

Cloud Computing and AWS Global Infrastructure

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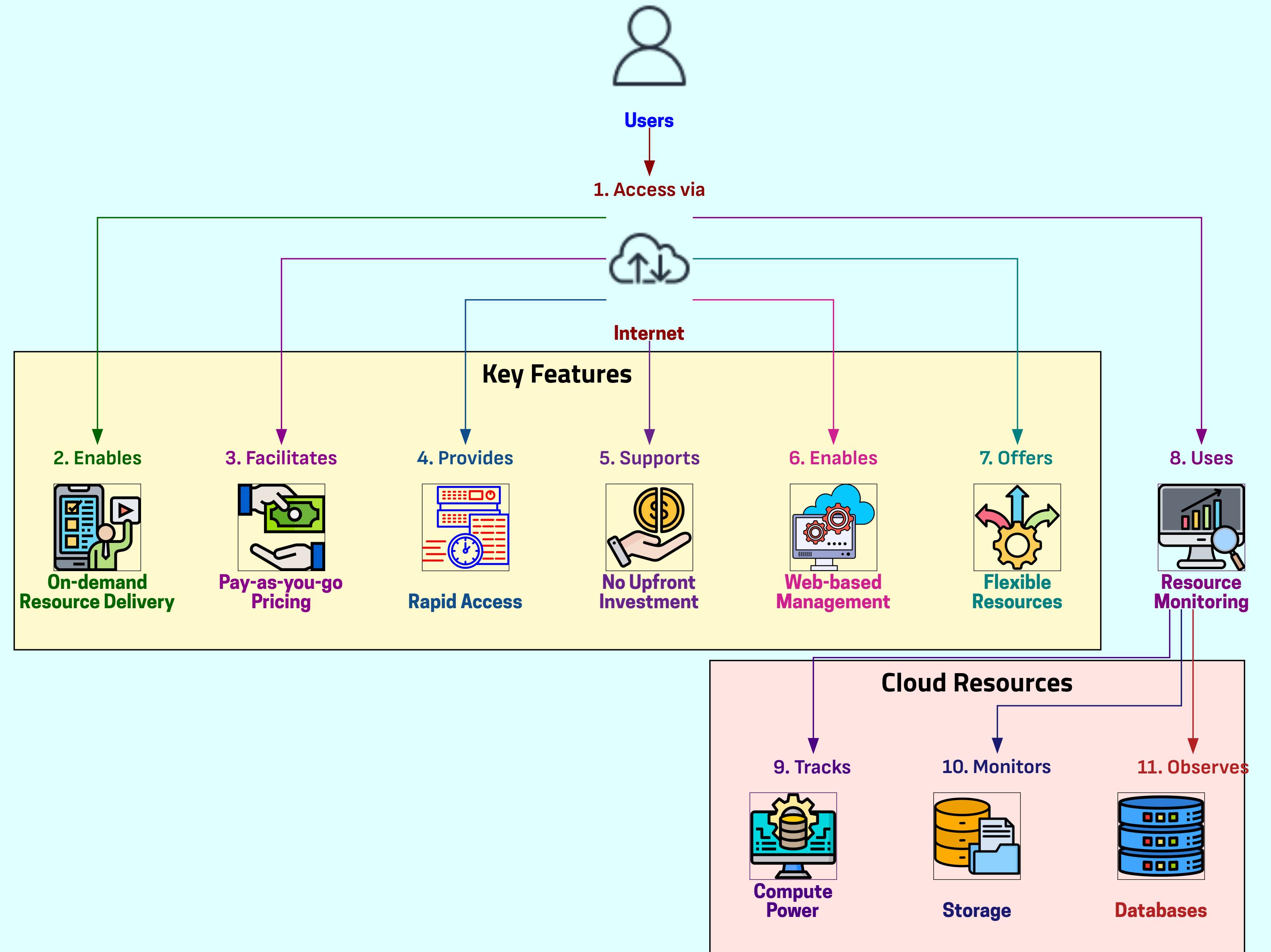
