Virtual Private Network

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Why in News?

Russia's tightening grip on **online content** in recent years has led to a significant surge in **Virtual Private Network (VPN) usage** among citizens seeking unrestricted access to information and media platforms.

What is a VPN?

- **About**: A **VPN** is a technology that establishes a **secure and private connection between a user's device and the internet.** VPNs encrypt the internet traffic and disguise the user's online identity.
  - VPNs can **bypass geo-restrictions** and censorship. By connecting to a VPN server in a different location, users can access content and websites that may be restricted or blocked in their region.
- **Mechanism:**
  - **Encryption:** When a user connects to a VPN, all data transmitted and received is encrypted.
    - Encryption **converts data into a code** that only the user's device and the VPN server can decipher using a decryption key.
  - **Secure Tunneling:** Encrypted data travels through a **secure tunnel to the VPN server.**
    - This tunnel prevents unauthorised parties like **Internet Service Providers (ISP),** hackers or government agencies from intercepting or monitoring the user's online activities.
  - **IP Address Masking**: The user's real IP address, which can reveal their location and device information, is **replaced with the IP address of the VPN server.**
    - This masking process enhances user privacy and makes it difficult for websites to track the user's actual location.

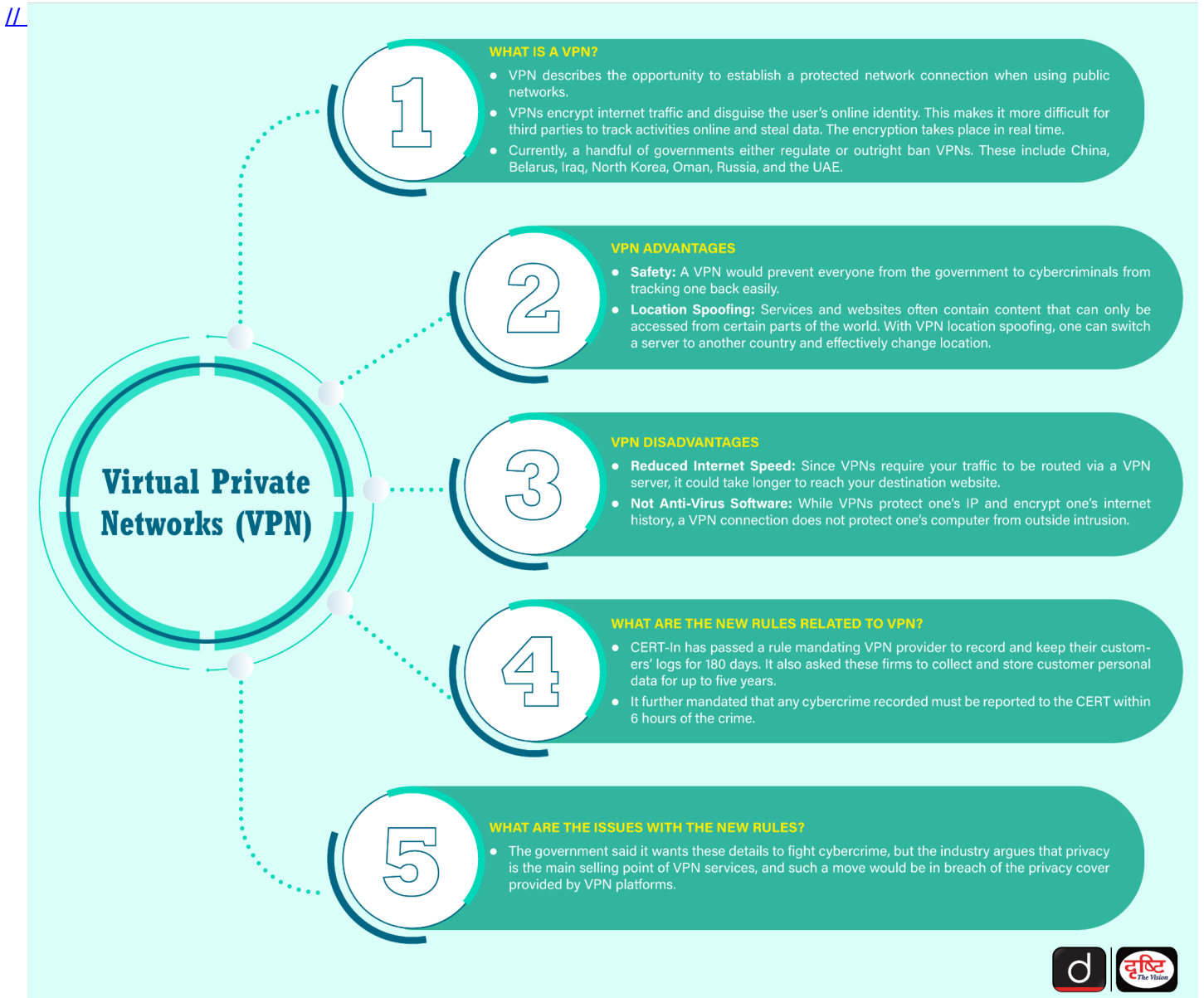## What are Other Key Technologies Similar to VPN?

