Types of VPC

In AWS, **VPCs (Virtual Private Clouds)** themselves are not classified into different *types*, but how you **configure** and **use** a VPC leads to different types of **VPC architectures or setups**.

Here's a breakdown of the **common types of VPC configurations** based on use cases and design:

✅ 1. Default VPC

- **Automatically created** by AWS in each region.
- Has:
    - A **/16 CIDR block** (e.g., 172.31.0.0/16)
    - A **public subnet** in each availability zone
    - Internet Gateway attached
    - Instances get a public IP by default
- Meant for quick setup and testing.

💡 Best for: Development/testing environments where simplicity is preferred.

✅ 2. Custom VPC

- You create this manually to meet **specific networking requirements**.
- Offers full control over:
    - CIDR range
    - Subnets (public/private)
    - Routing
    - Security groups & NACLs
    - Gateways (NAT, IGW, VPN, etc.)

💡 Best for: Production-ready workloads needing security, scalability, and control.

✅ 3. Public VPC

- A VPC that contains **only public subnets**.
- EC2 instances have public IPs and are accessible from the internet via **Internet Gateway**.

💡 Best for: Hosting public-facing applications (e.g., web servers, ALBs).

✅ 4. Private VPC

- All subnets are **private** — no direct internet access.
- Can access internet only via **NAT Gateway** (for outbound traffic).
- Typically used for:
    - Databases
    - Backend services
    - Internal APIs

💡 Best for: Secure services not meant to be accessed directly from the internet.

✅ 5. Hybrid VPC

- Combines **public and private subnets** in the same VPC.
- Uses:
    - Public subnet for web servers
    - Private subnet for backend/database servers
    - NAT Gateway in public subnet to allow outbound internet access for private instances

💡 Best for: Most real-world production environments.

✅ 6. VPC with VPN or Direct Connect

- Connects your on-premises data center to your VPC using:
    - **VPN Gateway** (encrypted internet tunnel)
    - **AWS Direct Connect** (dedicated fiber link)

💡 Best for: Enterprises integrating cloud with on-prem infrastructure.

✅ 7. VPC Peering and Transit Gateway Architectures

- For connecting **multiple VPCs** together:
    - **VPC Peering**: Point-to-point connection between two VPCs
    - **Transit Gateway**: Hub-and-spoke model for connecting many VPCs and on-prem networks

💡 Best for: Large multi-account or multi-region architectures

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📌 Summary Table

VPC Type	Internet Access	Use Case
Default VPC	Yes (public)	Quick start, testing
Custom VPC	Optional	Production-grade apps
Public VPC	Yes	Web servers, public apps
Private VPC	No (direct)	Databases, internal services
Hybrid VPC	Partial	Real-world apps (frontend + backend)
VPN/Direct Connect	Private network	Enterprise cloud integration
Peered/Transit VPC	Internal	Multi-VPC or multi-account setups