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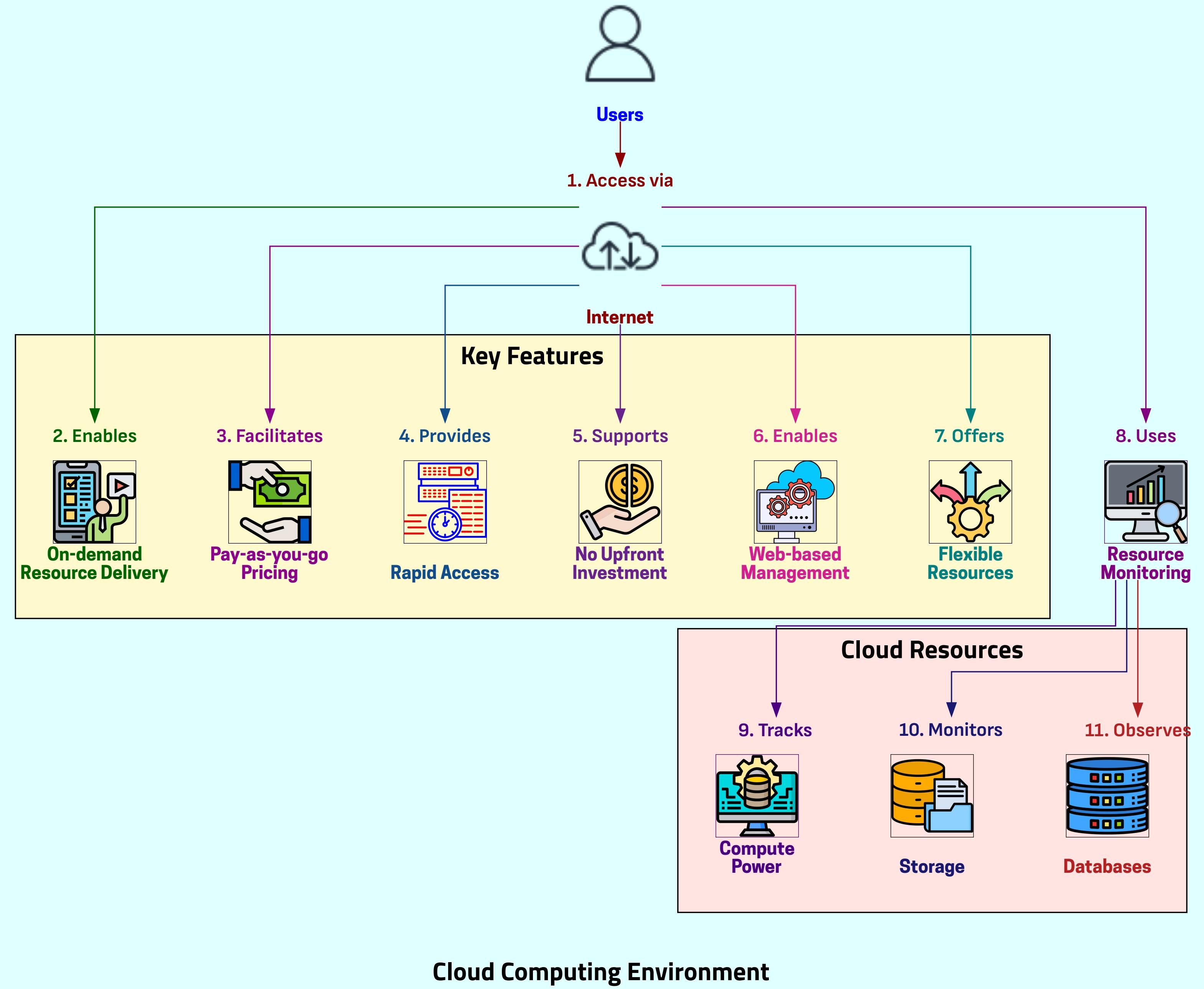
20. Accessing AWS services

