

CLOUD PLATFORM SOLUTIONS AND SERVICES



Ministry of Information Technology
& Telecommunication

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Cloud Platform Solutions and Services

One can not talk about emerging tech without giving a shoutout to cloud infrastructure and how it has shaped the way business is conducted. Cloud Platforms allow software and hardware products to co-exist remotely. The way these systems work is by allowing enterprises to rent access to services such as servers, databases, analytics, networking, intelligence, software, and storage.

This way enterprises do not have to set up their own data centres or any computing infrastructure. They can simply pay for the service or space they are using. These platforms allow individuals/organisations to create a myriad of different functions including the testing and building of applications, backup and storage of data, and the creation of cloud-native applications.

The different types of cloud platforms include:

- **Public Cloud platforms:** There are third-party providers that deliver computing resources over the internet. Examples of such platforms include Google Cloud Platform, Amazon Web Services, Alibaba, Microsoft Azure, etc.
- **Private Cloud platforms:** These are exclusive platforms that are used by a single organisation. These platforms are usually hosted on an on-site data centre or a third-party service provider.
- **Hybrid Cloud platforms:** These platforms are a combination of public and private cloud platforms with data and applications exchanged seamlessly between the two. These kinds of platforms give organisations greater flexibility and help optimise compliance, security, and infrastructure.

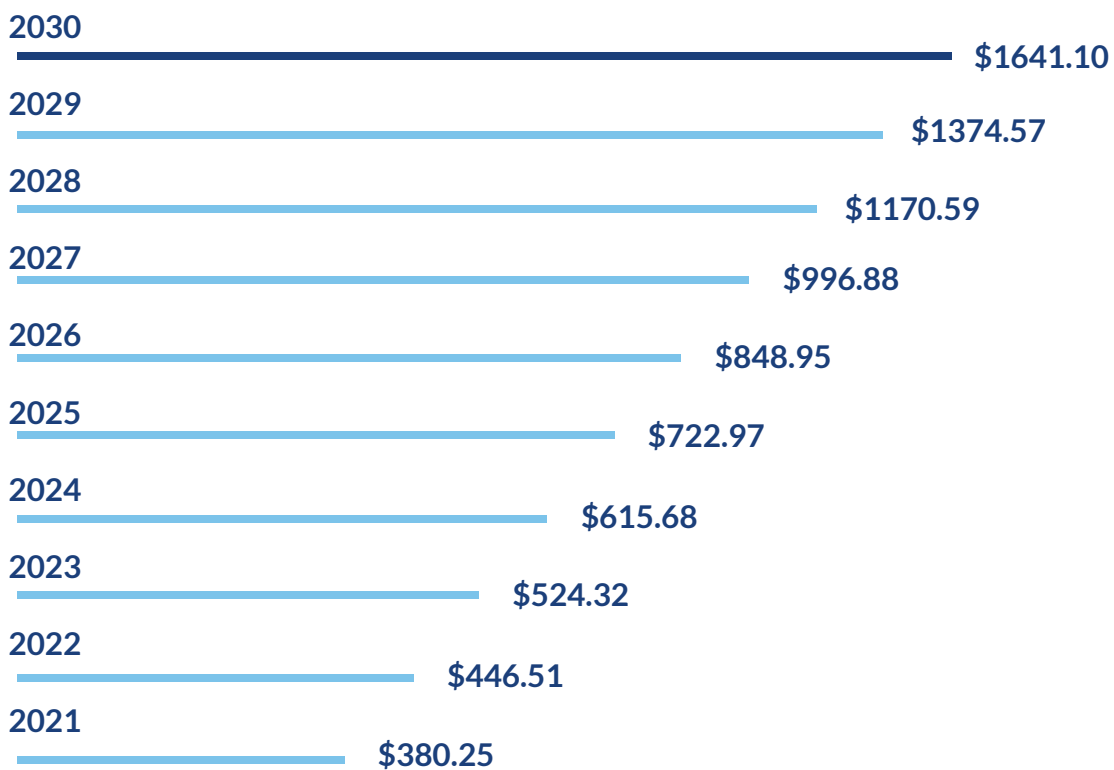


Global Outlook of the Market

It has been estimated that by 2025, global data storage will exceed 200 zettabytes of data out of which 50% of it (100 zettabytes of data) will be stored on the cloud. Compare that to 2015 when only 25% of all computing data was stored on the cloud.

