Hybrid Cloud Networking

Hybrid cloud networking is part of the new normal in enterprise networks, seamlessly integrating diverse IT environments based both on-premises and in the cloud. Learn about hybrid cloud networking, its architecture, benefits, challenges, and the role of observability platforms like Kentik in streamlining the management and configuration of hybrid cloud environments.

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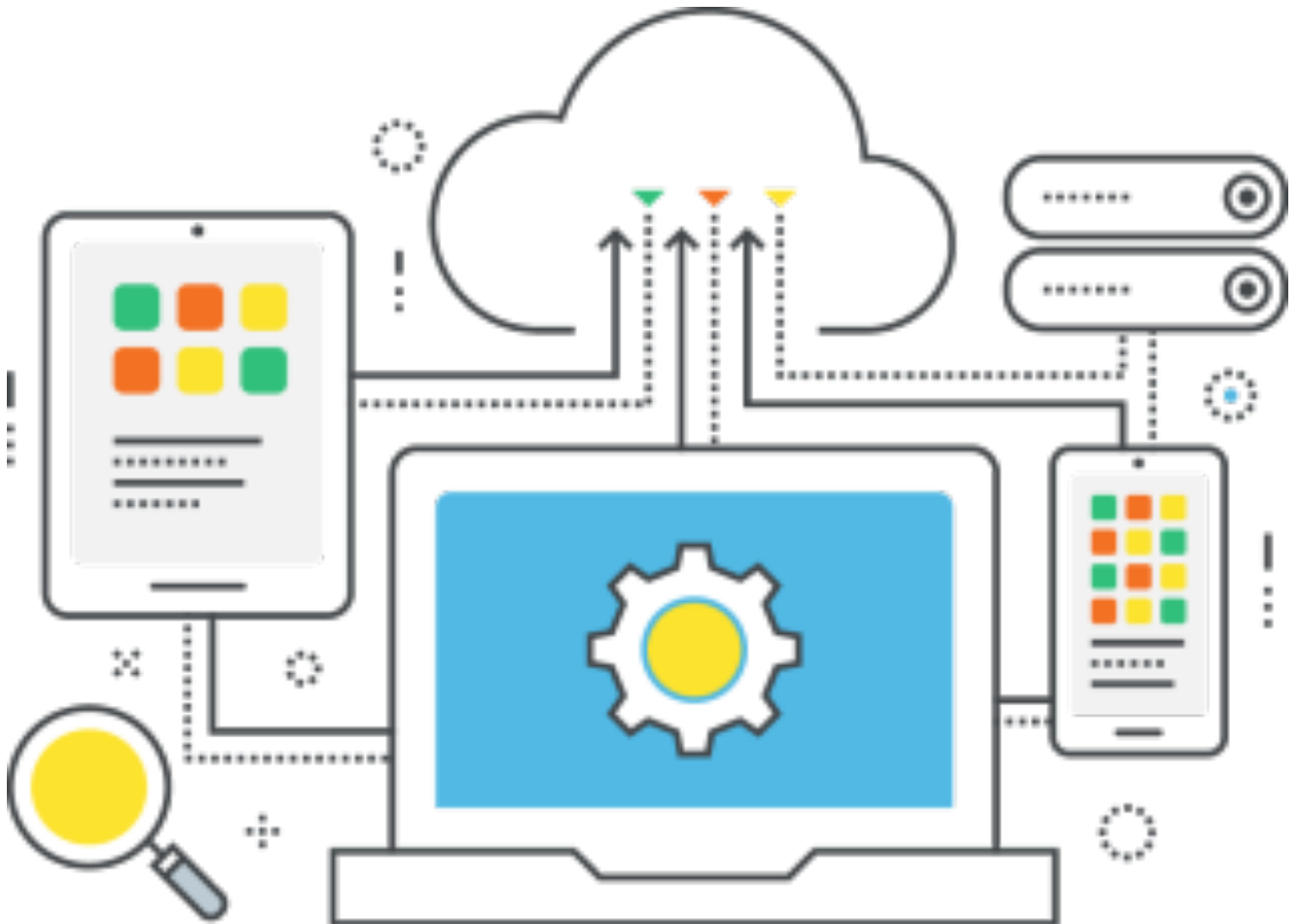
What is Hybrid Cloud Networking?

Hybrid cloud networking connects on-premises infrastructure with private and public cloud platforms, allowing data and applications to move freely between them. This interconnected approach enables applications and data to move dynamically across diverse platforms and enables businesses to harness the strengths of both on-premises and cloud resources. A hybrid cloud offers companies the best of both worlds—combining the security of on-premises systems and the scalability of the cloud.

Hybrid cloud networking—or simply "hybrid cloud"—is a subset of multicloud networking that combines private clouds (which could be on-premises or hosted) and public cloud resources, with orchestration between them. The hybrid cloud approach lets data and applications move between private and public clouds. This approach's benefits include resource deployment flexibility, helping organizations optimize existing infrastructure, security, and compliance.

What is Hybrid Cloud Architecture?

Hybrid cloud architecture is the strategic integration of private clouds (e.g., on-premises data centers) and public cloud services designed to ensure seamless data mobility and workload portability between these environments. Hybrid cloud architecture combines private and [public clouds](#) to provide businesses with greater flexibility and scalability.