What is Cloud Computing?



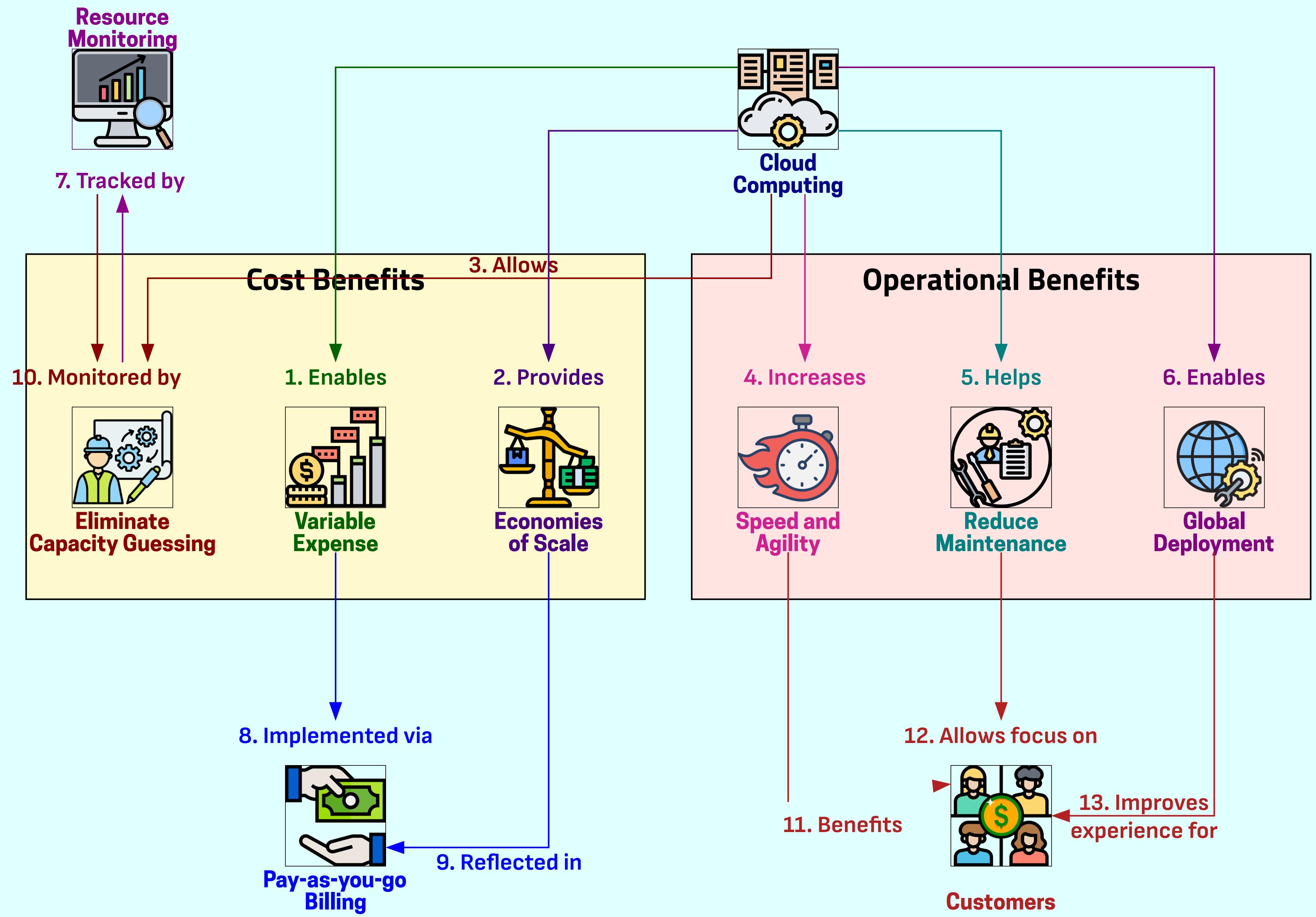
- | | |
|---------------------------------------|--|
| 1. On-demand IT resources delivery | 2. Pay-as-you-go pricing model |
| Compute power | Pay for consumed resources only |
| Storage | Avoid unused capacity costs |
| Other IT resources | Prevent overprovisioning |
| No long-term commitments | |
| Rapid access to flexible resources | 4. Eliminates upfront hardware investment |
| Quick provisioning | No large initial investments |
| Customizable resource types and sizes | Removes hardware management burden |
| Adaptable to changing business needs | Focus on innovation and development |

What is Cloud Computing?