The numbers start to make sense when you realise that currently, enterprises are using cloud platforms to process around 94% of all their business workload.

Cloud Computing Market Size, 2021 to 2030 (USD Billion)



The global cloud computing market was estimated to be around \$380.25 billion in 2021 and expected to reach \$623.3 billion by the end of 2022, paving the way for the market to hit the \$800 billion milestone by 2025. The End-user spending on cloud services will be around \$397.5 billion by the end of 2022, growing from \$332.3 billion in

2021.^{3 4} If we segregate the market by deployment, the private segment contributed a revenue of 46% in 2021 while by service, the SaaS market contributed to 55% of the total revenue.⁵

If we zoom in on individual cloud platform markets, according to a popular trading

¹<https://www.cloudwards.net/cloud-computing-statistics/#:~:text=In%202020%2C%20the%20combined%20end,will%20rise%20to%20%24397.5%20billion.>

²<https://www.globenewswire.com/en/news-release/2022/05/13/2443081/0/en/Cloud-Computing-Market-Size-to-Hit-US-1-614-1-Billion-by-2030.html>

³<https://www.globenewswire.com/en/news-release/2022/05/13/2443081/0/en/Cloud-Computing-Market-Size-to-Hit-US-1-614-1-Billion-by-2030.html>

⁴ <https://phoenixnap.com/blog/cloud-computing-trends>

⁵ <https://www.globenewswire.com/en/news-release/2022/05/13/2443081/0/en/Cloud-Computing-Market-Size-to-Hit-US-1-614-1-Billion-by-2030.html>

platform, the total size of the public cloud market could surpass \$500 billion by 2023. This would be a great boost from the \$338 billion valuation⁶ in 2021 which in itself saw a 25% uptick from the 2020 valuation. The largest sub-segment of the public cloud market remains to be SaaS (Software as a Service) as more and more enterprises have chosen to migrate their workloads to SaaS providers.

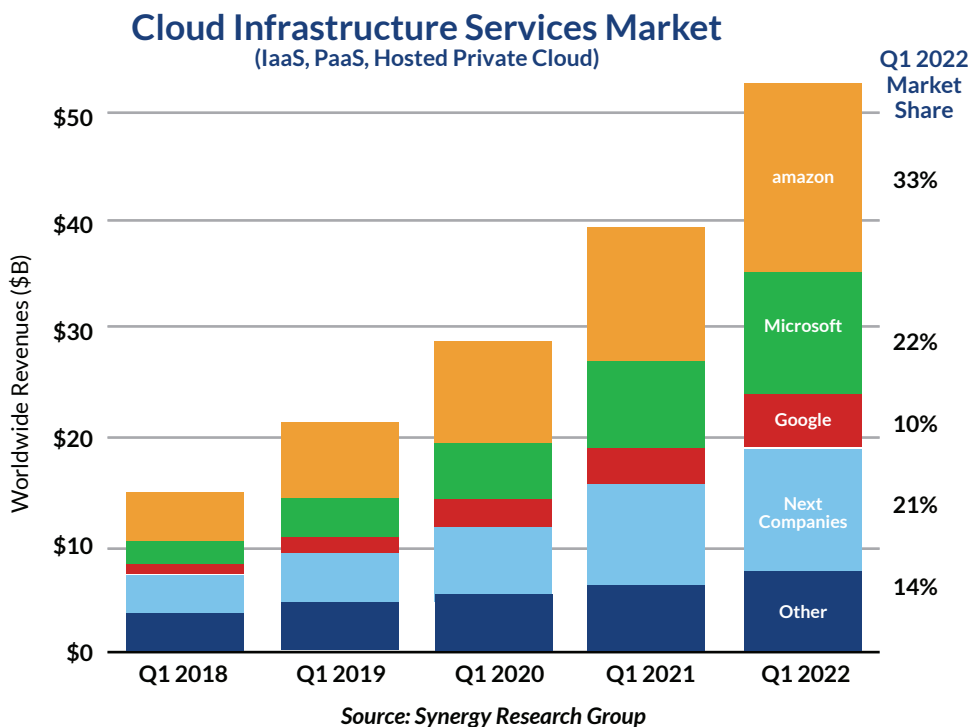
However, if we look at the growth trajectory the IaaS (Infrastructure as a Service) market takes the lead as the fastest growing sub-segment clocking in a