This architecture offers several advantages:

- **Data Mobility**: By integrating private and public clouds, data can move between the two effortlessly. This setup empowers businesses to make data storage or processing decisions based on cost, compliance, or performance metrics.
- **Workload Portability**: Modern technologies like virtualization platforms (e.g., VMware), container platforms (like Docker), and network virtualization (through VPNs) ensure that applications and services can be deployed, moved, or scaled without being tied to a specific cloud environment.
- **Adaptive Deployment**: Advanced application deployment strategies, including microservices, APIs, and Kubernetes, allow businesses to

deploy applications where they fit best—whether it's on-premises, in a private cloud, or on a public cloud.

By adopting a hybrid cloud architecture, organizations can dynamically adjust their IT infrastructure based on business needs, technical requirements, or even financial considerations, ensuring they always have the right resources in the right place at the right time.

Hybrid Cloud Networking vs Multicloud Networking

While both hybrid cloud and multicloud strategies utilize multiple cloud environments, their core goals and implementations differ. A hybrid cloud focuses on integrating private and public clouds, while a multicloud approach is about distributing resources across multiple cloud providers to tap into the diverse strengths of specific public cloud services.

Hybrid Cloud Networking is a strategy that bridges the on-premises and cloud computing worlds. Hybrid cloud networking seamlessly connects an organization's on-premises infrastructure (often termed as private cloud) to public cloud services. It allows for fluid movement of data and applications between private and public environments. The primary goal is to blend the best of both realms, combining the security and control of on-premises systems with the flexibility and scalability of public clouds.

Multicloud Networking is a strategy that embraces diversification. In a multicloud networking approach, businesses distribute their digital operations across multiple cloud service providers rather than tying their fate to one. This strategy protects against the vulnerabilities of vendor lock-in and exploits the unique advantages each provider brings to the table. It's all about choice and flexibility.

Hybrid vs Multicloud: Differentiating Factors

Hybrid and multicloud approaches differ in several key ways:

1. **Purpose**
   - **Hybrid Cloud** is focused on integrating private and public environments to enable data and application mobility. It's a blend,

ensuring businesses can maximize their existing on-premises infrastructure while tapping into public cloud advantages.

- o **Multicloud** is aimed at leveraging multiple cloud providers to access the best features, pricing, and services each offers. It's about diversification.

2. **Integration**:

- o **Hybrid Cloud** emphasizes deep integration between private and public cloud components, enabling seamless workload transfers.

- o **Multicloud** architectures imply that a cloud service might operate more independently, emphasizing selecting the best platform for each application or service.

3. **Flexibility and Deployment**:

- o **Hybrid Cloud** offers flexibility in deployment, allowing businesses to determine where applications live—either on-premises or in the cloud—based on specific requirements like security, compliance, or latency.

- o **Multicloud** provides flexibility in choosing cloud providers, ensuring businesses can harness the strengths of multiple vendors.

Components of Hybrid Cloud Networking

Hybrid cloud networking is more than just a combination of on-premises and cloud resources. It's an ecosystem designed for seamless communication, optimized performance, and hardened security. Understanding its components is crucial for businesses aspiring to harness the full potential of a hybrid cloud strategy.

- ▪ characters from a terminal driver.

- A piece of software called pseudoterminal driver, is added to this,which pretends that the characters are coming from a terminal.
- The operating system then passes the characters to the appropriate application program.

TELENT OPTIONS
- TELNET lets the client and server negotiate options before or during the use of the service.
- Options are extra features available to a user with a more sophisticated terminal.
- Users with simpler terminals can use default features.

TELENT COMMANDS

Command	Meaning	Command	Meaning
open	Connect to a remote computer	**set**	Set the operating parameters
close	Close the connection	**status**	Display the status information
display	Show the operating parameters	**send**	Send special characters
mode	Change to line or character mode	**quit**	Exit TELNET

NETWORK VIRTUAL TERMINAL (NVT)
- The mechanism to access a remote computer is complex.
- We are dealing with heterogeneous systems.
- This is because every computer and its operating system accepts a special combination of characters as tokens.
- For example, the end-of-file token in a computer running the DOS operating system is Ctrl+z, while the UNIX operating system recognizes Ctrl+d.
- If we want to access any remote computer in the world, we must first know what type of computer we will be connected to, and we must also install the specific terminal emulator used by that computer.
- TELNET solves this problem by defining a universal interface called the Network Virtual Terminal (NVT) character set.
- Via this interface, the client TELNET translates characters (data or commands) that come from the local terminal into NVT form and delivers them to the network.
- The server TELNET, on the other hand, translates data and commands from NVT form into the form acceptable by the remote computer.

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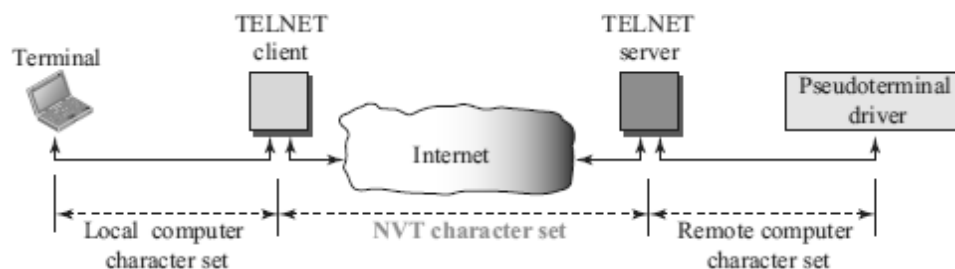
NVT Character Format

- NVT uses two sets of characters, one for data and one for control.
- For data, NVT normally uses what is called NVT ASCII. This is an 8-bit character set in which the seven lowest order bits are the same as ASCII and the highest order bit is 0.
- To send control characters between computers , NVT uses an 8-bit character set in which the highest order bit is set to 1.