Securely Transmitting Data: Securely Transmitting Data Created By Cloud-Based Instances.

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Cloud Security Part 2

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A virtual private network, or VPN, is needed because it creates a secure link between you and the internet. All the data traffic flows throughout an encrypted virtual tunnel via the VPN. When you access the internet, this covers your IP address, making its location invisible to everyone. A VPN connection is also protected from outside attacks, this is due to the fact that only you have access to the data in the encrypted tunnel, and no one else can because they lack the key. A VPN enables you to access geographically restricted content from anywhere on the planet. Many streaming services are not available in all countries. The VPN connection does not safeguard you against hacker attacks, Trojans, viruses, or other malware. As a result, you should use additional reliable anti-virus software (What is a VPN? How It Works, Types of VPN, 2022).

Many VPN providers employ OpenVPN, which is a popular and extremely secure protocol. It uses the TCP or UDP internet protocols. The former will ensure that your data is delivered in its entirety and in the correct order, whereas the latter will prioritize faster speeds. Many VPN services, including NordVPN, allow you to select between the two. Also, site-to-site VPNs are used to connect multiple locations on a company's network. They are classified into two types: intranet-based (for combining numerous LANs into a single private network) and extranet-based (for extending a company's network and sharing it with partners or customers) (Andriekutė, 2023).

OpenVPN is good for the company because it has a military-grade security approach to guard against both passive and active threats. For session authentication, it employs SSL/TLS, and for secure tunnel transport via UDP, it employs the IPsec ESP protocol. It also supports the X509 PKI, the TLS protocol, the OpenSSL cipher-independent EVP interface, and the HMAC-SHA1 algorithm for tunnel data authentication (OpenVPN, 2018).  
  
For security reasons, access management services would be handled by a third party, AWS Identity and Access Management (IAM) is a web service that allows you securely regulate access to AWS resources. IAM allows you to centrally manage permissions that govern which AWS resources users have access to. IAM is used to manage who is authenticated, signed in and authorized (has access to resources) (What Is IAM? - AWS Identity and Access Management, n.d.).

AWS Certificate Manager (ACM) is a service that allows you to provision, manage, and deploy public and private SSL/TLS certificates for usage with AWS services and internally connected resources. The time-consuming manual procedure of obtaining, uploading, and renewing SSL/TLS certificates is eliminated by ACM.The AWS shared responsibility paradigm is used in AWS Certificate Manager for data protection. AWS is in charge of global infrastructure security, while you are in charge of preserving control over your contents (Certificate Manager – AWS Certificate Manager – Amazon Web Services, n.d.).

SFTP is a secure file transfer protocol that was developed to securely transfer and manage files across a TCP/IP network. It employs the same commands as FTP and necessitates the use of an SFTP client and server. SSH keys are used to automate server access, while SFTP establishes a secure connection over an SSH data stream. “Data is securely transferred to a server using encryption methods, and authentication is set to prevent unwanted file access” (Gillis, 2022).

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