

Many of us are familiar with Netflix, with its vast network of streaming content. Today, there are more than 151 million paying members in more than 190 countries. While the company started in 1997 as a rent-by-mail service for DVDs, it has transformed into one of the largest providers of streaming content in the world¹.

Changing the entrenched mindset of consumers and proving that on demand content could be available, instantly, over the internet was not a simple matter. As is often the case, companies are susceptible to the time and technology of their founding. Starting in 1997, there was little choice for Netflix in that if the company wanted to launch a massive streaming service, they would also need to launch a massive, world class data centre.

AUGUST OF 2008: NETFLIX ENTERS THE CLOUD

Instead of thinking of the possible benefits of cloud computing in the abstract, Netflix offers a now ubiquitous case study. To have chosen a path to get to 151 million members in 190 countries using a data centre approach—if even possible—would have required extensive infrastructure deployed around the world. That would have meant that not only would Netflix have had to develop and deliver world-class content to win over the attention of members, but it would also have to employ a massive parallel effort to make sure that the data centres could deliver. Split focus such as this would make it very difficult to compete with the entrenched cable providers.

Therefore, in August of 2008, Netflix embarked on what would be a seven-year journey, transitioning from its own data centres to utilizing Amazon Web Services (AWS) as its cloud provider. This gave Netflix a number of benefits²:

- + The Netflix product itself continues to evolve rapidly, incorporating many new resource-hungry features and relying on ever-growing volumes of data.
- + It would have been impossible to assemble servers fast enough in Netflix's physical data centre to support the growth that has occurred.
- + The elasticity of the cloud allows Netflix to add thousands of virtual servers and petabytes of storage within minutes.
- + The multiple AWS cloud regions, spread over the world, enables Netflix to dynamically shift around and expand global infrastructure capacity, creating a better and more enjoyable streaming experience for Netflix members, wherever they are.

¹ Source: <https://www.netflixinvestor.com/ir-overview/profile/default.aspx>

² Source: Izrailevsky, Yury. "Completing the Netflix Cloud Migration." Netflix Media Centre. 11 February 2016.

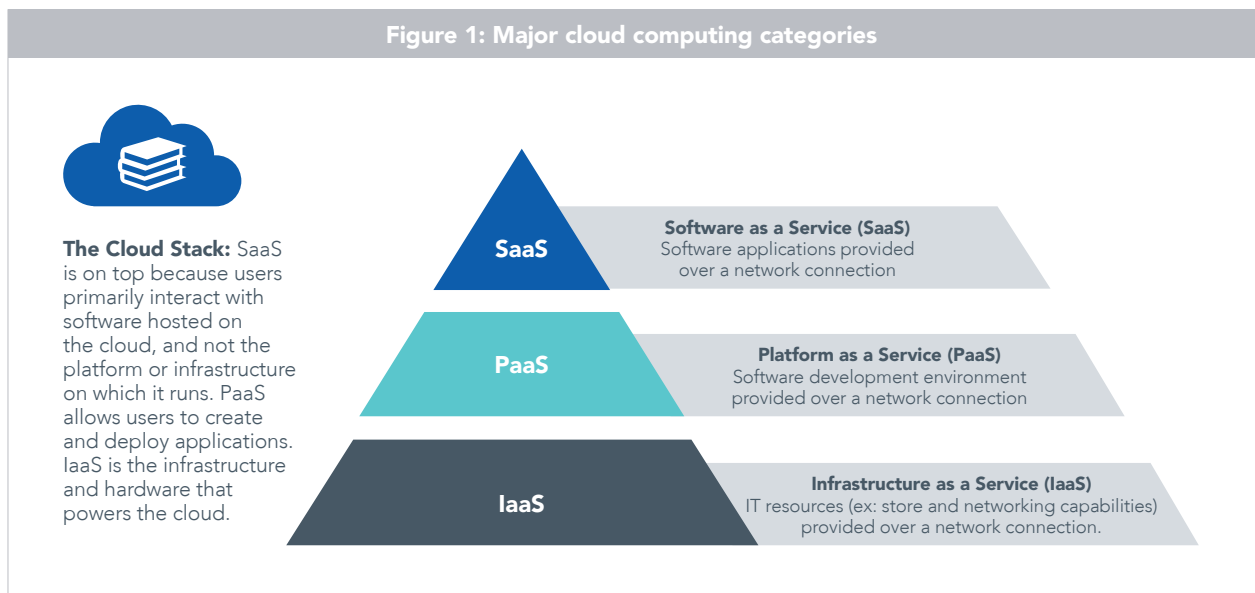
OTHER COMPANIES THAT HAVE EMBRACED THE CLOUD

