context, new technologies have a huge sociological impact that goes far beyond the tool itself and sets the framework for a people’s non-material culture, changing the way people think and relate to each other.⁴ Stemming from that, new business models have come up, enhancing the efficiency of consolidated business processes that were thought to be irremovable and unchangeable. Let’s take the music industry as an example. In past years,

¹ This phrase was coined by the British mathematician Clive Humby in 2006 during the ANA Senior marketer’s summit at Kellogg School. More on that in David S. WALL, “How Big Data Feeds Big Crime”, *Current History*, vol. 117, n. 795, 2018, p. 29, and in Jon SUAREZ-DAVIS, *Data isn’t ‘the new oil’ - it’s way more valuable than that*, in “The Drum”, 2022, www.thedrum.com/opinion/2022/12/12/data-isn-t-the-new-oil-it-s-way-more-valuable (accessed 16/08/2023).

² Concept developed by Micheal Palmer back in 2006. More on that in Michael PALMER, *Data is the New Oil*, in ANA Marketing Maestros”, 2006, ana.blogs.com/maestros/2006/11/data_is_the_new.html (accessed 16/08/2023), and in Perry ROTELLA, *Is Data The New Oil?*, in “Forbes”, 2012, www.forbes.com/sites/perryrotella/2012/04/02/is-data-the-new-oil/ (accessed 16/08/2023).

³ Alfred E. BRENNER, “Moore’s Law”, *Science*, vol. 275, no. 5306, 1997, p. 1551.

⁴ Edmore MUTEKWE, “The impact of technology on social change: a sociological perspective”, *International journal of peace, gender, development studies*, vol. 2, 2011, p. 226.

people used to buy music either physically, through discs and CDs, or digitally, via digital music stores. The business model of record companies seemed to work properly, until the advent of online piracy. People no longer had the interest to spend money on something they could have got access to freely and without exiting the doors of their house. In fact, starting from the late 1990s, record companies have faced a steady decline in yearly earnings due to the widespread music piracy that has defined the era of digital technology. As a result, the traditional business model needed to be changed, also due to the failed efforts to combat piracy through litigations.⁵ Since the 2008, a new player in the industry has changed the rules of the game. The Swedish company Spotify shifted the paradigm of music consumption by offering an improved on-demand technology experience to its customers and an unprecedented streaming music catalog to date with agreements made with major labels.⁶ The experience of Spotify shows how change in consumption is inevitable, and the best way to deal with it is to embrace the change and to improve current business models and adapt them to the technological innovations. The same logic applies to the storage and management of data. Historically, data have been stored in hard disk, which were physically present and available at the customer's premises. Such storing method has improved overtime, and the capacity of hard disks has enhanced reaching the point in which every store necessity can be satisfied as long as there are the financial possibilities to pay for the physical devices. Plenty of advantages and disadvantages can be found regarding this traditional storing method. Having the data stored within your house or company's facilities allows you to physically manage this data, without having to rely on any third-party company, and organizing them according to individual's or company's necessities. Some disadvantages can be outlined too. In fact, there is a noteworthy risky component of having all the data stored within a physical hardware, in that in case of a natural disaster or any other incidents of the type, the data will be lost without having other solutions but to recover them from precedent backups, given that the company had the foresight to implement a backup plan, which is not something to be taken for granted.

The first idea that resembles the concept of cloud computing dates back to 1961, when Professor John McCarthy, an American computer scientist and cognitive specialist

⁵ Neil S. TYLER, "Music Piracy And Diminishing Revenues: How Compulsory Licensing For Interactive Webcasters Can Lead The Recording Industry Back To Prominence", *University of Pennsylvania Law Review*, vol. 161, no. 7, 2013, pp. 2107-09.

⁶ Blake DURHAM, "Circulatory Maintenance: The Entailments of Participation in Digital Music Platforms", *American Music*, vol. 38, no. 2, 2020, p. 197.

participated in the MIT's centennial celebration held that year. During his speech, McCarthy proposed the idea that "computing may someday be organized as a public utility just as the telephone system is a public utility"⁷. He also had the foresight to imagine the future of the subscription systems of cloud computing services, as "each subscriber needs to pay only for the capacity he actually uses, but he has access to all programming languages characteristic of a very large system [...]".⁸ Douglas Parkhill, a Canadian technologist and former research minister, as well as the author of various publications, extensively examined nearly all of the contemporary attributes of cloud computing in his 1966 book titled "The Challenge of the Computer Utility."⁹ The author anticipated many of the characteristics inherent to the cloud as we understand it today: the flexible use of tools as utilities, the illusion of infinite resources, where the computing power and even specific applications could be sold following the economic model of a utility.¹⁰ In this context, cloud computing is presented as a solution to the above-mentioned issues, revolutionizing the traditional way of storing data and using computing resources. "There is no cloud, it's just somebody else's computer."¹¹ From this provocative sentence it is easy to understand the basic logic that underlies the whole matter, a big jump ahead compared to storing data and exploiting only the computer resources available on-premises in the user's facilities. Why not to exploit somebody else's computing capacity? Big corporation have the financial possibilities to provide their customers with a variety of services related to storage and computing that single individuals would require years to achieve. The key to understand the cloud concept is all here, numerous inefficient data centers will be reduced to fewer, more efficient, large-scale data centers with an improvement in terms of increasing output. This represents the first of three benefit that cloud computing offers to its users, i.e., a cheaper infrastructure. A reduction in the infrastructure costs is explained through the economic concept of economies of scale, defined as "factors that cause the average cost of producing something to fall as the volume of its output increases."¹² The second benefit of cloud computing is its "hands off" approach, in that the customer will not need to manage firsthand the hardware and the software. Such burden of

⁷ Simson GARFINKEL, *The Cloud Imperative*, in "MIT Technology Review", 2011, www.technologyreview.com/2011/10/03/190237/the-cloud-imperative/ (accessed 04/08/2023).

⁸ *Ibid.*

⁹ Douglas F. PARKHILL, *The Challenge of the Computer Utility*, Addison Wesley, 1966.

¹⁰ Yushi SHEN, Jie YANG, Tayfun KESKIN, "The Evolution of IT towards Cloud Computing in China and U.S.", *2012 International Conference on Computational Problem-Solving (ICCP)*, 2012, pp. 224-25.

¹¹ For more see Mary BRANSCOMBE, *Stop saying the cloud is just someone else's computer - because it's not*, in "ZD Net", 2016, www.zdnet.com/article/stop-saying-the-cloud-is-just-someone-elses-computer-because-its-not/ (accessed 16/08/2023).

¹² Tim HINDLE, *Mass Production*, The Economist, 2009.

work is carried by experienced cloud services providers that take the responsibility to provide the customer with the appropriate solution and let it focus only on what matters, on the practical business activity that need to be done, without having to worry about managing the IT infrastructure or updating the software.¹³ Lastly, the third benefit of cloud computing is that, compared to the traditional ways of storing and using computing resources, it represents a more secure solution offering a safer IT infrastructure, not only in terms of backup and having a copy of all the necessary and crucial information stored within the system, but also with regard to cybersecurity. It has been proved by the Defense Information Systems Agency (DISA) that a hypothetical malware attack can be detected easily within a private cloud network, as the latter allows the technicians to have a wider and broader picture of the entire system, and not only a fragmented one as in the case of traditional on-premises systems.¹⁴

China plays an important role in the development and innovation process of the global cloud computing environment, so that companies from all over the world started to consider the Chinese market as a target market for expanding their businesses. Despite that, the peculiarities of the Chinese context, its political environment and cultural characteristics that distinguish it from the West, pose some obstacles that cannot be ignored by international companies willing to expand in the Chinese market. This thesis is aimed at giving a comprehensive overview on all the different aspects of the cloud sector, with particular attention to the Chinese context and its requirements, serving the purpose of guiding a potential investor willing to approach the Chinese market but with a narrow view and knowledge of the challenges that it poses to the business.

Our journey in the cloud world will let the reader understand the basic concepts that lie behind this innovative approach to data storage, giving a comprehensive explanation of the new technology starting from the basics to get to the more complex implementation measures and legislative limitations that were set out by the Chinese government in order to control and regulate this sector, both for foreign and domestic players.

Many manuals and books start with the definition of cloud computing as reported by National Institute of Standards and Technology (NIST) of the U.S. Department of Commerce.

¹³ Steven C. DUDASH, "Understanding Cloud Computing", *The Department of Defense and the Power of Cloud Computing: Weighing Acceptable Cost versus Acceptable Risk*, Apr. 1, 2016, pp. 3–4.

¹⁴ Jared SERBU, *DISA pushes efficiency, security virtues of DoD private cloud*, in "Federal News Network", 2012 <https://federalnewsnetwork.com/defense/2012/01/disa-pushes-efficiency-security-virtues-of-dod-private-cloud/> (accessed 05/08/2023).

This definition is commonly referred to as the standard definition that better explain the cloud computing concept, at least from a western perspective. The definition goes as follows:

“Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”¹⁵

Some characteristics and basic aspects of the matter are promptly outlined in the definition, through adjectives such as “ubiquitous”, underlining the nature of cloud services as accessible from everywhere, following the user wherever it goes, “convenient”, highlighting the reduction in costs and capital expenditure for businesses that choose this solution, and “on-demand”, available to the user at anytime and anywhere, requiring only an internet connection, which nowadays is like the air that we all breathe (for the vast majority of cases). Another important aspect of the definition provided by the NIST is that cloud computing can be associated with the concept of sharing the resources a cloud provider offers to its users. Unlike previous methods of storing and using computing resources, cloud solutions give the user the possibility to use resources that are not available at its premises at that would cost and burden on capital expenses. In this way, the user will free resources that can be used on other core activities of its business, letting other specialized cloud providers manage the IT infrastructure and the various platforms, according to the user’s requests.

But what about the Chinese side of this definition? In the cloud sector the Chinese conception of cloud computing is not so common to be taken into consideration, and in most cases, there is no reference to the Chinese definition, at least in western books and manuals. Despite that, it is easy to understand that both the Chinese and western definition of cloud computing are similar and for almost the entirety of the definition share the same concepts and characteristics. The Chinese authority in charge of giving a definition of cloud computing is the China Academy of Telecommunication Research of the Ministry of Industry and Information Technology. According to the White Paper published in 2012, cloud computing is considered by Chinese authorities to be:

¹⁵ Peter MELL, Timothy GRANCE, The NIST Definition of Cloud Computing, *Recommendations of the National Institute of Standards and Technology*, 2011.

“An information processing method that achieve large-scale computing through a unified network organization, utilizing every type of ICT (Information and Communication Technology) information resources. Cloud computing utilizes distributed computing and virtual resource management to provide the user with a shared pool of resources on a dynamic on-demand and measurable basis.”¹⁶

In this definition we can find some common aspects that appear also in the definition given by the NIST, such as the stress on the shared pool of resources and on-demand peculiarity of cloud services. Apart from that, the Chinese definition adds to the western definition some relevant aspects such as the scope of this innovative method of storing and using computing resources, that is large in scale thanks to a unified network organization, that goes beyond the company’s facilities and national borders to connect to a globalized network infrastructure. This effort to emphasize the distributed nature of cloud services is further specified in the following line when the Ministry of Industry and Information Technology talks about “distributed computing and virtual resources management”. The clear reference to the shared pool of resources and the provision by specialized companies of computing capacity accessible by the user via remote methods is realized in a virtual manner, completely removing the physical hardware variable from the equation. The implicit implications of the two definitions also include one of the main characteristics that will be analyzed later in detail in this chapter, that is the pay-per-use basis of cloud services. Stemming from the reduction in capital expenditure of enterprises choosing to migrate their servers and data from a traditional on-premises solution to a more innovative cloud-based solution, entrepreneurs will only have to consider the expenses related to the effective usage of storage and computing resources provided by the cloud services company, and this represents a step-forward both in efficiency and efficacy of how a company shall structure their IT infrastructure.¹⁷

Other scholars have tried to give an even more complete and precise definition of what cloud computing is, integrating different definitions and finding a minimum common denominator between them. With regard to this, Vaquero et. al. argues that a comprehensive definition of cloud computing shall include basic concepts such as immediate scalability, resources usage optimization, business model, user-friendliness, massive data scalability and

¹⁶ *Yun jisuan baipishu* 云计算白皮书 (White paper on cloud computing), China Academy of Telecommunication Research of MIIT, 2012.

¹⁷ Greg BOSS, Padma MALLADI, Dennis QUAN, et. al., *Cloud Computing*, New York, IBM Corporation, 2007, pp. 14-15.

virtualization. Stemming from these basic concepts a proposed definition given by the authors is the following:

“Clouds are a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms and/or services). These resources can be dynamically re-configured to adjust to a variable load (scale), allowing also for an optimum resource utilization. This pool of resources is typically exploited by a pay-per-use model in which guarantees are offered by the Infrastructure Provider by means of customized SLAs.”¹⁸

This definition further expands on the previous two. The common ground between all the definitions seems to be the fact that the resources available for the user are shared between different parties and are not exclusive for a specific user, and that these resources are to be personalized and tailored to the customer’s specific needs according to concepts like scalability and variable demand. The definition proposed by Vaquero et. al. explicitly refers to the pay-per-use peculiarity of cloud services, that allows the customer to personalize even more their cloud-based experience according to the effective usage of computing resources provided by the cloud provider. Lastly, the definition mentions the general contractual framework used for the provision of cloud services, which are the Service Level Agreements (SLAs). These arrangements can take the form of formal and inclusive Service Level Agreements (SLAs). These SLAs are formal written contracts between the service provider (SP) and the service recipient (SR), outlining specific aspects of the service to be delivered at predefined levels in order to achieve business goals.¹⁹

1.2 Three service models

Cloud services are categorized in different ways according to the service model provided and the degree of control that the user retain over the whole infrastructure. Therefore, cloud services are commonly divided into three different service models: Infrastructure as a Service (IaaS), Platform as a Service (Paas), and Software as a Service (Saas).

- *Infrastructure as a Service (IaaS)*: the cloud provider hosts the computing resources, as well as storage, networking and virtualization capabilities and provides them to the user on a pay-as-you-go basis. As a result, the company choosing an IaaS solution will not need to

¹⁸ Luis M. VAQUERO, et. al., “A Break in the Clouds: Towards a Cloud Definition”, *Computer Communication Review*, vol. 39, 2009, p. 51.

¹⁹ Jahyun GOO, et. al., “The Role of Service Level Agreements in Relational Management of Information Technology Outsourcing: An Empirical Study”, *MIS Quarterly*, vol. 33, n. 1, 2009, p. 122.

invest in creating and maintaining physical infrastructure, as it will only focus on installing, configuring, and managing software on the infrastructure. The advantages of this solution are its cost efficiency and scalability, as the cloud provider guarantees that companies have access to all the computing resources they need when they need. The main disadvantages can be found in the security aspect, as the security controls on the infrastructure are completely handed over to the cloud provider, as well as technical issues that will prevent organizations from accessing applications and data they need to run their business.²⁰

- *Platform as a Service (PaaS)*: this option allows the user access to a cloud platform with all the necessary tools for developing and deploying applications, as well as the underlying computing resources. PaaS solutions give developers the freedom to focus on writing applications' code, as they don't need to update the operating and development tools or maintaining the hardware. The main advantages of this solution are its simplicity and convenience that will allow faster development of new software through a variety of tools that also foster collaboration between developers. The main disadvantages are the lack of scalability when compared to the IaaS solution and a vendor lock-in, in that PaaS providers have unique configurations that make difficult for companies to move from one provider to another.²¹

- *Software as a Service (SaaS)*: this option is also referred to as "on-demand software" and allows the user to directly work on applications managed by the provider that can be accessed via the internet. It is the easiest cloud model to set up and run, as companies can immediately access and use the software as soon as they subscribe, and the cloud provider takes responsibility for maintaining the infrastructure and updating the software. Scalability is also one of the advantages of this model, as companies will only need to change their subscription plan when additional capacity is needed. On the other hand, SaaS solutions do not give any control to the user and there could also be issues with integrating companies existing in-house software with the SaaS applications.²²

The distinction between the different service models is useful to understand how the market is evolving, which are the main trends in the cloud adoption by the companies and the different compliance requirements for each model. According to a report published by the

²⁰ Anthony T. VELTE, Toby J. VELTE, Robert EISENPETER, *Cloud Computing – A Practical Approach*, McGraw Hill, 2010, pp.69-70.

²¹ VELTE, VELTE, EISENPETER, "Cloud Computing...", p. 72.

²² *Ibid.*, pp. 74-75.

IDC Corporation, the world cloud services industry is currently dominated by SaaS with a significant 60.9% market share, followed by IaaS with 22.4%, and PaaS with 16.7%.²³

1.3 Four deployment models

In addition to the aforementioned three service models, four deployment models are identified, according to where the infrastructure for the deployment resides and who has control over that infrastructure. These four deployment models include public clouds, private clouds, community clouds, and hybrid clouds.²⁴

- *Public cloud*: the cloud infrastructure is provided to a variety of customers through the internet. This deployment model is also called “cloud hosting”, in that the infrastructure is owned by the cloud provider, and resources are offered to customers both free of charge and on a pay-per-use basis. Public clouds are the best solution for companies with low privacy concerns as the cloud infrastructure is completely owned by the cloud provider. The advantages of this deployment model are the convenience in let the service provider manage the infrastructure, its high scalability and reduced cost, and the assurance that your infrastructure is constantly available thanks to the extensive network of the provider’s servers. Nonetheless, there could be some issues with reliability of the public cloud, which more often than not experiences outages and malfunction, along with privacy and data protection concerns with regard to the opacity of where data are stored and who has access to it, and finally a lack of sophisticated customer service.²⁵
- *Private cloud*: the main difference between a public and a private cloud is that a private cloud solution is provided only to one specific company. This deployment model, which is also defined as “internal” or “corporate” model, host the server either externally or on the premises of the owner company and is maintained on a designated private network. Private clouds solve security issues by allowing only a limited scope of people to access the information, preventing the general public from getting access to the same infrastructure. The main advantage of private cloud is its high scalability, high security, together with a high degree of customization according to company’s

²³ Mass NEEDHAM, *Worldwide Public Cloud Services Revenues Grew 29.0% to \$408.6 Billion in 2021, According to IDC*, in “IDC”, 2022, www.idc.com/getdoc.jsp?containerId=prUS49420022 (accessed 04/04/2023).

²⁴ Derrick ROUNTREE, Ileana CASTRILLO, “Cloud Deployment Models”, *The Basic of Cloud Computing*, 2014.

²⁵ Nick ANTONOPOULOS, Lee GILLAM (edited by), *Cloud Computing Principles, Systems and Applications*, “Computers Communications and Networks”, Swindon (UK), Springer, 2010 pp. 6-7.

needs. On the other hand, the cost of adopting a private cloud solution is considerable, as it requires a higher investment on hardware, software, and staff training.²⁶

- *Community cloud*: this model is similar to a private cloud solution, with the only exception that instead of being provided only to one organization, community cloud solutions are provided to different organization with similar backgrounds. This model is particularly efficient in case of joint projects, where a group of organizations have uniform security, privacy and performance requirements. The main advantages of community clouds are its cost reduction, improved security privacy and reliability, and the enhanced data sharing and collaboration features. At the same time, this solution is still more expensive compared to public cloud and not commonly adopted yet.²⁷
- *Hybrid cloud*: this solution encompasses the strengths of the above-mentioned deployment models in a flexible way, in order to satisfy the specific needs of a company. According to the sensitiveness of different business activities, an organization can decide to deploy mission-critical workloads on a more secure private cloud, maintaining routine operations in a less expensive public cloud. This solution allows companies to allocate the computing resources in a cost-effective way, and to remain open to the possibility of scaling up if needed. However, hybrid clouds are suitable only for companies that can distinguish between mission-critical and other less sensitive workloads.²⁸

2. Evolution of the cloud industry in China

Cloud computing is considered to be the third revolution in the information technology industry, following the personal computer and the internet.²⁹ The importance of cloud computing in developing a modern technological environment for enterprises is reflected in the changes happening in the IT industry and the business models adopted by its players in terms of pricing schemes, market shares and overall bargaining power of forces in competition.³⁰ Contrary to what one might think, among the factors that influence the

²⁶ ANTONOPOULOS, GILLAM, "Cloud Computing Principles, Systems and Applications", cit., pp. 6-7.

²⁷ Yuliya SHAPTUNOVA, *4 Best Cloud Deployment Models Overview*, in "Sam Solutions", 2023 www.sam-solutions.com/blog/four-best-cloud-deployment-models-you-need-to-know/ (accessed 18/03/2023).

²⁸ Tim MAURER, Garrett HINCK, "What Is the Cloud?", *Cloud Security: A Primer for Policymakers*, Carnegie Endowment for International Peace, 2020, p. 10.

²⁹ O. A. AKINTOMIDE, "Cloud computing: The third revolution in IT", *Library Progress (International)*, vol. 33, issue 1, 2013, p. 77.

³⁰ Yushi SHEN, Jie YANG, Tayfun KESKIN, "The Evolution of IT towards Cloud Computing in China and U.S.", *2012 International Conference on Computational Problem-Solving (ICCP)*, 2012, p. 224.

development of the cloud industry there are not only technical aspects such as the storing capacity or the financial strength of all the parties involved, but are included factors such as the geographical areas in which a given cloud system is developed and the cultural differences that drive the business ecosystem. Many scholars of the caliber of Hofstede, in his publication “Culture and Organizations”³¹, McCoy, Galletta and King in their publication “Integrating National Culture into IS Research: The Need for Current Individual Level Measures”³², claim that cultural factors at different levels, ranging from the national and organizational levels to groups and individuals, can exert a substantial impact on the advancement, adoption, and utilization of information technology. Consequently, variations in culture can lead to divergent outcomes in the realm of IT. In 2012, an interesting study was made by a scholar of the University of Washington, Tayfun Keskin, and two senior employees of Microsoft corporation, Yushi Shen and Jie Yang, in order to study the cultural differences between US and China with regard to the development of cloud computing in terms of six different cultural dimensions, and which impact have on cloud computing. As opposed countries in basically all the dimensions involved, the study analyzed the two countries in terms of current IT status, long term orientation, government driven vs market driven, locus of control, power distance, individualism vs collectivism:³³

- *Current IT status*: the US are defined as a leading country in the cloud computing industry, whereas China is relegated in the role of follower. This difference in the current IT status of the two countries forecasts distinct cloud computing ecosystems in the future, as leading companies in the cloud industry such as Amazon, Google and Microsoft are based in the US and have pioneered cloud services such as AWS, Google App Engine, and Windows Azure Platform. On the contrary, the Chinese cloud ecosystems primarily relies on application-focused giants like Baidu and Tencent, with an important lack of global computer companies. However, China's strength lies in its state-owned telecom operators, China Mobile, China Telecom, and China Unicom, with vast customer bases that surpass even the U.S. population. In this context and with these premises, the U.S. is likely going to lead the core Cloud Server technologies sector, whereas China will likely dominate in terms of sheer user numbers.

³¹ Geert HOFSTEDE, “Culture and Organizations”, *International Studies of Management & Organization*, vol. 10 (4), 1980, pp. 15-41.

³² Scott MCCOY, Dennis F. GALLETTA, William R. KING, “Integrating National Culture into IS Research: The Need for Current Individual Level Measures”, *Communications of the Association for Information Systems*, vol. 15 (12), 2005.

³³ SHEN, YANG, KESKIN, “The Evolution of IT towards ...”, pp. 227-29.

- *Long Term Orientation (LTO)*: this dimension characterizes a society's time horizon, influencing values and behaviors. Long-term oriented societies prioritize the future and pragmatic values, while short-term oriented societies emphasize tradition and immediate obligations. The U.S. scores low on LTO (29), emphasizing tradition and fulfilling social obligations, leading to short-term business focus and quick results. In contrast, China scores high (118), valuing persistence and investing in long-term projects. Chinese society's ordered relationships and adaptable traditions reflect their LTO. Unlike the U.S., where business is driven by quarterly results, China's LTO-oriented approach is guiding long-term strategic planning for cloud computing.
- *Government Driven vs. Market Driven*: the economic approaches in the U.S. and China differ significantly, with the U.S. operating as a free market economy while China's government takes a proactive role in guiding economic development. This contrast extends to cloud computing as well. In the U.S., market forces drive cloud computing, resulting in prevalent public clouds that leverage economies of scale. Conversely, China's government-driven approach prohibits foreign companies from owning data in the country, leading to the absence of foreign public clouds. Instead, provincial governments are focusing on private or hybrid cloud strategies. The potential for public clouds in China lies primarily with state-owned telecom operators, benefiting from their extensive resources, control over channels, and a massive customer base, effectively creating a monopoly.
- *Locus of control*: this is a concept in personality psychology, reflects an individual's belief in their control over impacting events. It can be internal (self-controlled) or external (environment, others). Americans tend to attribute successes internally and failures externally, while Chinese individuals do the opposite. Chinese companies prioritize government leadership and compliance, with the government's role shaping success or failure. State-owned operators possess a competitive edge alongside their extensive resources and customer base. In contrast, U.S. companies hold the belief that their success or failure is within their own control.
- *Power distance*: this dimension represents a concept in organizational and cultural analysis and reflects the acceptance of unequal power distribution. Low power distance cultures, like the U.S., emphasize equality and participation, while high power distance cultures, such as China, embrace hierarchical authority. In the U.S., hierarchy is

practical, superiors are accessible, and communication is direct. China, with a high power distance score (80), tolerates inequalities and formal authority holds sway. The power distance impacts the influence of government officials on enterprise decisions, notably in cloud computing development.

- *Individualism vs. Collectivism*: individualism, a dimension of cultural analysis, assesses how individuals integrate into groups. In individualistic societies, personal achievements and rights are emphasized, while collectivist cultures prioritize group loyalty. The U.S. scores high (91) as an individualistic culture, valuing self-sufficiency and personal initiative. Geographical mobility and interactions with strangers are common, fostering proactive communication. Conversely, China scores low (20) as a collectivist culture, where group interests prevail over individual concerns. Hiring and promotions prioritize in-group relationships, and employee commitment to the organization is lower. These cultural differences shape the cloud computing landscape, with the U.S. likely to see dominance from individual companies like Microsoft, Google, IBM, and HP, while in China, government and well-connected state-owned telecom operators are likely to be the key players.

The diversity in cultures and business practices among different countries has led to the creation of a variegated legal environment with regard to the cloud industry. Indeed, cloud computing has brought new concerns in terms of data protection and cross-border data transfer, and the decision-makers of the respective countries has treated the matter differently. In this thesis we will focus on the Chinese legal environment, pointing out the various efforts undertaken by the Chinese policy-makers in order to regulate the provision of cloud services and to foster the development of this strategic sector.

2.1 Guidelines and policies supporting the development of cloud computing

The Chinese cloud sector has been promoted by Chinese authorities through a variety of guidelines and policies aimed at reducing the technological gap between China and already industrialized countries in advanced and innovative technology industries, as highlighted by the European Commission.³⁴ In this section we will present the major efforts made by the Chinese decision-makers in terms of guidelines and policies to enhance the quality of Chinese

³⁴ *Advanced Technologies for Industry – Report on China*, “International Reports”, European Commission, 2020, p. 7.

cloud services and the relative providers. Our analysis will be divided according to the year of promulgation of the relevant guidelines and policies by Chinese authorities at each level of government.

In 2010, the National Development and Reform Commission and the Ministry of Industry and Information Technology issued a joint notice titled “Notice on Promoting Innovative Development of Cloud Computing Services”.³⁵ The notice was aimed at strengthening the top-level design and scientific layout for the innovative development of cloud computing in China, and promoting the construction of cloud computing centers according to the peculiarities of different regions. After thorough research, the National Development and Reform Commission and the Ministry of Industry and Information Technology proposed to carry out pilot demonstration work for the innovative development of cloud computing in five cities: Beijing, Shanghai, Shenzhen, Hangzhou, and Wuxi. The pilot demonstration contents include the developing of SaaS, PaaS and IaaS services tailored to various user needs, fostering collaboration among enterprises, academia, and research to advance virtualization, distributed storage, and data management technologies. The notice provided the formation of a national cloud computing industry alliance to promote collaborative innovation, which was later fund in 2013 by Tsinghua University, Peking University and the Center for International Economic and Technological Cooperation under the Ministry of Industry and Information Technology.³⁶ In more practical terms, the notice required to develop implementation plans for cloud computing innovation, customized to local industrial characteristics and advantages, which then would be submitted to national authorities by a specified date. These pilot projects will then be executed, promptly addressing challenges and proposing policy measures, in collaboration with relevant departments to share experiences and replicate successful models. In October of the same year, the State Council released the “Decision on Accelerating the Cultivation and Development of Strategic Emerging Industries”.³⁷ The focus on this document is concentrated on the importance of developing emerging industries in order to guide future economic and social development, in that these industries play a significant role

³⁵ National Development and Reform Commission and the Ministry of Industry and Information Technology, *Guanyu zuohao yun jisuan fuwu chuangxin fazhan shidian shifan gongzuo de tongzhi* 关于做好云计算服务创新发展试点示范工作的通知 (Notice on Promoting Innovative Development of Cloud Computing Services), 2010.

³⁶ Xinhua, *China sets up cloud computing industry alliance*, in “China Daily”, 2013, www.chinadaily.com.cn/business/tech/2013-11/13/content_17103831.htm (accessed 05/01/2023).

³⁷ State Council, *Guanyu jiaokuai peiyu he fazhan zhanluexing xinxing chanye de jue ding* 关于加快培育和发展战略性新兴产业的决定 (Decision on Accelerating the Cultivation and Development of Strategic Emerging Industries), 2010.

in economic growth and technological advancement on a global scale. Cloud industry is listed in the document as one of the strategic emerging industries, along with nurturing industries like energy conservation, environmental protection, next-generation information technology, biotechnology, high-end equipment manufacturing, new energy, new materials, and new energy vehicles. At the local level, the Shanghai Municipal Commission of Economy and Informatization issued a notice on “Shanghai's Action Plan for Promoting the Development of the Cloud Computing Industry (2010-2012)”.³⁸ Stemming from the provisions of the 11th five-year plan, the Shanghai Municipal Commission of Economy and Informatization provided detailed specifications to implement such provisions in a context of growth and development of Shanghai's information service industry. The implementation shall be guided by principles of priority development strategy, focusing on high-end and distinctive aspects enhancing software industry development.

In 2011, the National Development and Reform Commission and the Ministry of Industry and Information Technology jointly published a document titled “Guiding Opinions on Accelerating the Development of the High-Tech Service Industry”.³⁹ The opinions highlighted the importance of developing the high-tech service industry, in order to expand domestic demand and to foster job creation in strategic emerging industries, optimizing industrial structure. The development is guided by the principles set out by Deng Xiaoping, as well as other scientific development principles such as the “three represents”, setting the goal to transform the sector in a growth driver that would enhance the economic structural adjustment and transformation. This document explicitly identifies the cloud computing industry as a key player in the future high-tech service industry, along with mobile internet and internet of things. In the same year, several cloud computing demonstration projects in Shanghai were among the first to be implemented, overcoming challenges in cloud computing applications and denoting the central and crucial role of the city in the implementation and testing of this new technology. Various high-tech companies took part in the demonstration projects, releasing cloud computing solutions and public service platforms. Among the companies that participated, there were Huadong Computer, PwC Software, Zhongbiao

³⁸ *Shanghai tuijin yun jisuan chanye fazhan xingdong fang'an* 上海推进云计算产业发展行动方案 (Shanghai's Action Plan for Promoting the Development of the Cloud Computing Industry (2010-2012), 2010.

³⁹ State Council, *Guanyu jiakuai fazhan gao jishu fuwuye de zhidao yijian* 关于加快发展高技术服务业的指导意见 (Guiding Opinions on Accelerating the Development of the High-Tech Service Industry), 2011.

Software, Dongfang Tongtai, and 21Vianet.⁴⁰ Collaborations with technological companies and enterprises such as Neusoft Group, Inspur Software, Wanda Information, and Huawei, promoted the demonstration and application of cloud computing. Following the initiative carried on by the Ministry of Industry and Information Technology (MIIT) and the National Development and Reform Commission (NDRC) to initiate cloud computing pilot demonstrations in five cities including Beijing, Shanghai, and Shenzhen, the first batch of funding support for the cloud computing application demonstration projects in these five cities has also been approved. In 2010, Shanghai has announced the “Implementation Measures for Financial Support for the Shanghai Cloud Computing Industry Base”, establishing a special fund to support the development of the cloud computing industry.⁴¹ In July of the same year, the Chengdu Municipal People's Government issued a notice on the “Twelfth Five-Year Plan Outline for Chengdu's Cloud Computing Application and Industrial Development”. As the name of the notice suggests, the aim of the document was to accelerate the construction of cloud computing infrastructure, promote widespread cloud computing applications, and foster the development of the cloud computing industry are significant initiatives for the city of Chengdu to adhere to the “dual emphasis on industrialization and informatization” development strategy, and to expedite the establishment of smart cities and a western communication hub, according to the provision of the 12th five-year plan.⁴²

In 2012, the Ministry of Industry and Information Technology published the “Twelfth Five-Year Plan for the Development of the Telecommunications Industry”⁴³, where the telecommunications sector is depicted as a strategic, foundational, and pioneering sector in building the national information infrastructure, playing a significant role in driving the transformation and upgrading of traditional industries, promoting strategic adjustments in the economic structure, enhancing the level of national informatization, and building a well-off society in an all-around way. The plan served as an important guide for the future development over the telecommunications industry in the following five years, enhancing the

⁴⁰ *Youguan yun jisuan de xiangguan falu fagui (guanyu yun jisuan de falu fagui)* 有关云计算的相关法律法规(关于云计算的法律法规) (Relevant Laws and Regulations on Cloud Computing), in “Itanlian”, 2023, www.itanlian.com/learn/other/70949.html (accessed 01/08/2023).

⁴¹ *Fagai wei zhongjin fuchi yun jisuan shou pi qiantou qiye mingdan quanding* 发改委重金扶持云计算 首批牵头企业名单圈定 (NDRC Provides Strong Financial Support for Cloud Computing, First Batch of Leading Enterprise List Defined), in “Shanghai zhengquanbao”, 2011, www.manulifefund.com.cn/Info/515266 (accessed 11/08/2023).

⁴² *Chengdu shi yun jisuan yingyong yu chanye fazhan “shierwu” guihua gangyao* 成都市云计算应用与产业发展“十二五”规划纲要 (Twelfth Five-Year Plan Outline for Chengdu's Cloud Computing Application and Industrial Development), 2011.

⁴³ See Ministry of Industry and Information Technology, *Tongxin ye “shierwu” fazhan guihua* 通信业“十二五”发展规划 (Twelfth Five-Year Plan for the Development of the Telecommunications Industry), 2012.

level of economic and social informatization, guiding the behavior of market entities, and allocating government public resources. In this context, cloud computing is regarded as a key technology and a key development direction for building national-level information infrastructure, achieving integration and innovation, and promoting energy conservation and emissions reduction. China saw this period as a critical strategic opportunity phase and urgently requires strategic support from the nation to accelerate the construction of key infrastructure, that comprehend, in addition to public cloud computing service platforms, also fiber optic broadband networks, next-generation mobile communication networks, next-generation Internet. Among the specific provision of the plan, there are the formulation of cloud computing standards, the transformation of traditional Internet data centers into cloud computing service infrastructure, the organization of cloud computing service demonstrations aimed at accelerating the widespread application of cloud computing technology in key areas, and the construction of the cloud computing industry chain. With the same logic of the aforementioned plan, in May of the same year the Ministry of Industry and Information Technology issued two additional plan regarding the development of the internet industry⁴⁴ and the development of the software and information technology service industry⁴⁵, that respectively emphasized that the industrialization of China's cloud computing services should be accelerated, with service innovation driving technological innovation, and demonstration applications boosting capabilities to promote the development of cloud computing service models, and listed the Cloud Computing Innovation and Development Project as one of the eight major projects, in order to accelerate the industrialization of China's cloud computing services, with service innovation driving technological innovation, and demonstration applications boosting capabilities to promote the development of cloud computing service models. In July 2012, the State Council released the “Twelfth Five-Year Plan for the Development of Strategic Emerging Industries,”⁴⁶ which supports cloud computing as an important direction for the development of the new generation of information technology industry and emerging formats. The Internet of Things and cloud computing projects were

⁴⁴ Ministry of Industry and Information Technology, *Hulianwang hangye “shierwu” fazhan guihua* 互联网行业“十二五”发展规划 (Twelfth Five-Year Plan for the Development of the Internet Industry), 2012.

⁴⁵ Ministry of Industry and Information Technology, *Ruanjian he xinxi jishu fuwu ye “shierwu” fazhan guihua* 软件和信息技术服务业“十二五”发展规划 (Twelfth Five-Year Plan for the Development of the Software and Information Technology Services Industry), 2012.