- 5. Access to servers, storage, and databases
 - Servers
 - Storage solutions
 - Databases
- 6. Web-based provisioning and management
 - Easy resource provisioning
 - Management through web application
 - Scalability options
- Cloud service platforms (e.g., AWS)

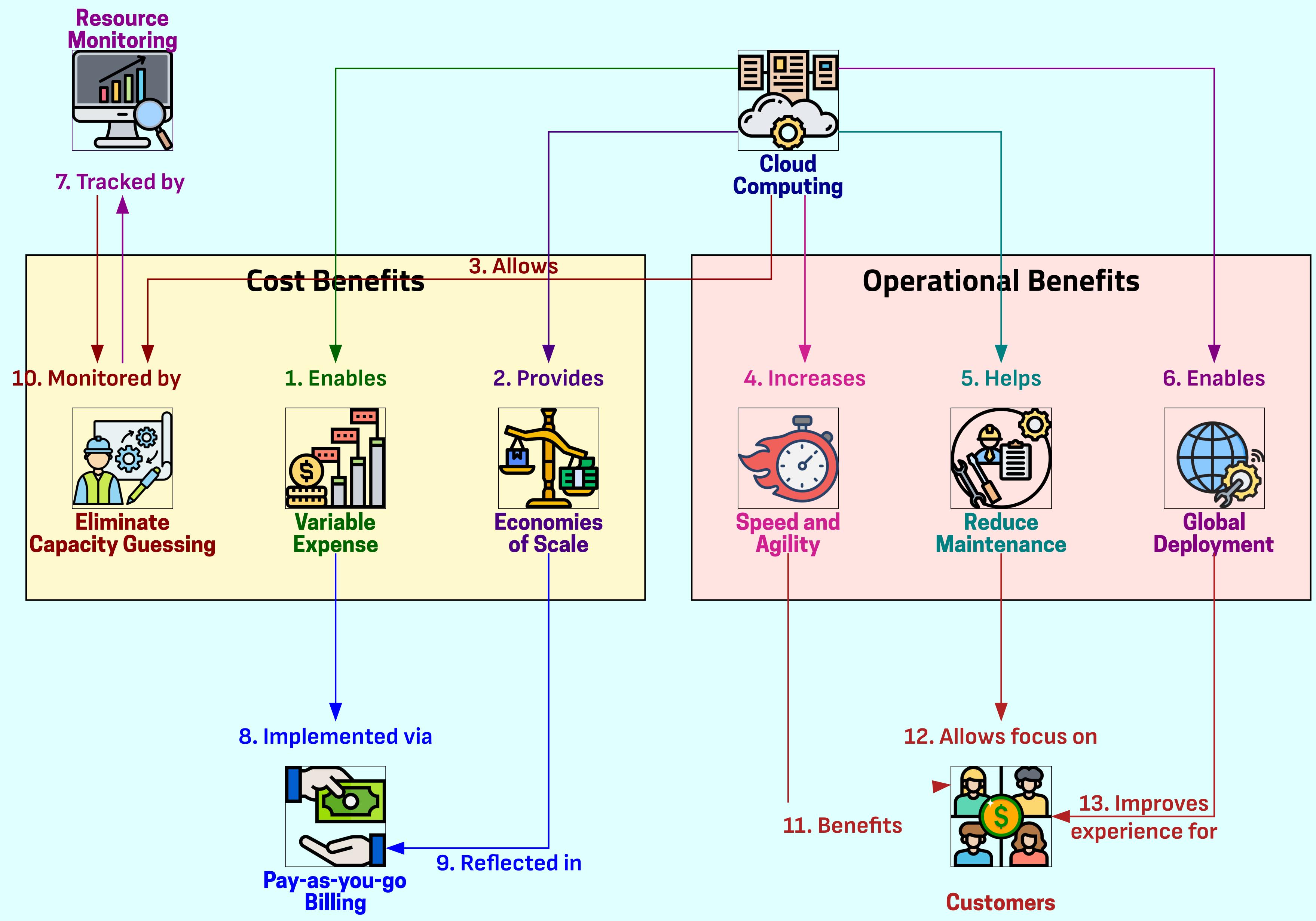
Cloud Computing Benefits



Benefits of Cloud Computing

1. Switch from fixed to variable expense
2. Pay only for used resources
3. Expenses tied to consumption
4. No large upfront investments