revenue of over \$90 billion in 2021.⁷ The IaaS market is expected to reach \$148 billion by 2023 with a YoY growth of 70%. Lastly, the PaaS (Platform as a Service) sector raked in a revenue of \$60 billion in 2021 with expectations to reach \$101 billion by 2023.⁸

When it comes to regional distribution, North America accounts for 61% of the worldwide cloud computing market. With over 48% of companies planning to move most of their apps to the cloud by the end of 2022, the cloud platform market is only going to grow more.⁹

Key Players in the Market

Looking at key players in all the segments, Amazon continued to remain on top in the IaaS market in 2021 with Microsoft, Alibaba, Google, and Huawei closing in behind. The top five IaaS providers accounted for over 80% of the market.



⁶<https://www.dincloud.com/blog/the-public-cloud-market-set-to-surpass-us-dollar500-bn-by-2023>

⁷<https://www.gartner.com/en/newsroom/press-releases/2022-06-02-gartner-says-worldwide-iaas-public-cloud-services-market-grew-41-percent-in-2021>

⁸<https://www.dincloud.com/blog/the-public-cloud-market-set-to-surpass-us-dollar500-bn-by-2023>

⁹<https://phoenixnap.com/blog/cloud-computing-trends>

¹⁰https://www.theregister.com/2022/05/02/cloud_market_share_q1_2022/

Worldwide IaaS Public Cloud Services Market Share (USD in millions)¹¹

Company	2021 Revenue	2021 Revenue Share (%)	2020 Revenue	2020 Revenue Share (%)	2020-2021 Growth (%)
Amazon	35,380	38.9	26,201	40.8	35.0
Microsoft	19,153	21.1	12,659	19.7	51.3
Alibaba	8,679	9.5	6,117	9.5	41.9
Google	6,436	7.1	3,932	6.1	63.7
Huawei	4,190	4.6	2,681	4.2	56.3
Other	17,056	18.8	12,697	19.8	34.3
Total	90,894	100.0	64,286	100.0	41.4

If we look at free cloud storage services for consumers, Dropbox and iCloud are dominating the market with 300 million users per platform. The three sectors that plan to spend the most on cloud computing services are manufacturing (\$19.7 billion), professional services (\$18.1 billion), and banking (\$16.7 billion).¹²

What is driving growth in the market?

Right now over 92% of the enterprises have a multi-cloud strategy. Moreover, about one-third of an average company's IT services go towards paying for cloud services. With over 48% of companies planning to move most of their apps to the cloud by the end of 2022 and cloud computing infrastructure becoming the backbone of delivery pipeline of almost every digital service, the cloud platform market is only going to grow more.¹³



¹¹<https://www.gartner.com/en/newsroom/press-releases/2022-06-02-gartner-says-worldwide-iaas-public-cloud-services-market-grew-41-percent-in-2021>