⁴⁶ State Council, *“Shierwu” guojia zhanluexing xinxing chanye fazhan guihua* “十二五”国家战略性新兴产业发展规划 (Twelfth Five-Year Plan for the Development of National Strategic Emerging Industries), 2012.

listed as twenty key projects for China's Twelfth Five-Year Plan. In addition to the guiding efforts and principles put in place by the Ministry of Industry and Information Technology, in September 2012 the Ministry of Science and Technology published the “Twelfth Five-Year Special Plan for China's Cloud Technology Development”,⁴⁷ which represents China’s first ministerial-level special plan for cloud computing. The plan holds significant importance for accelerating cloud computing technological innovation and industrial development. At the local level various projects have been implemented to foster investment in the cloud computing sector, such as the “Investment Guide for Chengdu Cloud Computing Encouragement Projects (2012)”, which focused on encouraging the construction of three types of cloud computing projects: basic industry projects, service platform projects, and industry support projects. The guide states that key technology and core equipment research and development projects in cloud computing will be prioritized and arranged for support under special science and technology funds by the science and technology departments.⁴⁸ The same investment-oriented guidelines have been implemented also by the city of Wuxi with its “Wuxi Internet of Things and Cloud Computing Industry Fund Management Method (2012)”⁴⁹ and by Guangdong province with its “Accelerating the Promotion of Cloud Computing Development in Our Province”.⁵⁰

In 2015, the State Council promulgated the “Opinions of the State Council on Promoting the Innovative Development of Cloud Computing and Cultivating New Business Forms of the Information Industry”, where it highlighted the need for the development of the cloud industry in China and it acknowledged the gap in core technologies and an insufficient opening and sharing of resources, as well as security issues. In the document, five guiding principles were emphasized, in order to encourage the adoption of cloud computing by Chinese enterprises and to foster the development of local companies in the industry. These four principles are:

⁴⁷ Ministry of Science and Technology, *Zhongguo yun keji fazhan “shierwu” zhuanxiang guihua* 中国云科技发展“十二五”专项规划 (Twelfth Five-Year Special Plan for China's Cloud Technology Development), 2012.

⁴⁸ *Chengdu chutai zhengce guli yun jisuan xiangmu jianshe* 成都出台政策 鼓励云计算项目建设 (Chengdu Introduces Policies to Encourage Cloud Computing Project Construction), in “ECCN”, 2012, news.eccn.com/news_2012010510481899.htm (accessed 16/08/2023).

⁴⁹ Wuxi Municipal People's Government, *Shi zhengfu guanyu jiakuai chanye zhuanxing shengji cujin jinji you hao you kuai fazhan de zhengce yijian* 市政府关于加快产业转型升级促进经济又好又快发展的政策意见 (Policy Opinions of the Municipal Government on Accelerating Industrial Transformation and Upgrading to Promote Fast and Healthy Economic Development), 2012.

⁵⁰ General Office of the People's Government of Guangdong Province, *Guanyu jiakuai tuijin wosheng yun jisuan fazhan de yijian* 关于加快推进我省云计算发展的意见 (Accelerating the Promotion of Cloud Computing Development in Our Province), 2012.

- *Market orientation*: companies operating in the sector should develop different type of services in accordance with market demand, and the government intervention should be limited.
- *Overall coordination*: there must be coordination between different regions and the development of data centers across the country should be scheduled according to market demand.
- *Innovation-driven*: innovation in terms of technology and management, with innovative business forms, shall be strengthen. International cooperation should be encouraged to improve innovation capability.
- *Security guarantee*: the overall security of information and big data processing, as well as storage protection shall be improved, in order to enhance the security of cloud computing.

The guidelines also established two deadlines for achieving the aforementioned goals in the development of the domestic cloud computing industry. By 2017, both domestic companies and their level of technological capability were expected to reach a level close to that of international advanced standards, with the ultimate benchmark of successfully reaching that level by 2020.⁵¹

In the 13th five-year plan promulgated in 2016, cloud computing is mentioned multiple times as one of the most important projects for the development of Chinese digital economy and for the digitalization of the country.⁵²

Subsequently, in 2017, the Ministry of Industry and Information Technology set up a three-year action plan for cloud computing development that integrated the previous opinions of the State Council, setting the goal for the Chinese cloud industry of reaching a market share of RMB 430 billion by 2019. The plan is also aimed at building strong Chinese brands in cloud industry and to gain awareness globally.⁵³ Along with the three-year action plan, in 2018 the National Development and Reform Commission made an agreement with China

⁵¹ State Council, *Guanyu cujin yun jisuan chuangxin fazhan peiyu xinxi chanye xin yetai de yijian* 关于促进云计算创新发展培育信息产业新业态的意见 (Opinions of the State Council on Promoting the Innovative Development of Cloud Computing and Cultivating New Business Forms of the Information Industry), 2015.

⁵² *Zhonghua renmin gongheguo guomin jingji he shehui fazhan di shisan ge wu nian guihua gangyao* 中华人民共和国国民经济和社会发展第十三个五年规划纲要 (Outline of the 13th Five-Year Plan for National Economic and Social Development of the People's Republic of China), 2016.

⁵³ *Big News: Chinese Cloud Computing Development 3-Year Action Plan in One Picture – Here Come Great Opportunities for Self-Owned Cloud Brands*, in “Shanghai Data Solution”, 2017, www.shuxun.net/en/site/newsDetail/277 (accessed 30/01/2023).

Development Bank to invest €13 billion into Cloud Computing and related projects until 2023.⁵⁴

Cloud computing was one of the main technologies that the Ministry of Industry and Information Technology required company to adopt in order to recover from the COVID-19 pandemic. Thanks to its flexibility and scalability, cloud computing can drive innovation and make business processes more efficient, but the role of government in adopting such technology is crucial, especially for small and medium enterprises.⁵⁵

Later integrations on the promotion of cloud computing have been made in the 14th Five-Year Plan, where China aims to expand its digital economy, with the added-value of its core industries reaching the level of 10% of GDP by 2025.⁵⁶ Other references for the promotion of cloud computing can be found in the “Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and the Long-Range Objectives Through the Year 2035”, in the “14th Five-Year Plan for the Development of Software and Information Technology Services Industry” and in the “14th Five-Year Plan for the Development of the Digital Economy”. These documents contain China’s long-term economic, social and environmental goals, and once again highlight the central role of cloud computing in the development of Chinese digital economy, fostering integration between digital technology and real economy.⁵⁷

2.2 Current situation and future predictions for the Chinese cloud market

China’s digital economy is growing at a fast pace, with the Chinese cloud industry achieving the world’s fastest growth rate and representing the second world largest market after the United States. The need for elastic computing resources is the main driver for cloud adoption by Chinese companies, along with the need for scalability to support business growth, increased IT efficiency, availability and resiliency. The vast majority of early cloud adopters in China have been consumer-facing companies, which need elastic computing resources and flexible solutions to face huge fluctuations in customer demand, especially on commercial events such as China’s Singles Day, where e-commerce traffic and transactions

⁵⁴ *Advanced Technologies for Industry – Report on China*, “International Reports”, European Commission, 2020, p. 7.

⁵⁵ ZHANG Ge, WANG Weijie, LIANG Yikai, “Understanding the Complex Adoption Behavior of Cloud Services by SMEs Based on Complexity Theory: A Fuzzy Sets Qualitative Comparative Analysis (fsQCA)”, *Complexity*, 2021, pp. 13-14.

⁵⁶ State Council, *Plan focuses on digital economy development during 14th Five-Year Plan period*, in “Xinhua”, 2022, english.www.gov.cn/policies/latestreleases/202201/12/ (accessed 23/02/2023).

⁵⁷ *Yun jisuan baipishu* 云计算白皮书 (White paper on cloud computing), China Academy of Telecommunication Research of MIIT, 2022.

volume can reach up to 30 times normal daily amount. Despite that, according to the analysis of McKinsey, the next wave of migration to the cloud will be led by China's critical industrial and manufacturing sectors, which count for more than a quarter of China's GDP.⁵⁸

The peculiar feature of the Chinese cloud market is its high proportion of private cloud, which is projected to account for 42% by 2025, whereas public cloud is expected to account for 36%. The two projections together account for a total increase of 19% in the shifting to cloud services from traditional servers in the period 2021-2025⁵⁹.

Chinese companies have a skeptical approach towards public cloud, which is regarded as less secure and not suitable for highly regulated sectors such as financial services. As a result, out of 278 decision makers interviewed by McKinsey, only 11% would choose a pure public cloud solution, with the remainder opting either for a combination between private cloud and traditional servers or a hybrid cloud solution. Chinese companies prefer one-off or up-front payment solutions when choosing their IT strategy and are keener to choose multiple cloud service providers according to their strengths.

Chinese companies are not willing to pay for the software, as demonstrated by the small size of the Chinese SaaS market, with a forecasted revenue for 2023 of \$16.32 billion⁶⁰, a tiny fraction compared to the US market.⁶¹ On the other hand, IaaS is the largest segment, with a projected market value of \$34.16 billion for the same period.⁶² With regard to the barriers to cloud adoption, the critical point recognized by the vast majority of organizations is the cost and difficulty of migration, followed by security and regulatory compliance concerns.

The most relevant increase in cloud adoption is forecasted to take place in the so-called "Followers" and "Laggards" categories, which include companies with an adoption rate below 70% that have just started their cloud migration and still lack of road maps and support for the process.

The adoption rate is higher in consumer-facing functions, such as marketing and sales and service operation, compared to internal functions such as logistics, manufacturing, and risk, which have a lower adoption rate. Overall, the functions with the highest potential increase

⁵⁸ Kai SHEN, Anand SWAMINATHAN, Xiaoxiao TONG, Kevin Wei WANG, *Cloud in China: The outlook for 2025*, in "McKinsey Digital", 2022, www.mckinsey.com/capabilities/mckinsey-digital/our-insights/cloud-in-china-the-outlook-for-2025 (accessed 05/04/2023).

⁵⁹ *Ibid.*

⁶⁰ *Public Cloud – China*, in "Statista", 2022, www.statista.com/outlook/tmo/public-cloud/china (accessed 05/04/2023).

⁶¹ SHEN, SWAMINATHAN, TONG, WANG, "Cloud in China...".

⁶² *Public Cloud – China*, in "Statista", 2022, www.statista.com/outlook/tmo/public-cloud/china (accessed 05/04/2023).

in adoption of cloud solutions are marketing and sales, service operations, product development, supply chain, manufacturing and human resources.

The vast majority of Chinese enterprises prefer to adopt cloud services of Chinese providers. Nearly 70% of the Chinese companies surveyed by McKinsey express a strong preference for domestic cloud services providers. However, 30% of the sample is open to evaluate foreign providers, basing their choice on a series of buying factors such as cybersecurity and data compliance, performance and technical requirements, key account, and operations support among others. Foreign cloud providers will need to provide a competitive solution, considering the peculiarities of the Chinese cloud market and offering support to the migration to cloud, especially in the public cloud segment, which accounts for 45% of the addressable market for international companies.⁶³

2.3 Major Chinese cloud service providers

The major players in the Chinese cloud market are Alibaba Cloud, Huawei Cloud, Tencent Cloud and Baidu AI Cloud, which collectively account for almost 80% of total expenditure on cloud services as of Q2 2022.⁶⁴

- *Alibaba Cloud*: established in September 2009, the same year as the Alibaba group's 10th anniversary, Alibaba Cloud (*Aliyun* in Chinese) is the largest public cloud service provider in China, accounting for 34% of China's cloud infrastructure service spend as of Q2 2022⁶⁵. Alibaba Cloud provides cloud-based and data-centric services to both external small and medium-sized businesses (SMBs) and also to various internal divisions within the Alibaba Group.⁶⁶ Alibaba Cloud started providing its cloud services in 2011 with a strong value proposition in IaaS service model, acquiring leading companies in the internet infrastructure services sector such as HiChina.⁶⁷ In 2014, Alibaba Cloud was the first cloud provider to be awarded by the British Standard Institute with the CSA STAR Gold Certification for cloud security, which boosted customer confidence and the company's global reputation.⁶⁸

⁶³ *Cloud services spend in China hits US\$7.3 billion in Q2 2022*, in "Canalys", 2022, www.canalys.com/newsroom/china-cloud-market-Q2-2022 (accessed 07/04/2023).

⁶⁴ *Ibid.*

⁶⁵ *Ibid.*

⁶⁶ Gongtao ZHANG, M.N. RAVISHANKAR, "Exploring vendor capabilities in the cloud environment: A case study of Alibaba Cloud Computing", *Information & Management*, Vol. 56, Iss. 3, 2019, p. 343.

⁶⁷ *Ibid.*

⁶⁸ *Aliyun first to achieve CSA STAR Gold Certification*, in "British Standard Institute", 2014, www.bsigroup.com/en-GB/about-bsti/media-centre/press-releases/ (accessed 08/04/2023).

- *Huawei Cloud*: with a market share of 19% as of Q2 2022, Huawei Cloud is the second largest Chinese cloud services provider. It focusses its operations both in upstream and downstream industries, providing cloud solutions in sector that historically have been less keen to digital innovation such as industrial, government, utilities, mining, and education. Huawei Cloud masters the data localization process, and so it represents the ideal partner for overseas cloud providers willing to enter the Chinese market.⁶⁹
- *Tencent Cloud*: the cloud division of the Chinese video games giant occupies the third place in the Chinese market with a 17% share as of Q2 2022.⁷⁰ The company supports the development not only of already established businesses but also provides financial support and training resources to startups through its Tencent Cloud Startup Program.⁷¹
- *Baidu AI Cloud*: the fourth place is occupied by Baidu AI Cloud, which has a market share of 9% as of Q2 2022.⁷² Apart from providing a wide range of cloud services, Baidu AI Cloud supports and lead the innovation in the artificial intelligent sector with the highest number of AI patent applications in China.⁷³

3. Regulatory framework for domestic enterprises

3.1 Legal classification of cloud services

The general framework for telecommunication services in China is outlined in the Telecommunications Regulations of the People’s Republic of China, which encompasses the licensing, collection of fees, interconnection, operation, and regulation for telecommunication services providers within the territory of mainland China.⁷⁴ In the second chapter of the Telecommunication Regulations, the policymaker has divided telecommunications businesses into two categories, which are basic telecommunication businesses and value-added telecommunication businesses.

- *Basic telecommunication businesses*: they provide public network infrastructure, services for public data transmission and basic voice telephony services.

⁶⁹ *Cloud services spend in China hits US\$7.3 billion in Q2 2022*, in “Canalys”, 2022, www.canalys.com/newsroom/china-cloud-market-Q2-2022 (accessed 07/04/2023).

⁷⁰ *Ibid.*

⁷¹ *Startup Program*, in “Tencent Cloud Official Website” www.tencentcloud.com/campaign/startupprogram?exit (accessed 07/04/2023).

⁷² *Cloud services spend in China hits US\$7.3 billion in Q2 2022*, in “Canalys”, 2022, www.canalys.com/newsroom/china-cloud-market-Q2-2022 (accessed 07/04/2023).

⁷³ Baidu AI Cloud Official Website, intl.cloud.baidu.com/ (accessed 07/04/2023).

⁷⁴ State Council, *Zhonghua renmin gongheguo dianxin tiaoli* 中华人民共和国电信条例 (Telecommunications Regulation of the People’s Republic of China), 2000.

- *Value-added telecommunication businesses*: they provide telecommunications and information services using public network infrastructure.⁷⁵

Further categorization of telecommunication services based on this division is set forth in the Classified Catalogue of Telecommunications Services, released by the Ministry of Industry and Information Technology in 2015, and attached to the Telecommunications Regulations. The Catalogue became effective in 2016 and was created with the intent of adapting to new technological development and fostering the opening up of the telecommunication sector.⁷⁶ Cloud services are defined in Section B “Value-added telecommunication services” (VATS) category B11 “Internet Data Center Services (IDC)”. There is a general consensus that the phrase “internet resources collaboration services” (IRCS), included in the definition of IDC services, refers to cloud services.⁷⁷ This is particularly evident as IRCS refer to all sort of internet services, ranging from data storage, internet application development environment, internet application deployment, provided through the internet and that users can access at any time, scalable as needed and shared in a collaborative manner. All these features are provided thanks to equipment and resources located on the data center.⁷⁸

The Administrative Measures on Telecommunications Business Permits introduces a further distinction of value-added telecommunications businesses based on their geographic scope. The document distinguishes between businesses that operates at the local level, within the scope of a province, autonomous region, or centrally-administered municipality, and businesses operating nationwide or across provinces, autonomous regions or centrally-administered municipalities.⁷⁹ Each of these two categories have different requirements in terms of operating permits that will be discussed in the following paragraph.

⁷⁵ State Council, *Zhonghua renmin gongheguo dianxin tiaoli* 中华人民共和国电信条例 (Telecommunications Regulation of the People’s Republic of China), 2000.

⁷⁶ Ministry of Industry and Information Technology, *Guanyu fabu “dianxin yewu fenlei mulu (2015 nian ban)” de tongzhi* 关于发布《电信业务分类目录(2015年版)》的通告 (Announcement of the Ministry of Industry and Information Technology on Promulgating the Classification Catalogue of Telecommunications Services (Version 2015)), 2015.

⁷⁷ Giulia INTERESSE, *China’s Cloud Computing Market: Developments and Opportunities for Foreign Players*, in “China Briefing”, 2022, www.china-briefing.com/news/chinas-cloud-computing-developments-and-opportunities/ (accessed 05/05/2023).

⁷⁸ Ministry of Industry and Information Technology, *Dianxin yewu fenlei mulu (2015 nian ban)* 电信业务分类目录 (2015年版) (Classification Catalogue of Telecommunications Services (Version 2015)), 2015.

⁷⁹ State Council, *Dianxin yewu jingying xuke guanli banfa* 电信业务经营许可证管理办法 (Administrative Measures on Telecommunications Business Permits), 2017.

3.2 Licensing system for value-added telecommunication businesses

The Telecommunications Regulations of the People's Republic of China introduces a licensing system for all the companies that want to provide basic and value-added telecommunications services within the territory of mainland China. As mentioned in the previous paragraph, cloud services providers fall into the scope of value-added telecommunications businesses, and therefore shall obtain an operating permit according to their business scope. Two distinct operating permits are defined in art. 9 of the Telecommunications Regulations:

- *Operating Permit for Inter-Regional Value-Added Telecommunications Business*: this permit must be obtained by all the value-added telecommunication businesses that have operations across two or more provinces, autonomous regions or centrally-administered municipalities, prior to the examination and approval of the supervisory department for the information industry under the State Council.
- *Operating Permit for Value-Added Telecommunications*: this permit must be obtained by all the value-added telecommunication businesses that operate within one province, autonomous region or centrally-administered municipalities, prior to the approval of the telecommunications administration authority of the province, autonomous region or centrally-administered municipality.

Art. 13 of the Telecommunications Regulations provides that a company operating in the value-added telecommunication sector shall be legally incorporated, shall have the appropriate funds and personnel to conduct its business activities, shall have the reputation or the capability of providing long-term services to its users, along with other conditions and requirements defined by other national legislation. Art. 14 provides that companies willing to apply for an operating permit in the value-added telecommunication sector shall submit the document set forth in art. 13 to the relevant authorities, according to the division of the operating permit outlined in art. 9. Within 60 days the relevant authorities will decide to approve or reject the application.

Additional provisions on operating permits for value-added telecommunication businesses are outlined in the Administrative Measures on Telecommunications Business Permits (电信业务经营许可管理办法), which were implemented on September 1, 2017. At the same time,

the previous version published in 2009 has been abrogated.⁸⁰ These measures apply to every stage of the application process, as well as the evaluation, usage and management of operating permits that take place within the territory of China. In addition to the requirements outlined in the Telecommunications Regulations, this document establishes the requirement for minimum registered capital: value-added telecommunication businesses that operate within one province, autonomous region or centrally-administered municipalities shall have a minimum registered capital of RMB1 million, whereas value-added telecommunication businesses that have operations across two or more provinces, autonomous regions or centrally-administered municipalities shall have a minimum registered capital of RMB10 million. Companies shall have appropriate facilities, land and technology, and shall not be included in the list of dishonest telecommunications business operators, including main investors and management personnel.⁸¹

The measures specify all the necessary documents to obtain the operating permit in the value-added telecommunication sector, including a written application signed by the legal representative of the company that comprises general information about the organization, business development and implementation plan and technical plan, networking and information security protection measures among others.⁸² It is important to notice that value-added telecommunication services are treated differently from basic telecommunication services in terms of share owning and minimum registered capital, as well as documents to be submitted during the application for the operating permit. Indeed, no less than 51% of the shares or equity of basic telecommunication businesses must be held by the State, and the minimum requirement for the registered capital for businesses operating at a local level and across provinces is respectively RMB100 million and RMB1 billion,⁸³ which is 100 times more than the capital requirements for value-added telecommunication businesses.

This could be explained by the higher sensitiveness of basic telecommunications, as they involve the construction of the public network infrastructure and therefore the need for a higher level of state control and a higher capital investment. This could also be seen as an incentive for the establishment of value-added telecommunications companies, with no restrictions in terms of share owning and lower level of minimum registered capital, along

⁸⁰ Ministry of Industry and Information Technology, *Dianxin yewu jingying xuke guanli banfa* 电信业务经营许可证管理办法 (Administrative Measures on Telecommunications Business Permits), 2017, Chapter 9, Annex.

⁸¹ *Ibid.*

⁸² *Ibid.* Art. 8.

⁸³ *Ibid.*

with the relatively easier procedure for obtaining the operating permit. These conditions are in line with the strategic objective of developing the Chinese digital economy in order to close the gap with other industrialized countries.

In November 2016, the MIIT published the Notice on the Regulation of Cloud Service Market's Business Conduct a document that summarize all the legal requirements for businesses operating in the cloud sector. This document once again stresses the necessity of obtaining an IDC VATS license for all the businesses that want to provide cloud services in China.^{84 85}

According to a report published by the China Academy of Information and Communications Technology, as of December 2019, the total number of value-added telecommunication businesses in China reached 78445, of which 19367 are inter-regional businesses and 59078 are businesses that operates within the scope of one province, autonomous region or centrally-administered municipalities. As of December 2019, 3210 IDC licenses were released, which represents the 3.26% of all the VATS licenses.⁸⁶

4. Data governance and compliance requirements

4.1 National legislation on data protection, data storage and cross-border data transfer

The Chinese regulatory framework on data protection has its roots back in 1994, when China gained full connectivity to the global internet and Chinese authorities soon started identifying and responding to potential threats to national security.⁸⁷

For the purpose of this thesis, the focus on data will be on matter such as data protection, data storage and cross-border data transfer. The three main laws promulgated by the Chinese policymakers and regulating these aspects are the Cybersecurity Law, the Data Security Law and the Personal Information Protection Law. With these three laws, the Chinese policymaker adopts a comprehensive approach to the managing of data, denoting an increasing attention on the matter, which needed to be regulated. The most recent update on the data protection

⁸⁴ Ministry of Industry and Information Technology, *Guanyu guifan yun fuwu shichang jingying xingwei de tongzhi* 关于规范云服务市场经营行为的通知 (Notice on the Regulation of Cloud Service Market's Business Conduct, 2016).

⁸⁵ CHINA: *Regulation of cloud services in China – What does it mean for your China business?*, in “DLA Piper”, 2016, blogs.dlapiper.com/privacymatters/china-regulation-of-cloud-services-in-china-what-does-it-mean (accessed 06/08/2023).

⁸⁶ China Academy of Information and Communications Technology, *Guonei zengzhi dianxin yewu xuke qingkuang fenxi baogao*, 国内增值电信业务许可情况分析报告 (Report on the current situation of domestic value-added telecommunications business permits), 2019.

⁸⁷ Rogier CREEMERS, “The Chinese Conception of Cybersecurity: A Conceptual, Institutional and Regulatory Genealogy”, *Journal of Contemporary China*, 2023, p. 3.

subject was the proposal of a new government agency to centralize the management of the vast amount of data stored within China, shifting from the current structure in which supervisory responsibilities are shared among multiple ministries.⁸⁸

4.1.1 Cybersecurity Law

The Cybersecurity law was the first of the three laws to be promulgated. It became effective on June 1, 2017, and in the first two articles it stated the aims and the scope of application of this law. The law was written with the intent of “ensuring cybersecurity, promoting the healthy development of the informatization of the economy and society” for a variety of activities related to cybersecurity within the mainland territory of the People’s Republic of China.⁸⁹ In Art.5 the law first mentions the Critical Information Infrastructure, which are later defined in Art.31 as infrastructures that “if destroyed, suffering a loss of function, or experiencing leakage of data—might seriously endanger national security, national welfare, the people’s livelihood, or the public interest”⁹⁰. Critical Information Infrastructures are protected by the State, which takes measures for preventing attacks, intrusions, interference, and destruction.⁹¹

Art. 21 of Chapter III introduces the cybersecurity multi-level protection system (MLPS) which consists in adopting measures such as data classification, backup of important data, encryption, and other technical and operating measures to ensure the stability and the security of the network.⁹²

Network product or service providers that collect user information are required, as per Art. 22 of this law, to clearly indicate the collection of user information and must obtain consent from the user. In case of user’s personal information, service providers must comply with the provisions of this law and other relevant laws and administrative regulations⁹³ that will be mentioned later in this chapter. An additional classification is outlined in Art. 23, which provide a “catalog of critical network equipment and specialized cybersecurity products”, jointly created by four departments and enacted on June 1, 2017, the same day as the

⁸⁸ Keith ZHAI, *China to Create New Top Regulator for Data Governance*, in “Wall Street Journal”, 2023, <https://www.wsj.com/articles/china-to-create-new-top-regulator-for-data-governance-c9317233> (accessed 07/07/2023).

⁸⁹ *Zhonghua renmin gongheguo wangluo anquan fa* 中华人民共和国网络安全法 (Cybersecurity Law of the People’s Republic of China) (hereinafter referred to as “Cybersecurity Law”, 2016).

⁹⁰ *Ibid.* Art. 31.

⁹¹ *Ibid.* Art. 5.

⁹² *Ibid.* Art. 28.

⁹³ *Ibid.* Art. 22.

Cybersecurity law.⁹⁴ The catalog lists 15 equipment and product types with detailed specifications that will be required to conduct security certifications and security inspections prior to entering the market.⁹⁵ Section 2 of Chapter III focuses on Critical Information Infrastructure (CII) that must be protected through the implementation of the cybersecurity multi-level protection system for public communication and information services and other CII. This article clearly states that information services, which comprises cloud services, are regarded as Critical Information Infrastructure, and so fall within the scope of security measures formulated by the State Council.⁹⁶ Art. 37 specifies that operators of Critical Information Infrastructure dealing with personal information or important data when conducting their operations within the mainland territory of the People's Republic of China, must store these information and data within mainland China, and only under special circumstances, where there is a true necessity and for business requirements, they can provide it outside the mainland, prior security assessment by the relevant authorities.⁹⁷ To conclude the analysis of the Cybersecurity law with regard to management of data by services providers, the latter must guarantee the confidentiality of user information collected and the publication of rules for collection and use of personal information, as regulated by Art. 40 and 41 in Chapter IV.⁹⁸

4.1.2 Data Security Law

The Data Security law became effective on September 1, 2021, and expands on the scope and regulatory potential of the Cybersecurity law.⁹⁹ Articles 1 and 2 outline the aim and scope of the law, which regulates data processing, ensures data security and promotes development and utilization of data. The peculiar characteristic of this law is its extra-territoriality nature, in that it not only regulates data processing activities within the territory of the People's Republic of China, but also provides that data processing outside the territory of People's Republic of China that has an impact on Chinese national security shall be investigated in

⁹⁴ Cybersecurity Law, Art. 23.

⁹⁵ Ministry of Industry and Information Technology, *Wangluo guanjian shebei he wangluo anquan zhuanong chanpin mulu* 网络关键设备和网络安全专用产品目录 (Catalog of critical network equipment and specialized cybersecurity products), 2017.

⁹⁶ *Ibid.* Art. 31.

⁹⁷ Cybersecurity Law, Art. 37.

⁹⁸ *Ibid.* Artt. 40-41.

⁹⁹ MéliSSa LAFITTE, *How do China's new data protection regulations impact multinational companies?*, in "Cloudi-Fi", 2022, www.cloudi-fi.com/blog/how-do-chinas-new-data-protection-regulations-impact-multinational-companies (accessed 11/02/2023).

accordance with the law.¹⁰⁰ ¹⁰¹ With regard to the telecommunications sector, competent departments in each sector must assume the responsibility for the supervision and the regulation of data security in their respective trades and sector, as provided by Art. 6.¹⁰²

Art. 21 states that a catalog of important data is required for every department in all localities and regions, as well as relevant industries and sectors, in order to give priority and strengthen the protection of important data¹⁰³, whereas in Art. 25 cross-border data flow is first mentioned in the law, as export of data that are controlled items and concern national security and interests, as well as the performance of international obligations are required to undergo an export control by the State.¹⁰⁴ Art. 31 and Art. 36 expand on the matter of cross-border data flow. Art. 31 outlines the responsibilities for outbound security management of important data collected or produced by both Critical Information Infrastructure operators (CIIOs) and other data processors within the territory of People's Republic of China. With regard to CIIOs, the provisions of the Cybersecurity law should apply¹⁰⁵ ¹⁰⁶, whereas for all the other data processors such measures shall be formulated by the national cyberspace authority in conjunction with the relevant departments under the State Council.¹⁰⁷ Art. 36 prohibits, without prior authorization from competent authorities, that data stored within the territory of the People's Republic of China are provided to any overseas judicial or law enforcement body.¹⁰⁸ These two articles are then combined with Art. 46 and Art. 48 of Chapter VI with regard to legal liability. Art. 46 states that whoever violates the provisions of Art. 31 providing important data abroad should be fined with a variable amount of pecuniary sanction according to the severity of the violation and may also have relevant business permits or the business license revoked.¹⁰⁹ This is particularly relevant in the case of value-added telecommunication businesses, as they are required to obtain an IDC VATS license in order to conduct their operations, as discussed in paragraph 3.2 of this chapter.¹¹⁰ Hence, VATS businesses must pay particular attention to compliance on cross-border data

¹⁰⁰ *Zhonghua renmin gongheguo shuju anquan fa* 中华人民共和国数据安全法 (Data Security Law of the People's Republic of China) (hereinafter referred to as Data Security Law), 2021, Artt. 1-2.

¹⁰¹ LAFITTE, "How do China's new data protection regulations...".

¹⁰² Data Security Law, Art. 6.

¹⁰³ *Ibid.* Art. 21

¹⁰⁴ *Ibid.* Art. 25

¹⁰⁵ See paragraph 4.1.1 of this chapter.

¹⁰⁶ Cybersecurity Law, Art. 37.

¹⁰⁷ Data Security Law, Art. 31.

¹⁰⁸ *Ibid.* Art. 36.

¹⁰⁹ *Ibid.* Art. 46.

¹¹⁰ See Chapter 1, paragraph 3.2.

flow, in order to maintain all the necessary legal requirements to continue their businesses in this sector. With the same logic, whoever violates the provisions of Art. 36 providing data to an overseas judicial or law enforcement body without obtaining the approval of the competent authorities should also be fined according to the seriousness of the circumstances and may also have relevant business permits and business license revoked.¹¹¹

4.1.3 Personal Information Protection Law

The most recent update to the legislation on the matter of data protection is the Personal Information Protection Law, hereinafter referred to as the "PIPL". This law, as clearly stated by its name and by Art. 1, is aimed at regulating the protection and the processing of personal information, as well as promoting their reasonable use. Therefore, it can be seen as an extension of the Data Security Law with regard to personal information protection.¹¹² The PIPL is strongly reminiscent of EU's GDPR¹¹³, even though they do not perfectly overlap, having both similarities and differences in different aspects such as applicable scope and cross-border data transfer.¹¹⁴

The law came into effect on November 1st, 2021, and is extraterritorial in application as it regulates both the domestic processing and the processing outside the territory of the People's Republic of China of personal information of natural persons within People's Republic of China, with some limitations regarding the latter case. With regard to the processing outside of China, Art. 3 of the PIPL states that the law shall apply to abroad processing aimed at providing products and services for natural persons inside the People's Republic of China, analyzing or evaluating the behaviors of natural persons within the territory of the People's Republic of China as well as any other circumstances defined by any law or administrative regulation.¹¹⁵ This article clearly states that the personal information taken into consideration are not only that of Chinese citizens but also of all the natural persons that are present inside the country, therefore including foreign nationality individuals. This article is particularly relevant for foreign traders in value-added telecommunication services, as they process

¹¹¹ Data Security Law, Art. 48

¹¹² Frank XIAO, Ruby SHEN, "Analysis of the Highlights of the Personal Information Protection Law", in "Deloitte", 2023, www2.deloitte.com/cn/en/pages/risk/articles/personal-information-protection-law-analysis.html (accessed 22/03/2023).

¹¹³ LAFITTE, "How do China's new data protection regulations...".

¹¹⁴ Thomas ZHANG, *GDPR Versus PIPL – Key Differences and Implications for Compliance in China*, in "China Briefing", 2022, www.china-briefing.com/news/pipl-vs-gdpr-key-differences (accessed 22/03/2023).

¹¹⁵ *Zhonghua renmin gongheguo geren xinxi baohu fa* 中华人民共和国个人信息保护法 (Personal Information Protection Law of the People's Republic of China) (hereinafter referred to as PIPL), 2021, Art. 3.

personal information of both Chinese and non-Chinese persons, either from within and without the territory of the People's Republic of China. Art. 6 introduces a limit to the collection of personal information, which must be limited to the minimum scope according to the purpose of processing¹¹⁶, whereas Art. 7 states that the processing of personal information shall be conducted according to principles of openness and transparency, with mandatory disclosure of the rules, as well as the purposes, means and scope of processing.¹¹⁷

Chapter II on personal information processing rules states the circumstances under which the processing can be done. Art. 13 provides a series of circumstances under which the processing of personal information is licit, making clear that obtaining consent from the individual is no longer the only lawful basis for the collection and use of personal information, since it can be done also for the performance of a contract in which the processing is a fundamental aspect and the individual is a party of the contract, public health emergency, news reporting for public interest and others.^{118 119} In the case of multiple subjects jointly processing personal information, they shall negotiate their respective rights and obligations, and in case of a violation of one party, the other personal information processors shall bear joint and several liability.¹²⁰

Section 2 of Chapter II defines the meaning of sensitive personal information and the rules for their processing. Sensitive personal information are defined in Art. 28 as “personal information that once leaked or illegally used, may easily lead to the infringement of the personal dignity of a natural person or may endanger his personal safety or property”¹²¹, and Art. 29 provides that processors of sensitive personal information shall obtain the individual's separate consent.¹²² Therefore, the processor is required to specifically inform the individual about the content of the collection with regard to sensitive personal information, hence generic clauses for privacy authorization will no longer be sufficient and will lose legitimacy.¹²³ Art. 36 of Chapter II set out a localization requirement for personal information processed by state organs, that must be stored within the territory of China.¹²⁴ Chapter III of the law regulates the cross-border transfer of personal information. The main requirements

¹¹⁶ PIPL, Art. 6.

¹¹⁷ *Ibid.* Art. 7.

¹¹⁸ XIAO, SHEN, “Analysis of the Highlights of the Personal Information Protection Law”.

¹¹⁹ PIPL, Art. 13.

¹²⁰ *Ibid.* Art. 20.

¹²¹ *Ibid.* Art. 28.

¹²² *Ibid.* Art. 29.

¹²³ XIAO, SHEN, “Analysis of the Highlights of the Personal Information Protection Law”.

¹²⁴ PIPL, Art. 36.

are provided in Art. 38 and comprise a mandatory security assessment organized by the national cyberspace department and a personal information protection certification issued by relevant specialized institution and entering into agreements with the overseas recipient.¹²⁵ As for the processing of sensitive personal information, when transferring personal information abroad the processor shall inform the individuals about the overseas recipient's details, as well as other relevant information about the processing and the categories of personal information. The processor shall also obtain the individual's separate consent about the cross-border transfer of personal information.¹²⁶ Art. 40 goes into details on the localization requirement for the processing of individuals' personal information both by CIOs and personal information processors that deals with personal information up to the amount defined by the national cyberspace department. These subjects must store personal information within the territory of China, and only when cross-border transfer of such information is truly necessary, they must pass a security assessment organized by the national security department prior to the transferring abroad of such information, as mentioned in Art. 38.¹²⁷

Personal information must not be shared and communicated to any foreign judicial authorities, unless otherwise authorized by the relevant Chinese authorities (Art. 41)¹²⁸, and any organization or individual that infringe Chinese national interests may be included in a list of restricted or prohibited recipients of personal information (Art. 42)¹²⁹.

Chapter V outlines all the information protection obligations that data processors are required to fulfill, including the formulation of an internal management system, the implementation of a classified management for personal information, the adoption of measures such as encryption and de-identification, and the determination of operational authority over personal information processing by appointing a person in charge of personal information protection when reaching the threshold amount, in order to ensure that personal information processing activities are in compliance with the law and relevant regulations.¹³⁰ Personal information processors outside of China shall establish a specialized agency or appoint a representative within the territory of China in charge of ensuring the compliance to

¹²⁵ PIPL, Art. 38.

¹²⁶ *Ibid.* Art. 39.

¹²⁷ *Ibid.* Art. 40.

¹²⁸ *Ibid.* Art. 41.

¹²⁹ *Ibid.* Art. 42.

¹³⁰ *Ibid.* Artt. 51-52.

Chinese regulations on the matter of personal information protection.¹³¹ For the purpose of this thesis is also important to mention Art. 58, with regard to processors of personal data that provides important internet platform services. These processors shall establish a personal information protection compliance system, formulate platform rules and clarify the norms and obligations that the platform shall respect when dealing with personal information.¹³²

4.2 Cloud specific regulations and security measures

In 2016, the MIIT published the Notice on the Regulation of Cloud Service Market's Business Conduct. The purpose of the notice was to summarize all the compliance requirements for cloud service providers in the Chinese market, especially regarding data localization and protection of personal data. Cloud services providers that want to operate in the Chinese market have to establish their platform within the country and provide their services through the approved international network business accesses and must comply with national data protection and user's personal information protection regulations, establishing a data management system for ensuring the security of network data and user's personal information. Means for collecting and using users' personal information must be defined clearly and communicated promptly to users. When providing services to users inside China, all the services facilities and network data must be located within the territory of China, and in case of necessity for cross-border operations and transfer of data, this must be done according to national legislation (reference to the provisions for cross-border data transfer of the Cybersecurity law and Personal Information Protection Law).¹³³

The notice further sets out specific measures for the protection of the telecommunication network¹³⁴, as well as detailed technical security standards for cloud providers¹³⁵ and public cloud providers¹³⁶.