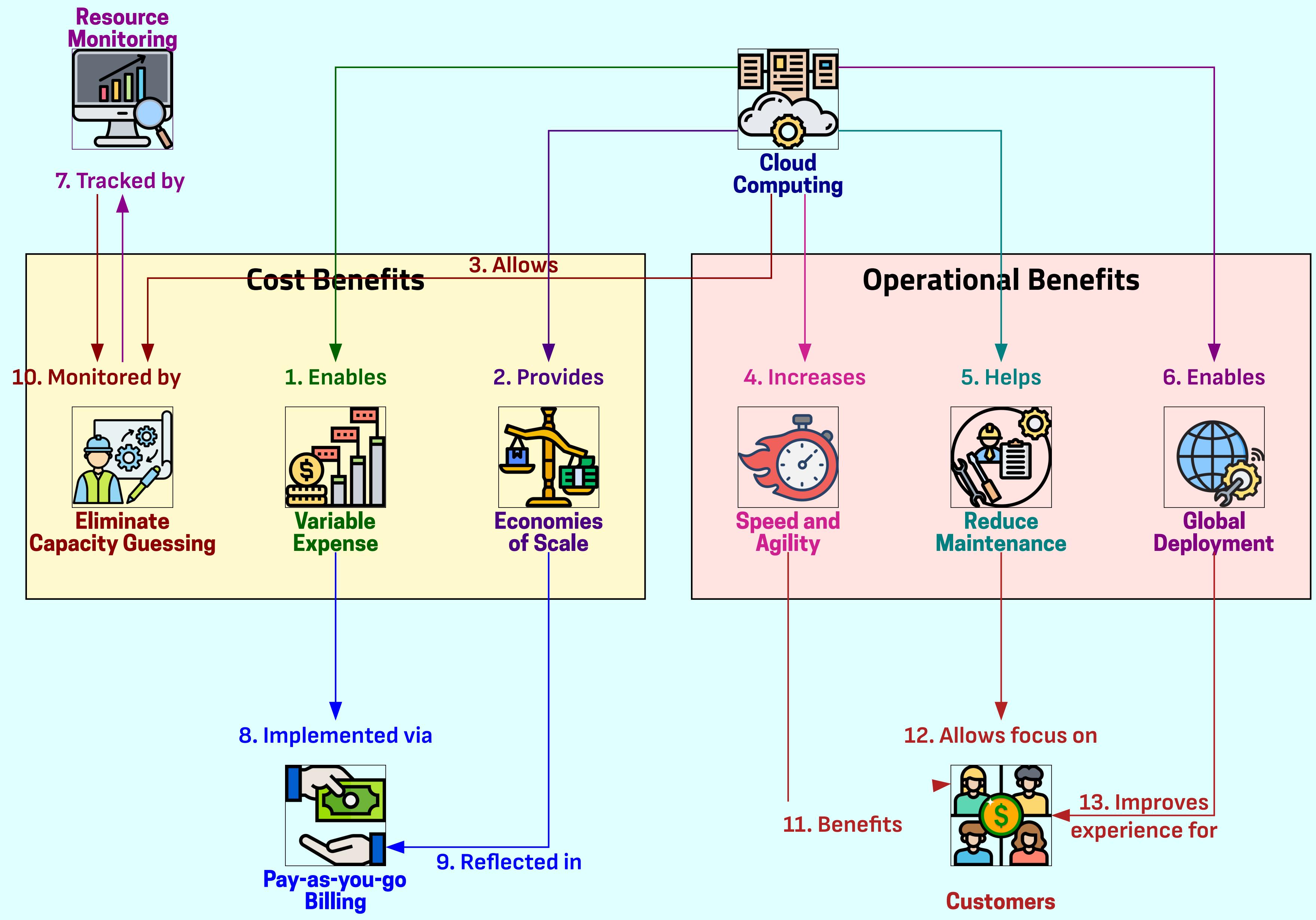
Cloud Computing Benefits



Benefits of Cloud Computing

2. Leverage economies of scale
- Benefit from aggregated usage
- Lower costs
- Pay-as-you-go pricing