¹²<https://techjury.net/blog/cloud-computing-statistics/>

¹³<https://phoenixnap.com/blog/cloud-computing-trends>

SIS/Consultants/Managed Services Providers¹⁴



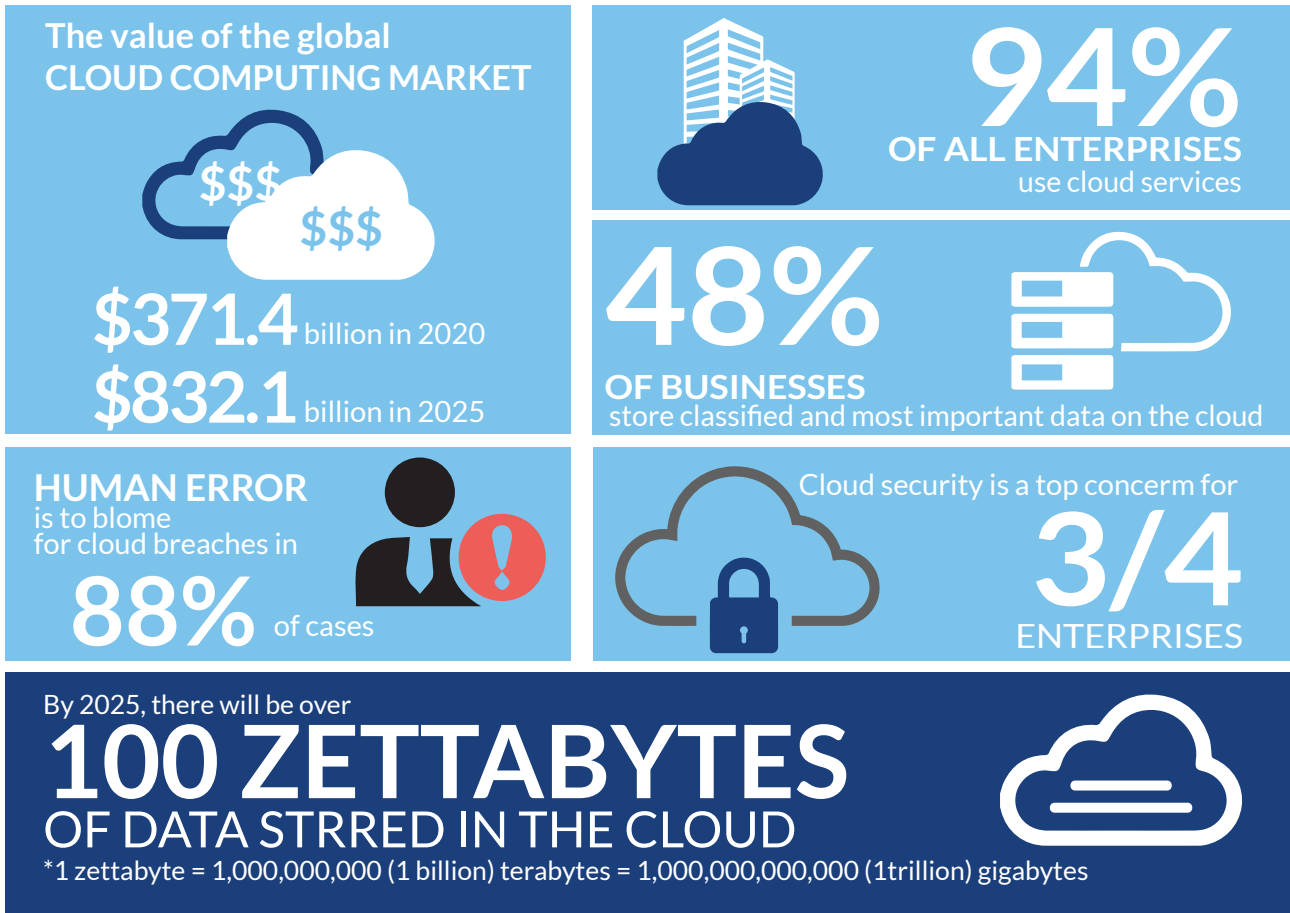
The emergence of ultra-fast networks like 5G and Wi-Fi will also push for new types of data that can be streamed from the cloud. This will directly impact cloud gaming platforms, both existing ones such as Google Stadia and Amazon Luna whilst also pushing for the emergence of new players in this arena. Development in cloud technology will also lead to the arrival of cloud virtual and augmented reality.