The first measures were implemented in 2010 by the MIIT, and provide that every company operating in the communications sector should evaluate the risk of its business

¹³¹ PIPL, Art. 53

¹³² *Ibid.* Art. 58.

¹³³ Ministry of Industry and Information Technology, *Guanyu guifan yun fuwu shichang jingying xingwei de tongzhi* 关于规范云服务市场经营行为的通知 (Notice on the Regulation of Cloud Service Market's Business Conduct), 2016.

¹³⁴ Ministry of Industry and Information Technology, *Tongxin wangluo anquan fanghu guanli banfa* 通信网络安全防护管理办法 (Measures for the Administration of Cybersecurity Protection of Communication Networks), 2017.

¹³⁵ National Standardization Management Committee, *Yun jisuan fuwu anquan nengli yaoqiu* 云计算服务安全能力要求 (Security capability requirements of cloud computing services), 2015.

¹³⁶ Ministry of Industry and Information Technology, *Gongyou yun fuwu anquan fanghu yaoqiu* 公有云服务安全防护要求 (Security and Protection Requirements for Public Cloud Services), 2016.

activities with regard to national security, the economy, the social order, and the public interest, and divide them into five levels of risk.¹³⁷ Once this division has been approved by experts appointed by the MIIT or the Communications Administration, within 30 days the company has to report the final divisions and levels to the relevant telecommunication authorities. In the case of value-added telecommunication services, provider must report the results to the telecommunication authority that issued the telecommunication business license.¹³⁸ The measures also specify that every operating unit shall schedule a back-up of the most important lines, equipment, systems and data of the communication network unit.¹³⁹

Further technical details are specified in the two technical documents mentioned above.

The Security capability requirements of cloud computing services¹⁴⁰ specifies detailed responsibilities for the implementation of security measures, which varies according to the different service models.

- *Software as a Service (SaaS)*: the user is responsible only for the security of its data and for the client-side application. All the other security measures are implemented by the cloud services provider.
- *Platform as a Service (PaaS)*: in this model there is a shared responsibility between the user and the cloud services provider for the security of the platform. The user is responsible for the security of the applications developed and deployed in the platform, as well as the operating environment, whereas the cloud services provider is responsible for all the other security measures.
- *Infrastructure as a Service (IaaS)*: in this model the responsibility for the virtualization of computing resources is shared between the user and the cloud services provider. The user implements security measures for the operating system, the operating environment and the applications, and is responsible for running, updating and configuring those resources in a secure and reliable manner. The cloud services provider is responsible for the security of the hypervisor and all the other low-level resources.

¹³⁷ Measures for the Administration of Cybersecurity Protection of Communication Networks, Art. 7.

¹³⁸ *Ibid.* Art. 8.

¹³⁹ *Ibid.* Art. 13.

¹⁴⁰ Security capability requirements of cloud computing services.

In general, the lower the level of the cloud service provided, the higher the management and security responsibility for the user. With the same logic, cloud service providers will have a higher responsibility for high-level cloud services.¹⁴¹

According to the scope of security measures, these can be categorized as:

- *General security measures*: these measures apply to the entire cloud computing platform. One example of general security measure is the security measures for the personnel which is deployed on every application system in the platform.
- *Specific security measures*: these are security measures that only apply to a specific application or service, for instance measures for access control to the email system or the word processing system of the cloud computing platform.
- *Mixed security measures*: in some cases, there could be security measures that are partly general and partly specific, for instance the emergency response plan for the email system of the platform, which requires both the resources for emergency response of the entire platform, and the back-ups and recover tools of the email system.¹⁴²

Finally, the document outlines ten types of basic security requirements for cloud providers, aimed at demonstrating that the latter can ensure the security of both the cloud environment and user's information. The 10 requirements are summarized as follows:

1. *Security of system development and supply chain*: the cloud provider must guarantee complete protection when developing the system and has to guarantee that the lower levels of the supply chain also adopt the same security measures and standards. The cloud provider must provide the user with documents and information about security measures and collaborate with the user in managing the information system and the business.
2. *Protection of the system and the telecommunications*: the cloud provider must surveillance the external and internal borders, control and protect the telecommunications, and guarantee the overall security of the system.
3. *Access control*: cloud service provider shall strictly protect the customer data of cloud

¹⁴¹ Security capability requirements of cloud computing services, p. 2.

¹⁴² *Ibid.* p. 3.

computing platform, the personnel, the processes and equipment, before accessing the cloud computing platform, shall be identified and the performable operation and applicable function shall be restricted.

4. *Configuration management*: cloud service providers must carry out the configuration management, establish and maintain the baseline configuration and set up the security parameters of all kinds of products within the platform.
5. *Maintenance*: cloud service providers shall provide for the maintenance of the facilities and the software systems of the cloud platform, and shall control the effectiveness of the tools, technologies, mechanisms, and maintenance personnel.
6. *Emergency response and disaster recovery*: cloud service providers must set out an emergency response plan and incident response plan for the cloud platform, carrying out periodic security drills and ensuring the usability of data during an emergency. The provider shall also dispose necessary back-ups and recover mechanism for ensuring business continuity for its customers.
7. *Audit*: cloud service providers shall formulate an auditable event list according to security requirements and users' requests, conduct the audit procedures and keep a detailed record of the content of the audit, preventing unauthorized access to the records.
8. *Risk assessment and continuous monitoring*: cloud service providers shall conduct risk assessments to determine whether risks regarding the security of the platform can be tolerated. The provider shall also formulate a monitoring targets list and conduct continuous security controls on the targets and sound the alarm whenever an unusual event happens.
9. *Security organization and personnel*: the cloud provider must ensure that every person that gets in touch with users' information and business activities have the qualities and capabilities to abide by their security responsibility. Before assigning access permission to relative employees, the provider must inspect about the conditions of the person in charge and regularly review the suitability for the role.
10. *Physical and environmental protection*: the cloud service provider must ensure that the generator room is located within the territory of China, and that its address, design,

electricity supply, fire protection, control mechanism for temperature and humidity must satisfy relevant standards.¹⁴³

Hence, cloud providers must formulate a detailed plan for the implementation of all the necessary security measures and specify how they intend to satisfy the standards set out in the document. In case the provider operates multiple applications or services, a security plan must be created for each application or service provided. The plan must provide generic information about the cloud computing platform, including the system topology, operation units, the interconnection with external systems, the service and deployment model, a list of the software and hardware of the system and information about data stream. In addition, the plan shall describe in detail the security measures adopted and the level of compliance to the standard requirements, choosing from six degree of compliance (fulfilled, partly fulfilled, planned, replaced, not fulfilled, not applicable).¹⁴⁴ In the annex of the document there is a template for the security plan, in order to help cloud services providers to fill in all the necessary information about the security requirements.¹⁴⁵

The “Security protection requirements for public cloud service” further specifies the standards for security protection according to the five levels of risk concerning national interests. Public cloud services providers shall then refer to the self-determined level of risk of their activities and abide by the relative standards specified in the document. The security protection requirements involve seven aspects of the day-to-day business of the provider, which are data, network, virtualization, host, physical environment, and management. For each level of risk, every of these aspects will require different standards of protection.¹⁴⁶ As for data storage, different standard requirements are set out for different levels of risk:

- *Level 1:* the basic configuration for the security of databases is specified in the “Baseline requirements of security configuration for telecom network and internet database.”
- *Level 2:* the provider shall use encryption technologies or other protection measures to ensure confidentiality when storing user’s authentication information, encouraging the user in maintaining the secrecy of key business-related and management data, encouraging the user in the parameter configuration of encryption algorithms, provide

¹⁴³ Security capability requirements of cloud computing services, p. 4.

¹⁴⁴ *Ibid.* pp. 5-6.

¹⁴⁵ *Ibid.* p. 53.

¹⁴⁶ Security and Protection Requirements for Public Cloud Services, pp. 1, 3-4.

effective disk protection or data fragmentation storage option, and control the integrity of data during the storage process.

- *Level 3*: in addition to the requirements of the second level, the provider shall guarantee that, when the integrity of data is compromised, relative measures can be deployed to recover data loss. The provider shall also encourage the user in choosing a third-party encryption and key management mechanism to protect user's key data.
- *Level 4*: in addition to the requirements of the third level, the provider shall also provide a protection mechanism when loading the image file of the virtual machine, to avoid that unauthorized users could access to the image file and run it on its computing resources.
- *Level 5*: provisions for the fifth level are still to be defined.¹⁴⁷

The document also identifies the key elements of risk analysis for public cloud services, which are assets, vulnerabilities, and threats.

- *Assets*: the identification and selection of the assets for public cloud services shall be conducted in a scientific and reasonable manner, and assets include all types of equipment, host, data and information, documents, personnel, and physical environment facilities.
- *Vulnerabilities*: assets are taken as the core reference for the identification of vulnerabilities, which are divided into technological vulnerabilities and management vulnerabilities.
- *Threats*: according to the source, threats are categorized as technological threats, environmental threats, and human threats. Environmental threats are further divided in natural force majeure threats and other physical threats, whereas according to the cause, human threats are divided in intentional and unintentional threats.¹⁴⁸

4.3 Implications for foreign traders not physically present in China

Foreign traders that offer cloud services in the Chinese territory are also affected by the Chinese legislation on value-added telecommunication and data protection. The Personal Information Protection Law has an extraterritorial scope of application and provides that cloud service providers that process personal information of natural persons within the

¹⁴⁷ Security and Protection Requirements for Public Cloud Services, pp. 4, 5, 9, 11, 13.

¹⁴⁸ *Ibid.* Annex B, pp. 15-16.

territory of China should abide by the provision of this law and, if the amount of personal data processed exceeds the threshold defined by the Cyberspace Administration of China, they shall store such data within the Chinese territory.¹⁴⁹ A similar provision can be found in Art. 37 of the Cybersecurity law, which stipulates that critical information infrastructure providers are required to store any personal information and significant data they collect or generate while operating within the territory of the People's Republic of China, within the country itself.¹⁵⁰ To comply with the provision on data localization, a number of companies have started to move their data centers to China. The most prominent case was Apple, which in 2018 came under criticism after moving the iCloud data of its Chinese users to data centers located in mainland China, which are operated by Chinese company Guizhou-Cloud Big Data, a data storage company of the local government of Guizhou province¹⁵¹. Recently, Apple has opened a new data center in the southwestern province of Guizhou and is also creating another data center in the Inner Mongolia region in China's north.¹⁵² The main criticism moved towards Apple is that the company uses a different form of encryption in China compared to other parts of the world, with digital keys used to unlock the data stored within the same facility, in this case stored directly within mainland China, letting the Chinese intelligence retaining control over Apple's physical hardware, as Matthew D. Green, a cryptography professor at Johns Hopkins University stated.¹⁵³

Other western companies, including LinkedIn, AirBnb and Evernote, had already been storing Chinese users' data within mainland China even prior to the enactment of the Cybersecurity law.¹⁵⁴

¹⁴⁹ *Data Protection Laws in China – Ways to Stay Compliant with Cloud Data*, in “In Country”, 2022, <https://incountry.com/blog/data-protection-laws-in-china-ways-to-stay-compliant-with-cloud-data/> (accessed 09/08/2023).

¹⁵⁰ Cybersecurity Law, Art. 37.

¹⁵¹ Lianrui JIA, Lotus RUAN, “Going global: Comparing Chinese mobile applications' data and user privacy governance at home and abroad”, *Internet Policy Review*, 9 (3), 2020, p. 3.

¹⁵² Dan SWINHOE, *Apple officially opens data center in China*, in “Data Center Dynamics”, 2021, www.datacenterdynamics.com/en/news/apple-officially-opens-data-center-in-china/ (accessed 23/04/2023).

¹⁵³ Sebastian MOSS, *Apple's Chinese data centers store encryption keys in same facility as user data*, in “Data Center Dynamics”, 2021, <https://www.datacenterdynamics.com/en/news/apples-chinese-data-centers> (accessed 23/04/2023).

¹⁵⁴ JIA, RUAN, “Going global: Comparing Chinese mobile applications' ...”, p. 3.

CHAPTER II

Entering the Chinese Cloud market: legal restrictions and investment strategies for foreign players

1. Legal restrictions on foreign investment in the Cloud industry

1.1 International agreements on telecommunications services

1.1.1 WTO and related agreements

With the accession to the WTO, China entered an international rule-based system made up by a series of agreements negotiated by governments covering goods, services and intellectual property. The actual WTO system replace the General Agreement on Tariffs and Trade (GATT), negotiated in 1947

¹, and is based on the Uruguay Round of Multilateral trade negotiations launched in Punta del Este in September 1986 and concluded only seven and a half years later in 1993, involving 123 countries as contracting parties². The 8th round of global trade discussion enunciated four objectives, which include the opening of international trade by reducing tariff and non-tariff barriers, the strengthening of the institutional capacity of GATT, the expansion of the range of GATT coverage to include additional areas such as textile and agriculture and the extension of the scope of GATT to cover emerging issues of international trade, such as services, trade-related aspects of intellectual property rights and trade related investment measures.³

The WTO agreements are composed by six main parts:

1. the Agreement Establishing the WTO, which is a comprehensive document that set out the scope, functions and structure of the organization as well as the institutional framework, principles and rules for international trade relations;
2. the General Agreement on Tariffs and Trade (GATT), aimed at reducing trade barriers, such as tariffs and quotas, and promoting the liberalization of trade in goods and merchandise among its member countries;

¹ Agneshwar SEN. "The World Trade Organisation and Preferential Agreements." *Economic and Political Weekly*, vol. 45, no. 28, 2010, p. 24.

² Muhammad Ijaz LATIF. "Uruguay Round of GATT and Establishment of the WTO." *Pakistan Horizon*, vol. 65, no. 1, 2012, pp. 53-55.

³ Luis ABUGATTAS, "The Uruguay Round of Multilateral Trade Negotiations: Developments and Prospects.", *The University of Miami Inter-American Law Review*, vol. 22, no. 2/3, 1991, p. 355-356.

3. the General Agreement on Trade in Services (GATS), which focuses specifically on the international trade of services, with the aim of liberalizing and regulating trade in services among member countries;
4. the Trade-Related Aspects of Intellectual Property Rights (TRIPS), which establishes minimum standards of protection and enforcement of intellectual property rights in member countries;
5. the Understanding on Rules and Procedures Governing the Settlement of Disputes, a central pillar of the multilateral trading system that helps enforcing the rules contained in all the other agreements. This procedure ensures the rule of law and makes the trading system more secure and predictable.⁴
6. Reviews of governments' trade policies, which refers to the process of evaluating and examining the trade policies and practices of member countries with the aim to ensure transparency, assess compliance with WTO rules and promote the smooth functioning of the multilateral trade system.

1.1.1.1 General Agreement on Trade in Services

As stated in the previous chapter, cloud services fall into the scope of telecommunications services⁵. Among the various agreements within the WTO, GATS holds the greatest influence over this particular sector, and the agreement's implications will now be examined.

The General Agreement on Trade in Services (GATS) is one of the trade agreements included in the WTO agreements and combines elements of both trade and investment agreements, establishing rules, which are binding and multilateral, that cover treatment of foreign services and service suppliers and government regulation of trade in services.⁶ The Agreement "is intended to contribute to trade expansion "under conditions of transparency and progressive liberalization and as a means of promoting the economic growth of all trading partners and the development of developing countries"⁷. Before the drafting of the GATS,

⁴ World Trade Organization, "A unique contribution", www.wto.org/english/thewto_e/whatis_e/tif_e/displ_e.htm (accessed 28/06/2023).

⁵ See Chapter 1, "Legal classification of cloud services."

⁶ Laura B. SHERMAN, "Wildly Enthusiastic" About the First Multilateral Agreement on Trade in Telecommunications Services", *Federal Communications Law Journal*, Vol. 51, 1, 1998, p. 64.

⁷ World Trade Organization, "The General Agreement on Trade in Services" [hereinafter referred to as GATS], 2013, p. 2.

trade in services was regulated by bilateral and regional schemes whose focus was quite narrow, in addition to existing industry-specific cooperation.⁸

According to Article I:2, the GATS defines four modes of providing and trading services⁹:

- Cross-border supply: the supply of services from the territory of one member into the territory of any other member, also known as “mode 1”. One example of this mode of supply are the services received by users of one country and provided from abroad through the telecommunications or postal network, such as international phone calls, consultancy or market research reports.
- Consumption abroad: services supplied to consumers of one member in the territory of another member, also known as “mode 2”. This mode of supply include tourism, students that move abroad to attend university courses, patients receiving cures abroad.
- Commercial presence: services provided by a service supplier of one country in the territory of another, through commercial presence, also known as “mode 3”. One example are foreign companies that set up subsidiaries or branches in a foreign country to conduct their business and to provide services in another country.
- Presence of natural persons: services provided by a service supplier of one country in the territory of any other member, through the presence of natural persons, also known as “mode 4”. Individuals travelling from their own country to supply services in another country as independent suppliers or employee of a foreign service firm fall into the scope of this mode of supply.

The fundamental principles of GATS are most-favoured-nation treatment, market access and national treatment.

- Most-favoured-nation treatment (MFN): this principle is one of the most influential in the agreement, as it obliged member countries to treat services and service providers from any other member country “no less favourably than it treats like services and service providers from any other country”.^{10 11} MFN obligation entails that a member shall not discriminate among other members, meaning that a member that pledges to open its market is prohibited from selectively closing its market to service suppliers

⁸ Juan A. MARCHETTI, Petros C. MAVROIDIS, The Genesis of the GATS (General Agreement on Trade in Services), *European Journal of International Law*, Vol. 22, Issue 3, 2011, p. 689.

⁹ GATS, Art.I:2.

¹⁰ Brett WILLIAMS, Deborah CASS, “Legal Implications for Regulation of Trade in Services of China’s Accession to the WTO”, in Ligang Song (edited by), *Dilemmas of China’s Growth in the Twenty-First Century*, ANU Press, 2012, p. 76.

¹¹ GATS, Part II, Art. 2.

from specific WTO members.¹² This obligation can be derogated in particular cases, as long as they are clearly stated in a member's list of Annex II Exemptions.¹³

- Market access: this provision is part of the specific commitments that can be found in part III of the GATS and states that each country have the possibility to set out the terms, limitations and conditions in the relative Schedule of Commitments and every member is obligated to provide services and service suppliers from any other member with treatment no less favourable than the specifications set out in the Schedule. A list of the possible limitation measures that countries could adopt follows in the second point of the article. These conditions include: (a) limitations on the number of service suppliers, (b) limitations on the total value of service transactions or assets, (c) limitations on the total number of service operations or on the total quantity of service output, (d) limitations regarding the overall count of individuals permitted to work within a specific service sector or the number of employees a service supplier can hire, specifically those who are essential and directly involved in delivering a particular service, (e) policies that limit or mandate certain forms of legal entities or joint ventures that a service supplier must use in order to provide a service; and (f) restrictions on the involvement of foreign capital, such as imposing a maximum percentage limit on foreign ownership or setting a cap on the total value of individual or combined foreign investments.¹⁴ ¹⁵ From this article it is clear that China is prevented from requiring the establishment of a joint venture as a precondition for foreign commercial presence in its market, if not otherwise indicated. Hence, if not provided in the Schedule of Commitments, foreign companies are free to independently establish a commercial presence in China.¹⁶
- National treatment: foreign services and foreign service suppliers shall be treated no less favourable than domestic services and service suppliers. Each member has the option to meet this requirement by providing services and service suppliers from any other member formally identical treatment or formally different treatment compared to what it offers to its domestic like services and service suppliers. These formally

¹² SHERMAN, "World Trade Organization: Agreement..." p. 355.

¹³ GATS, Part II, Art. 2.

¹⁴ GATS, Art. XVI.2.

¹⁵ Wei WANG, "On the Relationship Between Market Access and National Treatment Under the GATS", *The International Lawyer*, vol. 46, no. 4, 2012, p. 1053.

¹⁶ Petros C. MAVROIDIS, and André SAPIR, *China and the World Trade Organisation: Towards a Better Fit*, Bruegel, 2019, p. 12.

identical or formally different treatments shall be deemed as less favourable if they alter the competitive conditions in favor of domestic services or service suppliers, as opposed to services or service suppliers of any other Member that are similar in nature.¹⁷

After fifteen years of negotiations, China entered the WTO in December 2001. This marked one of the most important events in the history of the world trade system, and the accession has generated extensive discussion and analysis among professionals and scholars.¹⁸

Each WTO member is subject to two different categories of obligations:

- Rule obligations: general commitment of compliance to WTO rules of conduct contained in the Agreement Establishing the World Trade Organization and its annexes.
- Market access obligations: specific obligations undertaken by each member with the aim to reduce trade barriers related to certain goods and services. These obligations are contained in the goods and services schedule of each member annexed to GATT 1994 and GATS respectively.¹⁹

The terms of China's accession to the WTO are specified in a series of documents containing legally binding commitments and market access obligations. These documents are China's Schedule of Commitments, Protocol of Accession and Working Party Report.²⁰

1.1.1.2 GATS Annex on Telecommunications

The GATS have a range of annexes that expands on the general provision of the Agreement. The Annex on Telecommunications provides further details and explanations regarding the provisions of the Agreement concerning measures that impact the accessibility and utilization of public telecommunications transport networks and services.²¹ Public telecommunications transport network are to be intended as the "means the public telecommunications infrastructure which permits telecommunications between and among defined network termination points",²² and the public telecommunications transport services are to be intended

¹⁷ GATS, Art. XVII.2.

¹⁸ Julia Ya QIN, "WTO-Plus" Obligations and Their Implications for the World Trade Organization Legal System – An Appraisal of the China Accession Protocol", *Journal of World Trade*, vol. 37, no. 3, 2003, p. 483.

¹⁹ *Ibid.* p. 484-485.

²⁰ Farzana NOSHAB, "China's Accession to the Wto: Global Implications." *Strategic Studies*, vol. 22, no. 1, 2002, p. 215.

²¹ GATS, Annex on Telecommunications, Section 1.

²² *Ibid.* Section 2.

as the “means any telecommunications transport service required, explicitly or in effect, by a Member to be offered to the public generally”.²³

The first provision of the annex concerns the obligation for transparency of all the relevant information regarding conditions affecting access to and use of public telecommunications transport networks and services. This information shall be made publicly available and therefore China agrees to publish the relevant information concerning a wide range of matters such as tariffs, standard setters, notifications, registration or licensing requirements.²⁴ Every Member is required to guarantee that service providers from any other Member have the right to utilize public telecommunications transport networks and services for the transmission of information within and across borders, and conditions on the access to and use of public telecommunications transport network and services are permitted only under specific conditions.²⁵

In addition, member countries recognize the need for an expansion of advanced telecommunications infrastructure across all countries, and especially in developing countries. Stemming from this commitment, Section 6 of the Annex provides the obligation for member countries to endorse and encourage the participation of both developed and developing countries in the development programmes of international and regional organizations.²⁶

1.1.1.3 China's Schedule of Commitments

China's Schedule of Commitments contains horizontal and vertical commitments for services. Commitments that apply to all sectors are known as horizontal commitments and typically refer to the movement of capital and people, whereas specific commitments targeting a particular sector or sub-sector are usually referred to as vertical commitments.²⁷ The horizontal commitments set out the limitations to market access for the supply of services by foreign investors through commercial presence and presence of natural persons in all the sectors included in the schedule. According to the document, commercial presence refers to foreign invested enterprises in China. These include foreign capital enterprises, which can also be referred to as wholly foreign-owned enterprises (WFOE), and joint ventures. Joint venture enterprises are further categorized into equity joint ventures and contractual joint

²³ GATS, Annex on Telecommunications, Section 2.

²⁴ *Ibid.*, Section 4.

²⁵ *Ibid.*, Section 5.

²⁶ *Ibid.*, Section 6.

²⁷ WILLIAMS, CASS, “Legal Implications for Regulation of Trade in Services...”, p. 77.

ventures. Equity joint ventures (EJVs) are business arrangements in which the Chinese and the foreign partner contribute capital to establish a new legally independent enterprise and share ownership, control, and profits based on their respective equity stakes. Contractual joint ventures (CJVs) are a type of non-equity alliance with the presence of a relational arrangement where the Chinese and foreign partner work together on a range of projects, with the joint subsidiary separate from both parents. CJVs do not have an independent status and there is flexibility in the operational control and profit share, which are negotiated between the parties and can change overtime.²⁸

The schedule defines the minimum amount of foreign investment in an equity joint venture, which shall not be less than 25% of the registered capital of the joint venture. No limits are set with regard to the establishment of branches by foreign enterprises, unless stated differently within specific sub-sectors, and representative offices of foreign enterprises can be established provided that they do not engage in any profit-making activities except for representative offices of foreign law firms providing legal services, foreign firms providing accounting, auditing and bookkeeping services, foreign firms providing taxation services and foreign firms providing management consulting services. Further provisions are set out with regard to the use of land in the People's Republic of China. In China, the land is the property of the State, and businesses and individuals can obtain the right to use the land for a variable period that goes from 40 years for commercial, tourist and recreational purposes up to 70 years for residential purposes. Businesses and individuals are allowed to utilize the land for industrial purposes, as well as for education, science, culture, public health, physical education, and other comprehensive utilization for a maximum of 50 years.

Service supplied through mode 4, i.e., presence of natural persons, have no specific limitations, except for managers, executives and senior employees of a corporation of Pakistan that has established a representative office, branch or subsidiary in China, or is engaged in the foreign invested enterprises in the territory of the People's Republic of China, and services salespersons engaged in negotiating the sales of services of a foreign service supplier.

Limitations on national treatment are also specified in the horizontal commitments of the Schedule. There are no limits to national treatment for the commercial presence supply mode

²⁸ Yue WANG, Stephen NICHOLAS, "Knowledge Transfer, Knowledge Replication, and Learning in Non-equity Alliances: Operating Contractual Joint Ventures in China", *Management International Review*, Vol. 45, No. 1, 2005, p. 100.

for all the subsidies granted to domestic suppliers of audio-visual, aviation and medical services, as well as in the new commitments beyond China's current WTO commitments and in any new sector and sub-sector scheduled in future service negotiations. With regard to the presence of natural persons mode of supply, no limitations are set out except for the cases listed above referred to market access.

In the second section of the document, detailed commitments are set out for specific sectors and sub-sectors, according to the different modes of supply. Commitments related to computer and related services are defined at point B of the section about the specific commitments. Consultancy services related to the installation of computer hardware see no restriction in both limitations on market access and national treatment for the cross-border supply, consumption abroad and commercial presence mode of supply. Mode 4 is subject to limitations on market access as stated above in the horizontal commitments, and to certain qualifications such as certified engineers, or personnel with bachelor's degree or above and three years of experience in these sectors with regard to national treatment.

Software implementation services, data processing services and input preparation services have the same limitations in terms of national treatment but differ from the previous category in that wholly foreign-owned enterprises are allowed for the commercial presence mode of supply, whereas data processing, tabulation services and time-sharing services have the same limitations in terms of national treatment and market access as the consultancy services for computer hardware stated above.

Requirements for telecommunication services and value-added services are specified in the second point of the second section of the Schedule. Firstly, value-added services include a wide range of services like electronic mail, voice mail, on-line information and database retrieval, electronic data interchange, enhanced/value-added facsimile services (which covers store and forward, store and retrieve), code and protocol conversion and online information and/or data processing. Regarding the limitations to market access in telecommunication services sector, foreign service suppliers are allowed to invest in in the field of value-added telecommunications establishing joint ventures, and the maximum foreign investment in the joint ventures must not exceed 50% of the total registered capital. Basic telecommunication services are subject to the same limitations.

Additional commitments on both basic and value-added telecommunication services are set out in the Reference Paper attached to the Schedule of Commitments.²⁹ The Reference Paper covers a wide range of topics connected to telecommunication services, which comprise competitive safeguards, interconnection, universal service, public availability of licensing criteria, independent regulators, and allocation and use of scarce resources. Major suppliers shall be prevented from engaging in or continuing anti-competitive practices through appropriate measures. Those practices include:

- (a) engaging in anti-competitive cross-subsidization;
- (b) using information obtained from competitors with anti-competitive results; and
- (c) not making available to other services suppliers on a timely basis technical information about essential facilities and commercially relevant information which are necessary for them to provide services.³⁰

Suppliers providing public telecommunications transport networks or services shall adopt all the necessary measures to guarantee that consumer choosing one supplier can still communicate with users of another supplier and can access to services provided by another supplier, and interconnection between a service supplier and a major service supplier shall be ensured at any technically feasible point in the network.³¹

The notion of "universal service" encompasses the provision of fundamental local telecommunications services to all customers within a competitive market, supported by subsidies to ensure affordability.³² As stated in the Reference Paper, with the entrance into the WTO China has agreed to provide a universal service, which can be set freely in kind and scope by any member of the organization in a "transparent, non-discriminatory and competitively neutral manner"³³. The Chinese government is committed to the task and in 2000 the universal service entered officially into the Telecommunications Regulations of the People's Republic of China. In addition to that, a constantly updated program called "Telecommunications to Every Village" was implemented with the aim of connecting the

²⁹ See China's Schedule of Commitments, Annex 1, Reference Paper.

³⁰ China's Schedule of Commitments, Annex 1, Reference Paper (1.2).

³¹ *Ibid.* (2.2).

³² Shin-yi PENG, "Universal Telecommunications Service in China: Trade Liberalization, Subsidy, and Technology in the Making of Information Equality in the Broadband Era", *Asian-Pacific Law & Policy Journal*, Vol. 4, 2003, p. 38.

³³ World Trade Organization, Reference Paper to the Fourth Protocol to the General Agreement on Trade in Services, Apr. 24, 1996, Annex 1, art. 3

country's vast rural areas, and since 2016 with the "Broadband Countryside" project, China is committed to extend the broadband network to rural villages.³⁴

When a particular license is required to operate telecommunication services, all the licensing criteria, along with the period of time necessary for the application process and the terms and conditions of each license shall be made publicly available. In case the application process will present a negative outcome, the reasons and motives of the denial shall be made known when the applicant has made a specific request for consultation.³⁵

As mentioned above, China agreed to the principle to which the regulatory body is independent and not accountable to any supplier of basic telecommunication services. The regulatory body shall conduct its legislative duty in accordance with the principle of impartiality with regard to all market participants.³⁶

The last point of the Reference Paper touches the topic of the allocation and use of scarce resources. The principles to be followed with regard to the allocation and use of scarce resources, which include frequencies, numbers and rights of way, are that of transparency and non-discrimination, and the procedures shall be conducted objectively and timely. China commits to make the current state of allocated frequency bands publicly available, with no specific requirements for the detailed identification of frequencies allocated for government uses.³⁷

The implications for cloud services providers are evident. A foreign provider willing to invest in the value-added telecommunications sector must adhere to modes of supply defined by the Schedule of Commitments. When providing such services within the territory of the People's Republic of China, foreign investors can supply them through commercial presence within the above-mentioned limit of maximum registered capital. The Chinese authorities must provide foreign investors with detailed information about the application process when requesting the VATS IDC license in an effort to increase transparency.

³⁴ Lian WANG, Chun LIU, "Critical evaluation of China's universal service policy: Toward a harmonious online nation", *The Information Society*, Vol. 37, no. 3, 2021, p. 177-178.

³⁵ China's Schedule of Commitments, Annex 1, Reference Paper (4).

³⁶ *Ibid.* (5)

³⁷ *Ibid.* (6)

1.1.1.4 China's Protocol of Accession and Working Party Report

The Protocol of Accession of the People's Republic of China stands out as a distinctive agreement within the legal framework of the WTO. Unlike other protocols of accession in the WTO, China's Protocol of Accession was not drafted according to a standardized format. Instead, it incorporates numerous unique provisions that elaborate, enhance, alter, or deviate from the existing agreements of the WTO. Obligations that exceed the existing requirements of the WTO agreements are known as "WTO-Plus" obligations and cover a wide area ranging from the administration of China's trade regime to the Chinese economic system, to the new WTO disciplines on investment.³⁸

As stated in Part I about the general provisions, China's Protocol of Accession shall include the commitments referred to in paragraph 342 of the Report of the Working Party on the Accession of China (hereinafter referred to as Working Party Report).³⁹ These commitments are an integral part of the China's Accession Protocol and have the same binding force of the provisions contained in the main text.

China's Protocol of Accession include several WTO-Plus obligations regarding the following areas:

- *Transparency*: this is one of the core principles of the WTO system and it's a broad concept that could refer to transparency in the internal legal regimes of WTO members, transparency in the procedures conducted by WTO institutions, or transparency regarding the dispute settlement process.⁴⁰ China is required to enforce only those laws, regulations, and measures affecting trade that are published and readily available to the public. All such trade-related laws, regulations, and measures must be published before they are implemented or enforced. To ensure accessibility, China should designate an official journal dedicated to publishing these trade-related documents on a regular basis, making copies of all issues available to individuals and enterprises. China must establish one or more enquiry points where any individual, enterprise, or WTO Member can obtain information regarding the measures subject to publication. Timely response to requests for information is crucial, with China obligated to reply within 30 days (or 45 days in exceptional cases) after receiving a request. In case of any delay, China must

³⁸ QIN, "WTO-Plus" Obligations and Their Implications...", p. 483.

³⁹ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, pp. 2-3.

⁴⁰ Meinhard HILF, "Power Rules and Principles – Which Orientation for WTO/GATT Law?", *Journal of International Economic Law*, vol. 4, issue 1, 2001, p. 119.

provide written notification to the interested party, specifying the reasons for the delay. Replies to WTO Members must be complete and represent the authoritative view of the Chinese government, while information provided to individuals and enterprises should be accurate and reliable. Before implementing the published laws, regulations, and measures (except those related to national security, foreign exchange rates, monetary policy, and others impeding law enforcement), China should provide a reasonable period for comment to appropriate authorities. Additionally, China is obliged to translate all trade-related laws, regulations, and measures into at least one official language of the WTO and make such translations available to WTO Members no later than 90 days after their implementation or enforcement.^{41 42}

- *Judicial review*: two parts are identified: independent tribunals and the right to appeal. China is required to establish, designate, and maintain tribunals, contact points, and procedures that facilitate the timely examination of all administrative actions pertaining to the enforcement of general laws, regulations, judicial decisions, and administrative rulings.⁴³ The review procedures must incorporate the right for individuals or enterprises affected by any administrative action subject to review to appeal without facing any penalties. In cases where the initial right of appeal lies with an administrative body, there should always be the option to select an appeal to a judicial body. The appellant must receive notification of the appeal decision, and the reasons behind that decision must be provided in writing. Additionally, the appellant should be informed about any further right to appeal, if applicable.⁴⁴
- *Uniform administration*: China is committed to implement the WTO Agreement in an effective and uniform manner by amending its existing laws and enacting new legislation that fully aligns with the requirements of the WTO Agreement.⁴⁵ It is to be considered a WTO-Plus obligation in that it requires certain member countries to ensure full WTO compliance also by their sub-central governments,⁴⁶ and so China has undertaken to nullify all the local regulations, rules and other measures of local

⁴¹ Sylvia OSTRY, "China and the Wto: The Transparency Issue" *UCLA Journal of International Law and Foreign Affairs*, vol. 3, no. 1, 1998, pp. 11-12.

⁴² QIN, "WTO-Plus" Obligations and Their Implications...", pp. 491-495.

⁴³ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 4.

⁴⁴ *Ibid.*

⁴⁵ Romi JAIN, "China's Compliance with the WTO: A Critical Examination", *Indian Journal of Asian Affairs*, vol. 29, no. 1/2, 2016, p. 59.

⁴⁶ J. JACKSON, W. DAVEY, A. SYKES, *Legal Problems of International Economic Relations: Cases, Materials and Text*, 4th ed, West, 2002, p. 242.

governments at the sub-national level to conform to the WTO Agreement and the Protocol of Accession.⁴⁷ To ensure the enforceability of this commitment, China shall establish a complaint mechanism that gives the opportunity to individuals and enterprises to notify the national authorities of possible non-uniform application of the trade regime, and the latter shall promptly provide remedies to the notified situation in accordance with the obligations undertaken by China.⁴⁸

- *National Treatment*: section 3 of the Protocol provides an obligation denominated of “non-discrimination”, which is the equivalent of the national treatment provision that can be found in the GATS. Therefore, China shall guarantee to foreign individuals and foreign enterprises treatment no less favourable than the treatment guaranteed to other individuals and enterprises. The areas in which this provision shall be implemented in the acquisition of inputs, goods, and services essential for production, as well as the regulations governing the production, marketing, and sale of goods, both in the domestic market and for export. Other areas include the pricing and accessibility of goods and services provided by national and sub-national authorities, as well as public or state enterprises, in various sectors such as transportation, energy, basic telecommunications, utilities, and factors of production.⁴⁹
- *Investment measures*: the fundamental essence of the WTO is of providing a platform for facilitating the liberalization of international trade.⁵⁰ The provision regarding investment measures undertaken by China reflects a substantial commitment made by the country in investment liberalization, especially in services sector, with the additional implementation of the Trade-Related Investment Measures (TRIMs).⁵¹ Nonetheless, the provisions included in China’s Accession Protocol far exceed the scope of TRIMs⁵², in that China is committed to liberalize market access to foreign investment without requiring performance of any kind as condition for approval of foreign investment.⁵³

⁴⁷ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 3.

⁴⁸ QIN, “WTO-Plus” Obligations and Their Implications...” p. 498.