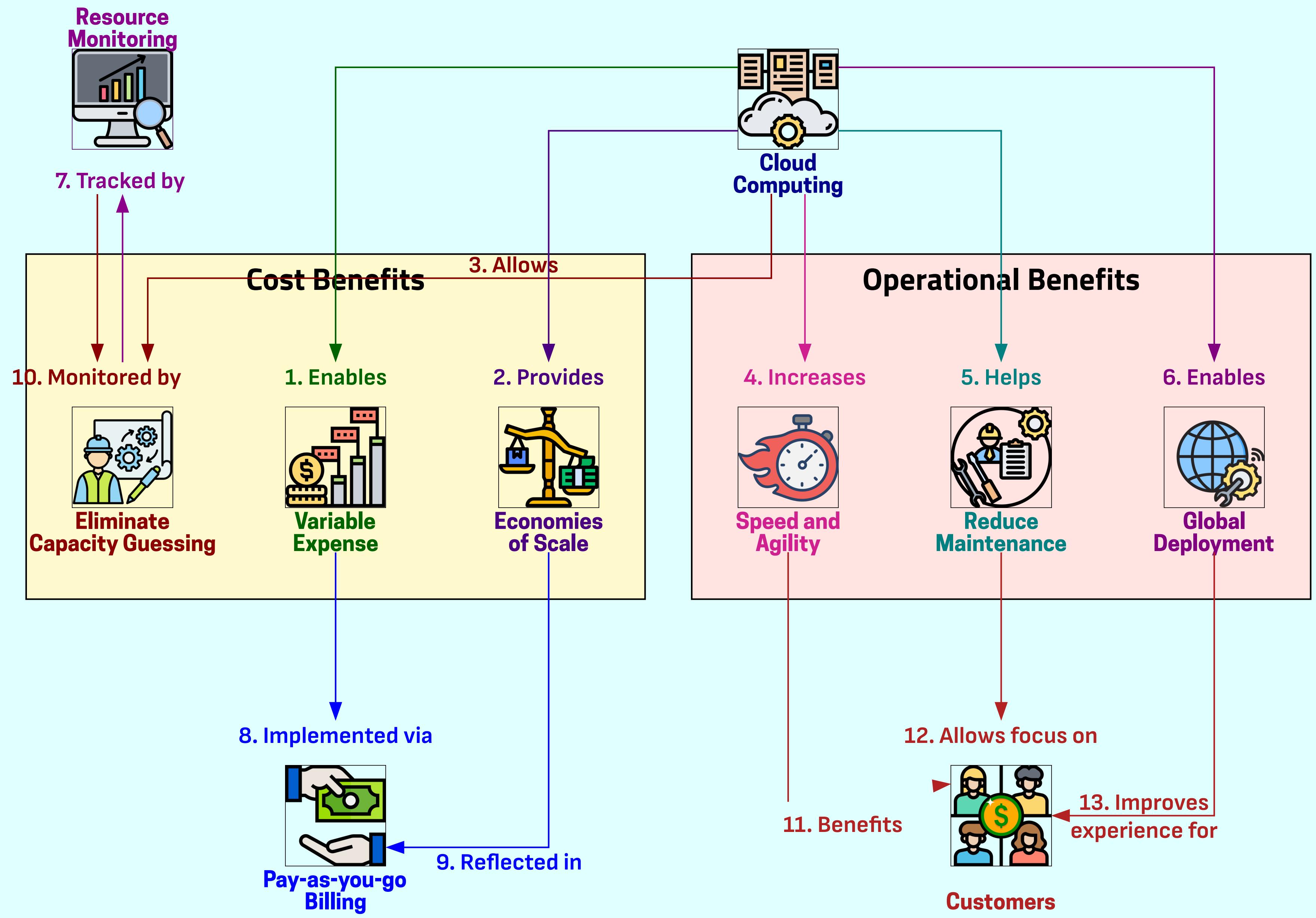
Cloud Computing Benefits



Benefits of Cloud Computing

- 3. Eliminate capacity guessing
- Scale resources as needed
- Minimal notice required
- Avoid unused resource costs