¹⁴<https://www.marketsandmarkets.com/Market-Reports/cloud-computing-market-234.html>

Cloudwards

Cloud Computing Statistics By the Numbers



Cloud infrastructure startups too had a great year with VC funding going up from \$15.3B in 2020 to a staggering \$50.3B in 2021.¹⁶

Cloud Platform Unicorns¹⁷

Name	Valuation	Country
TalkDesk	\$10B	United States
Workato	\$5.7B	United States
Cockroach Labs	\$5.7B	United States
Rubrik	\$4B	United States
Zapier	\$4B	United States



¹⁵<https://www.cloudwards.net/cloud-computing-statistics/#:~:text=In%202020%2C%20the%20combined%20end,will%20rise%20to%20%24397.5%20billion.>

¹⁶<https://greylock.com/greymatter/vc-funding-for-the-cloud/>

¹⁷<https://www.failory.com/startups/cloud-computing-unicorns>

Zooming in on Pakistan

The demand for cloud services has been rapidly growing in Pakistan with new players popping up in the market every day as companies realise how expensive owning IT infrastructure is.

One of the most prominent cloud hosting service providers in Pakistan is PTCL. A semi-government body, PTCL has one of the largest data centres in Pakistan in terms of size. They host data of government organisations in addition to their own data.¹⁸

In 2021, PTCL joined hands with Dell Technologies to introduce Azure Cloud Computing services for the first time in Pakistan. This new development allowed PTCL users to get access to Azure services.¹⁹

Similarly, the same year saw REDtone Digital Services (RDS) become a part of the Google Cloud Partner Advantage program. This initiative allowed organisations access to various Google services including Google Workspace, Google Cloud, and Google Education.



¹⁸<https://tallymarksconsulting.com/top-cloud-data-hosting-in-pakistan/>

¹⁹<https://houseofpakistan.com/cloud-computing-in-pakistan/>

Cloud First Policy

A notable development for the cloud infrastructure market in 2022 was the launch of the government's Cloud First Policy. The government-owned cloud infrastructure is supposed to help all public sector organisations avail cloud services at a fraction of the cost of operating their own data centres.

The Cloud First Policy was introduced in tandem with the Personal Data Protection Bill so that public and confidential data would remain secure. The approval of the law would put in effect the moving of the data centres of federal ministries and departments to the central Cloud which in turn would reduce government expenditure and enhance data protection. The policy also talked about establishing a Cloud Board with the

Secretary of IT acting as the chairman of the board²⁰

The opportunity for cloud adoption in government bodies is massive with the federal government having more than 40 divisions and 600 affiliated departments.

The policy is expected to increase cloud adoption in a variety of markets and foster the growth of the local ICT industry by enabling access to cloud-based technologies. It is also supposed to complement other emerging technologies such as Machine Learning, Internet of Things and Artificial Intelligence. Through this policy, MoITT aims to contribute to the Government of Pakistan's wish to promote e-governance.

The main objectives of the policy are:

- Maintenance of a pre-credited list of cloud service providers
- Reduction in cost of IT Infrastructure
- Investments in cloud services by international and local CSPs
- Facilitation of CSPs to achieve economies of scale
- Provision of enhanced security to end users via cloud services
- Provision of transparency to citizens via government solutions
- Transitioning from local hosting to cloud hosting solutions
- Provision of readily available cloud services
- Aggregation of resources to achieve optimization
- Development of a cloud-enabled workforce
- Achievement of environmental benefits by utilisation of resources
- Synchronised approach of IT procurement across governments²¹

¹⁹<https://houseofpakistan.com/cloud-computing-in-pakistan/>

²⁰<https://www.zameen.com/blog/pakistan-cloud-first-policy.html>

²¹<https://moitt.gov.pk/SiteImage/Misc/files/Pakistan%20Cloud%20First%20Policy-Final-25-02-2022.pdf>

The CloudFirst policy has classified data into five categories:

Open Data

The data related to government transparency as well as public domain work.