⁴⁹ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 4.

⁵⁰ Anyuan YUAN, “China’s Entry into the WTO: Impact on China’s Regulating Regime of Foreign Direct Investment”, *The International Lawyer*, vol. 35, no. 1, 2001, p. 201.

⁵¹ Chunlai CHEN. “Foreign Direct Investment in China: Trends and Characteristics after WTO Accession.”, in Ross GARNAUT and Ligang SONG (edited by), *China - Linking Markets for Growth*, ANU Press, 2007, p. 197.

⁵² World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 5.

⁵³ QIN, “WTO-Plus” Obligations and Their Implications...” p. 503.

- *Market economy commitments*: non-market economies (NMEs), also referred to as centrally planned economies are not targeted directly by the WTO agreements, as the whole system is based on the market economy assumptions, even though there is no specific provision to prescribe a particular type of economic system to country members.⁵⁴ Despite that, every member falling into the category of NMEs has made specific commitments for the formulation of market-oriented reforms. Even though China has long argued that, thanks to an extensive period of reforms, its economy should not be regarded as an NME, the country agreed to be treated as an NME for a period of fifteen years after its accession in the organization. The main reason for such classification was to allow the relevant institutions to conduct anti-dumping investigations against Chinese companies.⁵⁵ Therefore, China has made several market economy commitments on an ongoing basis that include the following: (a) the price of all goods and services shall be determined by market forces, except for the goods and services listed in Annex 4 of the Protocol. The Annex includes telecommunication services charges which are subject to government pricing.⁵⁶ (b) General commitments about the non-interference of government actions in the commercial decisions of state-owned and state-invested enterprises. Companies of all the other members of the WTO shall have equal opportunity to compete with domestic enterprises for sales and purchase to and from these SOEs.⁵⁷ (c) Gradually expansion and enhancement of the accessibility and extent of the trading right, ensuring that within three years from the accession to the WTO, all enterprises within China possess the right to engage in trade involving all goods across the entire customs territory of China. Exemptions from this obligation are contained in Annex 2A, which refer only to goods and no services are mentioned. Goods contained in the annex are subject to state trading both in export and import.⁵⁸
- *Transitional review*: according to the Trade Policy Review Mechanism contained in Annex 3 of the WTO Agreement, every member country in the WTO is subject to

⁵⁴ Alexander POLOUEKTOV, "Non-Market Economy Issues in the WTO Anti-Dumping Law and Accession Negotiations Revival of a Two-tier Membership?", *Journal of World Trade*, Vol. 36, Issue 1, 2002, pp. 5-12.

⁵⁵ Karen HALVERSON, "China's Wto Accession: Economic, Legal, and Political Implications", *Boston College International & Comparative Law Review*, Vol. 27 (319), 2004, p. 329-330.

⁵⁶ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 64.

⁵⁷ World Trade Organization, Report of the Working Party on the Accession of China, 2001, p. 9.

⁵⁸ World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 20.

periodical review of its trade policies and practices,⁵⁹ even though some argue that the generation of information tailored to the requirements of developing countries is lacking, and a significant portion of the WTO membership does not actively engage in review meetings.⁶⁰ The frequency to which countries are reviewed is based on the dimension of their share of world trade in a recent representative period. Thus, the first four countries with the biggest share are reviewed once every two years, the next sixteen countries are reviewed every four years, and all the other members are reviewed every six years.⁶¹ China represents an exception within this framework. According to Section 18 of China's Protocol of Accession, China has agreed to a special transitional review mechanism aimed at examining China's implementation of its WTO obligations. In particular, China trade policies and practices are to be reviewed every year for the first eight years since China's accession to the organization, and a final review within the first ten years that could take place at the tenth year or at an earlier date decided by the General Council.⁶²

1.1.2 Regional Comprehensive Economic Partnership

The Regional Comprehensive Economic Partnership (hereinafter referred to as RCEP) is the world's biggest free trade agreement (FTA)⁶³, based on the combined GDP of its 15 members, which accounts for 30% of global GDP⁶⁴, and a population of over three billion people.⁶⁵ China is one of the signatory states of the agreement, which entered into force on January 1st, 2020, after eight years of prolonged negotiations.⁶⁶

The creation of this new FTA led to the formation of a “high-level regional institution for economic integration and comprehensive cooperation”,⁶⁷ which builds upon each member's “respective rights and obligations under the *Marrakesh Agreement Establishing the World*

⁵⁹ World Trade Organization, Trade Policy Review Mechanism, C (ii).

⁶⁰ Arunabha GHOSH, “Developing countries in the WTO Trade Policy Review Mechanism”, *World Trade Review*, vol. 9 (3), 2010, pp. 449-450.

⁶¹ World Trade Organization, Trade Policy Review Mechanism, C (ii).

⁶² World Trade Organization, Protocol on The Accession of the People's Republic of China, 2001, p. 11.

⁶³ Jong Woo KANG, et al., “Regional Comprehensive Economic Partnership: Overview and Economic Impact”, *ADB Briefs*, vol. 164, 2020, p. 1.

⁶⁴ Lee JAEHYON, *Diplomatic and Security Implications of the Regional Comprehensive Economic Partnership (RCEP)*, Asan Institute for Policy Studies, 2021.

⁶⁵ Vinod K. AGGARWAL, “Introduction: The Rise of Mega-FTAs in the Asia-Pacific”, *Asian Survey*, vol. 56, n. 6, 2016, p. 1010.

⁶⁶ WANG Yan 王燕, LIU Danxia 刘丹霞, “RCEP kuajing shuju liudong guizhi yu zhongguo yinying”, RCEP 跨境数据流动规制与中国因应 (RCEP regulations on cross-border data flow and China's response), in *Guoji faxue kan*, 3, 2022, p. 37.

⁶⁷ Minghui SHEN, “Evaluation of Regional Economic Integration in East Asia”, in Shiro ARMSTRONG and Tom WESTLAND (edited by), *Asian Economic Integration in an Era of Global Uncertainty*, ANU Press, 2018, p. 260.

Trade Organization done at Marrakesh on 15 April 1994”⁶⁸ and other FTAs signed by member states of Association of Southeast Asian Nations (hereinafter referred to as ASEAN) and their respective free trade partners, which are Australia, China, Japan, Korea, and New Zealand.⁶⁹ The agreement recalls art. V of the GATS about economic integration and Art. XXIV of the GATT with regard to free-trade areas. Art. V of the GATS guarantees the freedom of entering into an agreement aimed at opening the market and fostering the liberalization of trade between member states.⁷⁰ In the same manner, Art. XXIV of the GATT set out the conditions for establishing a custom union or a free-trade area with respect to duties and regulations of commerce.⁷¹

In Chapter VIII of the RCEP concerning trade in services, the agreement defines the principles that every measure implemented by a party and involving trade in services shall follow. These measures are defined as all the measures implemented by

- (a) central, regional, or local governments and authorities of that Party; and
- (b) non-governmental bodies in the exercise of powers delegated by central, regional, or local governments or authorities of that Party.⁷²

Subparagraph (r) of art. 8.1 defines the modes of supply for trade in services. These modes of supply resemble the means of provision outlined in the GATS⁷³ as they include (a) the supply of a service from the territory of one party into the territory of any other party; (b) the supply of a service in the territory of one party to the service consumer of any other party; (c) the supply of a service by a service supplier of one party, through commercial presence in the territory of any other party and; (d) the supply of a service by a service supplier of one party, through presence of natural persons of a party in the territory of any other party.⁷⁴

Each signing party is required to make commitments under the subsequent articles regarding national treatment, market access and most-favoured-nation treatment, through different methodologies that could be either defining a schedule of specific commitments or defining a schedule of non-conforming measures. A brief analysis of the aforementioned principles according to the RCEP follows.

⁶⁸ Regional Comprehensive Economic Partnership Agreement [hereinafter referred to as RCEP], pp. 1-2.

⁶⁹ RCEP, pp. 1-2.

⁷⁰ GATS, Art. V.

⁷¹ GATT, Art. XXIV.

⁷² RCEP, Art. 8.2.

⁷³ See 1.1.1.1.

⁷⁴ RCEP, Art. 8.1(r).

- *National treatment*: art. 8.4 provides that each party shall guarantee to services and service suppliers of any other party “treatment no less favourable than that it accords to its own like services and service suppliers”⁷⁵, in all the sectors included in the schedule of specific commitments, and particularly in the schedule of specific commitments for services. In the same manner, each party should guarantee “treatment no less favourable than that it accords to its own like services and service suppliers”⁷⁶ in all the sectors, sub-sectors and activities subject to its Schedule of non-conforming measures. The treatment given to foreign services and foreign service suppliers may be formally identical or formally different compared to the treatment given to a party’s own like services and service suppliers, and regardless of the form to which the treatment is provided, the latter shall not modify the conditions of competition in favor of domestic services and services suppliers compared to their foreign counterpart.
- *Market access*: the provisions included in art. 8.5 concerning market access relates to all the modes of supply defined in art. 8.1 and states that each party must ensure that it treats services and service providers from any other party in a manner that is at least as favorable as the treatment outlined in its specified Schedule in Annex II (Schedules of Specific Commitments for Services). The article then defines a series of measures that a party shall not adopt or maintain based on regional subdivisions or its entire territory, with regard to market access commitment undertaken in the schedules of specific commitments or under the schedules of non-conforming measures. Among these prohibited measures there are restrictions on the quantity of service providers, restrictions on the overall value of service transactions or assets, restrictions on the overall number of service operations or the total quantity of service output, restrictions on the maximum count of individuals that can be employed in a specific service sector or by a service provider, measures that impose limitations or necessitate specific forms of legal entities or joint ventures through which a service provider can offer their services and restrictions on the involvement of foreign capital.⁷⁷
- *Most-favoured-nation treatment*: a party that chooses to make Most-Favored-Nation (MFN) commitments under Article 8.3 (Scheduling of Commitments) must provide treatment to services and service suppliers of another Party that is no less favorable

⁷⁵ RCEP, Art. 8.4.

⁷⁶ *Ibid.*

⁷⁷ RCEP, Art. 8.5.

than the treatment it provides to similar services and service suppliers of any other Party or non-Party. This applies to sectors and subsectors specified in its Schedule in Annex II (Schedules of Specific Commitments for Services) marked with "MFN," as well as those listed in the Most-Favored-Nation Treatment Sectoral Coverage Appendix. It also applies to sectors and subsectors not listed in the Most-Favored-Nation Treatment Sectoral Exemption List Appendix, subject to any conditions and qualifications mentioned therein.⁷⁸

The participation of China in the RCEP symbolizes its proactive commitment to the global governance of cross-border data flows. With this regard, the agreement has established rules for cross-border data flows under the premise of safeguarding national security interests and personal data privacy. The main provisions concerning cross-border data flows are contained in the chapter regarding electronic commerce and in the annexes of the chapter about trade in services concerning financial services and telecommunication services.⁷⁹

- *Electronic commerce*: the cross-border data flow provisions in the e-commerce chapter consists of three main clauses: art. 12.2 on principles and objectives, art. 12.15 on the cross-border transfer of information by electronic means, and art. 12.14 on the location of computing facilities. In art. 12.2 there is a general recognition of the importance of electronic commerce in driving economic growth and creating opportunities, in addition to a commitment to foster the trust and confidence in electronic commerce and promote collaboration among the parties.⁸⁰ Art. 12.15 states that each party might have its own regulatory obligations when dealing with the transfer of information by electronic means, but nonetheless the measures that each country will implement shall not prevent cross-border flow of information by electronic means under particular conditions, i.e. when the transfer of information is aimed at conducting the business of a covered person.⁸¹ Art. 12.14 provides that each party have the right to implement its own measures with regard to the use or location of computing facilities concerning requirements aimed at ensuring the security and confidentiality of communications, but

⁷⁸ RCEP, Art. 8.6.

⁷⁹ WANG, LIU, "RCEP regulations on cross-border data flow...", p. 38.

⁸⁰ RCEP, Art. 12.2.

⁸¹ RCEP, Art. 12.15.

that no such measures should require investors to locate computing facilities within one party's territory as the exclusive condition for conducting business in that country.⁸²

- *Financial services*: in the same manner as for electronic commerce, annex 8A of the RCEP concerning financial services covers the topic of cross-border data transfer in the financial sector. Art. 9 of the annex set out the conditions for transfers of information and processing of information. Each party is allowed to implement its own measures regarding the transfer of information and the processing of information, given that these measures do not prevent transfers of information and processing of information required for the conduct of the ordinary business of a financial service supplier in the territory of the party. A regulatory authority of one party is authorized to require a financial service supplier to comply with laws and regulations in the field of data management, data storage and system maintenance, as well as the retention of records within its territory by a financial service provider for regulatory or prudential purposes. In doing so, a party shall not implement such requirements to avoid its commitments and obligations in the field of transfer of information and processing of information. In addition, the article does not limit the authority of a Party to safeguard personal data, personal privacy, and the confidentiality of individual records and accounts, and it does not oblige a party to allow for the cross-border data transfer of information that are not included in its commitments such as the allowance for non-resident financial service providers to engage in the principal supply and intermediary supply.⁸³
- *Telecommunication services*: annex 8B of the RCEP set out specific conditions for all the measures implemented by a party and affecting trade in public telecommunications services, and covers measures concerning the availability and utilization of public telecommunications networks or services and measures concerning responsibilities pertaining to providers of public telecommunications networks or services.⁸⁴ Art. 4 of the annex provides the conditions for access and use of public telecommunication network and services, and states that every party must guarantee that service providers from other parties are granted timely access to and utilization of public telecommunications networks and services, which encompass leased circuits, within their territory or across borders. Such access should be provided on terms and

⁸² RCEP, Art. 12.14

⁸³ RCEP, Annex 8A, Art. 9.

⁸⁴ RCEP, Annex 8B, Art. 2.

conditions that are reasonable, non-discriminatory, transparent. Nonetheless, each party is allowed to require an operating permit or license that service suppliers will need in order to supply a public telecommunications network or service in its territory. Service suppliers of another party have a series of rights when conducting business in the territory of another party, these rights include the permission to acquire or lease and connect terminal or other equipment that interfaces with a public telecommunications network, and that is essential for providing their services, the establishment of connectivity between leased or owned circuits and public telecommunications networks and services, or between circuits leased or owned by another service provider, and the use of operating protocol of their choice. Every party must guarantee that service providers from other parties have the right to utilize public telecommunications networks and services for the transmission of information within their territory or across borders. This includes facilitating intra-corporate communications of such service providers and granting them access to information stored in databases or in machine-readable format within the territory of any party. A party is permitted to implement measures essential for ensuring the security and confidentiality of messages and safeguarding the personal information of end users of public telecommunications networks or services. However, these measures must not be applied in a manner that results in arbitrary or unjustifiable discrimination or serves as a disguised restriction on trade in services. Conditions on restrictive measures that could be implemented by parties are set out in the article, which underlines that no condition is to be imposed on access to and use of public telecommunication networks and services. The only exceptions shall be to protect the public service obligations of providers of public telecommunications networks and services, specifically their capacity to offer their networks or services to the general public or to preserve the technical integrity of public telecommunications networks or services. Only if these conditions are met, the parties shall implement restrictive measures for access to and use of public telecommunications networks and services that include requirements for specified technical interfaces, requirements for inter-operability of public telecommunications networks and services, requirements for the approval of terminal or other equipment, limitations on linking leased or owned circuits with public telecommunications

networks or services, or with circuits leased or owned by other service providers, and requirements for notification and licensing.⁸⁵

1.1.3 Cyberspace-related international cooperation efforts

In December 2016, president Xi Jinping made some remarks at the opening ceremony of the second world internet conference held in Wuzhen. The speech was about the importance of cyberspace and the need for cooperation between countries in this sector to “jointly build a community of shared future in cyberspace.”⁸⁶ Subsequently, in 2017, the Ministry of Foreign Affairs of the People’s Republic of China published the International Strategy of Cooperation on Cyberspace, a document containing a comprehensive explanation of China's policy and position on cyber-related international affairs. The document states that information technology, and in particular the internet, has allowed the international community to implement policies and strategies that have changed and transformed the society, the governance and people’s understanding of the world. Stemming from these assumptions, China’s strategy in cyberspace is based on four key principles:

- *The Principle of Peace*: China supports a secure, stable and prosperous cyberspace that will allow for shared benefits among countries, which have intertwined interests. China makes references to the UN Charter’s principles of non-use of force and peaceful dispute resolution⁸⁷ and opposes acts of hostility, arms race, and conflicts in cyberspace, advocating for the promotion of peace through cooperation. It calls for a joint effort to prevent and limit the threats posed by cyber terrorism.
- *The principle of Sovereignty*: this principle is also included in the UN Charter and includes all the aspects related to the cyberspace. The International Strategy of Cooperation on Cyberspace highlights each country’s right to choose its own path of cyber development, as well as cyber regulation and internet public policies. It opposes cyber hegemony, interference in internal affairs, and activities that undermine national security. Foreign powers shall not exercise their influence on public policies, laws and regulations implemented by national governments.

⁸⁵ RCEP, Annex 8B, Art. 4.

⁸⁶ Ministry of Foreign Affairs of the People’s Republic of China, “Remarks by H.E. Xi Jinping President of the People's Republic of China at the Opening Ceremony of the Second World Internet Conference”, 2015 www.fmprc.gov.cn/eng/wjdt_665385/zyjh_665391/201512/t20151224_678467.html (accessed 28/06/2023)

⁸⁷ “United Nations: Charter of the United Nations”, *The American Journal of International Law*, vol. 39, no. 3, 1945, pp. 191.

- *The principle of Shared Governance*: a multilateral approach shall be followed in building and managing the cyberspace. Every country in the international community, no matter their size and economic conditions, are entitled to equal participation in developing the international order and rules in cyberspace. The United Nations, along with other relevant international mechanisms and platforms, should play a decisive role in shaping the international consensus among the different positions of various countries. The distribution of internet resources shall be done in an equitable manner and the global governance system should be multilateral, democratic and transparent.
- *The principle of Shared Benefits*: the document mentions the 2030 Agenda for Sustainable Development as a systemic goal that can be achieved also through the development of an equitable internet environment that could bring benefits to all regions and countries. This can be done with an increased cooperation and openness of cyberspace that is aimed at realizing a people-centered, development-oriented and inclusive information society. Particular attention should be granted to developing countries, providing more technical and financial assistance to reduce the gap with already industrialized nations in the cyberspace.

Later in the document there is a special mention for the central role of the United Nations in formulating international rules in cyberspace. With this regard, China expresses its support for the adoption of resolutions on information and cyber security by the United Nations General Assembly, and, in addition, China will continue to participate in all the processes of the United Nations Governmental Groups of Experts. The latter has been developing a set of norms aimed at promoting responsible conduct among nations in the realm of cyberspace in order to enhance international understanding of cyberspace activities at technical, operational and policy levels, strengthen control and oversight of cyber activities with a focus on responsibility, increase the involvement of responsible partners in a more effective manner, and minimize risks, misunderstandings mistakes, and potential escalation in cyberspace.⁸⁸

China is one of the founding members of the Shanghai Cooperation Organization (SCO), an organization that was created in early 1990s for purpose of “set[ting] up a framework to facilitate the settlement of border issues between China and the Central Asia Republics with

⁸⁸ John A. DAVIS, and Charlie LEWIS, “Beyond the United Nations Group of Governmental Experts: Norms of Responsible Nation-State Behavior in Cyberspace”, *The Cyber Defense Review*, 2019, pp. 161.

the involvement of Russia”.⁸⁹ In January 2015, China and other member states of the SCO submitted an updated version of the “International Code of Conduct for Information Security” to the UN General Assembly. The code was created with the aim of identifying States’ rights and responsibilities in information space, encouraging constructive and responsible behavior among states while fostering cooperation to tackle shared threats and challenges in this domain. The ultimate goal is to ensure that information and communication technologies (ICTs), including networks, are utilized solely for the advancement of social and economic development and the well-being of people. Additionally, it seeks to uphold international stability and security.⁹⁰

China is open to dialogue with all parties of the international community in order to expand the cooperating efforts on cyber affairs. With this intent, China is committed to continue to hold the World Internet Conference (also referred to as Wuzhen summit), which is one of the key international platforms for technological standard-setting and governance of the cyberspace.⁹¹ The country takes responsibility to conduct a constructive dialogue and take on discussions on matters related to cyberspace with countries in the region within the framework of China-Japan-Korea cyber policy consultation. The last consultation took place on December 9th, 2020, via video conference due to the pandemic. It was the fifth round of the consultation and representatives and officials of pertinent ministries and agencies from the three countries participated in the consultation. The main topics revolved around “the latest developments in cyberspace, international and regional cybersecurity processes, regional and international initiatives including the Global Initiative on Data Security, and the trilateral practical cooperation in cyberspace”.⁹²

Another framework in which China is committed to pursue dialogue on cyberspace-related matters is the ASEAN Regional Forum (ARF), a security organization created with the main motivation of distributing in a stable and equitable manner the power between the main forces acting in the Asia-Pacific, i.e. China, Japan, and the United States.⁹³ The ARF together with

⁸⁹ Stephen ARIS, “The Shanghai Cooperation Organisation: ‘Tackling the Three Evils’. A Regional Response to Non-Traditional Security Challenges or an Anti-Western Bloc?”, *Europe-Asia Studies*, vol. 61, no. 3, 2009, pp. 457.

⁹⁰ Ministry of Foreign Affairs of the People’s Republic of China, “International Code of Conduct for Information Security”, 2011 www.fmprc.gov.cn/eng/wjdt_665385/2649_665393/201109/t20110913_679318.html (accessed 28/06/2023).

⁹¹ Brigitte DEKKER, et al., “Policy”, *Unpacking China’s Digital Silk Road*, Clingendael Institute, 2020, p. 12.

⁹² Ministry of Foreign Affairs of the People’s Republic of China, “China, Republic of Korea and Japan hold the 5th Cyber Policy Consultation”, 2020 www.fmprc.gov.cn/eng/wjwb_663304/zjzg_663340/jks_665232/jkxw_665234/202012/t20201210_599384.html (accessed 28/06/2023).

⁹³ Rosemary FOOT, “China in the ASEAN Regional Forum: Organizational Processes and Domestic Modes of Thought”, *Asian Survey*, vol. 38, no. 5, 1998, p. 425.

other organizations and forums are aimed at maximize opportunities for cooperation between regional governments and the latter ones shall remain alert and participate in the activities of those organizations and forums in order to gain the important insights and support their own view on cyberspace-related matters.⁹⁴ In addition, China will continue to hold the Boao Forum for Asia. Boao, situated in Qionghai city within Hainan province, serves as the permanent host for the Asia Forum since 2002. Qionghai city encompasses a substantial land area within Hainan and has gained prominence through the Boao Forum for Asia, which has emerged as a vibrant hub for China's international economic development, cooperation, and cultural activities.⁹⁵

A more practical approach is to be adopted and promoted by China in ensuring the cooperation between member states of SCO and BRICS countries, i.e., Brazil, Russia, India, China and South Africa, and will carry out balanced cybersecurity processes within the ARF framework. The Conference on Interaction and Confidence Building Measures in Asia (CICA) is a regional organization that was first proposed by Kazakhstan president Nursultan Nazarbayev on October 5, 1992. CICA is an Asia-based multilateral institution aimed at discussing about security issues in the region. With a total number of funding members of fifteen, including China, Russia and selected countries from Central and West Asia, the organization have seen little global recognition because of its slow institutionalization and development. The first meeting of foreign ministers took place in 1999, followed by the inaugural CICA summit in 2002. The CICA became known in the global arena only in 2014, when China assumed the chairmanship. The fourth CICA summit was hosted by China in Shanghai and witnessed the largest-ever gathering of heads of state and governments. The attendance of the United Nations Secretary-General further added to the significance of the summit.⁹⁶ CICA is one of the regional organizations supported and encouraged by China in order to foster cybersecurity cooperation.

The Forum on China-Africa Cooperation (FOCAC) is one of the tools that China utilize to affirm its presence in the African country. Inaugurated in 2000, the FOCAC has helped

⁹⁴ Gary WATERS, "The Case for a Regional Cyber Security Action Task Force", *Security Challenges*, vol. 7, no. 1, 2011, p. 4.

⁹⁵ Biao HE, et al., "Examining the Impacts of Mega-Events on Urban Development Using Coupling Analysis: A Case Study of the Boao Forum for Asia", *Sustainability*, 12(2), p. 730.

⁹⁶ Huiyun FENG and Kai HE, "China's Institutional Challenges to the International Order", *Strategic Studies Quarterly*, vol. 11, no. 4, 2017, pp. 40-41.

increasing Chinese trade and investment in Africa, with the result of the abolition of tariffs on 190 kinds of imported goods from twenty-eight of the least-developed African countries.⁹⁷

The China-Arab States Cooperation Forum (CASCF) is an official dialogue initiative between China and the Arab League (AL), consisting of 21 current member countries. Its establishment took place in 2004 during a visit by the former Chinese President, Hu Jintao, to the Arab League headquarters in Cairo, Egypt.⁹⁸ One of the most prominent achievement of the CASCF was reached at the 8th ministerial meeting of the CASCF on July 10, 2018. Other than a US\$20 billion loan announced by Xi Jinping for offering assistance in transportation infrastructure, promoting energy cooperation in the sectors of oil, gas, and low-carbon technologies, establishing a platform for financial cooperation, and fostering high-tech industrial collaboration, the forum enhanced the integration of China-Arab markets by introducing a credit line worth US\$3 billion. The credit line granted by China involved different sectors such as “digital technology cooperation, e-commerce, and cloud, as well as satellite technology development”.⁹⁹

The establishment of the Forum of China and the Community of Latin American and Caribbean States (CELAC) was announced with the adoption of a “Joint Statement on China-Latin America and the Caribbean Summit in Brasilia” on July 17th, 2014, when the Chinese president Xi Jinping attended the China-Latin America and the Caribbean Summit held in the Brazilian capital. The first ministerial meeting of China-CELAC forum was held in Beijing on January 8th and 9th, 2015, and in those days the forum was officially launched. This forum is aimed at fostering the advancement of a comprehensive cooperative partnership between China and Latin America and Caribbean states, built on principles of equality, mutual benefit, and shared development.¹⁰⁰

The Asian-Africa Legal Consultative Organization (AALCO) is the last organization analyzed in this part, which was constituted on November 15th, 1956. Originally known as Asian Legal Consultative Committee (ALCC), it is regarded to be a concrete achievement stemming from the significant Bandung conference. The main purposes and objectives of the

⁹⁷ Felix M. EDOHO, “Globalization and Marginalization of Africa: Contextualization of China—Africa Relations”, *Africa Today*, vol. 58, no. 1, 2011, p. 115.

⁹⁸ The China-Arab States Cooperation Forum (CASCF), 2016 bricspolicycenter.org/en/forum-de-cooperacao-china-paises-arabes/ (accessed 28/06/2023).

⁹⁹ Liana M. PETRANEK, “Paving a Concrete Path to Globalization with China’s Belt and Road Initiative Through the Middle East”, *Arab Studies Quarterly*, Vol. 41, Issue 1, 2019, p. 8.

¹⁰⁰ Department of Latin American and Caribbean Affairs Ministry of Foreign Affairs of China, “Basic Information about China-CELAC Forum”, April 2016 www.chinacelacforum.org/eng/ltjj_1/201612/P020210828094665781093.pdf (accessed 28/06/2023).

organization are to advise member states in the field of international law and foster cooperation between Asian-African countries on legal matters, providing guidance and support on legal issues of common concern in the form of recommendations to governments. With the consent of Member States, the Organization communicates its views on international law matters to the United Nations, other institutions, and international organizations. This allows for the representation of the Organization's perspective on relevant legal topics. In summary, the organization offers help in the field of international law to all its member countries, gives them legal support and facilitate the communication between countries and between member states and international organizations, such as the United Nations, on matters related to international law.¹⁰¹

These are the main forums and organizations in which China contributes, according to its international strategy on cooperation on cyberspace. In addition to that, China will collaborate in close contact with other organization with APEC and G20 on internet and digital economy related matters, as well as all the other relevant regional organizations. It's important to have a clear picture of all these international bodies that somehow are directly involved in the shaping of the domestic legislation and international relations of the Chinese government on cyberspace related matters. In the following section, the focus will return on the Chinese domestic regulations in the field on telecommunications, underlining all the specific limitations for foreign providers. The general overview of the global stakeholders outlined in this section helps understanding the reasons for the choices of the Chinese government when regulating foreign presence in a highly sensitive sector such as that of value-added telecommunication services.

1.2 Domestic regulations for foreign providers of Cloud services

When entering the Chinese cloud services market, a foreign provider shall abide by a series of regulations mainly listed in the Notice on the Regulation of Cloud Service Market's Business Conduct, a document already mentioned in Chapter 1 that summarize all the peculiar characteristics and legislative requirements of the cloud industry and cloud market in China. The document not only focus on foreign providers but gives a list of provisions and regulations that foreign players shall take into consideration when evaluating its entrance in

¹⁰¹ Asian-African Legal Consultative Organization, "About AALCO", www.aalco.int/about (accessed 28/06/2023).

the Chinese market. The notice has a national scope and is directed to all the telecommunications administration bureaus in each level of government, as well as to all the main telecommunications service providers. First of all, the notice clarifies the meaning of cloud services, which are defined in the Telecommunications Service Classification Catalog (2015 Edition) as “internet resource collaboration services” under the umbrella of internet data center (IDC) business.¹⁰² With that clear in mind, a foreign cloud services provider shall abide firstly by a general legislative framework constituted by the Measures for the Administration of Telecommunications Business Operation Permits (Order No. 5 of the Ministry of Industry and Information Technology) and the Notice on Further Regulating Market Access for Internet Data Center (IDC) and Internet Access Services (MIIT Letter [2012] No. 552). The main requirements set out in these two documents are related to funds, personnel, premises and facilities. Every cloud services provider is subject to the obligation for the conduction of relevant technical evaluations and shall obtain the appropriate value-added telecommunication business operating license.¹⁰³ The notice then specifically refers to foreign cloud services providers, stating that foreign cloud services providers operating within the Chinese territory shall abide by the provisions set out in the Administrative Measures for Foreign Investment in the Telecommunications Enterprise (State Council Order No. 534), as well as the opening up policies related to IDC businesses and contained in the Mainland and Hong Kong/Macao Closer Economic Partnership Arrangement (CEPA) Service Trade Agreement. As their domestic counterpart, foreign providers of cloud services must apply for the establishment of foreign invested telecommunications enterprises and obtain the corresponding value-added telecommunications business operating license.¹⁰⁴ In addition, cloud service operators shall inform the telecommunications authority about every technical cooperation with relevant entities. During every step of the collaboration process, a series of behavior shall be avoided by the company, such as the illegal provision of users’ and network data to collaborators or the transferring and leasing of its telecommunications business operating permit. The licensing requirements is once again highlighted in point n. 6 of the document, where cloud service operators are requested to obtain the appropriate licensing qualification also for utilizing the network infrastructure, IP addresses, bandwidth and other

¹⁰² Ministry of Industry and Information Technology, *Guanyu guifan yun fuwu shichang jingying xingwei de tongzhi* 关于规范云服
务市场经营行为的通知 (Notice on the Regulation of Cloud Service Market’s Business Conduct), 2016, p. 1.

¹⁰³ *Ibid.*

¹⁰⁴ *Ibid.* p. 2.

resources provided by their telecommunications partners, and the latter ones shall provide such resources only to business entities that already possess the licensing requirements.¹⁰⁵ Platforms for the provision of cloud services shall be established within the country, and in case of necessity, their relevant servers could be connected to overseas networks through the internet international business entry-exit approved by the MIIT. The use of other dedicated lines and virtual private networks (VPN) for connecting to the international network is prohibited.¹⁰⁶

The notice defines a special category of users named “access users” (*jieru yonghu* 接入用户). This kind of users are access websites and third-party application developers, and cloud services providers are required to take managerial responsibility for the behaviors of their access users. Some examples of these responsibilities are assurance that access users comply with relevant regulations, real-name registration for all the third-party application developers that have access to the platform and the management of information published by access users, that shall be treated in conformity with the law and shall be stopped in case the dissemination of information covers information that cannot be legally published. Specific provisions about the protection of personal information are also included in the notice. Cloud services providers shall establish sound data management systems and ensure the security of network data and user personal information. Network information security is one of the priorities highlighted in the notice. Every cloud service provider shall appoint dedicated personnel in charge of ensuring the security of the network within a comprehensive system for managing network information security and assessing the security of new technologies and new businesses. The main aim of this requirement is to ensure the continuity of the cloud services provided by the operator, as well as to address promptly every major accident.

Finally, the notice mentions other specific regulations and standards that both domestic and foreign cloud services providers shall comply to when conducting their business in China. The first regulation mentioned in the final part of the notice is “Administrative Measures for the Security Protection of Communication Networks”, whereas the technical standards for cloud services providers are outlined in the Security Capability Requirements for Cloud Computing Services and in the Security Protection Requirements for Public Cloud Services.

¹⁰⁵ Ministry of Industry and Information Technology, *Guanyu guifan yun fuwu shichang jingying xingwei de tongzhi* 关于规范云服
务市场经营行为的通知 (Notice on the Regulation of Cloud Service Market’s Business Conduct), 2016, pp. 2-3.

¹⁰⁶ *Ibid.* p. 3.

In the following sections we will analyze the main regulations affecting the business of foreign cloud services providers in the Chinese market, in order to have a clear picture of all the limitations and requirements set out by Chinese regulations.

1.2.1 Regulations on the Administration of Foreign-Invested Telecommunications Enterprises

The main measures for regulating the business operation and requirement of foreign-invested enterprises in the telecommunications sector are the “Regulations on the Administration of Foreign-Invested Telecommunications Enterprises”. This document was first promulgated by the State Council on December 11, 2001, and it went through three revisions since then. The first revision took place on September 10, 2008, the second revision occurred according to a State Council’s decision on February 6, 2016, and the document was revised for the last time on March 29, 2022.

The subjects of these regulations are foreign-invested telecommunications enterprises, that are defined as “enterprises established within the territory of the People's Republic of China by foreign investors in accordance with the law to engage in telecommunications business operations.”¹⁰⁷ These foreign-invested enterprises may engage in both basic telecommunications services and value-added telecommunications services. References to the specific classification of the services provided shall be conducted according to the Telecommunications Regulation, mentioned in the previous chapter.¹⁰⁸

A minimum amount of registered capital is required when establishing a foreign funded telecommunication enterprise within the territory of China, and different requirements are requested whether the services belong to the basic or to the value-added telecommunications services category. The minimum registered capital for foreign enterprises engaging in nationwide or cross-provincial/autonomous region/municipal level basic telecommunications services is 1 billion RMB, whereas for the same kind of businesses operating at provincial, autonomous region, or municipal level, the minimum registered capital shall be 100 million RMB. With the same logic, foreign-funded enterprises operating value-added telecommunications services at national level or cross-provincial/autonomous

¹⁰⁷ PRC State Council, *Waishang touzi dianxin qiye guanli guiding* 外商投资电信企业管理规定 (Regulations on the Administration of Foreign-Invested Telecommunications Enterprises), 2001, Art. 2.

¹⁰⁸ See Chapter I paragraph 3 “Regulatory framework for domestic enterprises”.

region/municipal level shall have a minimum registered capital of 10 million RMB, whereas foreign-funded telecommunication enterprises operating at provincial, autonomous region, or municipal level shall have a minimum registered capital of 1 million RMB.¹⁰⁹

Limitations on the share capital owned by foreign investors are also set out in the document. Foreign-funded telecommunication enterprises operating basic telecommunication services shall not have a foreign contribution that exceeds 49% of the registered capital, whereas foreign-funded telecommunication enterprises that operate in the value-added telecommunication services sector shall not have a foreign contribution that exceeds 50% of the registered capital.¹¹⁰

It has to be noted that these regulations work in accordance with the provisions set out in the Telecommunications Regulations, and that coordination between the two is required to fully comply with the requirements set out by the Chinese government in the basic and value-added telecommunications sector.

Both Chinese and foreign investors shall meet specific requirements according to the document, specifically when investing in basic telecommunication services. Art. 8 and 9 of the document stresses that these requirements have to be met only by those subjects defined as “Chinese main investors” and “foreign main investors”, which are investors that contribute the highest amount among all Chinese/foreign investors and account for more than 30% of the total Chinese/foreign investments. Chinese main investors must be legally incorporated companies with a suitable amount of funds and number of personnel that allows the company to conduct business activities, as well as meeting specific industry requirements stipulated by the State Council and relevant industrial and information technology authorities. Foreign investors shall also be legally incorporated companies with a business operating license in basic telecommunications services in the country or region of origin, and shall have the appropriate amount of fund and number of personnel suitable for engaging in business activities. Regardless of the type of business operated by the foreign entity, the latter shall in any case apply for a telecommunications business operating license, be it for basic or for value-added telecommunications services. The foreign-funded enterprise shall submit all the relevant documents to the industry and information technology authority of the State Council, these documents include an investor profile statement, qualification certificates or relevant

¹⁰⁹ Regulations on the Administration of Foreign-Invested Telecommunications Enterprises, Art. 5.