Netflix is far from the only example—many companies globally are moving to the cloud. A few examples:

- + **BMW:** BMW built its new car-as-a-sensor service (CARASSO) in six months. By using the cloud, this can scale up and down two orders of magnitude based on changing load requirements within 24 hours. The system was built with the vision of processing data from hundreds of thousands of vehicles travelling billions of kilometres³.
- + **LG Electronics:** When the term “internet-of-things” is used, LG Electronics is a central player. Like Netflix, the company initially was using on premises servers in a physical data centre. In 2016, the company transitioned to the cloud. Kim Kunwoo, Chief of the Service Development Team, LG Cloud Center, LG Eletronics said, “By using AWS for our new Internet of Things (IoT) platform, we saved 80% in development cost. It also enables developers to focus on writing business logic for LG service scenarios.”⁴

WHAT IS CLOUD COMPUTING?

Large, recognized companies are seeing the benefits of using the cloud, but it’s important to step back and ground the discussion in what the cloud really represents. The “Cloud” refers to the aggregation of information online that can be accessed from anywhere, on any device. Cloud companies provide on-demand services to a centralized pool of information technology (IT) resources via a network connection. The three major categories of the cloud industry are:



Source: WisdomTree.

³ Source: “AWS Case Study: BMW.” AWS Re: Invent 2015. <https://aws.amazon.com/solutions/case-studies/bmw/>.

⁴ Source: “AWS Case Study: LG Electronics.” <https://aws.amazon.com/solutions/case-studies/lg-electronics/>.

THE CLOUD SOFTWARE ADVANTAGE

Cloud computing has particularly transformed the software industry. Over the last decade, cloud Software-as-a-Service (SaaS) businesses have eclipsed traditional software companies as the new industry standard for deploying and updating software. Cloud-based SaaS companies provide software applications and services via a network connection from a remote location, whereas traditional software is delivered and supported on-premise. This key difference in distribution leads to several distinct fundamental advantages for cloud vs. traditional software:

Product advantages

- + **Speed, ease, and low cost of implementation:** Cloud software is installed via a network connection; it doesn't require the higher cost of on-premise infrastructure setup and installation.
- + **Efficient software updates:** Upgrades and support are deployed via a network connection, which shifts the burden of software maintenance from the client to the software provider.
- + **Easily scalable:** Deploying via network connection allows cloud SaaS businesses to grow as their clients grow, with ability to expand service to more users or add product enhancements with ease. Client acquisition can happen 24/7 and cloud SaaS companies can more easily expand into foreign markets.

Business model advantages

- + **High recurring revenue:** Cloud SaaS companies employ a subscription-based revenue model with smaller and more frequent transactions, while traditional software businesses rely on a single large, upfront transaction. This model can result in more predictable, annuity-like revenue stream for cloud software providers.
- + **High client retention with longer revenue periods:** Cloud software becomes embedded in client workflow, resulting in higher switching costs and client retention. Importantly, clients prefer the pay-as-you-go transaction model which can lead to longer periods of recurring revenue as upselling product enhancements does not require an additional sales cycle.
- + **Lower expenses:** Cloud SaaS companies can have lower Research & Development (R&D) cost because they don't need to support multiple types of networking infrastructure at each client location.