Public Data

Data related to the public interest is publicly accessible without authorization.

Restricted Data

Non-sensitive data related to public sector businesses, operations, and services.

Confidential Data

Sensitive data and information not intended to be published but accessible with certain authorization.

Secret Data

Data is critical to the national interest, financial security, and public order.

In 2022, Jazz also entered the cloud infrastructure market with the launch of 'Garaj', a state-of-the-art cloud platform. Jazz has planned to invest around \$6M in the business over the next few years. It aims to enable businesses, public entities, academic institutions as well as local startups to further optimise their operational efficiency, capacity and accelerate their growth ambitions. The cloud services will be delivered from Jazz's data centre in Lahore and Jazz Digital Park, Pakistan's largest TIA



Rated-3 certified data centre that was recently established with an investment of US\$ 8 million.²²

To increase the usage of cloud platforms, PSEB started inviting proposals from local and international cloud service providers to offer their services at a discounted rate through the PSEB Cloud Platform. According to the terms of reference, the company offering the service should be either registered in Pakistan or in the case of foreign firms, should partner up with a local firm that has a valid NTN and GST. Furthermore, the company's data centre should be at least Tier III or Tier IV compliant and have an annual turnover of 50 million rupees.²³

While global tech giant SAP announced plans to launch cloud computing solutions in Pakistan in 2022²⁴ Huawei signed an MOU with Meezan Bank to launch projects focused on cloud transformation and technological innovation. As per the agreement, Huawei and its partners will aid Meezan Bank in Hybrid Cloud Transformation.²⁵

Huawei also signed similar MOUs with the Ministry of Information Technology-funded National Incubation Centres in Pakistan for the bolstering of cloud technology. As per the agreement, NICs would be provided with special cloud service packages that could be used by their startups.²⁶

Saudi-German joint venture DETASAD also marked its entry in Pakistan with a partnership with Nayatal in 2022. This partnership is meant to introduce edge cloud computing for different industries through Nayatel.²⁷

Daraz is also all set to bring Alibaba's cloud computing solutions to Pakistan with its new enterprise vertical DarazTech. Daraz has also been offering Daraz Cloud Services to Pakistan in conjunction with Alibaba Cloud.²⁸

Besides local players, Pakistan has a multitude of multinational companies operating in the same space including Cisco, Oracle, IBM, and PlumGrid.²⁹

Private Cloud Solutions	TallyMarks Consulting, Khazana Enterprises, RapidCompute, HostBreak, Websol Technologies, Nexus Technologies, SepiaHost
Cloud Solutions for IaaS	Wateen Cloud, RapidCompute, MultiNet
Cloud Solutions for SaaS	Techwards, VergeSystems, RedRackx, LogicMount
All-inclusive Cloud Solutions	Cube XS Weatherly, Datamark, Zenveus, Cloudservers, Nexus Technologies, TechAccess
Cloud Security	PalmChip, Titanium™
Cloud Software Training	Netkom Learning
Cloud Migration and System Integration	Systems Limited, Netsol, Abacus, Excellence Delivered, Unisys, NorthBay, Maison Consulting

²²<https://www.veon.com/media/media-releases/2022/jazz-s-cloud-platform-garaj-to-help-business-realize-their-full-potential/>

²³<https://propakistani.pk/2022/05/18/pseb-invites-cloud-service-providers-to-offer-services-at-subsidized-rates/>

²⁴<https://www.phoneworld.com.pk/sap-cloud-computing-pakistan/>

²⁵<https://247news.com.pk/meezan-bank-signs-mou-with-huawei-on-cloud-transformation/>

²⁶<https://propakistani.pk/2022/04/03/nics-signs-mou-with-huawei-to-accelerate-cloud-and-ai-enablement-for-startups-in-pakistan/>