¹¹⁰ *Ibid.* Art. 6.

confirmation documents of investors in accordance with art. 8 and 9 of the regulations analyzed in this part and documents related to specific requirements set out in the telecommunications regulations and regarding both basic and value-added telecommunications services. All these documents will be revised by the competent industrial and information technology authority of the State Council with different deadlines for basic and value-added telecommunications services. The relevant authority shall revise all the documents submitted by the foreign-funded enterprise providing basic telecommunications services within a period of 180 days from the date of acceptance of the application, and after that a decision on the feasibility of the application process shall be made. With the same logic, applicants for a telecommunications business operation license for value-added telecommunications services shall receive a response within 60 days from the submitting of all the relevant documents. After this period of time, if the evaluation outcome is positive, a telecommunications business operating permit will be issued, if not the applicant shall be notified with a written note containing all the reasons for that decision.¹¹¹

A special mention shall be made to the provision regarding the cross-border telecommunications services. This practice is not prohibited by the current regulations but an approval by the competent industrial and information technology authorities of the State Council shall be obtained prior to the actual engagement in such activities, in symbiosis with the international telecommunications import and export bureau.¹¹²

In all the situations in which an applicant submits false or forged certifications in order to deceive competent authorities in the evaluation process, or in the case of a violation in the required limitation in the proportion of foreign investment in the enterprise, the latter shall be fined according to the severity of the violation and the telecommunications business operating license shall be revoked.¹¹³

From this analysis it can be inferred that foreign-invested enterprises are subject to limitations in terms of minimum registered capital and proportion of investment in the enterprises, as well as to the requirement to obtain a relevant telecommunications business operating license. A foreign investor shall bear in mind that the provisions of these regulations are not exhaustive and shall be integrated with more general provisions contained in the telecommunications regulations mentioned in the previous chapter. This is crucial in order to

¹¹¹ Regulations on the Administration of Foreign-Invested Telecommunications Enterprises, Art. 10.

¹¹² *Ibid.* Art. 12.

¹¹³ Regulations on the Administration of Foreign-Invested Telecommunications Enterprises, Art. 13-14.

avoid sanctions and to mitigate the risk of seeing the telecommunications business operating license revoked.

1.2.2 Notice on Further Regulating Market Access for Internet Data Center (IDC) and Internet Access Services

In 2012, the MIIT published the “Notice on Notice on Further Regulating Market Access for Internet Data Center (IDC) and Internet Access Services”, a notice that is aimed at promoting the healthy development of the Internet industry and create a healthy and orderly market environment. In addition, the notice further specifies the provisions of the “Implementation Plan for Further Regulating the Market Access of Internet Data Center (IDC) Services and Internet Access Service (ISP) Businesses, hereinafter referred to as the “Implementation plan”.

The implementation plan, according to the notice, covers Internet Data Center (IDC) services and Internet Access Service Provider (ISP) businesses and specify the requirements for obtaining a business operating license in related sectors. These requirements are listed in the Implementation plan and includes the arrangement of sufficient funds and personnel that will allow the service provider to conduct its business activity. In particular, IDC and ISP businesses shall establish a dedicated network and information security personnel system, with appropriate management personnel based on the number of websites connected to the service, with the addition of a dedicated customer service department and specialized personnel for handling complaints.¹¹⁴ Another key requirement for businesses applying for an IDC license is the use of their own or leased data centers and premises. The term IDC data center is a broad recipient of a various range of equipment, that include uninterruptible power supply (UPS), power generation equipment, cooling systems and server cabinets. When applying for an IDC license, service providers shall submit all the necessary proof materials which include property ownership certificates or lease agreements, data center design documents, supervision reports, and construction documentation of the data center. Enterprises in this sector are required to provide hosting, proxy maintenance, system configuration, and management services for users' servers and other internet-related

¹¹⁴ Ministry of Industry and Information Technology, *Guanyu jin yi bu guifan yintewang shuju zhongxin (IDC) yewu he yintewang jieru fuwu (ISP) yewu shichang zhunru gongzuo de shishi fang'an* 关于进一步规范因特网数据中心(IDC)业务和因特网接入服务(ISP)业务市场准入工作的实施方案 (Implementation Plan for Further Regulating the Market Access of Internet Data Center (IDC) Services and Internet Access Service (ISP) Businesses) [hereinafter referred to as Implementation Plan], 2012, pp. 1-2.

equipment through outsourcing. A range of other application services can be offered to customers, such as rental services for database systems, servers, storage space, proxy leasing of communication lines and outbound bandwidth among others.¹¹⁵

IDC and ISP services providers shall meet all the requirements in terms of network security management and information security management. In order to enhance the response capabilities of the enterprises in this sector and to ensure a more secure operating environment for their customers and services, IDC and ISP companies shall ensure communication network security through the implementation of a series of communication network security protection standards and with the development of network security emergency response plans. In the same manner, in order to counteract illegal websites and content, protect users' information and conduct information security assessments, IDC and ISP companies shall establish a system for inspecting and handling illegal websites and content, implement user information security management with the development of policies and procedures aimed at enhancing the level of protection of users' information collected and stored within the enterprise's systems. In addition to that, periodical security assessment must be undertaken with the aim of evaluating the effectiveness of the information security measures and identifying potential vulnerabilities or risks.¹¹⁶

In the final provisions of the notice, the establishment of a reputation evaluation and data center rating management mechanism for IDC and ISP companies is announced with the aim of helping and giving important insights for market regulation purposes to relevant authorities. These evaluations will be published regularly, and the reputation system will be combined with annual inspections and auditing activities of both IDC and ISP enterprises. Domestic and foreign enterprises are supported in the application process for relevant operating licenses through a dedicated website entitled "Telecommunications Business Comprehensive Management System"¹¹⁷, where all the required documents can be downloaded and all the relevant certifications to be submitted are listed.

¹¹⁵ *Ibid.* p. 2.

¹¹⁶ *Ibid.*

¹¹⁷ The website can be accessed at tsm.miit.gov.cn.

1.2.3 Administrative Measures for the Security Protection of Communication Networks

Implemented on March 1st, 2010, the Administrative Measures for the Security Protection of Communication Networks are aimed at “strengthen the management of communication network security, enhance the capacity for communication network security protection, and ensure the smooth operation of communication networks.”¹¹⁸

The measures start with the definition of the authority responsible for providing unified guidance, coordination, and oversight for the protection of national communication network security, which is the MIIT. In addition to the MIIT, telecommunications administrations and authorities at each level of government, i.e., province, autonomous region, and municipality directly under the central government are also responsible for fulfilling the duty of providing guidance, coordination, and inspection of communication network security protection work within their respective administrative regions.¹¹⁹

Art. 7 of the measures describes more in details the practical actions required by the legislation in order to ensure the security of communications network. Every telecommunications service provider shall divide its operational communication networks into units and classify them into different levels, from 1 to 5, according to the potential damage these may cause to national security, economic operation, social order, and public interests in the event of a breach in the system. These classifications shall then be revised and evaluated by the relevant institutions in the sector, as specified above.¹²⁰

A communication between the company and the telecommunications institutions must be established after the evaluation of the classification of units and levels, and according to the sector in which the enterprise operates, a report containing different kind of information must be filled. Basic telecommunications service providers are divided in major business operators' group companies and subsidiaries. The first ones must report to the MIIT a record of the communication network units under their direct management, whereas subsidiaries and branches are responsible for reporting to the local telecommunications management bureaus the record of the communication network units they are responsible of managing. In the field of value-added telecommunications services, business operators shall report to the

¹¹⁸ Ministry of Industry and Information Technology, *Tongxin wangluo anquan fanghu guanli banfa* 通信网络安全防护管理办法 (Administrative Measures for the Security Protection of Communication Networks), 2009, Art. 1.

¹¹⁹ *Ibid.* Art. 4.

¹²⁰ Implementation Plan [...], Art. 7.

telecommunications management institutions that issued the telecommunications business operation license.¹²¹

According to the different level of each operational communication network, the telecommunications services provider shall arrange compliance assessments that must take place every year for units belonging to level 3 or above, and with a frequency of two years for units belonging to level 2. The results of the compliance assessments, as well as rectification status or rectification plans shall be submitted to the authority responsible for record-keeping within 30 days from the completion of the compliance assessment.¹²²

With the same logic as the compliance assessments, security risk assessments for each communication network unit must be undertaken with the same frequency mentioned above, in order to eliminate significant network security risks. It is interesting to notice that before national major events, the telecommunications service providers are required to conduct an additional security risk assessment, according to the provisions set out by the telecommunications regulatory authority. This denotes a particular attention to sensitive events that are relevant to national security and poses emphasis on the critical role that telecommunications play in avoiding possible vulnerabilities in the system and managing the response to those weak points.¹²³

To sum it up, these measures once again stress the importance of establishing a sound security system that allow domestic and foreign companies to conduct their business in both basic and value-added telecommunications businesses in a secure and responsible way. Each of the two types of businesses is required to meet certain requirements and to promptly communicate their effort in ensuring the security of their network to relevant authorities.

1.2.4 Foreign Investment Law and Negative List

To conclude this paragraph on the regulations for foreign providers entering the Chinese market, a special mention has to be made to the Foreign Investment Law (FIL), which is a comprehensive law on foreign investment in China that replaced the previous three laws that regulated wholly foreign-owned enterprises, sino-foreign equity joint venture enterprises and sino-foreign cooperative joint venture enterprises.¹²⁴ Enacted on January 1st, 2020, the FIL is

¹²¹ Implementation Plan [...], Art. 8.

¹²² *Ibid.* Art. 11.

¹²³ *Ibid.* Art. 12.

¹²⁴ Franco FORNARI, Valentino LUCINI, “Introduzione alla riforma degli investimenti stranieri in Cina”, *Mondo Cinese*, vol. 167, n. 1, 2019, p. 106.

aimed at broadening the market access, encouraging and facilitating foreign investment with a standardization in the management of the latter. Here a brief overview of the main provisions regarding foreign investors that directly affects their operation in the country will be reported.

According to the Implementation Regulations of the Foreign Investment Law of the People's Republic of China, a foreign investor entering the Chinese market both through the formation of a new foreign invested enterprise or through the acquisition of an already existing Chinese company, shall follow a three-step process consisting of application, approval and filing.¹²⁵ Foreign investors shall be given the so-called “national treatment”, i.e., their investment shall receive a treatment no lower than that given to domestic investors. This is also called “pre-entry national treatment”, in that the law provides that foreign investors shall be granted a national treatment before their presence or establishment in the country.¹²⁶ Despite the commitment of China to liberalize as much as possible its market to foreign investors, the national treatment scheme is integrated by a negative list system in order to regulate the access to certain sectors of the market, deemed as more sensitive and therefore under special scrutiny by the State. In all other sectors not contained in the negative list, the national treatment clause shall be applied with no other exceptions except in the case of more preferential treatment accorded to certain countries in specific international treaty or agreement signed by China.¹²⁷ The negative list system was already in use prior to the implementation of the FIL, as demonstrated by the existence of the investment catalogue. In order to further promote and enhance the management of foreign investments in the country, in 2015 the State Council published the Notice on the Special Administrative Measures for Foreign Investment Entry Admission in the Free Trade Pilot Zones (Negative List). A total number of four free trade pilot zones were established in Shanghai, Guangdong, Tianjin and Fujian.¹²⁸ This first version of the negative list was divided into 15 categories, 50 items, and

¹²⁵ State Council, *Zhonghua renmin gongheguo waishang touzifa shishi tiaoli* 中华人民共和国外商投资法实施条例 (Implementation Regulations of the Foreign Investment Law of the People's Republic of China) [hereinafter referred to as Implementation Regulations], 2019, Art. 48.

¹²⁶ Mo ZHANG, “Change of regulatory scheme: China’s New Foreign Investment Law and Reshaped Legal Landscape, *Pacific Basin Law Journal*, 37, 2020, p. 193-94.

¹²⁷ Ministry of Commerce of the People’s Republic of China, *Zhonghua renmin gongheguo waishang touzifa* 中华人民共和国外商投资法 (Foreign Investment Law of the People’s Republic of China) [hereinafter referred to as FIL], Art. 4.

¹²⁸ See State Council, *Guowuyuan bangongting guanyu yinfa ziyou maoyi shiyanqu waishang touzi zhunru tebie guanli cuoshi (fumian qingdan) de tongzhi* 国务院办公厅关于印发自由贸易试验区外商投资准入特别管理措施（负面清单）的通知 (Notice on the Special Administrative Measures for Foreign Investment Entry Admission in the Free Trade Pilot Zones (Negative List)), 2015.

122 specific administrative measures based on the "National Economic Industries Classification". The length of China's negative list denotes clearly the country's interest in reducing government intervention in the economy.¹²⁹ It limited the access to telecommunications transmission services and internet related service in the following manner: telecommunication service providers are subject to the commitments undertaken by the People's Republic of China at the time of accession to the WTO and take the form of a limitation of foreign investment for value-added telecommunications services which shall not exceed 50%, whereas for basic telecommunication services providers the limit to foreign investment is set to 49%, with the Chinese equity or shares in the company no less than 51%. In addition, foreign investors entering the basic telecommunication services business shall be specialized companies legally established to engage in basic telecommunications services.¹³⁰ A series of restrictions are also set out for internet and internet-related services, where investments in a vast range of services, from internet news services, online publishing services, to internet cultural operations and public information release is prohibited, with the only exceptions to the contents of already opened up sectors under China's WTO commitments. The Chinese government shall conduct a security assessment in case foreign investors cooperate with internet news information service units on businesses related to internet news information services.¹³¹

The new version of the negative list, expanded countrywide in 2018 after five years of piloting period in the free trade zones, was anchored in the form of law with the introduction of the FIL in 2020.¹³² It follows the same principle as its previous versions, with the exception that market access measures included in the list are divided into two categories, i.e., prohibitive measures and restrictive measures.¹³³ The difference between the two is that in sectors with restrictive measures, foreign investors are subject to certain limitations regarding equity investment and senior management personnel set out in the negative list, whereas foreign investors are not allowed to invest in sectors defined as prohibited.¹³⁴

¹²⁹ Dan MARKUS, "China and the Negative-List Principle: Possibilities and Uncertainties", in Scott KENNEDY (edited by), *State and Market in Contemporary China: Toward the 13th Five-Year Plan*, Center for Strategic and International Studies (CSIS), 2016, p. 38.

¹³⁰ Special Administrative Measures for Foreign Investment Entry Admission in the Free Trade Pilot Zones (Negative List), 25 (60).

¹³¹ *Ibid.* 26 (61-62-63).

¹³² Qian ZHOU, *How to Read China's New Law on Foreign Investment*, in "China Briefing", 2019, www.china-briefing.com/news/read-chinas-new-law-foreign-investment/ (accessed 28/06/2023).

¹³³ ZHANG, "Change of regulatory scheme..." p. 201.

¹³⁴ Implementation regulations, Art. 33.

The official name for the negative list is Special Administrative Measures (Negative List) for Foreign Investment Access, and its latest version was published in 2021. This new version of the negative list further liberalizes market access to foreign investors, reducing the number of restricted and prohibited sectors from 33 to 31.¹³⁵ It is important to notice that sectors not listed in the negative list are treated according to the principle of equal treatment for domestic and foreign capital and that both foreign and domestic investors are subject to the provisions of the Negative List for Market Access, a different negative list which delineates all the sectors in the Chinese economy opened to private investment. Following the same principle of the negative list for foreign investment, private companies are allowed to invest in sectors not included in the negative list for market access without requiring additional administrative approvals.¹³⁶ The negative list for foreign investments comes next other agreements in the hierarchy, such as the Mainland and Hong Kong Closer Economic Partnership Arrangement, the Mainland and Macao Closer Economic Partnership Arrangement and other international treaties and agreements with more preferential provisions on access treatment for foreign investors than the negative list.

In recent years, the number of prohibited and restricted sectors have reduced significantly. The number of restricted sectors have reduced from 111 in 1995 to only 10 in 2021, whereas the number of prohibited sectors have reached its peak in 2007 with a value of 39 and has decreased to its lowest point in 2021 to only 21 prohibited sectors.

The 2021 version of the negative list set out specific limitations for the telecommunications industry which are similar to already implemented limitations in previous versions. The provisions for foreign telecommunications services providers are subject to the WTO commitments undertaken by China. Foreign operators establishing a value-added telecommunications businesses joint venture in China cannot own shares in the company for more than 50% of the total amount of share capital. This limitation does not include different fields such as ecommerce, domestic multi-party communications, storage-forwarding, and call centers. At the same time, foreign services providers of basic telecommunications services must ensure that the controlling stake in the joint venture is held by the Chinese party.

¹³⁵ See *Waishang touzi zhunru tebie guanli cuoshi (fujian qingdan) (2021 nian ban)* 外商投资准入特别管理措施 (负面清单) (2021 年版) (Special Administrative Measures (Negative List) for Foreign Investment Access) (2021 edition).

¹³⁶ *China's 2022 Negative List for Market Access: Restrictions Cut, Financial Sector Opening*, in "China Briefing", 2022, www.china-briefing.com/news/chinas-2022-negative-list-for-market-access-restrictions-cut-financial-sector-opening/ (accessed 28/06/2023).

Here it has to be noted that compared to previous versions of the negative list, there is no specific indication about the maximum amount of foreign shareholding in basic telecommunications services businesses, which was set to 49% in the Special Administrative Measures for Foreign Investment Entry Admission in the Free Trade Pilot Zones. With regard to software and information technology services, numerous sectors are deemed as prohibited, such as the provision of internet news information services, online publishing services, online audio-visual program services, internet cultural operations (excluding music), and internet public information dissemination services.

2. Means to invest in the Chinese Cloud industry

The current legal framework for the cloud industry does not allow foreign enterprises to apply for an IDC license, which is mandatory to set up a value-added telecommunication business in China. Despite this limitation, foreign cloud providers can use different strategies to enter the Chinese market. This paragraph analyzes in detail the main strategies adopted by foreign companies.

2.1 CEPA Route

In 2003, China has signed two bilateral agreements respectively with the Special Administrative Region of Hong Kong and the Special Administrative Region of Macao. These agreements are known by their English acronyms CEPA (“Closer Economic Partnership Agreement”) and are aimed at fostering the economic and trade exchange between mainland China and the two territories.¹³⁷

- *Mainland and Hong Kong*: signed on June 29th, 2003, the “Mainland China and Hong Kong Closer Economic Partnership Arrangement” is made up of three sections, including tariff reduction on 273 categories of Hong Kong imported goods in mainland China, the opening up of Chinese market to Hong Kong service providers in 17 sectors, and a series of measures for promoting bilateral exchanges of goods, capital and people.¹³⁸ On September 2003, a series of annexes were signed, including Annex 4 on

¹³⁷ See Ministry of Commerce of the People’s Republic of China, *Neidi yu gang’ao guanyu jianli jinmi jingmao guanxi de anpai* 内地与港澳关于建立更紧密经贸关系的安排 (Mainland and Macao Closer Economic and Partnership Arrangement) [hereinafter referred to as Mainland and Hong Kong CEPA], 2003.

¹³⁸ Bruno CABRILLAC, “A Bilateral Trade Agreement Between Hong Kong and China: CEPA”, *China perspectives*, 54, 2004, p. 1.

Specific Commitments on Liberalization of Trade in Services. Annex 4 specifies that, from October 1, 2003, Hong Kong service suppliers are allowed to set up joint venture enterprises to provide internet data center services. The shareholding limit for Hong Kong service suppliers in the joint venture enterprise should not exceed 50%, and there will be no geographic restriction for the joint venture enterprise to provide value-added telecommunication services within mainland China.¹³⁹

Based on the liberalization measures that have been implemented under CEPA and its Supplements, a subsequent agreement, the “Mainland and Hong Kong CEPA Agreement on Trade in Services”, was signed in Hong Kong on November 27, 2015. The latter realizes the liberalization of trade in services in the whole mainland and Hong Kong through a pre-access national treatment with a negative list.¹⁴⁰ With this agreement, Hong Kong will enjoy the most preferential treatment in the whole mainland, meaning that all free trade agreements that China signs with other countries and territories with better provisions than CEPA also apply to Hong Kong.¹⁴¹ Hong Kong companies have an easier access to the mainland market through investment facilitation measures such as the adoption of filing administration of contracts and articles of association for establishment and change of enterprises. The related procedures will then be processed according to the relevant legislation of the mainland.¹⁴²

- *Mainland and Macao*: signed on October 17, 2003 the “Mainland China and Macao Closer Economic Partnership Arrangement” is similar to the bilateral agreement signed by mainland China and Hong Kong and has similar objectives, such as the reduction or elimination of tariff and non-tariff barriers on the vast majority of trade in goods between the two sides, the liberalization on trade in services through the elimination of all discriminatory measures between the two sides, the promotion of trade and the facilitation of investment.¹⁴³ Similarly to the Hong Kong case, Annex 4 of the agreement states that, from January 1, 2004, Macao service suppliers are allowed to set up joint venture enterprises to provide internet data center services, with the same

¹³⁹ Mainland and Hong Kong CEPA, Annex 4, p. 15.

¹⁴⁰ See Ministry of Commerce of the People’s Republic of China, Mainland and Hong Kong CEPA Agreement on Trade in Services Signed in Hong Kong, 2003.

¹⁴¹ *Ibid.*

¹⁴² Mainland and Hong Kong CEPA, Agreement on Trade in Services, Chapter 7, Art. 12.

¹⁴³ Mainland and Macao CEPA, Chapter I, Art. 1.

shareholding limit set at 50% for Macao service suppliers and with no geographic limits for the joint venture in providing value-added telecommunication services. On November 28, 2015, Macao and mainland China signed the “Mainland and Macao Closer Economic Partnership Arrangement Agreement on Trade in Services”, which was implemented on June 1, 2016. The agreement further liberalizes the trade in services in the whole mainland and Macao in a similar way of the correspondent bilateral agreement signed between mainland China and Hong Kong, in terms of number of areas of service sector involved, preferential treatment in the whole mainland, and the adoption of the filing management approach.¹⁴⁴

Both the Hong Kong and Macao CEPA Agreements provide a legal pathway for foreign enterprises to enter the Chinese cloud market. Unfortunately, this solution is valid only for companies incorporated in Hong Kong and Macao, and companies incorporated in other regions are not allowed to set up a Hong Kong/Macao company with the only purpose of establishing a Chinese joint venture.¹⁴⁵ The Hong Kong/Macao company should meet the following requirements, as provided by Annex 5 of both CEPA agreements:

- It shall be duly incorporated according to the commercial code and the commercial registration code of the special administrative region, and if provided by the law, it shall obtain a valid business registration certificate. The annex specifies that overseas companies, representative offices, liaison offices, “mailbox companies”, and companies established to provide services to their parent companies are not considered as services providers in Hong Kong/Macao, and therefore are not eligible for setting up a Chinese joint venture;¹⁴⁶
- The nature and scope of services provided by the company in Hong Kong/Macao should include the nature and scope of services they intend to provide in mainland China.
- It should have registered in Hong Kong/Macao and engaged in substantive commercial operations for more than 3 years;

¹⁴⁴ Ministry of Commerce of the People’s Republic of China, Mainland and Macao CEPA on Trade in Services Signed in Macao, 2003.

¹⁴⁵ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

¹⁴⁶ Mainland and Hong Kong CEPA, Annex 5 *Guanyu “fuwu tígongzhe” dingyi ji xiangguan guiding* 关于“服务提供者”定义及相关规定 (Definition and related regulations regarding 'service providers'), p. 2.

- It should have paid income tax during the period of substantive commercial operations, meaning that the entity cannot be a dormant company and must have had some real ongoing business activities;¹⁴⁷
- It should own or rent business premises which have to be commensurate with the scope and scale of its commercial operation in Hong Kong/Macao;
- Over 50% of the company's workforce must consist of individuals who either permanently reside in Hong Kong/Macao or individuals who are granted permission to establish residency in Hong Kong/Macao according to relevant legislation.

In practice, it remains a hard challenge for Chinese joint ventures to obtain an IDC license through the CEPA route, given the high level of discretion of Chinese authorities in the approval process and the high uncertainty of the timeframe for approval. As of March 2020, 13 Chinese joint ventures established under the CEPA route have successfully obtained an IDC license, with some of the main telecommunications service providers in Hong Kong and Macao behind these joint ventures.¹⁴⁸ Foreign companies either with subsidiaries or well-established operations in Hong Kong and Macao have also been able to obtain an IDC license through the establishment of a Chinese joint venture.¹⁴⁹ In 2011, NTT Docomo, one of the main Japanese mobile operator, announced that it has invested \$22.5 million in Baidu Yi Xin Network Technology, the newly created joint venture between the company and Baidu, Inc, aimed at providing value-added services and digital content for mobile phones in mainland China.¹⁵⁰ In 2013, a European multinational company with ongoing operations in Hong Kong, SAP, announced the creation of China Datacom Corporation Limited, a joint venture with China Communication Services, a subsidiary of China Telecom Group. The joint venture will offer SAP cloud computing solutions to small and large organizations in China and will expand the cooperation of the two companies from IDC services to cloud offerings and application services.¹⁵¹ Atos is another European company headquartered in France with

¹⁴⁷ Mainland and Hong Kong CEPA, Annex 5 *Guanyu "fuwu tígongzhe" dingyi ji xiangguan guiding* 关于“服务提供者”定义及相关规定 (Definition and related regulations regarding 'service providers'), p. 2.

¹⁴⁸ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

¹⁴⁹ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

¹⁵⁰ *NTT Docomo completes investment in joint venture with China's baidu*, in “Japan Today”, 2012, japantoday.com/category/tech/ntt-docomo-completes-investment-in-joint-venture-with-chinas-baidu (accessed 29/06/2023).

¹⁵¹ *SAP and China Telecom Expand Strategic Partnership to Provide SAP Cloud Portfolio in China*, in “SAP News”, 2013, news.sap.com/2013/11/sap-and-china-telecom-expand-strategic-partnership-to-provide-sap-cloud-portfolio-in-china/ (accessed 29/06/2023).

well-established operations in Hong Kong, since it has 3 data centers spread across Hong Kong and operates the Hong Kong Government Cloud.¹⁵² In 2019, Atos formed a joint venture with leading cross-border digital economy fund investors Sequoia Capital China and CBC Capital, and a part of Atos in China, and opened a new office in Wuhan, which will be the headquarters for the newly-created joint venture Atos Cloud Computing.¹⁵³

2.2 VIE Structure

Implementing a VIE or “variable interest entity” structure is one of the most common strategies used by foreign investors to invest indirectly into IDC projects in China.¹⁵⁴ The VIE structure is based on a series of contractual arrangements between a holding company outside of China, usually incorporated in the Cayman Island, and a Chinese operating entity. This structure allows foreign investors to invest in the non-Chinese holding company and to have no direct investment in the Chinese operating company, as the holding company does not own any equity interests in the Chinese operating company.¹⁵⁵ VIE structures serve a dual purpose, on the one hand they allow Chinese companies to raise overseas capital, and on the other hand they allow foreign investors to comply with China’s regulations on foreign investment in prohibited and restricted sectors.¹⁵⁶ The initiator of the VIE structure was SINA, a renowned Chinese web portal that, back in 2000, planned to go public in the American stock market. At that time, the company didn’t meet the revenue threshold for listing, therefore, SINA hired Liu Gong, a lawyer experienced in government affairs, which, along with his team, designed the new VIE equity structure, making possible for the company to go public in the Nasdaq market.¹⁵⁷ Stemming from the SINA experience, a typical Chinese style VIE structure comprises four tiers:

- *A Chinese operating company*: a Chinese domestic capital enterprise with Chinese citizens as its shareholders that will work in sectors prohibited or restricted to foreign

¹⁵² Atos Hong Kong Official Website, atos.net/en/hong-kong (accessed 28/04/2023).

¹⁵³ *Atos Cloud Computing opens office in China*, in “Market Insiders”, 2019, markets.businessinsider.com/news/stocks/atos-cloud-computing-opens-office-in-china-1028738942 (accessed 29/06/2023).

¹⁵⁴ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

¹⁵⁵ *Considerations for Investors in Chinese VIE Structures*, in “Paul Weiss”, 2022, www.paulweiss.com/practices/transactional/private-equity/publications/considerations-for-investors-in-chinese-vie-structures?id=45127 (accessed 28/06/2023).

¹⁵⁶ Fa CHEN, “Variable interest entity structures in China: are legal uncertainties and risks to foreign investors part of China’s regulatory policy?”, *Asia Pacific Law Review*, vol. 29, issue 1, 2021, p. 2.

¹⁵⁷ Kent LIN, *Why Do Chinese Internet companies go IPO with the VIE Equity Structure?*, in “Medium”, 2018, medium.com/@tours4tech/why-do-chinese-internet-companies-go-ipo-with-the-vie-equity-structure-b44e271d87b0 (accessed 28/06/2023).

investors. The company holds all the assets and licenses that cannot be obtained by foreign investors or foreign-invested entities and that are necessary to operate in the prohibited/restricted sectors (e.g., IDC VATS licenses for cloud services providers)

- *A Cayman-incorporated company*: the non-Chinese holding company that will act as the listed entity owned by both Chinese shareholders and founders of the Chinese entity and by foreign investors. This company is responsible for capital-raising and typically does not have any operations.
- *A Hong Kong conduit company*: a shell company acting as an intermediary between the listed entity and the WFOE, usually incorporated to avoid a withholding tax on dividends;
- *A wholly foreign-owned enterprise (WFOE) based in China*: a foreign capital company incorporated in mainland China holding all the technology and patents and owned by the listed company;

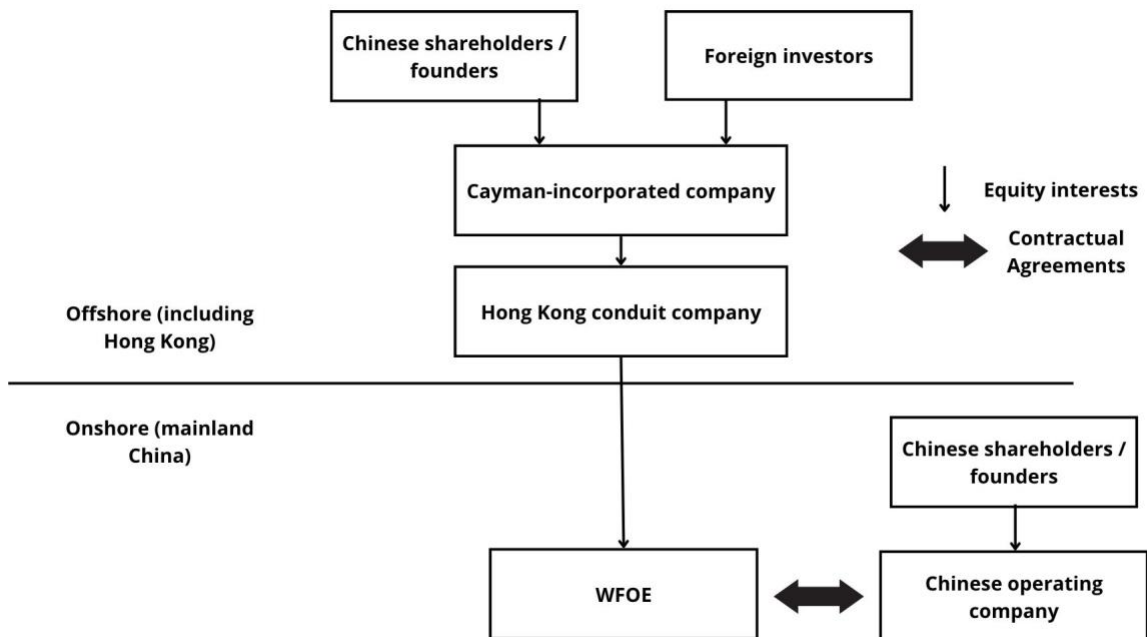


Figure 1. Simplified chart of a VIE structure¹⁵⁸

The purpose of the VIE structure is to mimic the functioning of an equity owning structure, giving the foreign investors the sense of control and managerial power over the operations of

¹⁵⁸ Based on the figure drawn by the author CHEN in “Variable interest entity structures in China...”, p. 4.

the Chinese company. At the same time, the profits generated by the Chinese entity must be consolidated into the financial statements of the Cayman-incorporated holding company, therefore giving foreign investors an enhanced perception of economic benefits.¹⁵⁹ This is possible through the arrangement of a series of contracts between the WFOE and the Chinese operating company that allows the WFOE to obtain managerial power and economic benefits in exchange for capital injections. These contracts are¹⁶⁰:

- *Loan Agreement*: the WFOE provides capital to the Chinese operating company for business operation in China. The loan agreement is usually denominated in RMB, and it is interest free. It runs for a number of years, with the possibility for the WFOE to extend or shorten the term of the loan unilaterally.
- *Equity pledge agreement*: this agreement serve as a security for the loan granted by the WFOE to the Chinese operating company.
- *Call option agreement*: the call option make possible for the WFOE to buy shares in the Chinese operating company at a given price that could be either based on the total amount of the loan mentioned above, or on the “lowest permissible price under PRC law”¹⁶¹.
- *Power of attorney*: Chinese owners of the operating company usually give the WFOE power of attorney. The agreement assigns to the WFOE all the rights of usual shareholders, such as voting power and the power to nominate all the directors, and ensures that managerial power is authorized to the WFOE.
- *Technical service agreement and asset licensing agreement*: the technical service agreement enables the WFOE to obtain the total amount of economic benefits from the Chinese operating entity in the form of technical fees in exchange for the exclusive provision of technical services to the Chinese operating entity, which include website maintenance, programming, sales support, fulfillment services, curriculum development.

¹⁵⁹ CHEN, “Variable interest entity structures in China...”, p. 3.

¹⁶⁰ The information about the agreements is taken from:

- Li GUO, “Chinese Style VIEs: Continuing to Sneak under Smog”, *Cornell International Law Journal*, vol. 47, issue. 3, 2014, p. 578-579
- Fa CHEN, “Variable interest entity structures in China: are legal uncertainties and risks to foreign investors part of China’s regulatory policy?”, *Asia Pacific Law Review*, vol. 29, issue 1, 2021.

The agreements hereby mentioned are not exhaustive but give an idea of the contractual relationship between the Chinese operating company and the WFOE.

¹⁶¹ *Ibid.*

Although VIE structures have been widely used in the last two decades, their legality has never been confirmed by Chinese authorities. So far, Chinese regulators have decided on the legality of different VIE structures on a case-by-case basis without formulating a generally applicable criterion.¹⁶² The first attempt to regulate VIE structures, without explicitly mentioning them, was made in June 2006, when the Ministry of Information Industry released the “Notice of the Ministry of Information Industry on Strengthening the Administration of Foreign Investment in Value-Added Telecommunications Services”. The notice referred to foreign investors cooperating with Chinese value-added telecommunication companies to evade the Provisions on the Administration of Telecommunications Enterprises with Foreign Investment and provided that “A telecommunications enterprise within the territory of China may not lease, shift or sell any license for telecommunications business in any form, or provide resources, places and facilities or any other condition for any foreign investor to engage in any illegal telecommunications operation by any means within the territory of China.”¹⁶³

Other regulating efforts have been made throughout the years. In 2009, three government agency (the General Administration of Press and Publication (GAPP), the National Copyright Administration (NCA), and the National Office of Combating Pornography and Illegal Publications) jointly published a document named “The Notice Regarding the Consistent Implementation of the ‘Stipulations on Three Provisions’ of the State Council and the Relevant Interpretations of the State Commission Office for Public Sector Reform and the Further Strengthening of the Administration of Pre-examination and Approval of Internet Games and the Examination and Approval of Imported Internet Games”. In the notice the three agencies expressly prohibit foreign players from gaining control over domestic internet game operators by means of contractual or other control arrangements. Despite that, other important state agencies, such as the MOFCOM, the MIIT or the Ministry of Culture, were left out from the notice, therefore limiting the influence of such provision.¹⁶⁴

Skepticism from Chinese local governments have also started to arise when, in September 2010, Buddha Steel, a Delaware-incorporated company planned to acquire a Hong Kong company that had a VIE control over a Hebei province based company operating in the steel

¹⁶² CHEN, “Variable interest entity structures in China...”, p. 6.

¹⁶³ Ministry of Information Industry, *Xinxi chanye bu guanyu jiaqiang waishang touzi jingying zengzhi dianxin yewu guanli de tongzhi* 信息产业部关于加强外商投资经营增值电信业务管理的通知 (Notice of the Ministry of Information Industry on Strengthening the Administration of Foreign Investment in Value-Added Telecommunications Services), 2006, p. 1.

¹⁶⁴ GUO, “Chinese Style VIEs...”, p. 582.

industry. Buddha steel filed a registration statement for an initial public offering in the United States but had to soon withdraw it due to a notice by the Hebei province government authorities that stated that the VIE arrangements “contravene[d] current Chinese management policies related to foreign-invested enterprises and are against public policy”.¹⁶⁵ It is possible, though, that this move by the Hebei local authorities was driven by a protectionist approach and was focused on investment in a particular industry, rather than targeting VIE structures in general.

Perhaps the most decisive regulatory effort involving VIE structures came from MOFCOM which changed the approach towards this arrangement and targeted VIE structures in general rather than according to the specific industry, as in the previous cases.

The first step was done with the issuing of the Notice on the Establishment of the Security Review System for Mergers and Acquisitions of Domestic Enterprises by Foreign Investors by the General Office of the PRC State Council in March 2011. On August 25, 2011, the MOFCOM promulgated the “Provisions of the Ministry of Commerce for the Implementation of the Security Review System for Mergers and Acquisitions of Domestic Enterprises by Foreign Investors”. Article 9 of the provisions states that, for mergers and acquisitions of domestic companies undertaken by foreign investors, the necessity for a security review should be judged according to the essential content and actual impact of the transaction, and foreign investors shall not avoid the security control through, among other methods, contractual control.¹⁶⁶

After that, in August 2012, the MOFCOM for the first time explicitly prohibited the use of a VIE structure with the issuing of a decision on the conditional anti-monopoly approval of Walmart’s acquisition of Yihaodian, a major China online retailer. With this decision, the MOFCOM expressly prohibited Walmart from operating value-added telecommunications business services provided by Yihaodian via the VIE structure. The fear was that Walmart could get access to the restricted value-added telecommunications business without obtaining the relevant permits.¹⁶⁷

¹⁶⁵ Thomas M. SHOESMITH, *PRC Challenge to Variable Interest Entity Structures?*, in “Pillsbury”, 2011, www.pillsburylaw.com/images/content/3/5/v2/3571/ChinaAlertPRCChallengeToVIEStructures-03-31-11pdf.pdf (accessed 28/06/2023).