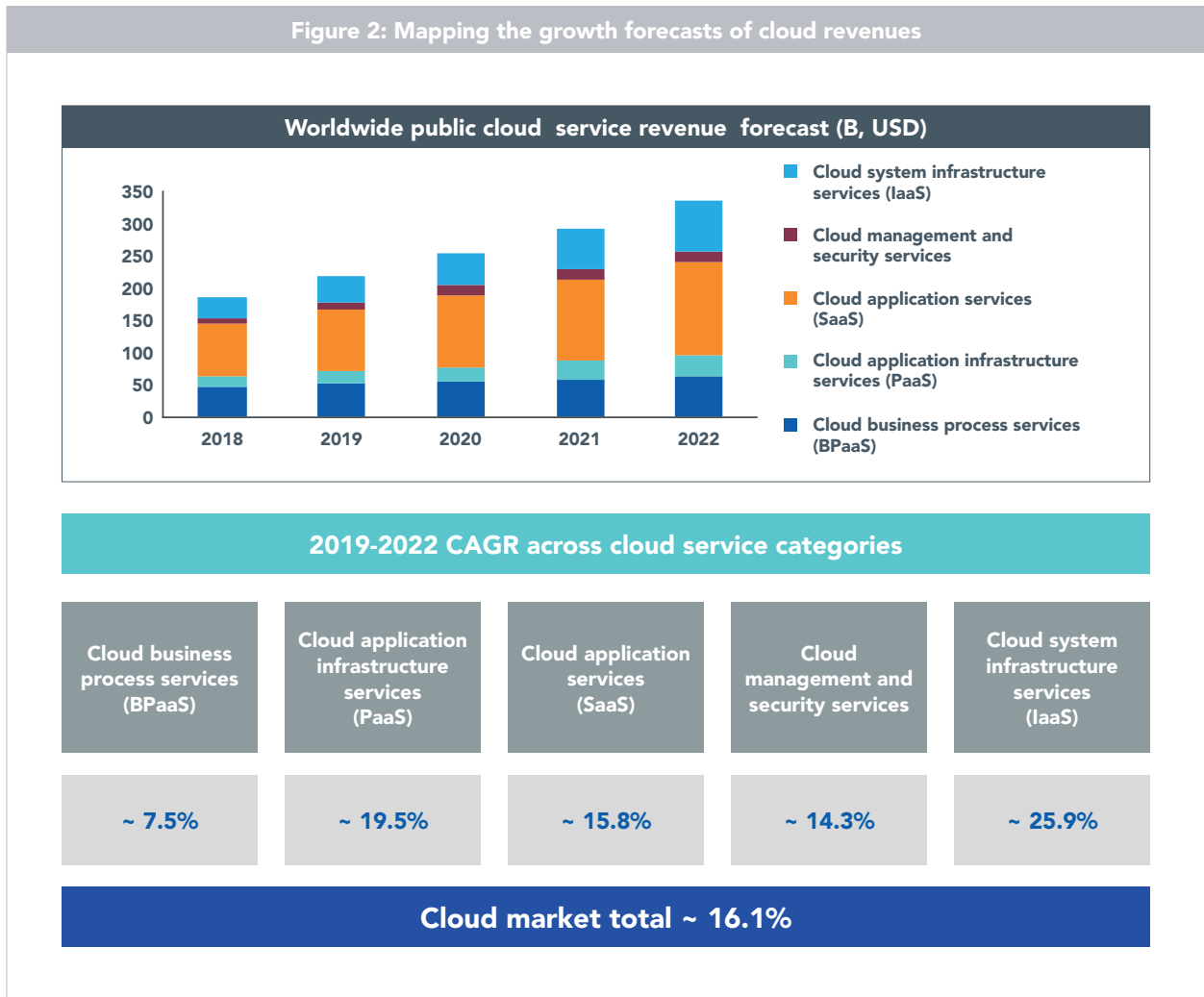
GROWTH POTENTIAL: THE FUEL FOR ANY INVESTMENT THESIS

It is a simple matter to find companies that have already adopted cloud services and become cloud customers. Those looking to implement an investment strategy today cannot rely solely on what has happened, as the future potential should be the bigger driver of returns.