²⁷<https://propakistani.pk/2022/03/16/nayatel-partners-with-detasad-to-leverage-edge-cloud-computing-for-businesses-in-pakistan/>

²⁸<https://www.techjuice.pk/vaporvm-a-noticeable-player-in-the-cloud-services-game-of-pakistan/>

²⁹<https://www.techjuice.pk/vaporvm-a-noticeable-player-in-the-cloud-services-game-of-pakistan/>



Abacus Consulting

Since 1987, Abacus has pioneered the business transformation services industry in Pakistan. Over their 30-year journey, they have evolved through a focus on building deep partnerships with global leaders and sustained investment in widening their global reach. They have constantly been expanding our operations and currently have offices in 5 countries, serving over 600 enterprise clients across the globe, with a special focus on emerging markets. They are passionate about being partners to our clients as advisors, consultants, technology specialists, systems integrators and outsourcers. Abacus's Cloud and Emerging Technologies practice offers a full range of enterprise cloud services to drive business growth. They work closely with organisations to analyse the business objectives and growth strategy. Their client services include cloud advisory services, cloud hosting and migration, cloud native app development, big data and analytics, cloud managed services and cloud education. The company recently announced its partnership with Oracle Netsuite, the world's leading cloud ERP and also entered a collaboration with Huawei for its cloud consulting unit.³⁰



Verge Systems

Verge systems is a software development company with over 2600 clients based in over 198 countries. They have worked on multiple SaaS based projects but their crown jewel is their cloud-based HR software called Web-HR. Launched in 2011, WebHR has become an indispensable tool for small, medium and large enterprises all over the world. The application is available in over 30 different languages and in 2017 became the only HR company in the world to introduce Artificial Intelligence into HR through Amazon's Alexa and Microsoft's Cortana.³¹



RedRackx

RedRackx is Pakistan's first Multi-Country Cloud with Disaster Recovery Solutions in 11 Data Centres globally, providing cloud infrastructure solutions to simplify data centre operations according to the client's needs. Redrackx Cloud architects and deploys cloud infrastructure solutions that have been providing Software-Defined Data Centre Services to organisations around the world. The flagship architecture, Redrackx HyperCX Bento, simplifies your data centre operations, streamlining the deployment, management, and scaling of data centre resources according to the client's commercial needs.³²

³⁰<https://abacus-global.com/index.html>

³¹https://www.vergesystems.com/service_webhr.php#

³²<https://redrackx.com/>



Wateen

Wateen Telecom is Pakistan's leading ICT company with a diverse portfolio of customers across various industries. A pioneer in the telecommunications industry, Wateen is proud to have laid the foundation of Pakistan's optical fibre connectivity with the fastest growing country-wide network. Their cloud business solutions include Amazon web services as well as Wateen Cloud for businesses that are looking for local hosting solutions. Wateen IaaS offers hosting services through a nationwide array of virtual data centers.³³



Multinet

Multinet Pakistan, is one of the premier information and communication solution providers for leading enterprises in the region. Multinet excels at addressing the diverse communication requirements of its customers through its extensive product portfolio, nationwide long-haul network, overarching footprint of international POPs and terrestrial extension into neighbouring countries. Their product MyCloud is Pakistan's first enterprise ready cloud. They are an Infrastructure as a Service (IaaS) cloud supplier offering a high performing, reliable, sealable, adaptable and strong cloud Solution to enable the Mission Critical applications of businesses. They have various Tier3 Data Centers in Karachi, Lahore and Islamabad³⁴



Datamark

Datamark provides the safest and most effective solutions for data management. Datamark takes pride in providing the most useful strategies to its users and has a list of satisfied customers. Once you understand where your architecture needs strengthening, they can offer insight into the design, selection, and deployment of the right storage solution for you. They know that data is any business's lifeblood, making the data center the heart. With specialized solutions from Zones, they'll get yours in perfect health. Whether you're breaking ground on a new data center or upgrading a server room, their fully integrated racks fast-track the design, purchase, integration, and testing of your new data center infrastructure so you can utilize your valuable IT personnel on other strategic projects.³⁵