¹⁶⁶ Ministry of Commerce of the People’s Republic of China, *Shangwu bu gonggao 2011 nian di 53 hao shangwu bu shishi waiguo touzizhe bingou jingnei qiye Anquan shencha zhidu de gui ding* 商务部公告 2011 年第 53 号 商务部实施外国投资者并购境内企业安全审查制度的规定 (Announcement No. 53 of 2011 of the Ministry of Commerce of the People’s Republic of China Concerning the Provisions of the Ministry of Commerce for the Implementation of the Security Review System for Merger and Acquisition of Domestic Enterprises by Foreign Investors), Art. 9.

¹⁶⁷ Daniel DUSEK, Julie GAO, Micheal GISSER, “China M&A: Looking Ahead to 2013”, *2013 Insights*, 2013, p. 116.

The Chinese Securities Regulatory Commission (CSRC) is another government agency that took on an adverse attitude towards the usage of the VIE structure. In September 2011, an unofficial internal report written by the CSRC drew the attention of various media outlets and of VIE investors, in that it suggested that VIE structures represent a major threat to national security, urged the MOFCOM to implement enforcing regulations, and recommended that the MOFCOM and the CSRC grant approval for existing companies using the VIE structure when listing overseas.¹⁶⁸ The CSRC approach towards VIE structures can be summarized in the circular 45 issued by the government agency with regard to the application process for overseas listing by Chinese companies. Joint stock limited companies are allowed to apply for an overseas listing if the listing requirements are met, but the application will be rejected if one of the company's shareholders are involved within a VIE structure. Therefore, the CSRC has been making an attempt to facilitate the foreign listing of domestic enterprises, but at the same time is willing to limit the adoption of the VIE structure.¹⁶⁹

VIE structures have been subject to regulatory discussion in the drafting process of the Foreign Investment Law (FIL). In the definition of foreign investors contained in the 2015 draft version of the FIL, these were defined as natural persons without Chinese nationality, enterprises incorporated in accordance with laws of other countries or regions, governments of other countries or regions and their subordinate departments or agencies, and international organizations.¹⁷⁰ The draft specifies that “domestic enterprises controlled by foreign investors shall be deemed as foreign investors”,¹⁷¹ and interprets control in a broad manner, including not only the holding of 50% or more of shares, equity, shares in property, voting rights or other similar rights and interests in the enterprise, but also other forms of decisive control on the enterprise's management, finance, human resources or technologies by means of contracts, trust or other ways.¹⁷² Furthermore, the definition of foreign investment includes investment activities conducted by foreign investors aimed at controlling domestic enterprises or hold equity in domestic enterprises by agreements, trust or other ways,¹⁷³ hence clearly defining

¹⁶⁸ GUO, “Chinese Style VIEs...”, p. 582.

¹⁶⁹ *Ibid.*

¹⁷⁰ Ministry of Commerce of the People's Republic of China, *Zhonghua renmin gongheguo waiguo touzifa (cao'an zhengqiu yijian gao)* (Foreign Investment Law of China (2015 Draft)) [hereinafter referred to as FIL 2015 Draft], Art. 11(1–4).

¹⁷¹ *Ibid.* Art. 11.

¹⁷² *Ibid.* Art. 18.

¹⁷³ *Ibid.* Art. 15.

contractual control as a form of foreign investment.¹⁷⁴ In addition, companies incorporated under foreign jurisdictions but under the actual control of Chinese investors are regarded as Chinese investors when investing in restricted industries.¹⁷⁵ All these provisions combined, could have made clarity about the issue of the legality of VIE structures. According to the 2015 draft, the Cayman-incorporated company, the Hong Kong conduit company and the WFOE would be regarded as foreign investors. At this point, it is crucial to understand whether the Cayman-incorporated company is under the actual control of Chinese investors or not, given that this company is participated by both Chinese and foreign investors. If it is the case of a Chinese control, investment in restricted industries using a VIE structure could be deemed as Chinese investment and therefore be considered as legitimate. Conversely, if the VIE structure is being used for achieving contractual control of a Chinese operating company in a prohibited sector, this will be considered as a form of foreign investment and therefore deemed as illegal.¹⁷⁶ Despite all the efforts made in the drafting process of the FIL, in the final version of the law published on March 15, 2019 and enacted on January 1, 2020, all the references to the VIE structure and contractual control has been removed. Indeed, foreign investment are defined as investment activity directly or indirectly conducted by a foreign natural person, enterprise or other organization, including the acquisition of shares, equities, property shares or any other similar rights and interests of an enterprise within the territory of China, and the investment made in any other way stipulated by laws, administrative regulations or provisions of the State Council.¹⁷⁷ As a result, the final version of the FIL does not clarify whether Chinese authorities consider the VIE structure as a legal means that can be used by foreign investors or not, in that it does not further specifies key terms like “indirect investment activities”, “similar interests”, and “other form of investment”.¹⁷⁸

VIE structures pose a series of legal risks to foreign investors. Due to the legal ambiguity of the structure, Chinese authorities can outlaw at any time the contractual agreements that are at the foundation of the VIE structure, which in turn will likely either cause the expulsion of foreign presence through a reorganization of the structure or the withdrawal of the business license obtained by the Chinese operating company. With regard to the possible compensation,

¹⁷⁴ CHEN, “Variable interest entity structures in China...”, pp. 7-8.

¹⁷⁵ FIL 2015 Draft, Art. 45.

¹⁷⁶ CHEN, “Variable interest entity structures in China...”, p. 11.

¹⁷⁷ FIL, Art 2.

¹⁷⁸ CHEN, “Variable interest entity structures in China...”, pp. 11-12.

foreign investors could hardly receive effective recourses due to potential jurisdictional hurdles. Another issue involving VIE structures is the conflict of interest between parties. Given that the VIE structure rely on the contractual agreements between various company, if the owner of the Chinese operating company wants to take back control of the operating entity, those agreements may prove to be less enforceable and therefore cause the collapse of the structure, situation that will likely be avoided with a direct equity control over the company.¹⁷⁹

2.3 Commercial cooperation

Another investment strategy that foreign investors can adopt to enter the Chinese cloud market is the establishment of commercial cooperation between the foreign investor and the Chinese company that already operates in the Chinese cloud sector and holds the IDC license. This strategy offers a relatively more straightforward and practical way of investing in the cloud sector, as opposed to the previous mentioned CEPA route and VIE structure.¹⁸⁰ The commercial cooperation is divided in two models: the technical support model and the co-investment model.

- *Technical support model*: foreign investors can choose to license their brand and technologies to a Chinese company that holds the relevant IDC license. This can be done either directly by the foreign company to the Chinese entity, or indirectly, through a WFOE owned by the foreign investor. In addition, the foreign investor will charge the Chinese company for licensing and service fees due to the provision of related technical maintenance and support services. This method does not give the foreign investors or the related WFOE the same power and the same control of the VIE structure, as there is no nominee arrangement between the two parties. Instead, foreign investors can exercise a variable degree of power according to the covenants and restrictions included in the contract. Indeed, foreign investors can influence the way business is conducted by the Chinese IDC license holder by setting strong obligations and limitations. This is particularly relevant for ensuring the quality of the services provided on behalf of the licensor by the licensee, therefore the foreign company shall be actively involved in the quality control process and to make sure that business is

¹⁷⁹ GUO, “Chinese Style VIEs...”, p. 582.

¹⁸⁰ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

conducted in a way that is conform to company's standard. Another manifestation of the power exercised by the foreign investor on the Chinese company can be observed in case of a material breach in the restrictions and obligations by the latter. In such eventuality, the licensor has the right to terminate the licenses granted to the Chinese entity and serve as a guarantee on the risk of non-compliance to restrictions and limitations, as well as quality standards, set out by the foreign company. Hence, this model, if well managed and if appropriate restrictions are set out, allows the foreign investor to gain a strong operational control over the business conducted in China and to obtain a stable revenue stream coming from technical maintenance and support services fees. The technical support model can be combined with other models, such as the co-investment model or the VIE structure to gain a much larger control over the Chinese operations or to acquire facilities in the country for the construction of IDC infrastructure. Thanks to the relative ease in implementing this model, it has been used by many foreign companies in order to enter the Chinese cloud industry. One of these companies is Microsoft Azure, which set up a commercial cooperation with 21Vianet, one of the most prominent cloud services providers in the Chinese market and a NASDAQ-listed company. In this way, Microsoft has been able to provide its cloud services through its Azure China division to the Chinese market. In Chapter 3, the Microsoft Azure case study will be analyzed in much more details, diving deep into the commercial relationship between the IT giant and the Chinese provider.



Figure 2. Simplified chart of the technical support model¹⁸¹

- *Co-investment model*: this model provides a solution to the issue of how to provide sufficient capital for the acquisition of the real estate and the construction of the IDC

¹⁸¹ Based on the figure drawn in "Morison Foerster"
www.mofo.com/resources/insights/200616-cloud-9-foreign-investors

infrastructure that arises in both the technical support model and VIE structure. In this model a clear distinction of the various degree of equipment involved in the IDC business is necessary. The so called “IDC essential equipment” include racks, IT equipment, database and network facilities of the IDC. In the Co-investment model, IDC essential equipment are owned by the Chinese IDC license holder, that is also in charge of providing the IDC services that directly involve the personnel in the management and maintenance of the servers. The subsidiary of the foreign company in China, namely the WFOE, owns the real estate (the so called non-essential equipment) and constructs the IDC. After construction, it leases the property to the Chinese company, and in addition to that, it provides the Chinese provider with a vast range of ancillary “non-telecommunications services” such as property management, equipment maintenance, security and cleaning services. As said earlier, the foreign company, through its Chinese subsidiary, directly owns the internet data center and the real estate where the IDC is located, and this give this model a clear advantage when compared to the technical cooperation and vie structure models. In addition, the co-investment model allows the foreign investor, through the WFOE, to take advantage of the depreciation of both the data center and the real estate in its financial statement. This model has been used by a variety of players in the IDC sector, including both strategic investors and private equity investors. Strategic investors such as KDDI and Equinix deploy this model to invest in IDC projects in China: KDDI has invested into four internet data centers located in Beijing and Shanghai providing the necessary ancillary services, together with the construction of the data centers; Equinix established a Chinese joint venture with the Chinese company Datang Gaohong Information Technology¹⁸², and participated in an IDC project in Shanghai through the co-investment model. In 2018, private equity investor KKR cooperated with the Chinese company Golden Data (Kunshan) Information Technology in the participation in an IDC project in the city where the Chinese partner was located in Jiangsu province.¹⁸³

¹⁸² Jeremy DEUTSCH, Desmond CHEN, *Getting to Know our Asia-Pacific Leader – Desmond Chen*, in “Equinix”, 2022, blog.equinix.com/blog/2022/02/21/getting-to-know-our-asia-pacific-leader-desmond-chen/ (accessed 30/06/2023).

¹⁸³ See KKR Official Website, *Historical List of Portfolio Companies*, 2018, www.kkr.com/historical-list-portfolio-companies (accessed 30/06/2023).

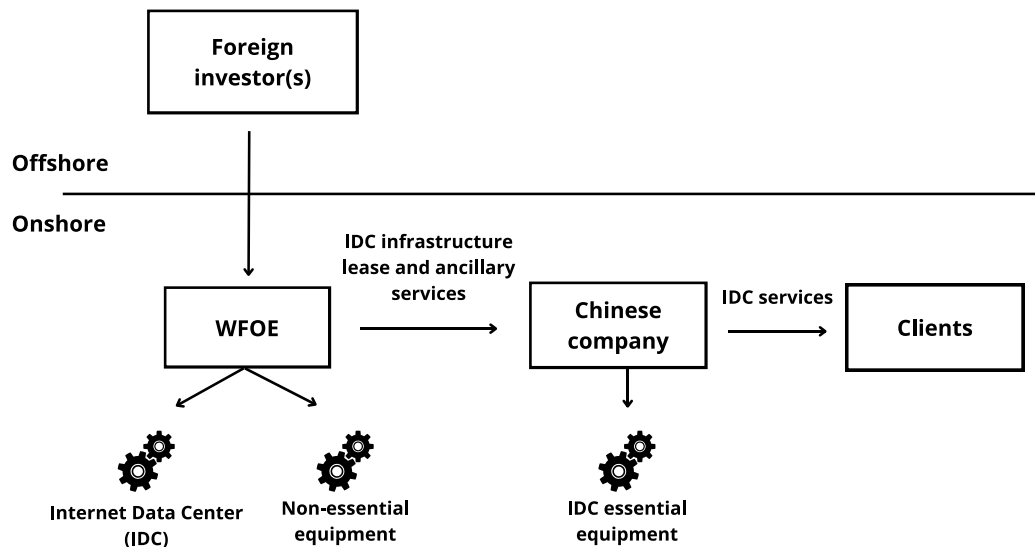


Figure 3. Simplified chart of the co-investment model¹⁸⁴

The strategies that foreign investors can adopt to invest in the cloud services industry, and more broadly in the internet data center sector, described in this paragraph can either be employed singularly or in combination between them. For instance, the Hong Kong Stock Exchange sets out precise requirements for listing companies that use the VIE structure when conducting their business. VIE structures are allowed only for conducting business in restricted sectors, and in the eventuality that the structure is used in unrestricted sectors, the specific case will be analyzed and judged by the Listing Committee.¹⁸⁵ To solve this issue, foreign investors willing to enter the IDC market in China and wanting to go public on the Hong Kong Stock Exchange can deploy a combination of both VIE structure and co-investment model strategies. Firstly, the VIE structure will be used merely to operate in China and to gain control over business operation of the Chinese entity, whereas the co-investment model will serve the purpose of housing the real estate assets and to physically build the data centers.¹⁸⁶ Hence, foreign investors must evaluate the best solution for their type of business and adopt a flexible approach in order to reach their strategic goals.

¹⁸⁴ Based on the figure drawn in “Morison Foerster”

www.mofo.com/resources/insights/200616-cloud-9-foreign-investors

¹⁸⁵ *Listing PRC Companies in Hong Kong Using VIE Structures*, in “Charltons”, 2014, www.charltonslaw.com%2Flegal%2Fipo%2Flisting-PRC-companies-in-Hong-Kong-using-VIE-structures.PPT&usg=AOvVaw0q_dYRk39RveNesJ7sxDCS&opi=89978449 (accessed 30/06/2023).

¹⁸⁶ *Data Center Investments in China: Cloud 9 for Foreign Investors?*, in “Morison Foerster”, 2020, www.mofo.com/resources/insights/200616-cloud-9-foreign-investors (accessed 28/06/2023).

CHAPTER III

Journey to the East:

Microsoft Azure's expansion in China

The title of this chapter is inspired by the Chinese literary classic “Journey to the West”, where the Chinese monk Sanzang left his home country for India, in search of the Buddhist canonical texts, with the aim of taking them back to China and spreading them among people. During his journey, the monk was helped by three disciples that cleared the way towards India and that were indispensable for the succeeding of the mission. Like the Chinese monk, Microsoft has embarked on a journey to the East to get its share of the burgeoning Chinese market for cloud computing and cloud services. As we saw in the previous chapters, this journey is full of obstacles and impediments, but luckily for Microsoft, the IT services giant can also count on a few loyal allies that helped the company comply with local regulations without giving up the opportunity to offer its cloud services and technology to Chinese enterprises and end customers. This chapter will analyze the current situation of Microsoft Azure in China, the strategies adopted by the company to overcome the legislative obstacles when entering the Chinese market and the paradoxical condition in which VNET Group, Microsoft's Chinese local partner, find itself in.

1. Introduction on Microsoft Azure and VNET Group

To start off, we will present the two entities mainly involved in this chapter, which are Microsoft Azure, the cloud services division of the big multinational company leader in the IT sector, and its Chinese partner VNET Group. Even though these are the main characters in the narrative of this chapter, the analysis will later expand to other businesses that play an active role in the implementation of Microsoft's Chinese market entry strategy.

1.1 Microsoft Azure

Like many of its competitors, Microsoft Azure is a public cloud computing platform that comprises a set of cloud services and resources provided by the multinational company. Along with services and tools that allow businesses and customers to manage and deploy

applications, Microsoft Azure also provides a variety of services that mainly promote the storing and the transformation of data based on the requests of the final customer, be it a natural person or a company.¹ The cloud computing platform was launched on February 1, 2010, a considerable amount of time after its main competitor AWS, which pioneered the modern cloud infrastructure service landscape introducing Amazon Elastic Compute Cloud to the market back in August 2006.² Even though Microsoft entered the market for cloud services years after its main competitor Amazon, it has managed to become the cloud provider of 90% of world leading companies included in the Fortune 500.³ Looking at the impressive growth in cloud-based solution utilization among enterprises, it can be inferred that Microsoft played a decisive role in changing what can be seen as the traditional, and perhaps outdated, way of storing business data on physical servers, as well as developing application on business-owned platforms and software. The main reason why many companies were, and in some cases still are, reluctant to migrate their data on the cloud, is that owning the physical equipment and software gives the company a sense of control and security, especially when dealing with crucial data that, in case of a breach, could seriously impact the operation of the business. Despite that, on-premises solutions have also considerable complications in that traditional infrastructures are often too rigid and complex, no allowing the company to rapidly adapt to the constant changes in business situations. In addition, the amount of work, in terms of planning and organization, for implementing the appropriate solution for the business has to be done from the start, and this could take away precious resources and time that could be otherwise dedicated to the core business of the enterprise. On top of that, traditional infrastructures need a continuous maintenance, requiring the administrators to periodically buy the licenses and updates for both software and hardware. Azure cloud, as all the other cloud providers, offers a different solution that can enhance the performance of the business and at the same time will have a positive impact in terms of reduction of capital expense, as all the customers will only have to maintain switches and vendor-provided devices such as modems and firewalls onsite.⁴

¹ Timothy L. WARNER, "What is Microsoft Azure?", in Timothy L. WARNER (edited by), *Microsoft Azure for Dummies* www.dummies.com/article/technology/information-technology/networking/cloud-computing/what-is-microsoft-azure-269661/ (accessed 6/07/2023).

² Ron MILLER, *How AWS came to be*, in "TechCrunch", 2016, techcrunch.com/2016/07/02/andy-jassys-brief-history-of-the-genesis-of-aws/ (accessed 6/07/2023).

³ Cameron COOPER, *Microsoft Azure vs Traditional Infrastructure*, in "CCB Technology", 2022, ccbtechnology.com/microsoft-azure-vs-traditional-infrastructure/ (accessed 11/07/2023).

⁴ *Ibid.*

Microsoft Azure's cloud deployment model is public cloud, and the platform provides services belonging to each of the three cloud service models, which are Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Each of these solutions can be used in a flexible, open, reliable, global, and economical way:

- *Flexible*: the resources provided by the platform can be scaled up or scaled down according to the needs of the customers;
- *Open*: Microsoft Azure supports basically all the programming languages, operating systems, tools, or frameworks;
- *Reliable*: the platform guarantees a high level of availability, with a service-level agreement (SLA) up to 99.95%. This means that Microsoft Azure is committed to guarantee that the services provided will be accessible and operational for at least 99.95% of the agreed-upon time, with minimal downtime or disruption. In addition to that, customers are backed by the platform with round-the-clock technical support, meaning that users can receive timely assistance to address any concern at any time;
- *Global*: data are stored in geo-synchronous data centers that are geographically dispersed or located in different regions of the world. In this way, the platform is working towards the enhancement of data resilience, the minimization of the risk of data loss, and the improvement of access and availability for users across different geographic regions;
- *Economical*: all the services provided by Microsoft Azure are based on the principle of "pay-per-use". According to this principle, users pay only for what they use, according to their needs, with the option to expand and scale up (or scale down) at any time the amount of space, storage, and every other service provided by the platform.⁵

There are many examples of services provided by Microsoft Azure that have become commonplace in work environments, as well as in public institutions. Microsoft provides Software-as-a-Service applications, which consist in customer-facing applications that runs in the cloud. One example of Microsoft's SaaS services is Microsoft 365, which is a "subscription-based evolution of Microsoft Office"⁶. Instead of installing on-premises the

⁵ Logan MCCOY, *Microsoft Azure Explained: What It Is and Why It Matters*, in "CCB Technology", 2022, ccbtechnology.com/what-microsoft-azure-is-and-why-it-matters/ (accessed 6/07/2023).

⁶ Emma WITMAN, *What is Microsoft 365? Here's what you need to know about the subscription service to Word, Excel, and other Microsoft programs*, in "Business Insider", 2021, www.businessinsider.com/guides/tech/what-is-microsoft-365?r=US&IR=T (accessed 6/07/2023).

traditional Microsoft Office applications, such as Word, Excel, PowerPoint, etc., Microsoft provides the customer with a subscription on its Office 365 suite, which can be purchased on a monthly basis. After obtaining the subscription, the customer will only have to access the various applications through a web browser without having to occupy space on the computer. This is a more flexible solution compared to the traditional one as users only pay for the period of time they use the services and can access the documents everywhere at anytime.

If a developer wants to focus on the application and the final users without having to worry too much about maintaining the environment in which such application is developed, Microsoft Azure provides some services that fall into the definition of Platform-as-a-Service (PaaS). Services like Azure App Service, designed for workloads that uses PHP and MySQL, and Azure SQL Database, which, as the name suggests, is a native hosted database platform for MySQL, leverage autoscale and pushbutton georeplication, in other words this means to implement synchronized replicas of your service across different geographic regions to ensure fault tolerance and bring those services closer to your users. As a result, the cloud services provider, in this case Microsoft, bear responsibility for the hosting environment, allowing developers to work more freely on their applications.

When the customer is willing to maintain a much wider control on the developing environment, even with the trade-off of sacrificing scalability and agility, Infrastructure-as-a-Service (IaaS) solutions are what fits the most. Microsoft Azure allows companies that deliver their services via VMs to host such virtual machines in the Azure cloud. Consequently, customers retain full responsibility for managing the entire life cycle of the virtual machine, in terms of configuration, data protection, performance tuning, and security. In practical terms, companies that benefits from a IaaS solution won't have to provide for physical and logical resources locally, as the hosting platform is provided by Microsoft, and the customer is left with the responsibility of maintaining the VMs over their life cycle.

On top of that, Microsoft provides other versions of the Azure cloud for other two deployment models, i.e., private cloud and hybrid cloud. In order to meet the demand for private cloud from big multinational enterprises that for various reasons don't want to store their data in Microsoft's or any other cloud services providers' physical data centers, Microsoft offers Azure Stack, a portable version of the Azure cloud. It comprises a server rack that companies can either lease or buy from a hardware or service provider affiliated with Microsoft. In this way, a company can have all the advantages of a cloud computing

infrastructure at the local level without having to connect to the public internet or any other external cloud services providers. Azure's private cloud works with the same tools as the public cloud platform in terms of resource manager (Azure Resource Manager ARM) and application programming interface (API), making it easier for administrators and developers to deploy cloud-based services on premises and vice versa.⁷ Microsoft Azure Stack services can be deployed in a variety of sectors, such as financial services, government entities, manufacturing industry, retail, healthcare⁸, as listed in Microsoft's official website. More often than not, businesses want to combine the advantages of both public cloud and private cloud deployment models. The primary rationale behind this is that, in the majority of cases, enterprises already have bought physical IT equipment that they want to continue using, and at the same time they want to leverage the potential of cloud computing with public cloud solutions, such as the ones provided by Microsoft Azure. This solution is what is called a hybrid cloud solution, and Microsoft Azure helps companies to achieve the best combination of private and public cloud through a series of tools such as Azure virtual machines (VMs), Azure management tools to manage on-premises servers, and failover disaster recovery (DR) solutions using Azure as a site for storing the backup of your system and data. The latter one is particularly important for businesses that cannot afford to have a failover and to wait a considerable amount of time to recover crucial data from a traditional back-up archive. For this reason, Azure stores a replicated backup of your production servers which can be accessed and used in case of necessity to shift from a failed primary environment to a back-up environment in a nearly instant manner.⁹

As mentioned earlier, back-up and disaster recovery are among the core services provided by Azure, since they allow businesses to continue operating even in the case of unexpected events that could have a negative impact on the company. Thanks to the flexibility of cloud-based solutions, Azure provides you with the possibility to store your data safely, in any language, operating system and from any location.¹⁰ Compared to traditional tape back-ups,

⁷ Timothy L. WARNER, "What is Microsoft Azure?", in Timothy L. WARNER (edited by), *Microsoft Azure for Dummies* www.dummies.com/article/technology/information-technology/networking/cloud-computing/what-is-microsoft-azure-269661/ (accessed 6/07/2023).

⁸ Microsoft Azure Official Website, *Azure Stack* azure.microsoft.com/it-it/products/azure-stack-tabx7ce64a1e33ff4ede8f41d33ebe9782f9 (accessed 6/07/2023).

⁹ Timothy L. WARNER, "What is Microsoft Azure?", in Timothy L. WARNER (edited by), *Microsoft Azure for Dummies* www.dummies.com/article/technology/information-technology/networking/cloud-computing/what-is-microsoft-azure-269661/ (accessed 6/07/2023).

¹⁰ Logan McCOY, *Microsoft Azure Explained: What It Is and Why It Matters*, in "CCB Technology", 2022 ccbtechnology.com/what-microsoft-azure-is-and-why-it-matters/ (accessed 6/07/2023).

storing data in Azure's site recovery offers the customer a wide range of advantages that can enhance the back-up strategy of the business. Among the different positive aspects of Azure's back-up solutions there are offsite replication, reduced onsite maintenance, extended data retention of up to ninety-nine years, minimal or no capital investment, and minimal operational expenses.¹¹ Losing the data is almost impossible for a company that uses Azure's cloud, since it stores three copies of data in three separate locations in the data center, with an additional three copies in a remote Azure data center. Moreover, Azure's built-in integration allows customers to request for additional back-up in a smooth and rapid manner, especially for those operating in a Windows virtual environment.

Microsoft Azure is holding a strong second place in the race for the biggest cloud services market share worldwide. As of Q4 2022, Amazon Web Services (AWS) accounted for 32% of the global cloud services market, with Microsoft Azure following closely with a 23% of market share. Google Cloud is the third cloud services provider worldwide with a 10% of market share. Microsoft Azure showed a steady growth through the years, starting from a 13.7% in Q4 2017 and reaching today's level with almost a 10% growth rate in the period 2017-2022. In the same period, AWS showed a constant performance in terms of market share with no significant changes, maintaining a market share of around 32%.¹² Another statistic shows how Microsoft Azure services are used, in the majority of cases, by organizations that define themselves as "light" or "moderate" cloud users, i.e., that implements cloud solutions only for a part of their business and do not use cloud services excessively. As of 2022, 66% percent of "light users" companies were implementing Azure Cloud solutions, compared with 65% percent of those implementing solutions provided by AWS. A slight advantage is also shown on the percent of "moderate users" that uses Azure's services (70%), in comparison with those using AWS services (68%). On the contrary, "heavy users" of cloud services are more likely to opt for an AWS solution (81%), even with a small difference compared to those choosing Azure's solutions (80%).¹³

¹¹ Logan McCOY, *Microsoft Azure Explained: What It Is and Why It Matters*, in "CCB Technology", 2022 ccbtechnology.com/what-microsoft-azure-is-and-why-it-matters/ (accessed 6/07/2023).

¹² *Cloud infrastructure services vendor market share worldwide from 4th quarter 2017 to 4th quarter 2022*, in "Statista", 2023 www.statista.com/statistics/967365/worldwide-cloud-infrastructure-services-market-share-vendor/ (accessed 11/07/2023).

¹³ Charles GRIFFITH, *The Latest Cloud Computing Statistics (updated July 2023)*, in "AAG", 2023 aag-it.com/the-latest-cloud-computing-statistics/ (accessed 11/07/2023).

1.2 VNET Group

VNET Group¹⁴ is Microsoft Azure Chinese partner for the distribution of its cloud services in China. The company was established in 1996 and is known in China as 世纪互联 (Shiji hulian). The company commenced its operations in 1999 and has undergone through a series of corporate restructurings when in October 2009 there was the setting up of a holding company called “AsiaCloud” in the Cayman Islands. AsiaCloud was the ancestor of the company that nowadays changed its name in VNET Group and was formerly a wholly-owned subsidiary of aBitCool, which was also a company incorporated under the laws of the Cayman Islands.

Most of the crucial information about the company, including relevant details and explanations about the organizational structure, the main operating activities and services offered, are contained in the annual report (Form 20-F) submitted to the United States Security and Exchange Commission (SEC). Indeed, the company listed (as 21Vianet) on the Nasdaq in April 2011¹⁵, and consequently has to abide to various disclosure requirements set out by the American capital market regulators. Thanks to these disclosures, we are capable of knowing the exact structure of the company and a lot of other precious information regarding its business that won’t be otherwise available if the company wasn’t listed on the Nasdaq.

Its business is mainly divided in three categories: internet data center services (IDC), neutral hybrid IT services and neutral cloud services.¹⁶ VNET Group is leader in the carrier-neutral and cloud-neutral data center service provider in China with one of the largest carrier-neutral data center network in China. This network is composed by 45 self-built data centers, 98 partnered data centers, an aggregate capacity of 87,322 cabinets under the management of the company, and 216 POPs. The company has located its data centers mainly in tier-1 cities in China and their surrounding regions. Thanks to the partnership with Microsoft, VNET Group is the first Chinese company and the first carrier-neutral data center service provider

¹⁴ VNET Group is the new name of the company, which was before referred to as 21Vianet Group. The name changing was firstly announced on August 24, 2021, simultaneously with the release of its Q3 2021 results, and was later officialized on October 8, 2021. The new name recalls its stock ticker symbol “VNET” and was adopted in the need for more coherence and change in the way the company approaches to the market. For the purpose of clarity, in this thesis the company will be referred to as VNET Group, since all the latest documents are redacted with this name. Though, it is important to keep in mind that at the time of the initial collaboration between Microsoft and VNET Group, the latter was still called 21Vianet, therefore in some of the references listed in this chapter, the company could also be referred to as 21Vianet. For more information see Doug YOUNG, *21Vianet Looks for New Chapter With Name Change*, in “Bamboo Works”, 2021 thebambooworks.com/21vianet-looks-for-new-chapter-with-name-change (accessed 18/07/2023).

¹⁵ Nasdaq Official Website, *About VNET Group, Inc.*

www.nasdaq.com/market-activity/stocks/vnet (accessed 18/07/2023).

¹⁶ LU Biao 路彪, *Yun jisuan shidai shiji hulian gongsi de yewu zhuanxing yanjiu* 云计算时代世纪互联公司的业务转型研究 (Research on Business Transformation of 21vianet Company in Cloud Computing Era), pp. 1-2.

to offer global cloud services in China. According to the annual report submitted to the SEC, VNET Group gives much importance and rely heavily on this partnership with the American multinational company in attracting potential customer, “especially enterprise and government entity customers that have a strong demand for cloud services.”¹⁷ Based on the numbers listed above, VNET Group operates two different kind of data centers: self-built and partnered. The distinction between the two is mainly related to the ownership of the data centers, indeed, the company classifies “self-built data centers” as those where they have their own cabinets and house data center equipment in buildings that they either own, lease from third parties, or purchase from third parties, whereas “partnered data centers” are defined as data center space and cabinets that are leased from the main telecommunication providers, such as China Telecom, China Unicom, and China Mobile, and other parties through agreements.¹⁸

Of the main services provided by VNET Group, there are comprehensive hosting and related services such as managed hosting services, cloud services and VPN services.

- *Managed hosting services*: the company provides managed hosting services, offering to host customers' servers and networking equipment. They also offer interconnectivity solutions to enhance the performance, availability, and security of customers' internet infrastructure. The managed hosting services provided by VNET Group cover both the retail and wholesale data center market thanks to the adoption of a “dual-core” strategy that allows the company to catch all the opportunities coming from these two directions. With regard to managed retail services, VNET Group offers solutions that are designed to cater to various levels of service, allowing scalability to meet the diverse needs of our customers, ranging from a single cabinet to megawatt-scale deployments. Some examples of the services provided to retail customers are the colocation services where the company allocates dedicated data center space to house customers' servers and networking equipment coupled with tailored server administration services; interconnectivity services that enable customers to connect their servers with one another, China's internet backbones, and other networks through the company's Border Gateway Protocol (BGP) network or its single-line, dual-line, or multiple-line networks; value-added services, including hybrid IT services, bare metal services, firewall

¹⁷ United States Securities and Exchange Commission, “VNET Group, Inc. Annual Report for the fiscal year ended December 31, 2022” (SEC 2022 Annual Report), 2023, p. 76.

¹⁸ *Ibid.* p. 26.

services, server load balancing, data backup and recovery, data center management, server management, and backup server services. Meanwhile, the offer regarding managed wholesale services provides customers, such as China's internet giants and large-scale cloud computing service providers, with new data center sites constructed and developed by the company based on their specified standards.¹⁹

- *Cloud services*: the provision of cloud services by VNET Group is strictly related to the partnership signed with Microsoft. Indeed, the company had never provided such services before, and started providing public cloud solutions only from the setting up of the cooperation arrangement with Microsoft in 2013.²⁰ The cloud services provided by VNET Group cover all the range of existing cloud computing service models, namely IaaS, PaaS and SaaS, to both enterprise and individual end customers on the public cloud. These cloud services follow the same logic as per the cloud services provided by Microsoft Azure, customers can access to a one-stop-shop to access a portion of shared computing resources, and this allows them to manage applications uploaded to virtual servers or access applications provided by different operators on the cloud infrastructure. The payment is done on an on-demand basis, providing flexibility and cost-effectiveness. In addition to Microsoft Azure, VNET Group also operates Microsoft 365 services, with which the company provides customers with the full range of Microsoft 365 applications, as well as business-class email, file sharing and HD video conferencing. These tools are all connected together through the public cloud, therefore customers can access to all the necessary applications for running their business everywhere and at any time. The total billing from customers is split between Microsoft and VNET Group, with the latter retaining a portion based on agreed-upon metrics. All sales revenue from services provided by VNET Group is deposited into an escrow account, jointly administered by Microsoft and the company. Payments to Microsoft are settled on a monthly basis. Moreover, VNET Group is eligible to receive incentive payments from Microsoft upon fulfilling specific sales or service conditions. The existing agreement with Microsoft spans ten years until 2027.
- *VPN services*: the range of services provided by VNET Group also includes VPN services, that the company defines as “best-in-class, enterprise-grade network

¹⁹ SEC 2022 Annual Report, p. 71.

²⁰ *Ibid.* p. 74.

services”²¹, which are provided in numerous cities across China and the wider Asia-Pacific region. Of all the enterprise network solutions, the most relevant ones that stand out from the various options available are the Multiprotocol Label Switching (“MPLS”) and the Software-Defined WAN (“SD-WAN”). In addition to those services, VNET Group provides internet access and network security solutions, along with fully managed network services that facilitate connectivity to 216 Points of Presence (POPs) throughout Asia. Notably, 95 of these POPs are dedicated to VPN services. The company adds on to the already rich portfolio of products Cloud and SaaS solutions and high-speed network connections aimed at connecting and deploying in the fastest manner possible the public cloud around the Globe. The most recent development in this field has been the introduction of the so-called Secure Access Service Edge (also referred to as “SASE”), a solution created starting from the company’s already existing SD-WAN services. Thanks to the quality of the VPN services provided by VNET Group, the latter has been appointed as one of the SD-WAN Services Standard Drafting Units of China Communications Standards Association (“CCSA”), obtaining at the same time the “SD-WAN Ready” certificate issued by the China Academy of Information and Communications Technology (“CAICT”) in 2020 for the overall solutions provided by the company. This certificate has been upgraded to “SD-WAN Ready 2.0” in 2022. VNET Group officially entered the China Cross-Border Data Telecommunications Industry Alliance thanks to its effort to comply with China’s Communications Administration.²²

One of the most relevant peculiarity that pops up from the annual report submitted to the SEC is that VNET Group, even though is commonly referred to as the “Chinese partner of Microsoft Azure”, is in fact a “Cayman Islands holding company with no material operations of its own.”²³ Stemming from that, the main activities conducted by the entity are carried out by its subsidiaries, variable interest entities (VIEs), and VIEs subsidiaries. Paragraph 2 of this chapter will further analyze the situation and existing relations between VNET Group and its VIEs, for now it is important to understand the key concept of foreignness of VNET Group, as it is incorporated in the Cayman Islands.

²¹ SEC 2022 Annual Report, p. 75.

²² *Ibid.*

²³ *Ibid.* p. 7.

VNET Group is positioned in a competitive stance in the Chinese internet data center market, which is dominated by the three main telecommunications providers, namely China Telecom, China Unicom and China Mobile. According to 2021 statistics, the company holds a strong fourth place in the market with a 4% of market share, together with another third-party cloud provider Global Data Solutions.²⁴

2. Azure China vs Azure Global

The need for a diversified business model in China is outlined in the Chinese Telecommunication Regulations, where cloud services providers, regardless of the service model, are required to apply for either a value-added telecommunications business permit or a regional value-added telecommunications business permit, according to the scope of business operations of the provider.²⁵ These operating permits can only be applied by “locally registered companies with foreign investment less than 50%”, as stated both in the regulation and in Microsoft’s official website.^{26 27} To comply with this regulation, and more in general with all the legislative requirements set out by Chinese authorities and analyzed in previous chapters, Microsoft decided to operate its cloud services in China with its Azure division through a commercial cooperation between the company and VNET Group, formerly known as 21Vianet. VNET Group operates Microsoft Azure’s technologies thanks to a licensing agreement. Hence, a clear distinction between Azure Global, which is operated on a global level and embodies the standard provision of cloud services by Microsoft Azure, and Azure China, which on the contrary represents a diversified business model localized specifically for the Chinese market, in both operation model and service availability needs to be analyzed.