- Smart Domain Name System **(DNS):** It provides a proxy server resource for additional protection of a user's identity by masking a **user's ISP-generated DNS address** with a different address, generated by the Smart DNS device, before sending the user request to the internet.
- **The Onion Router:** It protects user data by encapsulating the data in **multiple layers of secure encryption**, using the **Onion Protocol**, as it routes the data from sender to receiver.
  - The process ensures that a user's identity is protected from ISPs and advertisers.
- **Proxy Servers:** Proxy servers act as intermediaries between a user's device and the internet.
  - They can be used to hide the user's IP address, bypass content filters, and improve speed by caching frequently accessed web pages.

Note:

- In 2022, the **Indian Ministry of Electronics and Information Technology** introduced

regulations mandating VPN providers, data centres, virtual service networks, and cloud providers to record users' personal details for five years.
- They must also log usage patterns, and service purposes, and report cybersecurity incidents to CERT-In within six hours.

WHAT IS A VPN?
- VPN describes the opportunity to establish a protected network connection when using public networks.
- VPNs encrypt internet traffic and disguise the user's online identity. This makes it more difficult for third parties to track activities online and steal data. The encryption takes place in real time.
- Currently, a handful of governments either regulate or outright ban VPNs. These include China, Belarus, Iraq, North Korea, Oman, Russia, and the UAE.

VPN ADVANTAGES
- **Safety:** A VPN would prevent everyone from the government to cybercriminals from tracking one back easily.
- **Location Spoofing:** Services and websites often contain content that can only be accessed from certain parts of the world. With VPN location spoofing, one can switch a server to another country and effectively change location.

VPN DISADVANTAGES
- **Reduced Internet Speed:** Since VPNs require your traffic to be routed via a VPN server, it could take longer to reach your destination website.
- **Not Anti-Virus Software:** While VPNs protect one's IP and encrypt one's internet history, a VPN connection does not protect one's computer from outside intrusion.

WHAT ARE THE NEW RULES RELATED TO VPN?
- CERT-In has passed a rule mandating VPN provider to record and keep their customers' logs for 180 days. It also asked these firms to collect and store customer personal data for up to five years.
- It further mandated that any cybercrime recorded must be reported to the CERT within 6 hours of the crime.

WHAT ARE THE ISSUES WITH THE NEW RULES?
- The government said it wants these details to fight cybercrime, but the industry argues that privacy is the main selling point of VPN services, and such a move would be in breach of the privacy cover provided by VPN platforms.

Virtual Private Networks (VPN)

UPSC Civil Services Examination, Previous Year Question

Q. What is "Virtual Private Network"? (2011)

(a) It is a private computer network of an organization where the remote users can transmit encrypted information through the server of the organization.

(b) It is a computer network across a public internet that provides users access to their organization's network while maintaining the security of the information transmitted.

(c) It is a computer network in which users can access a shared pool of computing resources through a service provider.

(d) None of the statements (a), (b) and (c) given above is a correct description of Virtual Private Network.

Ans: (b)

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