Techwards

Techwards was founded in 2020 with a core team of 25 engineers from the CloudSOC CASB (Symantec) team. Their team of 50+ employees now serves over ten clients with two of them being Fortune 500 companies. They are specialists in cloud computing, configuration management, CI / CD, containerization, and automated testing. They use the latest tools such as Kubernetes, Docker, etc to create modular DevOps systems that are robust and scalable and at the same time lean and efficient.³⁶

³³<https://www.wateen.com/>

³⁴<https://multinet.com.pk/>

³⁵<https://thedatamark.com/>

³⁶<https://techwards.co/>



CloudServers

CLOUD SERVERS PVT Ltd offers dedicated server hosting & cloud hosting solutions to small, medium, and corporate clients in Pakistan. Their network and hardware are specially designed for cloud services. The Cloud Services are designed to enable you and your end users to host websites, databases, apps, etc. They provide every customer with the necessary tools to get a fully-functional dedicated server or cloud server up and running as quickly as possible. Their Cloud servers offer a one-click reboot and OS installation of your choice (Centos, Fedora, Ubuntu, etc).³⁷



TechAccess

TechAccess provides intelligent business solutions, prompt technical support, and a diverse range of IT services. With ISO 27001:2013 & ISO 9001:2015 certifications and over a decade of experience, they are optimally equipped to provide effective solutions with comprehensive fusion. They are providing managed cloud services, leveraging enterprise-class technology to guarantee high availability, and performance. Their offerings include Public, Private, and Managed Cloud services.³⁸

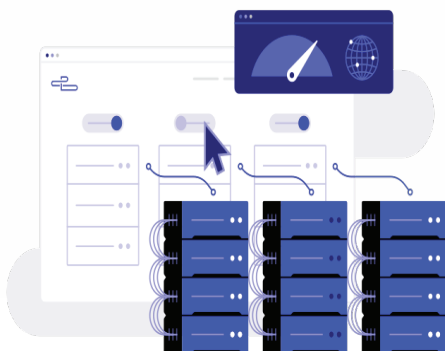
Khazana Enterprises

Khaza Enterprises is a cloud-native technology provider with a natural focus on security. Their goal is to help Pakistani organizations remain competitive in today's global economy by assisting them in their digital transformation journey. With their public-private partnership with NTC (National Telecommunication Corporation), Khazana provides secure and innovative products and services to the government sector. As one of the first cloud-native IT providers located in and serving Pakistani organisations, Khazana offers end-to-end solutions for the financial services sector and other private sector entities. Khazana Cloud services are developed on state-of-the-art Hyper-Converged Infrastructure (HCI) to offer secure, efficient, and cost-effective cloud services, specially designed to provide secure cloud computing for financial institutions, telcos, corporate, retailers, and other entities. They offer server hosting and virtual desktop infrastructure designed to meet the secure computing requirements of their clients.³⁹



Nexus Technologies

Nexus Technologies is a pioneer in the webhosting market. They provide cloud hosting services under the umbrella of Nexus Cloud which offers a wide range of features and advantages for businesses as well as end-users. They offer secure, scalable and reliable Cloud-based Solutions from Basic to Business Critical Applications, backed up with the most advanced and sophisticated security infrastructure with maximum security and disaster recovery capabilities and other cost-effective hosting solutions.⁴⁰



³⁷<https://www.cloudservers.pk/>

³⁸<https://www.techaccesspak.com/>

³⁹<https://khazanapk.com/>

⁴⁰<https://khazanapk.com/>

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ABOUT THIS INDUSTRY ROUNDUP

Pakistan Software Export Board developed this paper by hiring services of independent consulting firms to prepare this roundup on Pakistan's Cloud Platform Solutions and Services sector. The paper focuses on Pakistan-based companies in this vertical and apprises the reader of the expertise available in Pakistan in the Cloud Platform Solutions and Services domain.

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