- *Operation model:* As stated above, Microsoft operates its Azure services in China through a licensing agreement between the company and VNET Group. The licensing agreement involves all the technologies owned by Azure and necessary to the provision of the relevant cloud services. As a result, Microsoft Azure operated by VNET Group

²⁴ LU Min, *Dongcha 2022: Zhongguo IDC (hulianwang shuju zhongxin) hangye jingzheng geju ji shichang fen'e* 洞察 2022: 中国 IDC(互联网数据中心)行业竞争格局及市场份额, (Insight 2022: Competition Landscape and Market Share of China's IDC (Internet Data Center) Industry) in “Qianzhan Jingji Xueren” www.qianzhan.com/analyst/detail/220/220810-78817780.html (accessed 10/07/2023).

²⁵ PRC State Council, *Zhonghua Renmin Gongheguo dianxin tiaoli* 中华人民共和国电信条例 (Telecommunications Regulations of the People’s Republic of China), 2000, art. 9.

²⁶ *Ibid.*

²⁷ Microsoft Azure Official Website, *Azure China Operation* docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-azure-china-operation (accessed 10/07/2023).

acts as an “physically separated instance of cloud services located in mainland China, independently operated and transacted by Shanghai Blue Technology Co., Ltd”²⁸, which is the actual name of the company that, as its principal activity, operates and provides “Office 365 and Windows Azure platform services.”²⁹ Given that the technology licensed to its Chinese partner is the same, in terms of service level, to the technology that powers Azure Global services, Chinese customers can use Azure’s services with no significant differences in terms of quality compared to their global peers. Therefore, given the structure of the commercial cooperation between the two entities, the operational model of Azure Global and Azure China, i.e., the relationship established between the actual cloud services provider and the customer, is slightly different according to the geographical zone where the customer resides in. When purchasing an Azure solution, two different scenarios can occur, the customer can either be an international customer or a Chinese customer. In the case of an international customer, the latter will sign all the necessary agreements and contracts for the provision of the cloud services directly with Microsoft corporation; on the contrary, if the customer is a Chinese company, this will sign all the necessary agreements and contracts directly with VNET Group, given that the latter is the official legal entity for Microsoft Azure.³⁰

²⁸ Microsoft Azure Official Website, *Azure China Operation* docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-azure-china-operation (accessed 10/07/2023).

²⁹ SEC 2022 Annual Report, Notes to the Consolidated Financial Statements (Continued), F-19

³⁰ Microsoft Azure Official Website, *Azure China Operation* docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-azure-china-operation

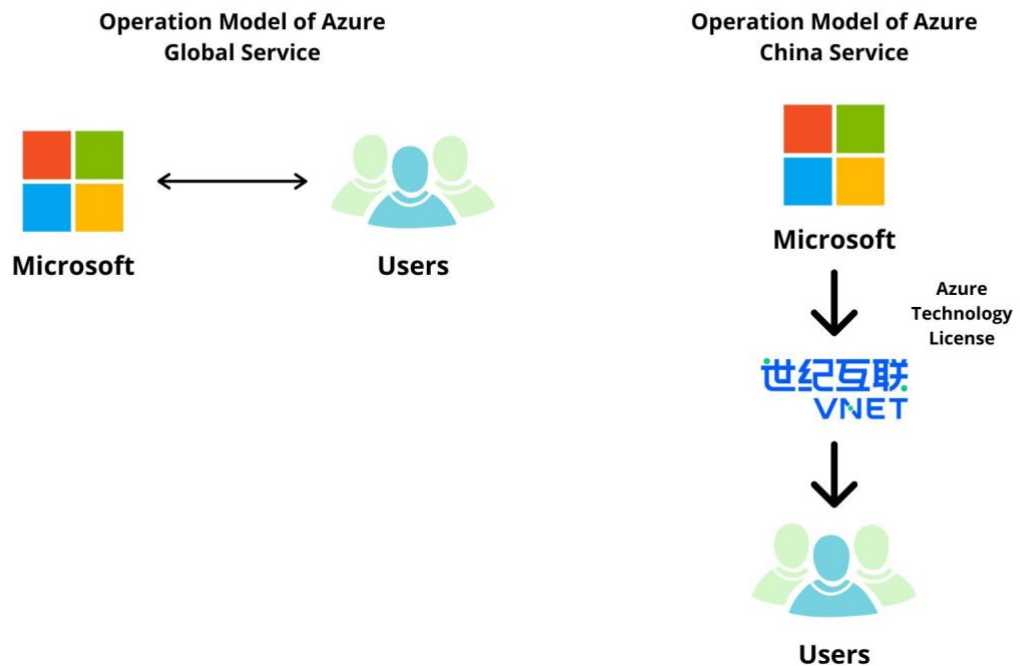


Figure 1. Operation Model of Azure Global and Azure China.³¹

- *Service Availability:* Microsoft official website states once again that Microsoft Azure services are operated in China by its Chinese partner as a standalone instance, which is separated from the services provided internationally through Azure Global. This means that, even though the service availability does not differ in a relevant manner between the two entities, still some difference exists in how much and how far the Chinese version of Azure’s services is able to reach its customers. Even though Azure China services availability is not identical to that of Azure Global, the company states that the quality of the services available to customers is not affected by the difference in service availability.³²

In addition to the above-mentioned characteristics, Azure China and Azure Global differ for a variety of other peculiarities, such as data centers, premium services, channels and payment methods, use cases and Azure marketplace.

³¹ The figure is based on the representation of Azure Global Services and Azure China Services that can be found on Microsoft Azure’s official website at docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-azure-china-operation

³² Microsoft Azure Official Website, *Azure China Operation* docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-azure-china-operation (accessed 10/07/2023).

- *Data centers:* Azure Global has the world primacy in the number of data center regions covered worldwide, with the ability to deploy and provide its services to 44 regions globally, with the only exception of China and Germany, which are operated by local partners). Azure China data centers are top quality data centers located in Eastern China and Northern China. The peculiarity of these data centers is that they rely on a direct access to backbone networks of major mainstream Chinese telecommunications operators such as China Mobile, China Telecom, and China Unicom. This enables Chinese users to enjoy a high-speed and stable local network access experience.
- *Premium services:* Azure Global solution offers a wide range of complementary services included in the offering of its public cloud that users and customers can utilize to enhance the user experience of their applications in order to better serve company's global customers, subsidiaries, and partners. Among the complementary services provided by Azure Global there are the Language Understanding Intelligent Service (LUIS) which enables the customer to design applications that understand natural language input from users, facilitating language understanding and interaction with the application; Translator API allows developers to integrate translation capabilities into applications, enabling seamless translation of text and speech across languages; Bing Speech API allows the application to leverage speech recognition and synthesis capabilities that will result in effective voice-based interactions; Azure's machine learning service enables developers to build, deploy and manage machine learning models and integrate them into applications, in order to effectively introduce intelligent decision-making into their products; Security Center is a complementary service that provides the customer with an advanced threat protection and security management system, which is essential for safeguarding customer's applications and data; Visual Studio Team Services offer a complete suite of development tools that enables customers to develop their applications in a collaborative and agile environment that facilitates efficient software development and delivery. Azure China differs in terms of complementary and premium services provided to customers, compared to Azure Global. These services cater to the specific needs of the Chinese market, offering cutting-edge solutions for various industries which include HDInsight, a cloud-native big data analytics service that helps businesses process and analyze large-scale data to extract valuable insights; SQL DB, Microsoft's SQL Database service on Azure,

providing a scalable and managed SQL Server database for applications; MySQL Database on Azure, a fully managed MySQL database service on Azure, offering high availability and security for MySQL-based applications; CosmosDB, a globally distributed multi-model database service, designed to handle diverse data types and offer low-latency access worldwide; IoT Suite, a collection of services tailored for Internet of Things (IoT) applications, facilitating device connectivity, data management, and analytics; IoT Hub, an Azure service that enables secure and scalable device-to-cloud and cloud-to-device communication for IoT solutions; Media Services, which allow for efficient streaming, encoding, and delivery of media content to a global audience; Content Delivery Network (CDN), which accelerates the delivery of web content, videos, and other assets, providing better performance and scalability.

- *Channels and payment methods:* Azure Global supports various methods of payment including online purchasing with payment in US dollars, pay-as-you-go option, where the user uses services first and then pay later for the resources consumed, payment via international foreign currency credit cards. In addition, when describing the various channels and payment methods of Azure Global, Microsoft underlines that customers in mainland China can purchase the global version of Azure through transactional partners based on the MCCL EA (Microsoft Customer License and Support) agreement.³³ With the same logic, Azure China supports online purchase with payment in Chinese yuan (RMB) but differs in the other categories, in that it supports prepayment method, allowing users to pay in advance for services; it also supports multiple payment options, including Alipay, UnionPay online payment, and bank remittance, providing various payment methods for users. Customers in mainland China can purchase the Chinese version of Azure through transactional partners based on the OSPA (Online Subscription Program Agreement) agreement, operated by Century Internet Co., Ltd.³⁴
- *Use cases:* Azure Global services can be deployed and used in a variety of cases, thanks to the global perspective with which the entity operates and provides its services. Among all the use cases, the following are listed in Microsoft Azure’s official website

³³ Haoxin CHENG, *Azure EA zhanghao guanli, dingyue qianyi* Azure EA 账号管理, 订阅迁移 (Azure EA Account Management and Subscription Migration), in “Microsoft”, www.microsoft.com/cms/api/am/binary/RE4NNEp (accessed 15/07/2023).

³⁴ *Purchase of Azure China*, in “Microsoft”, 2020
learn.microsoft.com/en-us/azure/china/concepts-purchase (accessed 15/07/2023).

and are the most relevant to our analysis: One Belt One Road (OBOR) business, global market operations, global IoT (Internet of Things) applications, overseas game development or operations, global market social applications, global mobile applications. At the same time, Azure China customization is reflected also in the use cases of the entity, as demonstrated by the list published on Microsoft's Azure official website: Chinese market local business systems (CRM systems), Chinese market operations (enterprise ERP systems like SAP), Chinese market IoT (Internet of Things) applications, Chinese social media applications, Chinese local data center disaster backup, Hybrid cloud (Azure Stack).³⁵

- *Azure marketplace*: Microsoft Azure certifies various applications from its partners that can be purchased and downloaded from the official marketplace that can be found on the platform. Microsoft Azure's certification is the proof of the high-quality of its partners' applications, among those there are Test Drive, a sandbox that allows the user to instantly run applications on-site, in order to learn and evaluate the software, Barracuda, Cloudera, NetScaler, WordPress, Nginx, and more. Microsoft Azure supports the pay-as-you-go model also for third parties' applications present on its official marketplace. Azure China official marketplace can also be accessed via the payment of 1 yuan. The marketplace contains a variety of applications that better suits the rapidly growing Chinese cloud ecosystem, such as LAMP Stack, GitLab, Red Hat Enterprise Linux (RHEL) 7.3, SuiteCRM, Check Point R80 Security Management, and more.

3. Azure China purchase process

Once that the main characteristics and differences between the global version of Microsoft Azure and its Chinese version has been set out clearly, we can now analyze more in detail the process that a Chinese company has to undertake when purchasing Azure China services in China. The contract that the Chinese customer has to deal with is called the Online Service Premier Agreement (OSPA), a standard contract having three-years terms and a minimum

³⁵ *Quanjie ban Azure and Zhongguo ban Azure* 全球版 Azure and 中国版 Azure (Azure Global and Azure China), in "Microsoft" www.microsoft.com/china/azure/ (accessed 20/07/2023).

initial annual commitment. OSPA contract is reserved only for enterprise customers that want to purchase Azure services through a contractual procedure.

As stated in Microsoft Azure's official website, the standard OSPA contract has the following six main characteristics that the Chinese customer has to take into consideration and has to comply with:

- *Contract structure*: the standard OSPA contract is a standalone contract independent from other agreements that the Chinese customers may have signed with the relevant parties. The main components of the standard contract are the Agreement's Terms and Conditions, the contact information sheet, the order form, and signature form. In order to be effective, the contract must be signed in all of its four parts from the Chinese customer.
- *Commitment*: in order to sign the contract, the Chinese customer is obliged to a minimum monetary commitment of as initial order of 50.000RMB, without taxes. When signing the contract, the Chinese customer agrees also to place additional annual orders for the second and third year, starting from the date of signature of the contract. At the end of each year, the customer has the possibility to confirm or to reject the subsequent year commitment, as well as to scale up or scale down the amount of monetary commitment set previously.
- *Payment*: the Chinese customer has the option to pay up to 30 days after the day of signature of the contract, choosing from different payment methods that can be either company wire transfer or check.
- *Pricing*: the price of Azure China's services is the same as listed in the web direct list page, and the Chinese customer can also enjoy only promo offers and benefits. On February 1st, 2017, the Azure new pricing became effective. The new pricing is the same as the previous OSSA pricing but with some differences in terms of customized pricing benefits that are reserved only for OSPA customers.
- *Overage*: in case of prolonged term of services, the Chinese customer will be subject to the same service rate as committed to by the latter when first entering into the service contract. In addition, the Chinese customer will be billed for every month of the overage service period. For every service the customer utilizes, the latter will be charged according to the pre-established rate at the day of the signing of the contract, and the amount of charges will be progressively deducted from the customer's monetary

commitment's term balance until this will be completely exhausted. In this eventuality, the overage starts. The customer will be notified in advance, before the monetary commitment will be exhausted, at the predefined usage percentage of 50%, 75%, 90%, and 100% respectively, in order to constantly inform the user of its percentage of usage and don't it be unprepared for additional charges due to overage. Once the customer has agreed to enter into overage, the system will automatically calculate and dispatch the overage statement to the customer's contacts. If the customer doesn't want to pay for the additional charge due to overage on a monthly basis, it can choose to place an additional order to top up the amount of monetary commitment that will be used to repay for the overage services.

- *Agreement renew*: as stated above, the overall duration of the contract is three years. Once the agreement has expired, the Chinese customer has the option to sign a new contract, renewing its commitment for an additional three-year period. The transition from the old to the new contract will happen smoothly without the need to rebuild or to reset the terms and conditions of the services provided by VNET Group.

In addition to the standard OSPA contract, where the contractual relationship is established directly between the Chinese customer and VNET Group, the Chinese customer can also opt for an indirect form of the Online Service Premium Agreement, which differs from the previous one in that the agreement is signed between the local enterprise customer and Microsoft indirect partner, and not directly with VNET Group. Therefore, the two contractual models, i.e., direct and indirect OSPA, differs mainly in the business model and billing method of the customer.³⁶ Microsoft indirect partners will replace VNET Group in the various steps during the buying to using process, including pre-sales consultancy, the provision of quotation based on customer's purchase plan, the integration of the partner's solutions with Microsoft Azure, as well as billing and invoice services.

For the sake of clarity, the following table summarizes the main characteristics, differences, and similarities of the two models of contract that a Chinese customer can choose from when purchasing Azure China's services in China.

³⁶ *Purchase Programs*, in "Microsoft", 2020
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-purchase-programs (accessed 20/07/2023).

	Direct OSPA	Indirect OSPA
Agreements	The Chinese customer signs the complete package of OSPA Agreements directly with VNET Group	The Chinese customer signs a commercial contract with Microsoft indirect partner and only an Indirect OSPA Agreement Terms and Conditions with VNET Group
Agreement Duration	3 years	3 years
Pricing/Quotation	The pricing and the quotation of the Azure services purchased by the Chinese customer will be quoted by Microsoft Sales Team	The price of the Azure services will be quoted by Microsoft indirect partner
Billing and Payment	The Chinese customer will pay directly to VNET Group	The Chinese customer will pay to Microsoft indirect partner
Support	For all the support requests, the Chinese customer should contact VNET Group	VNET Group supports the customer in the majority of cases, except for billing-related matters, which will be supported by Microsoft indirect partner

Table 1. Differences and similarities between direct and indirect OSPA³⁷

The process for the purchasing of Azure China’s cloud services is carried on by both Microsoft Account Team and VNET Group, which collaborate to allow the customer to prepare and submit all the necessary documents for the enabling of the service contract. The

³⁷ Table 1 is taken from Microsoft Official website, for more information see Enterprise Purchase Process - Purchase Programs docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-purchase-programs

purchase process can be divided into four phases: credit check, the creation of an Org ID contract effective, and payment.³⁸

- 1- *Credit check*: every company that wants to sign a contract for the provision of Azure's services in China has first to undergo a credit check by VNET Group. In this phase, Microsoft Account teams will inform the customer and guide it along the filing procedure. The materials and documents that every customer should provide in order to complete the credit check process are the following: business license with registered capital, tax register certification, recent 2 years' financial report, contract details with commitment, payment terms and Microsoft related contact persons. For the last requirement, Microsoft Account team will provide the customer with all the necessary help and guidance to consolidate the documents and requirements.³⁹ It is important to notice that if the annual commitment amount for the next year exceeds 150% of the previous year's amount, the customer will be required to undergo an additional credit check.
- 2- *Creation of Org ID*: an Org ID is in fact an Organization ID which consists of a unique username that allows the customer enterprise to log in to its reserved area, to create subscriptions and deploy Azure services as needed. The format of an Org ID differs between Azure Global and Azure China. The latter will be in the format "****@***.partner.omschina.cn". Due to Chinese regulations, the Windows Live ID, which is used by the users of Azure Global, is not valid for purchasing Azure China services. The Org ID is a mandatory requirement when signing the OSPA contract as it will uniquely identify the customer in the system. Therefore, the Org ID must be unique, the system will automatically check if the chosen domain has already been used by another enterprise, and the system will also need an SMS verification to complete the process. If, for co-manage purposes, the customer needs more Org IDs, the system will allow OSPA users to create multiple Org IDs under the same domain. This can be

³⁸ All the requirements and provision regarding the purchase process of Azure China services are valid for both direct and indirect OSPA contract models. Microsoft indirect partners may add additional requirements according to the specific case. In this eventuality, the Chinese customer shall visit and consult Microsoft indirect partner's official website and related document and information for more detailed instructions about the activation of the contract.

³⁹ *Enterprise Purchase Process - Credit Check*, in "Microsoft", 2022
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-ospa-purchase-process - [contract-structure](#)
(accessed 26/07/2023).

done mainly in two ways, by creating an Org ID via Office365 platform O365 Platform, or by creating an AD service in Azure Management Portal AD on Management Portal.⁴⁰

- 3- *Contract effective*: after completing all the necessary steps and after all the contracts details are finalized, VNET Group will send the contract package to the customer, which will only have to sign it to complete the process. After signing the contract, the customer will have to send it back to VNET Group, which in turn will provide the customer with its requested Org ID. The process is complete and now the customer can use the Org ID to sign in the platform and start using Azure services.
- 4- *Payment*: with the signing of the contract, the last step left to be completed by the Chinese customer is the payment. This step of the process has to be carried on within 30 days from the date of signature of the contract. The customer will be able to use Azure services prior to the date of payment, provided that it completes the payment within the term of 30 days set out by the company. It has to be noted that the payment refers to the initial commitment that every Chinese customer is obliged to undertake, with a minimum amount monetary commitment of 50.000RMB. The customer can choose either company wire transfer or check as a payment method, and once VNET Group receives the monetary commitment from the Chinese customer, it will issue the VAT invoice to the latter one. In case the Chinese customer is not able to provide the monetary commitment and to submit the annual order to VNET Group, the Azure services agreed upon in the contract will be immediately suspended after the deadline of 30 days, as stated in the contract. With regard to the following years' commitment, for the second and the third year, the Chinese customer will need to follow the same procedure in terms of payment method and payment term, in order to continue the contractual relationship with VNET Group (or Microsoft indirect partner in case of an indirect OSPA) for the provision of Azure services. The customer will be notified by the system respectively 105 days, 60 days, and 7 days prior to the annual recurrence of the signing of the contract in order to let the customer be prepared for the renewal of the monetary commitment and the annual submission of the order.

The process described above is meant to be followed only by Chinese customers, i.e., Chinese legal entities incorporated in the territory of the People's Republic of China.

⁴⁰ *Enterprise Purchase Process - Create Org ID*, in "Microsoft", 2022
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance (accessed 26/07/2023)

Overseas customers willing to purchase Azure China services have no option but to follow the above-mentioned process by means of their legally established Chinese subsidiaries, which in turn will sign all the necessary agreements with VNET Group for the provision of cloud services by Azure China. Therefore, no overseas enterprise is allowed to purchase Azure China services directly, as the process involves Chinese entities that are legally established in China that will serve the purpose of being an intermediary also for overseas companies with operations in China and wanting to adopt Microsoft Azure cloud services solutions.⁴¹ In this eventuality, it is highly probable that overseas enterprises have already purchased an Azure Global subscription abroad, and therefore, to guarantee business continuity between overseas and Chinese subsidiaries, the company will want to purchase an Azure China subscription for its operation in mainland China. It has to be noted here that “services between Azure Global and Azure China cannot be migrated automatically.”⁴² The reason for this apparent discontinuity between Azure Global and Azure China is that the two services are operated as separated instances. Therefore, customers willing to apply this method will have to consult the Azure Migration Center in order to obtain all the necessary information about the migration process for all the data stored in Azure Global.

The purchase process is supported by Microsoft with different sets of benefits that will allow the customer to enjoy a smoother and simpler experience during all the steps of the signing of the contract. Microsoft guarantees price protection for its customer, in that, in case of price changes, Microsoft will maintain the best possible price for its customer. In the case the price goes up for a specific service, the pricing quoted to the customer will stay the same, whereas in the eventuality of a significant drop in price for a particular service, the quoted price will automatically adjust to the lowest level possible. In case of any price change, the customer will be timely notified by the system via email. As mentioned above, the payment step is also facilitated in that the customer has 30 days to pay for its upfront monetary commitment, and in the meantime, it is allowed to start using the services provided by Azure China, even prior to the date of the effective payment. Additional payment flexibility is also reflected in case of overage, where customer can choose either to make an additional monetary commitment or to pay for the extra amount on a monthly basis. The customer is

⁴¹ *Enterprise Purchase Process - Special Notes for Overseas Customer Purchase China Azure*, in “Microsoft”, 2022 docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/go-china-playbook-ospa-purchase-process - [contract-structure](#) (accessed 27/07/2023).

⁴² *Ibid.*

supported throughout the entire process directly by Microsoft Team, with the option to purchase an additional premier support if it is needed for mission-critical deployment. When purchasing a subscription to Azure China, the customer will automatically be entitled to all future releases of additional offers such as Azure HUB⁴³ and other Azure plan SKUs.⁴⁴ In order to make the purchase process, and more in general to allow customers to manage their subscription properly, Microsoft gives full access to the Azure Enterprise Portal, which will serve the purpose of letting the customer manage their usage, accounts and pricing.⁴⁵ In addition, the portal includes various other features such as display the monetary commitment purchased by the customer, offers an overview of service utilization and expenses across all accounts and subscriptions, regularly sends usage notifications (daily, weekly, or monthly) to keep customers informed about their remaining financial commitment or any monthly overages, and, finally, enables users to download comprehensive usage records and view costs at both the account and subscription levels.⁴⁶

A special mentioned has to be made with regard to the subscription conversion option made available to customers. In case an enterprise customer did purchase Azure China services through a non-OSPA method, i.e., online purchase, web-direct subscriptions, and trial subscriptions, the latter will have the possibility to choose for a conversion of its non-OSPA subscription to a OSPA subscription. The change in the status of its subscription will not have an impact on the current operations carried on by the customer, as the subscription conversion entails only a change in the billing logic and will not influence the actual deployment operations. As described by the figure below, as of today, the subscription conversion process is exclusively a one-way process that allows the customer to convert a non-OSPA subscription plan to a OSPA subscription plan. Once the non-OSPA subscription has been converted into a OSPA subscription, the process cannot be reversed, and the subscription cannot be converted back to an online purchase or trial subscription.⁴⁷

⁴³ Azure Hybrid Use Benefit allows the customer to use existing on-premises Windows server licenses when moving to the cloud. If the Windows server license possessed by the enterprise customer includes Software Assurance (SA), the Hybrid Use Benefit offer will allow the customer to only pay for basic compute rates while deploying Windows virtual machines in Azure.

⁴⁴ *Enterprise Purchase Process – Benefit*, in “Microsoft”, 2022
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/contract-structure (accessed 27/07/2023)

⁴⁵ *Enterprise Purchase Process - Azure Enterprise Portal*, in “Microsoft”, 2022
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/contract-structure (accessed 27/07/2023)

⁴⁶ *Ibid.*

⁴⁷ *Enterprise Purchase Process - Subscription Conversion*, in “Microsoft”, 2022
docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/contract-structure (accessed 27/07/2023).

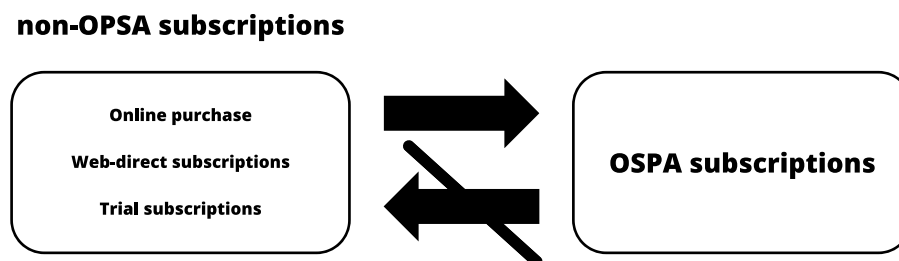


Figure 2. Subscription conversion process.⁴⁸

4. Unraveling the paradox: VNET Group VIE structure

As described in Chapter I and Chapter II, the value-added telecommunications sector in China is highly regulated and it is inscribed into the negative list as a restricted sector where foreign investors are not allowed to own more than a 50% equity interest in any Chinese company incorporated under the law of the People’s Republic of China that operates in value-added telecommunications businesses.⁴⁹ Even prior to the 2021 version of the negative list, in July 2006 the Ministry of Industry and Information Technology issued a circular requiring foreign investors to set up a foreign invested enterprise (FIE) in mainland China, in order to obtain the mandatory value-added telecommunications business operating license that will allow the foreign investor to conduct any value-added telecommunications business in China.⁵⁰ The circular states clearly that every Chinese business entity that obtained a value-added telecommunications business operating license is prevented from leasing, transferring or selling the license to foreign investors in any form, and it is prohibited from providing any assistance in form of resources, sites, or facilities, to foreign investors that engage in value-added telecommunication businesses in China without the appropriate and required license and documentation. In this scenario, it is clear that foreign investors have to approach the

⁴⁸ This representation is taken from Microsoft Azure’s official website, for more information see Enterprise Purchase Process - Subscription Conversion docs.azure.cn/en-us/articles/azure-china-purchasing-guidance/contract-structure

⁴⁹ Ministry of Commerce, *Waishang touzi zhunru tebie guanli cuoshi (fumian qingdan) (2021 nian ban)* 外商投资准入特别管理措施 (负面清单) (2021 年版) (Special Administrative Measures (Negative List) for Foreign Investment Access (2021 edition), 2021, n. 14.

⁵⁰ Ministry of Industry and Information Technology, *Xinxi chanye bu guanyu jiaqiang waishang touzi jingying zengzhi dianxin yewu guanli de tongzhi* 信息产业部关于加强外商投资经营增值电信业务管理的通知 (Notice of the Ministry of Information Industry on Strengthening the Administration of Foreign Investment in Value-Added Telecommunications Services), 2006

Chinese market for cloud services in a peculiar way, looking for Chinese partners that will allow them to provide those services in the Chinese territory.

As we came to understand, Microsoft Azure has started a collaboration with the Chinese entity VNET Group, that helped the big multinational to enter the Chinese market and to offer Azure cloud services to Chinese enterprise customers. What's interesting though is that, as we saw in the previous paragraph, even though the Chinese entity with which Microsoft started a collaboration is by all means a legally incorporated company under the laws of the People's Republic of China, it also belongs to VNET Group, which is in fact a Cayman Islands exempted company, which acts as a holding company with no material operations of its own. Indeed, VNET Group business operations are primarily conducted by its subsidiaries, its variable interest entities, and its variable interest entities' subsidiaries. The paradox here is crystal clear, Microsoft, on the one hand, is collaborating with a Chinese entity that owns all the required licenses and meet all the requirements set out by the Chinese law to operate in the value-added telecommunications business sector, but on the other hand, it is *de facto* doing business with an entity that is controlled by all means by a VIE structure that allows VNET Group to operate in the value-added telecommunications business sector from abroad, as it embodies a Cayman Island incorporated company. The VIE structure adopted by VNET Group serve a double purpose of meeting all the legislative requirements set out by the Chinese government and relevant authorities with regard to restricted sectors to foreign investors, and at the same time it permits VNET Group to raise funds in foreign capital markets. Indeed, VNET Group (at that time named 21Vianet) listed on the NASDAQ market in April 2011⁵¹, when the company sold 13 million American depositary shares for 15\$ each, 2\$ above the proposed range, raising a total amount of \$195 million with its IPO.⁵²

For the purpose of this thesis, it is important to understand what entity, in the organizational structure of VNET Group, is responsible for operating Microsoft Azure's services in China. By looking at Microsoft official website and VNET Group SEC filings it is clear that the Chinese company that provides Azure's cloud services to Chinese customer, formerly known as 21Vianet, is denominated "Shanghai Blue Cloud Technology Co. Ltd." (hereinafter referred to as SH Blue Cloud). This entity not only provides Windows Azure platform

⁵¹ Nasdaq Official Website, *About VNET Group, Inc.*

www.nasdaq.com/market-activity/stocks/vnet (accessed 27/07/2023).

⁵² *21Vianet IPO raises \$195 million, more than expected*, in "Reuters", 2011

www.reuters.com/article/us-21vianet-ipo-idUKTRE73K0BI20110421 (accessed 27/07/2023).

services but is also responsible for providing Office 365 services to Chinese customers. In the subsequent section we will dive deeper into the analysis of the organizational structure of VNET Group, in order to understand who the real owner of the SH Blue Cloud is, as to unravel the paradox of having to find a Chinese partner for providing value-added telecommunications services in China, but in fact in this case the Chinese partner is by all means controlled by a foreign entity. We will later discuss in detail all the contractual arrangements that allows VNET Group to exercise control and power over the Chinese entities without any equity involvement in such business entities.

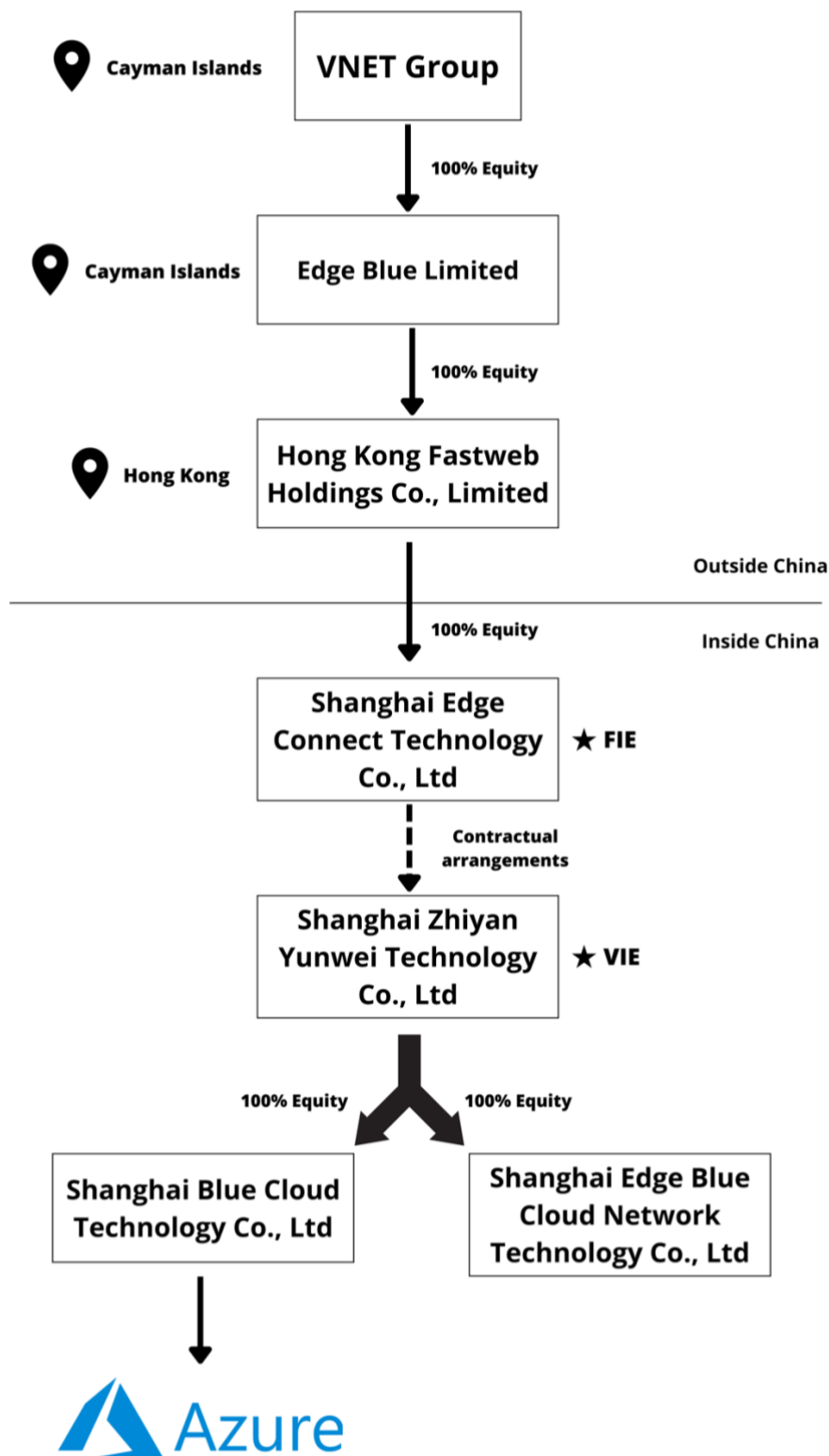


Figure 3. VNET Group organizational structure.⁵³

⁵³ The figure has been drawn from VNET Group 2022 Annual Report submitted to the SEC. It has to be noted that the figure in this section is not exhaustive of the entire organizational structure of VNET Group, but it serves the purpose representing the relationships between different entities in the organizational structure regarding the company Shanghai Blue Technology, responsible for providing Microsoft Azure’s cloud services in China.

At the top of the organizational chart there is VNET Group, a Cayman Islands holding company with no operations of its own. The company, in fact, carry on its operations exclusively through its subsidiaries and variable interest entities (VIEs), and VIEs' subsidiaries.⁵⁴ The fact that the company decided to establish its headquarters in the Cayman Islands is no surprise, as the islands have a history as a tax heaven and offshore finance is one of the main pillars of the Caymanian economy.⁵⁵ Indeed, in the Cayman Islands, as well as in all the other existing offshore financial centers there are no relevant taxes, and taxes are levied only on relevant internal taxable events but there are low to no tax rates on profits from foreign sources. In addition, tax havens also grant special tax privileges to certain types of taxable persons or events.⁵⁶ As further specified in the SEC Annual Report in the section regarding taxation, the Cayman Islands do not impose taxes on individuals or corporations based on profits, income, gains, or appreciation, and inheritance taxes or estate duties are completely absent. Apart from potential stamp duties applicable to documents executed within or brought into the jurisdiction of the Cayman Islands, there are no other significant taxes levied by the Cayman Islands government that would be relevant to VNET Group. The Cayman Islands is not party to any double taxation treaties that would apply to payments involving the company, and there are no exchange control regulations or currency restrictions within the Cayman Islands. Additionally, when the company distributes dividends to shareholders, no withholding tax from the Cayman Islands will be imposed.⁵⁷

As in the majority of cases, VNET Group's VIE structure starts from an offshore tax haven, in this case the Cayman Islands. VNET Group acts as a listed company, raising funds from the capital market, and is owned by both Chinese shareholders, by the founders of the Chinese entity and by foreign investors. The main investors of VNET Group are the UK company FIL Investment Advisors, owning a 8.02% stake in the company, the Hong Kong business entity MY.Alpha Management Advisors, with a 4.90% stake, and the Vanguard Group, holding a 2.67% stake in the company.⁵⁸ VNET Group own 100% equity of another company incorporated under the laws of the Cayman Islands, namely Edge Blue Limited. It is not clear for what purpose this company has been established, as there is no relevant material about the

⁵⁴ SEC 2022 Annual Report, p. 3.

⁵⁵ Susan M. ROBERTS, "Small Place, Big Money: The Cayman Islands and the International Financial System", *Economic Geography*, vol. 71, no. 3, 1995, p. 240.

⁵⁶ *Ibid.*

⁵⁷ SEC 2022 Annual Report, p. 109.