Figure 2 indicates:

- + The overall market of worldwide public cloud service revenues is forecast to grow from a level of below 200 billion USD to a level of greater than 300 billion USD by 2022. This is a Compound annual growth rate (CAGR) of 16.1% from 2019 to 2022.
- + Cloud system infrastructure represented the strongest potential within the forecast, having a CAGR estimate of 25.9% over this same period.

Figure 2: Mapping the growth forecasts of cloud revenues



Source: WisdomTree, Gartner, Inc. Worldwide public cloud service revenue forecast figures are as of April 2019 and are from Gartner press release. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**

Importantly, no thematic strategy is without risk, and cloud computing is no exception. Currently, society has placed enormous value on data and data collection as well as on internet access and connectivity. If regulations or accepted practices regarding these things change, it could influence the growth of the cloud.

HOW IS WISDOMTREE STRUCTURING A THEMATIC INVESTMENT STRATEGY FOR CLOUD COMPUTING?

Many investors may look at Cloud Computing as a theme that would have been great to access five years ago. It's true, we are all captive to the mindset derived from our most recent environment, and what we've experienced has been a bull market that has lasted approximately 10 years as the world recovered from the Global Financial Crisis of 2008-09. It is no secret that the Information Technology sector, globally, has led the markets higher over this period, so a theme like cloud computing must have seen its most ideal environment receding in the rear-view mirror.

To us, this reality does not indicate that the opportunity is over, but rather that the opportunity requires a more refined, bespoke investment approach, as well as a flexible structure that can respond to changes within the cloud computing market that we might not be able to predict today. Behemoths like Amazon, Google, Microsoft and IBM all have their own cloud platforms, but most investors can easily access these companies without a specialised thematic investment strategy. They're also all so large and so well-known that more of their performance might come from how investors feel about global equities or the global technology sector rather than any specific feelings about cloud computing.

WisdomTree's focus was therefore not on the cloud providers that are already some of the most successful companies in the world today, but rather to develop an approach that can adjust to a rapidly changing landscape—cloud computing—and possibly find those firms that could be providing those innovative, new solutions for tomorrow.

ENTER THE BVP NASDAQ EMERGING CLOUD INDEX

WisdomTree has been building innovative investment strategies, globally, since 2006, and the firm has a history of assembling partnerships with the goal of the best possible investment experience in mind. To that end, WisdomTree's global thematic platform includes:

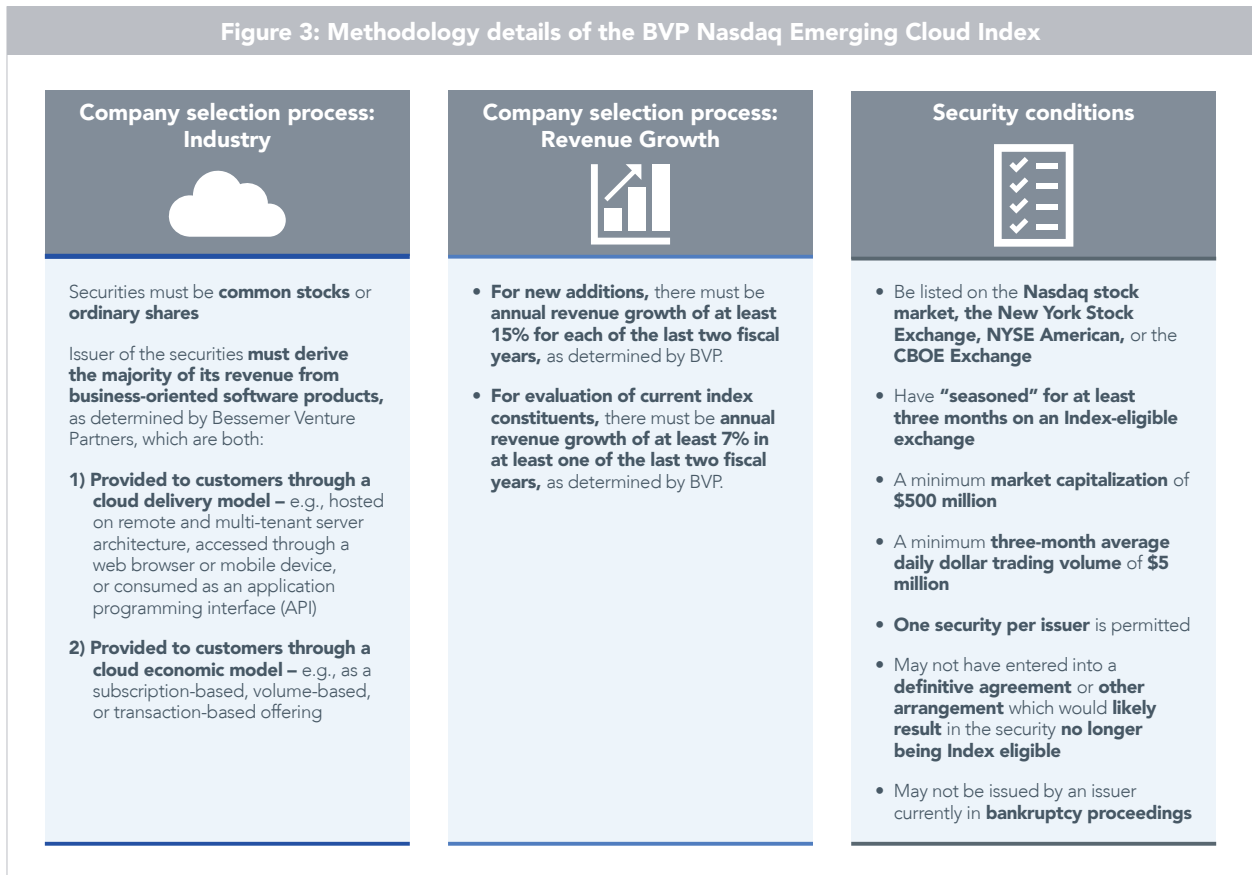
- + **Artificial Intelligence:** An approach characterized by the purity of exposure to companies whose revenues come from supporting artificial intelligence capabilities across the value chain, specifically encapsulated within the Nasdaq CTA Artificial Intelligence Index.
- + **Cloud Computing:** An approach characterized by discovering emerging cloud companies that have proven their capability to achieve rapid revenue growth, specifically encapsulated within the BVP Nasdaq Emerging Cloud Index.

WHO ARE BESSEMER VENTURE PARTNERS (BVP)?

Bessemer Venture Partners is an early-stage venture capital firm that has advised on over 124 Initial public offerings (IPOs) in the last 50 years and has the largest cloud portfolio in venture capital. The firm has approximately \$5 billion in assets and more than 200 active portfolio companies at present.

Figure 3 will lay out the details behind the methodology of the BVP Nasdaq Emerging Cloud Index, but it's critical to keep this big picture framework in mind:

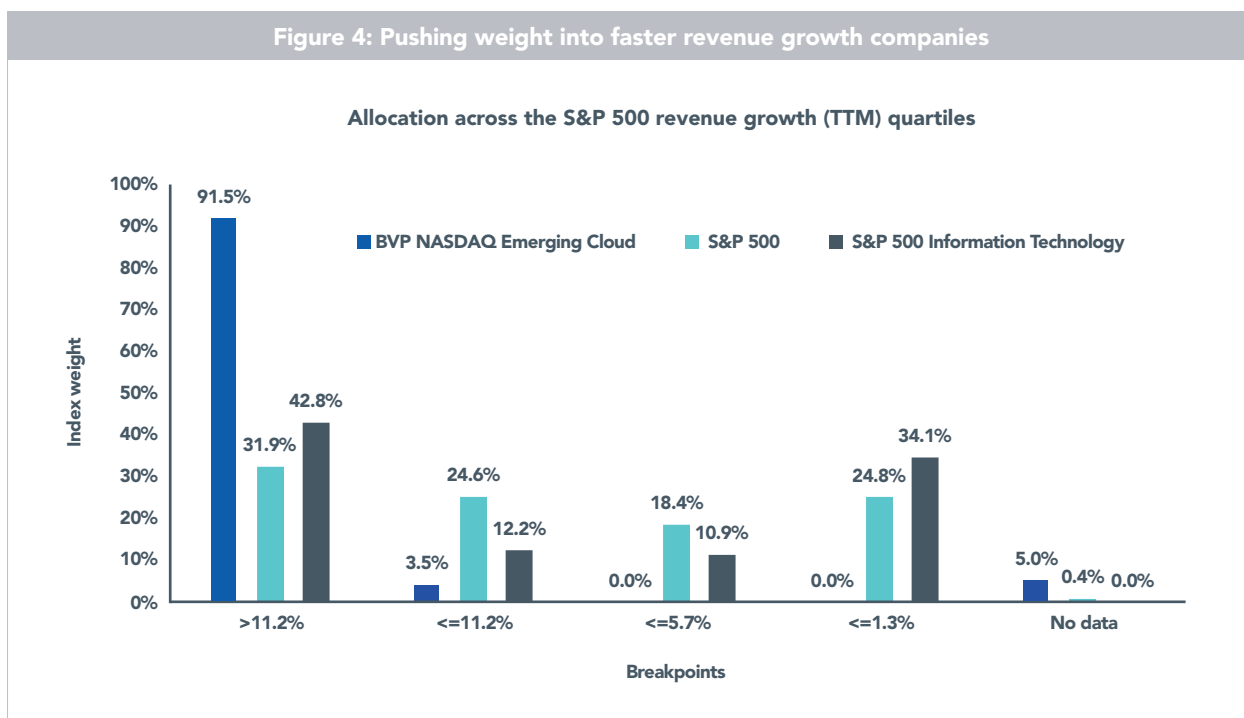
- + BVP is a recognized leader in assessing the potential investment merit of cloud computing companies. At the semi-annual index rebalancing, it is their knowledge and expertise that is evaluating the companies and informing the stock selection.
- + NASDAQ is a globally recognized leader in many areas, including index calculation. NASDAQ is the third-party calculation agent for the BVP Nasdaq Emerging Cloud Index



Sources: Nasdaq, BVP Nasdaq Emerging Cloud Index Methodology as of October 2018. The information presented is by no means exhaustive. Please refer to the Index methodology for further details. **You cannot invest in an index. Historical performance is not an indication of future results and any investments may go down in value.**

BOTTOM LINE: PUSHING INTO FASTER REVENUE GROWTH COMPANIES

If we were to focus only on a single conclusion, it would be that the approach undertaken by the BVP Nasdaq Emerging Cloud Index does indeed push exposure into very high revenue growth companies. We know that the S&P 500 Index has done well in the past decade, and the S&P 500 Information Technology Index was a key underlying driver of this result. When an investor decides to focus on cloud computing rather than broader technology, the current picture does indeed indicate the potential for faster revenue growth.



Source: Source: WisdomTree, FactSet. As of 31 July 2019. Revenue growth is based on trailing 12-month sales in USD. Each breakpoint is the upper breakpoint for a given quartile apart from the last quartile, where it is the lower breakpoint. **You cannot invest in an index. Historical performance is not an indication of future results and any investments may go down in value.**

Figure 5: Listing Information

Listing Name	Exchange	Exchange Code	Bloomberg code	ISIN	Trading Currency	Base Currency	TER%
WisdomTree Cloud Computing UCITS ETF - USD Acc	UK	WCLD	WCLD LN	IE00BJGWQN72	USD	USD	0.40%
	UK	KLWD	KLWD LN	IE00BJGWQN72	GBx	USD	0.40%
	SIX	WCLD	WCLD.S	IE00BJGWQN72	USD	USD	0.40%

TER = Total Expense Ratio.

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