⁵⁸ CNN Business, VNET Group

money.cnn.com/quote/shareholders/shareholders.html?symb=VNET&subView=institutional (accessed 28/07/2023).

company. Despite that, the company is also fitting well into the VIE structure in that it, in turn, owns a 100% equity stake in what can be defined, according to the VIE structure theory, as a Hong Kong conduit company, namely Hong Kong Fastweb Holdings. This company acts as an intermediary between the listed entity (VNET Group) and the wholly foreign owned enterprise established in the territory of the People's Republic of China. The main purpose of the Hong Kong incorporated company is to avoid a withholding tax on dividends. Indeed, the Enterprise Income Law provides that, since January 1, 2008, the dividends that nonresident companies in the People's Republic of China pay to their parent companies abroad, are subject to an income tax rate of 10%.⁵⁹ According to the Arrangement Between Mainland China and the Hong Kong Special Administrative Region for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion on Income and Capital, along with other relevant PRC laws, if a Hong Kong resident enterprise fulfills the specified conditions and requirements stated in this arrangement and other applicable laws, the withholding tax on dividends received by the Hong Kong resident enterprise from a PRC resident enterprise, initially set at 10%, may be lowered to 5% as determined by the competent PRC tax authority.⁶⁰ Hence, this structure is purportedly made for reducing as low as possible the tax rate for the withholding tax that is to be levied in the eventuality one of the subsidiaries or VIEs are to pay back dividends to VNET Group via the Hong Kong conduit company. Despite that, the company declares that, to date, it has not issued or disbursed any dividends on its ordinary shares, and it is not planning to do so in the near future. The reason for that is the willingness of the company to retain the majority, if not all, of the available funds and any upcoming profits to support the operation and growth of the business.⁶¹ The tax avoidance purpose of the Hong Kong company is made clear also by the depicted simulation of the hypothetical taxes that might be required to be paid in mainland China and Hong Kong, in the case the company has taxable earnings and is determined to pay a dividend in the future. If 100 is to be the total amount of hypothetical pre-tax earnings, on this amount a tax rate of 25% will be levied as tax on earnings at full statutory rate at PRC subsidiary level. It has to be noted here that some of the subsidiaries and

⁵⁹ State Taxation Administration, *Zhonghua renmin gongheguo qiye suode shui fa* 中华人民共和国企业所得税法 (Law of the People's Republic of China on Enterprise Income Tax) (hereinafter referred to as Enterprise Income Tax Law), 2007, Art. 4.

⁶⁰ *Neidi he Xianggang tebie xingzheng qu guanyu dui suode bimian shuangchong zhengshui he fangzhi touloushui de anpai* 内地和香港特别行政区关于对所得避免双重征税和防止偷漏税的安排 (Arrangement Between Mainland China and the Hong Kong Special Administrative Region for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion on Income and Capital), 2006, Art. 10.

⁶¹ SEC 2022 Annual Report, pp. 16-17.

VIEs qualify for a preferential tax rate of 15% in the PRC, however, the qualification for this preferential tax treatment is temporary and may not be available in case the company will decide to pay dividends in the future. The resulting earnings after the reduction due to the 25% tax rate (75) will be further reduced due to a withholding tax at a tax treaty rate of 5%, resulting in a final amount of total earnings to be distributed to shareholders of 71.25. The table below exemplifies this process.⁶²

Hypothetical pre-tax earnings	100.00
Tax on earnings at a statutory rate of 25% at PRC subsidiary level	(25.00)
Amount to be distributed as dividend from a PRC subsidiary to a Hong Kong subsidiary	75.00
Withholding tax at tax treaty rate of 5%	(3.75)
Amount to be distributed as dividend at Hong Kong subsidiary level and net distribution to VNET Group, Inc.	71.25

*Table 2. Example of the hypothetical taxes to be paid in case of a distribution of dividends.*⁶³

The portion of the VIE structure described so far refers to the companies established outside the territory of the People’s Republic of China, and therefore classifies VNET Group as an overseas entity. It is important to bear in mind, though, that VNET Group may also be classified as a Chinese “resident enterprise” under the PRC Enterprise Income Tax Law. Indeed, the law and all the subsequent implementation rules provide that an enterprise headquartered abroad with “de facto management bodies” within China is to be considered as a resident enterprise.^{64 65} As a result, companies that fall under the definition of resident enterprises are treated the same way, in terms of enterprise income tax, as the Chinese companies headquartered within the borders of the People’s Republic of China. The law further expands on the definition of “de facto management body” as the “management body

⁶² SEC 2022 Annual Report, pp. 16-17

⁶³ The table has been drawn from the 2022 Annual Report submitted to the SEC by VNET Group.

⁶⁴ Enterprise Income Tax Law, Art. 2.

⁶⁵ State Tax Administration, *Zhonghua renmin gongheguo suode shui fa shishi tiaoli* 中华人民共和国企业所得税法实施条例 (Implementation Regulations of the Enterprise Income Tax Law of the People’s Republic of China) (hereinafter referred to as Implementation Regulations), 2007, Art. 2.

that exercises full and substantial control and overall management over the business, productions, personnel, accounts and properties of an enterprise.”⁶⁶ ⁶⁷ The company declares that, to the knowledge of its senior personnel, currently there are no conditions for classifying VNET Group as a resident enterprise. In the eventuality that this will happen in the future, the case set out in Table 2, line 2, will likely happen, i.e., the company’s worldwide taxable income will be subject to a taxation at a rate of 25%, and the company will also be obliged to meet all the reporting obligations set out in the Enterprise Income Tax Law of the People’s Republic of China. The same unfavorable tax condition will be applied also to Edge Blue Limited and Hong Kong Fastweb Holdings, respectively the Cayman Islands and Hong Kong entity of the VIE structure, in case they will also be deemed as resident enterprises.⁶⁸ If more than one company in the VIE structure will be considered as resident enterprise, a special provision of the Enterprise Income Tax Law will be applicable. The law, indeed, provides that dividends paid between “qualified resident enterprises” will be subject to an exemption on the withholding tax that will otherwise be applicable.⁶⁹ This will constitute a noteworthy advantage in the payment of dividend both between companies located abroad and between companies located abroad and within China.

In order to understand the management characteristics and peculiarities of the companies located within China and belonging to VNET Group with regard to the provision of Azure cloud services, we will now dive into the analysis of the Chinese subsidiaries of VNET Group.⁷⁰ The main entities at the foundation of the VIE structure adopted by VNET Group to operate in the value-added telecommunications sector in China are the Chinese foreign invested enterprise (FIE), also referred to as wholly-foreign owned enterprise (WFOE) Shanghai Edge Connect Technology and the variable interest entity (VIE) Shanghai Zhiyan Yunwei Technology. These two entities are those more involved in the setting up of the VIE structure, in that it exists a strong contractual relationship between the two companies, so that the WFOE retains sufficient power and control of the VIE, even without any equity interest in the Chinese company. In detail, the contractual arrangement between the two companies serve the purpose of enabling the WFOE to (a) direct the activities and operations of the VIE and its subsidiaries that have the most significant influence on the financial performance of

⁶⁶ Enterprise Income Tax Law, Art. 2

⁶⁷ Implementation Regulations, Art. 4.

⁶⁸ SEC 2022 Annual Report, p. 57

⁶⁹ Enterprise Income Tax Law, Art. 26.

⁷⁰ For reference, see the “Inside China” section of Figure 3.

the VIE and its respective subsidiary companies; (b) let the WFOE subsidiaries receive a significant portion of the economic benefits from the VIE and its subsidiaries in exchange for the services they provide; and (c) to possess an exclusive right to acquire all or a portion of the equity interest in the VIE, subject to compliance with the applicable laws in the People's Republic of China.⁷¹ Furthermore, the holding company VNET Group declares that, as of the date of the 2022 Annual Report submitted to the SEC, all the WFOEs and VIEs within the organizational structure of the group are in compliance with Chinese regulations in terms of obtaining the requisite licenses and permits for the People's Republic of China government authorities that are relevant for the conduction of business operation of all the subsidiaries and consolidate affiliated entities in the territory of China, including but not limited to the value-added telecommunications operation licenses.⁷²

The contractual arrangements between the WFOE and the VIE include five different agreements, each of which is indispensable to support the structure and to allow the WFOE to maintain the necessary degree of control over Chinese operations:

- *Equity Pledge Agreement*: the agreement was signed in Shanghai and has entered into force on December 10, 2020. The pledge agreement is a contractual document that establishes a situation wherein one party (the pledgor) fully transfers the ownership of a particular property or asset to another individual or entity (the pledgee). The pledgee accepts the asset and holds it in safekeeping, typically in exchange for some form of compensation.⁷³ The parties of this agreement are Shanghai Edge Connect Technology, which acts as the Pledgee and is described in the agreement as a “wholly foreign-owned company registered in Shanghai, China, legally engaged in technical service business with the permission of the relevant Chinese government authorities”⁷⁴; and Shanghai Rongyan Yunqi Technology, acting as the Pledgor and is described in the agreement as a “domestically-funded enterprise registered in Shanghai, China which owns 100% of the equity of Shanghai Zhiyan Yunwei Technology”.⁷⁵ Under this agreement, Shanghai Rongyan Yunqi Technology pledges 100% of its equity interest in Shanghai Zhiyan Yunwei Technology to Shanghai Edge Connect Technology. Therefore, pursuant to

⁷¹ SEC 2022 Annual Report, p. 8.

⁷² *Ibid.* p. 4.

⁷³ *Pledge And Security Agreement*, in “Contracts Counsel”, 2023, www.contracts-counsel.com/t/us/pledge-and-security-agreement (accessed 01/08/2023).

⁷⁴ Equity Pledge Agreement signed on December 10, 2020, between Shanghai Edge Connect Technology and Shanghai Rongyan Yunqi Technology (hereinafter referred to as Equity Pledge Agreement), p. 1.

⁷⁵ Equity Pledge Agreement, p.1.

this agreement, the WFOE acquires the right to sell or dispose of the equity interest in the VIE if the latter defaults on the debt or obligation set out in other agreements. The term for the equity pledge is 20 years, unless otherwise stipulated in written form by the parties.⁷⁶

- *Irrevocable Power of Attorney*: in the preamble of this agreement, firstly there is the definition of a series of contracts (all of which will be covered in this section) referred to as “Controlling agreements”, i.e., the Exclusive Technical Consulting and Service Agreement, the Exclusive Option Agreement and the Equity Pledge Agreement. Hence, the power of attorney agreement is aimed at ensuring the performance of the controlling agreements, authorizing in an irrevocable way the WFOE to exercise a series of rights on behalf of the target company, i.e., Shanghai Zhiyan Yunwei Technology, or the VIE. These rights are formally owned by the equity owner of the VIE, i.e., Shanghai Rongyan Yunqi Technology, and therefore are granted to the WFOE. These rights include exercising all the rights of a shareholder, including voting rights, granted to Shanghai Rongyan Yunqi Technology by the laws and articles of association of the Shanghai Zhiyan Yunwei Technology. This includes making shareholders' resolutions, such as selling, transferring, pledging, or disposing of all or a portion of the equity of the VIE. In addition, Shanghai Edge Connect Technology will be entitled to designate and appoint the legal representative (Chairman of the board), directors, supervisors, general manager, and other senior managers of the VIE to act as authorized representatives of this Shanghai Rongyan Yunqi Technology.⁷⁷ The WFOE is also authorized to delegate all or part of its acquired rights to other persons or entities without having to notify Shanghai Rongyan Yunqi Technology and without the latter's consent. All the above mentioned rights granted to Shanghai Edge Connect Technology will not be exercised by Shanghai Rongyan Yunqi Technology for the entire period of validity of the irrevocable power of attorney agreement.⁷⁸
- *Exclusive Option Agreement*: the agreement defined three parties, namely, Shanghai Edge Connect Technology (WFOE) as Party A, Shanghai Rongyan Yunqi Technology as Party B, and Shanghai Zhiyan Yunwei Technology (VIE) as Party C. As in the

⁷⁶ Equity Pledge Agreement, p. 4.

⁷⁷ Power of Attorney written by Shanghai Rongyan Yunqi Technology on December 10, 2020 (hereinafter referred to as Power of Attorney).

⁷⁸ Power of Attorney.

previous agreements, the focus is on Party B holding the 100% equity interest of Party C. With the exclusive option agreement, Party A, or WFOE, obtain the right to acquire all or part of the equity interest of Party C, or VIE, held by Party B.⁷⁹ This option is also called an “Equity Option” and can be exercised by both the WFOE and a third party appointed by it. The Equity Option shall be exercised in accordance with Chinese laws and regulations, in terms of foreign ownership of China-based companies and its relative equity limitations. In exercising the Equity Option, the WFOE has to follow a detailed procedure that is defined in the agreement and includes the following steps: (a) the WFOE shall give written notification to Party B, the so-called “Equity Purchase Notice”, containing the decision to exercise the Equity Option; (b) the notice shall also include the quantity of equity Party A wants to acquire from Party B, also referred to as “Purchased Equity”; and (c) it has to communicate to Party B the purchase date and the equity transfer date.⁸⁰ In addition, the pricing process of the purchase shall be calibrated on the minimum level of price permitted under the laws of the People’s Republic of China and relevant administrative regulations, in all the cases except when an evaluation is required by such laws and regulations.⁸¹

- *Exclusive Technical Consulting and Service Agreement*: this Agreement is signed directly between Shanghai Edge Connect Technology (WFOE) and Shanghai Zhiyan Yunwei Technology (VIE). This is because there are no equity interests in the agreement, and therefore there is no need for the involvement of the equity owner entity Shanghai Rongyan Yunqi Technology. In this agreement, the WFOE acts as the technical consulting and services provider for the VIE, including its subsidiary Shanghai Blue Cloud Technology, which is responsible for providing Microsoft Azure’s services in mainland China. The aim of the agreement is to make Party A the sole and exclusive technical consulting and services provider to Party B, hence, Shanghai Edge Connect Technology agrees not to provide such kind of services to third parties without prior written consent of the VIE.⁸² At the same time, Party B accepts

⁷⁹ Exclusive Option Agreement signed on December 10, 2020, between Shanghai Edge Connect Technology, Shanghai Rongyan Yunqi Technology, and Shanghai Zhiyan Yunwei Technology (hereinafter referred to as Exclusive Option Agreement), p. 2 (1.1).

⁸⁰ *Ibid.* p. 2 (1.2).

⁸¹ *Ibid.* p. 2 (1.3).

⁸² Exclusive Technical Consulting and Service Agreement signed on December 10, 2020, between Shanghai Edge Connect Technology and Shanghai Zhiyan Yunwei Technology (hereinafter referred to as Exclusive Technical Consulting and Service Agreement), 1.1.

the technical consulting and services from Party A, agreeing not to accept the same kind of services from third parties.

In addition to the agreements, the contractual arrangement is accompanied by a Letter of Undertaking written by the authorized representatives of Shanghai Edge Connect Technology to Shanghai Zhiyan Yunwei Technology. In this letter, the WFOE commits to financially support the VIE or other companies whose financial statement can be consolidated by the VIE. In case the elected subjects will suffer a loss in any year, according to the accounting standards for enterprises, the WFOE will provide financial support for the following year, and the amount will be no less than the suffered loss, in order to nullify the effects of the financial losses in that year. The amount provided by the WFOE is not required to be returned, and the commitment taken will be irrevocable and effective starting from December 10, 2020.⁸³

The contractual arrangements described above illustrate the strong relationship between the WFOE and the VIE. It is clear now why the company is worried about a possible classification of this structure as a “de facto management body”, in that the VIE operations are in large part under the effective control of the WFOE, even without any direct equity interest. Given the current reputation of the VIE structures in the Chinese context, VNET Group is also worried that the legislative framework related to such structure will change in the future, and the VIE structures will be declared as illegal. In this eventuality, the company will be forced to reorganize its entire structure, and this will inevitably have an impact also on the material operations of providing Azure services to Chinese clients through Shanghai Blue Cloud Technology. As mentioned in the SEC Annual Report, an equity control of business operations in China would have been more effective, but due to the restrictions on foreign investment in value-added telecommunication sector, the company had no other option but to set up the contractual arrangements described in this chapter. The enforcement of all the agreements by VNET Group is challenging and may involve substantial costs. Future modifications on the rules and regulations in the People’s Republic of China will potentially hinder the ability to maintain the current structure and both the company and the VIEs risks to be found in violation of existing and future PRC laws and regulations and the current organization structure will likely be declared illegal or invalid by the PRC court, arbitral tribunal, or relevant regulatory authorities.⁸⁴

⁸³ Letter of Undertaking written by Shanghai Edge Connect Technology on December 10, 2020.

⁸⁴ SEC 2022 Annual Report, p. 10.

5. Azure China compliance

In this final section, we will analyze more in detail all the matters related to the compliance with existing Chinese and international regulations. A particular focus will be aimed at understanding how Azure China collects and processes users' personal data, how does it transfer it outside for ensuring the continuity of the services provided and finally all the measures taken to fulfill the obligations set out by the main regulations related to the protection of personal information, i.e., the European General Data Protection Regulation (GDPR) and the Chinese Personal Information Protection Law (PIPL).⁸⁵

5.1 Collection and processing of personal information

For what concerns the collection of personal information, the Privacy Statement for Online Services Operated by 21Vianet⁸⁶ starts with the definition of “Personal information”, which is a characteristic that is common in all the regulations covering the processing of personal data, such as the European GDPR and the Chinese PIPL. The Privacy Statement defines personal information as “all kinds of information recorded by electronic or other means that relates to an identified or identifiable natural person, excluding anonymized information”⁸⁷ Among all the data that could be regarded as “personal information”, a special mention has to be made to real-name authentication data, the account of the payment instrument, payment data, verification information and support data. Personal information is then further specified in a subcategory denominated “Sensitive Personal Information”: these are all the data involving personal information that “is likely to result in damage to the personal dignity of any natural person or damage to his or her personal or property safety if it is revealed, illegally provided, or abused.”⁸⁸ Some of the aforementioned examples of personal information also fall into the definition of sensitive personal information, such as real-name authentication data and payment data, as well as other data like identification and personal payment instrument account numbers, security code, transaction record, and personal verification data.

⁸⁵ The main sources of information on this paragraph will be the documents provided by Microsoft Azure and VNET Group themselves, such as the 21Vianet Online Services Terms (May 1, 2023, updated version), 21Vianet Online Services Data Protection Addendum, and the Privacy Statement for Online Services Operated by 21Vianet.

⁸⁶ The name 21Vianet is used to refer to Shanghai Blue Cloud Technology, which is the Chinese entity responsible for providing Microsoft Azure cloud services in the Chinese market.

⁸⁷ Privacy Statement for Online Services Operated by 21Vianet, 2023, *How We Collect and Use Your Data - Definition of Personal Information*.

⁸⁸ *Ibid.*

As in this first section, there are many different types of data that can be collected by Shanghai Blue Cloud Technology during the provision of Azure's services. Among all the data the following are the most relevant:

- *Customer data*: this particular type of data encompasses all the data that are provided by the user or on its behalf through the use of Azure services and other services provided by Shanghai Blue Cloud Technology. It includes all the texts, sound, software or image files uploaded for storage or processing in the services provided, or other application hosted on the cloud platform and installed by the user, as in the case of the Platform as a Service model. Customer data are used for the provision of the services which the customer has subscribed to and for all the purposes compatible with the provision of such services. Among the purposes that allow Shanghai Blue Cloud Technology to process personal information, there are the enhancing of the underlying technology, the conduction of troubleshooting to prevent, detect, and address issues impacting the functioning of online services. Additionally, a constant work on improving features that detect and protect users from emerging and evolving threats, such as malware and spam is undertaken, and customer data helps improving the efficiency of this process. Customer data are stored within mainland China only in limited circumstances, as for troubleshooting and to solve technical problems, and the company may also authorize a third party contractor, such as an affiliate or a supplier located outside the territory of the People's Republic of China, to access such data only for a limited period of time and only for the accomplishment of specific activities. Shanghai Blue Cloud Technology will then terminate the access to customer data once the problem is solved, and, in general, will supervise the entire processing of customer data by other subjects beyond the company itself.⁸⁹
- *Administrator data*: this type of data refers to the information regarding the owners of the accounts and subscriptions, provided during the registration process or when purchasing the related online service. This information includes name, address, phone number, and email address. Administrator data will be utilized by Shanghai Blue Cloud Technology with the aim to complete the transactions requested by the user, managing the user's account, as well as improving the services provided, detecting and preventing

⁸⁹ *Ibid. How We Collect and Use Your Data - Customer Data.*

fraud. Such data are also utilized for commercial purposes, contacting the customer in case of new subscriptions, billing and important updates about Azure services and other services provided by Shanghai Blue Cloud Technology. It must be noticed that the customer cannot unsubscribe to these communications within a reasonable amount of time that follows the enactment of the online services requested.⁹⁰

- *Real-Name Authentication Data*: the real-name authentication is a topic that has raised several questions due to its strictness and uniqueness to the Chinese market. The subject has been revised many times during the years and the Cyberspace Administration of China is constantly working on improving the system, updating regulations on the identification of users in order to avoid potential harmful situation, such as for preventing banned social media users from registering on other platforms under similar names.⁹¹ In accordance with applicable laws and regulations, a real-name management system is also implemented by Shanghai Blue Cloud Technology in the provision of Azure related cloud services. For providing real-name authentication access to its users, the company has to collect information regarding business license, the administrator's mobile phone number and the scanned copy of the user's ID card. These data are mandatory to provide for all the users that want to use the services provided by Shanghai Blue Cloud Technology, and the latter has the right to assess the validity of the data provided by the user through the agencies that legally store the user's data.⁹²
- *Payment data*: when purchasing the requested services from Shanghai Blue Cloud Technology, the latter will acquire all the data related to user's payment instrument, such as number, user's name and billing address, the security code associated with the payment instrument utilized during the transaction and other financial data. In order to facilitate future transactions, detect and prevent fraud, Shanghai Blue Cloud Technology will store payment data within its system, so that the user won't have to provide the same data during every transaction. The only exception is made for the security code associated with the user's payment instrument, which is the only data that will not be automatically stored within the company's system.⁹³

⁹⁰ Privacy Statement for Online Services Operated by 21Vianet, 2023, *How We Collect and Use Your Data – Administrator Data*.

⁹¹ Tracy QU, *China updates rules on real-name registration online in crackdown on schemes to revive banned user accounts*, in "South China Morning Post", 2021

www.scmp.com/china-updates-rules-real-name-registration-online-crackdown-schemes (accessed 03/08/2023).

⁹² Privacy Statement for Online Services Operated by 21Vianet, 2023, *How We Collect and Use Your Data – Real-Name Authentication Data*.

⁹³ Privacy Statement for Online Services Operated by 21Vianet, 2023, *How We Collect and Use Your Data – Payment Data*.

- *Support data*: in case the user has submitted a support request or run an automated fault detector, Shanghai Blue Cloud Technology is entitled to collect data regarding the user's hardware and software, along with other details useful to identify the problem and to facilitate its resolution, such as contact or personal verification information, personalized chat session data, diagnostics data about the device and application conditions during the error occurrence, system and registration data pertaining to software installation and hardware configuration, and error tracking files. During each phase of the customer service and assistance, the company is entitled, through the consent obtained by the user, to access the user's machine temporarily and sporadically through different support techniques such as remote access, whose recording can be accessed by the user at any time after the completion of the intervention.⁹⁴

5.2 Storage and transfer of personal information

All the personal information collected during the performance of the services by Shanghai Blue Cloud Technology will be stored in mainland China. In particular cases, it can happen that the company encounters the necessity to transfer such data outside the territory of the People's Republic of China. In such cases, the data will be transferred to Shanghai Blue Cloud Technology's licensor, Microsoft Corporation, following the legitimate process and only after obtaining the authorization by the user, or in accordance to applicable laws and regulations. The retention period, for customer data is limited to 90 days after expiration or termination of the subscription by the user, in order to let the latter to extract all of its relevant data. Shanghai Blue Cloud Technology will then commit to delete all the personal information of its then former user within an additional period of 90 days.⁹⁵ The personal information retained by the company after the closing of a user's account will not be used or processed during the period that follows the closing of the account but that precedes the 90 days limit-period for the deletion, or anonymization, of such information.⁹⁶

With regard to the transfer and disclosure of user's personal information, the company is committed not to disclose or transfer any of the afore-mentioned data category (i.e., Customer Data, Administrator Data, Real-Name Authentication Data, Payment Data, Support Data, or any other Personal Information), with the only exception of the transfer of data between

⁹⁴ *Ibid. How We Collect and Use Your Data – Support Data.*

⁹⁵ 21Vianet Online Services Data Protection Addendum (hereinafter referred to as DPA), 2022, p. 9.

⁹⁶ Privacy Statement for Online Services Operated by 21Vianet, 2023, *How We Store Your Personal Information.*

Shanghai Blue Cloud Technology, its licensor and affiliates. A series of detailed circumstances are then described in the Privacy Statement with regard to the transfer of personal information to third subjects. In order to technically improve the services provided by the company, the latter will, from time to time, contract with the licensor, suppliers, and sub-contractors, within or outside the People's Republic of China, on the behalf of the customer. Another reason for the access of personal data by supplier or sub-contractors is customer support. In this case, if there is the necessity for a data transfer, Shanghai Blue Cloud Technology will inform the user of all the detailed reasons and necessity for such eventuality and will ensure that all the personal information subject to the data transfer will be treated in a confidential manner. In case the user purchases, from the platform provided by the company, a third-party's services, the user will find itself in the situation to provide personal information to the third-party responsible for providing such services. Such data will then be regulated by the Privacy policies and statement applicable to the related third-party. The enterprise customer has to deal with all end-users' data protection and privacy requests, and only in case of a written instruction by the enterprise customer, Shanghai Blue Cloud Technology will take on the requests.

The overall protection effort put in place by Shanghai Blue Cloud Technology is aimed at ensuring the confidentiality of user's personal information and at avoiding potential data leaks. Various security technologies and procedures are deployed during this process, and personal information are stored on computer systems located in controlled locations with restricted access. Another method to protect personal information from unauthorized access, use, or disclosure, is encryption, which is used when storing and transferring data outside data centers. Specific notification obligations are undertaken by the company in order to promptly inform the user in case of personal information security incidents or cybersecurity incidents. The user will be informed of the recovery procedures put in place by the company and all the precautionary measures to be put in place by the user in order to mitigate the risk of additional potential data leaks.⁹⁷

⁹⁷ Privacy Statement for Online Services Operated by 21Vianet, "How We Protect Your Personal Information"

5.3 Compliance with GDPR and PIPL

All the measures undertaken by VNET Group, with particular reference to the provider of Azure China services Shanghai Blue Cloud Technology and described in section 5.2 are subject to current Chinese and international regulations regarding the collection and processing of personal information. In this final section we will analyze more in detail how such measures comply with the general legislative framework for data protection, underlining the articles more relevant and with a major impact on the operations of the Chinese cloud services provider.⁹⁸

The Data Protection Addendum (DPA) published by the company on November 15, 2022 sets out a detailed list of all the topics related to data protection that may result in specific measures put into place by Shanghai Blue Cloud Technology, in order to comply with current regulations and norms. The scope of the DPA is extended to all the online services, included the provision of Azure cloud services, that the company provides to its customers. For the sake of clarity, the company specifies that the DPA terms “apply only to the processing of data in environments controlled by 21Vianet and 21Vianet’s subprocessors.”⁹⁹ The reason for this statement is that Shanghai Blue Cloud Technology wants to make clear that all the data that are stored and remains within the customer’s premises or any other operating environment selected directly by the customer are not under the responsibility and management of the company and they are not subject to any of the provision listed on the DPA.¹⁰⁰ The company process customer data and personal information according to specific lawful basis sets out in the document and only under customer’s instructions. Therefore, the nature of data processing is embodied in two main objectives that legitimate Shanghai Blue Cloud Technology to collect and process users’ data:

- *to provide customer the online services*: the collection and processing of data aimed at providing customer with the requested online services consists of a series of specific activities that include the delivery of functional capabilities as established by the customer during the licensing and configuration steps and the provision of personalized user experiences to both the customer and its end users; troubleshooting activities,

⁹⁸ The information regarding the compliance with current regulations on personal information protection, i.e., the European General Data Protection Regulation and the Chinese Personal Information Protection Law, can be found in the Data Protection Addendum that Shanghai Blue Cloud Technology (21Vianet) published on November 15, 2022, and that came into effect on the same day, for more information see the document “21Vianet Online Services Data Protection Addendum” that can be found on Microsoft Azure China’s official website at this link: en.21vbluecloud.com/ostpt (accessed 04/08/2023).

⁹⁹ DPA, *Scope*.

¹⁰⁰ *Ibid.*

which include all the efforts put in place by the company in order to prevent, detect and repair different problem arising during the provision of online services; the update of all the online services provided by the company, with the aim of maintaining a high level of performance of the services provided, as well as enhancing user productivity, reliability, efficacy, quality, and security.¹⁰¹ The company is not allowed by the DPA to use customer's data and personal information to conduct commercial operation and to send promotional contents, unless otherwise indicated in the user's documented instructions.

- *to conduct business operations associated with providing the online services:* in this section of the DPA, "business operations" are defined as all the "processing operations authorized by the customer."¹⁰² When using the online services provided by Shanghai Blue Cloud Technology, the customer authorizes the company to conduct a series of business operations with the data provided by the latter that involve the creation of aggregated statistical and non-personal data stemming from data characterized by containing pseudonymized identifiers, as well as the calculation of various statistics related to customer's data. These activities do not involve the access and analysis of the content of the data taken into consideration and are limited to the achievement of purposes such as billing and account management, the calculation of compensations, the creation of internal reports and business models, and for financial reporting.¹⁰³

The DPA then further specifies the provision regarding the disclosure of processed data, i.e., all the customer's confidential information necessary for the provision of the online services, as well as customer's data and personal information. In general, Shanghai Blue Cloud Technology commits not to disclose or granting access to user's personal data to any third subject except when specifically allowed by the customer itself, or when required by relevant laws. In the latter case, Shanghai Blue Cloud Technology will firstly try to redirect the request for user's personal information to the user itself, and in the case the company is compelled to communicate specific information regarding the customer, the company will notify it with the specific communication by the relevant authorities, unless explicitly prohibited by the law.¹⁰⁴

¹⁰¹ DPA, *Nature of Data Processing; Ownership*.

¹⁰² *Ibid.*

¹⁰³ *Ibid.*

¹⁰⁴ DPA, *Disclosure of Processed Data*.

With respect to the processing of personal information, as well as the processing of customer data, the DPA outlines the specific requirements, roles, and responsibility of both the customer and Shanghai Blue Cloud Technology, distinguishing between roles and responsibility under the European GDPR and roles and responsibility under the Chinese PIPL.

- *Processing subject to the GDPR*: the articles of the GDPR that are relevant to the company's processing of personal information are articles 28, 32, and 33. For the sake of clarity, a brief reminder of the contents of these three articles will follow. Article 28 sets out the obligations and responsibilities of data processor under the GDPR in terms of controller-processor relationship, authorization for subcontracting and contractual obligations, among others.¹⁰⁵ Article 32 outlines the security measures that both data controllers and processors must implement to ensure the protection of personal data under the GDPR, involving risk-based security measures, key security measures, and the consideration of risks among others.¹⁰⁶ Article 33 provides the obligations of data controllers and processors in the event of a personal data breach under the GDPR, including both controller's and processor's obligations for personal data breach notification and the documentation necessary in case of personal data breaches.¹⁰⁷ The DPA outlines the main responsibilities of Shanghai Blue Cloud Technology as the processor of personal data, as opposed to the customer as the controller of such data. The only exception to this definition is when the customer acts as the processor of personal data, and in that case the company will be regarded as a subprocessor. Shanghai Blue Cloud Technology cannot engage another processor without prior specific or general written authorization from the customer, and in case of an authorization the company must inform the customer of any intended changes, and the latter has the option to oppose to such changes, as provided by Art. 28 (2). The processing of personal information by Shanghai Blue Cloud Technology shall be governed by the GDPR terms, as well as European Union or Member State law and shall be undertaken according to the principles set out in every of such regulations. In particular, the company shall process personal data only on documented instructions from the Customer, except when required to do so by applicable law, it shall ensure that authorized personnel processing personal data are bound by confidentiality

¹⁰⁵ GDPR, Art. 28.

¹⁰⁶ GDPR, Art. 32.

¹⁰⁷ GDPR, Art. 33.

obligations and that all the necessary security measures are taken, in accordance with art. 32 of the GDPR. When the services provided by the company are terminated unilaterally by the customer, the company shall delete or return all the personal data after the provision of services related to processing and delete existing copies, unless retention is required by applicable law. In case the company engages another processor, which will be entitled to carry out specific processing activities on behalf of the customer, the same data protection obligations as set out in the GDPR Terms must be imposed on that other processor through a contract or other legal act under Union or Member State law. The implementation of appropriate technical and organizational measures aimed at ensuring a level of security appropriate to the risk associated with data processing is a shared responsibility between both the customer and Shanghai Blue Cloud Technology. Some examples of these security measures are the pseudonymization, encryption of personal data, as well as efforts put in place to ensure the confidentiality, integrity, availability, and resilience of processing systems and services. Having a process for regular testing and evaluation of security measures will also serve the purpose of guarantee an appropriate level of security. Risk assessment is another important step in the data protection effort that both customer and the company shall consider and put in practice considering the risks associated with processing personal data, including the risk of accidental or unlawful destruction, loss, alteration, unauthorized disclosure, or access to transmitted, stored, or processed personal data. Specific European Union or any Member State law could require any third party acting under the authority of the customer or Shanghai Blue Cloud Technology to access to personal data, but in all the other cases these subjects must be prevented from processing personal data. Finally, in case of personal data breaches, Shanghai Blue Cloud Technology shall timely notify the customer of the event, and the notification must include the information that a processor is required to provide to a controller under Article 33(3) of the GDPR, to the extent such information is reasonably available to the company.¹⁰⁸

- *Processing subject to the PIPL*: customer is considered the "handler" of personal data under the PIPL, which is similar to the controller under the GDPR. Shanghai Blue

¹⁰⁸ DPA, Attachment 2, "European Union General Data Protection Regulation Terms".

Cloud Technology is considered the "entrusted party" of such data, akin to a processor under the GDPR. In certain cases, when customer acts as an entrusted party of personal data, the company becomes a "subprocessor." The terms and definitions align with the requirements of the PIPL and when the company acts as the entrusted party or subprocessor, it will process personal data only based on documented instructions from the customer. The customer's 21 Vianet Customer Agreement, along with the Data Processing Agreement Terms, product documentation, and customer's use and configuration of features in the online services, form the complete documented instructions to Shanghai Blue Cloud Technology for the processing of personal data. If the PIPL applies and customer is an entrusted party, customer must ensure that its instructions, including the appointment of Shanghai Blue Cloud Technology as an entrusted party or subprocessor, have been authorized by the relevant handler. To the extent the company processes personal data subject to the PIPL for business operations associated with providing online services to the customer or for the purpose of administering and performing the 21 Vianet Customer Agreement, it will comply with the obligations of an independent "handler" under the PIPL. The company accepts the added responsibilities of a data "handler" for such processing to act consistently with regulatory requirements and provide increased transparency and accountability. Shanghai Blue Cloud Technology employs precautionary measures to protect customer data and personal data in processing, including those identified in the DPA and those contemplated under the PIPL. If Shanghai Blue Cloud Technology uses or processes personal data for the purpose of administering and performing the 21 Vianet Customer Agreement, the customer is responsible for obtaining all required consents (or relying on any other applicable legal basis) from data subjects under the PIPL for providing their personal data to the company. Shanghai Blue Cloud Technology will follow appropriate requirements for cross-border data transfer, as required by applicable law.¹⁰⁹

The chapter was aimed at giving an overview on all the relevant aspects involving Shanghai Blue Cloud Technology and its commercial relationship with the multinational corporation Microsoft to provide Azure services in China. It is clear now that, while the two companies

¹⁰⁹ DPA, *Processing of personal data – Roles and responsibilities of customer and 21Vianet – Processing subject to the PIPL.*

work together to expand the geographical reach of Azure's services even in a countries with numerous limitations on foreign investment such as China, at the same time, the Chinese partner implements a structure commonly used in the value-added telecommunication business sector to raise financial support from abroad and to list itself in one of the major capital markets in the world such as the NASDAQ. In the foreseeable future, it is likely that this structure will be impacted by some changes in the legislative framework regarding foreign investment in the Chinese market. As described in the previous chapters, some attempts to regulate investment and corporate structures aimed at evading the current limitations on foreign investment, such as the VIE structure, has already been thought and designed, only to be abandoned at the very last, as in the case of the Foreign Investment Law and its 2015 draft. We believe that, as long as the situation stays the same as it is, both the foreign and Chinese party of the deal will gain reciprocal advantages, in that on the one hand, the foreign company is able to invest and gain a higher market share in a business environment theoretically not so keen to foreign investment, and on the other hand, Chinese companies are able to access to financial resources that otherwise would be difficult to find.

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CHAPTER I

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CHAPTER II

Entering the Chinese Cloud market:

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CHAPTER III

Journey to the East:

Microsoft Azure's expansion in China

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La vita è un percorso fatto di ostacoli, sfide, imprevisti, decisioni da prendere e situazioni da accettare. La vita procede veloce, ma sa anche aspettare, ti sostiene, ti incoraggia e ti offre opportunità che spetta a ognuno di noi cogliere. La vita non è passività, non va subita, ma va vissuta, sperimentata. Un libro immacolato è un libro non letto, un libro rovinato è un libro vissuto.

Ma cos'è la vita? La vita sono le persone che ti circondano, le relazioni che crei, la passione che metti nelle cose che fai, lo sguardo curioso quando affronti il cambiamento, i sorrisi, le risate, le lacrime, gli inizi e le conclusioni, il ciclo degli eventi. La vita è cambiamento. L'unica costante è il cambiamento.

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Marco Roccon