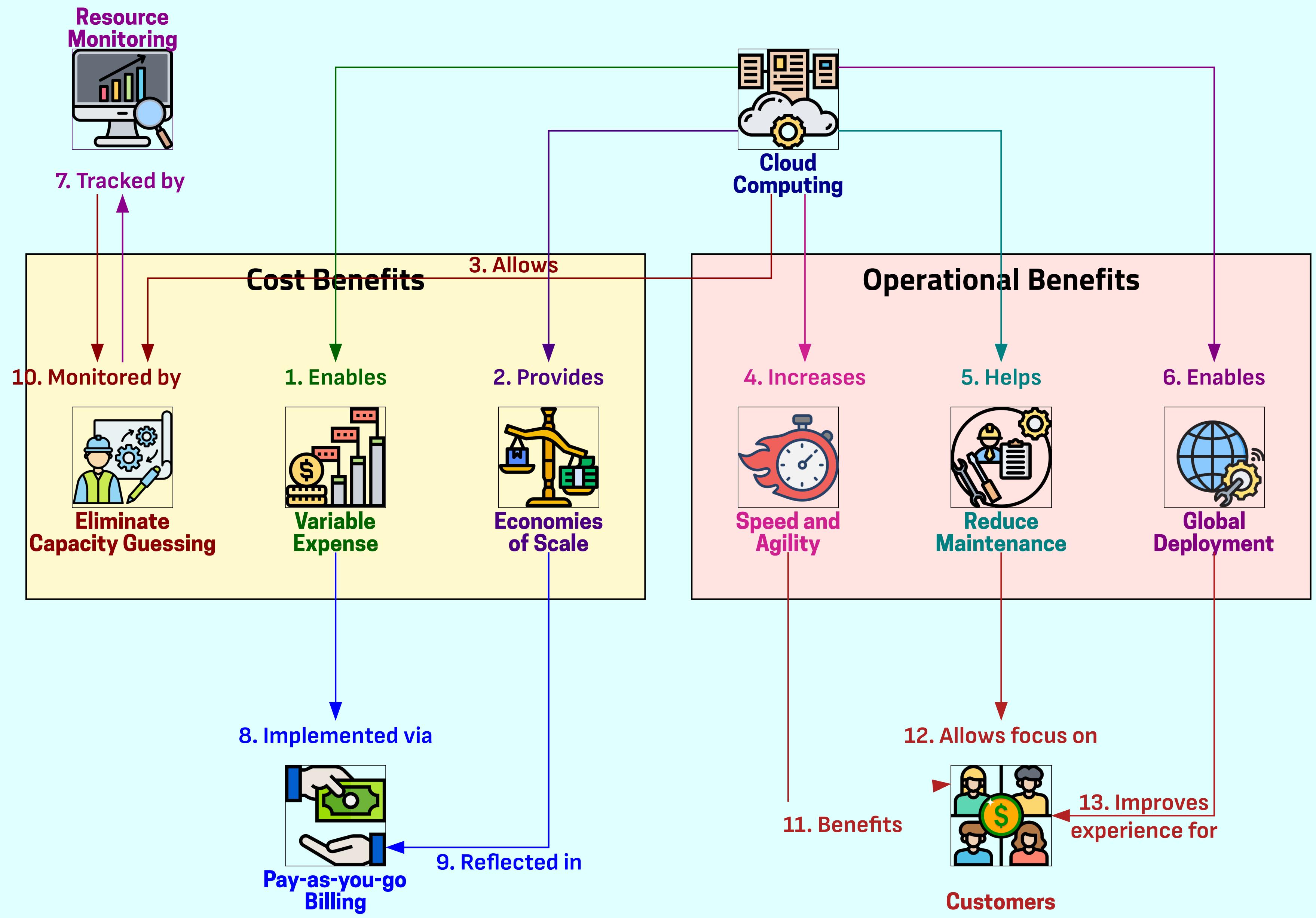
Cloud Computing Benefits



Benefits of Cloud Computing

- 4. ► Increase speed and agility
- Resources available in minutes
- Enhanced organizational agility
- Lower experimentation costs

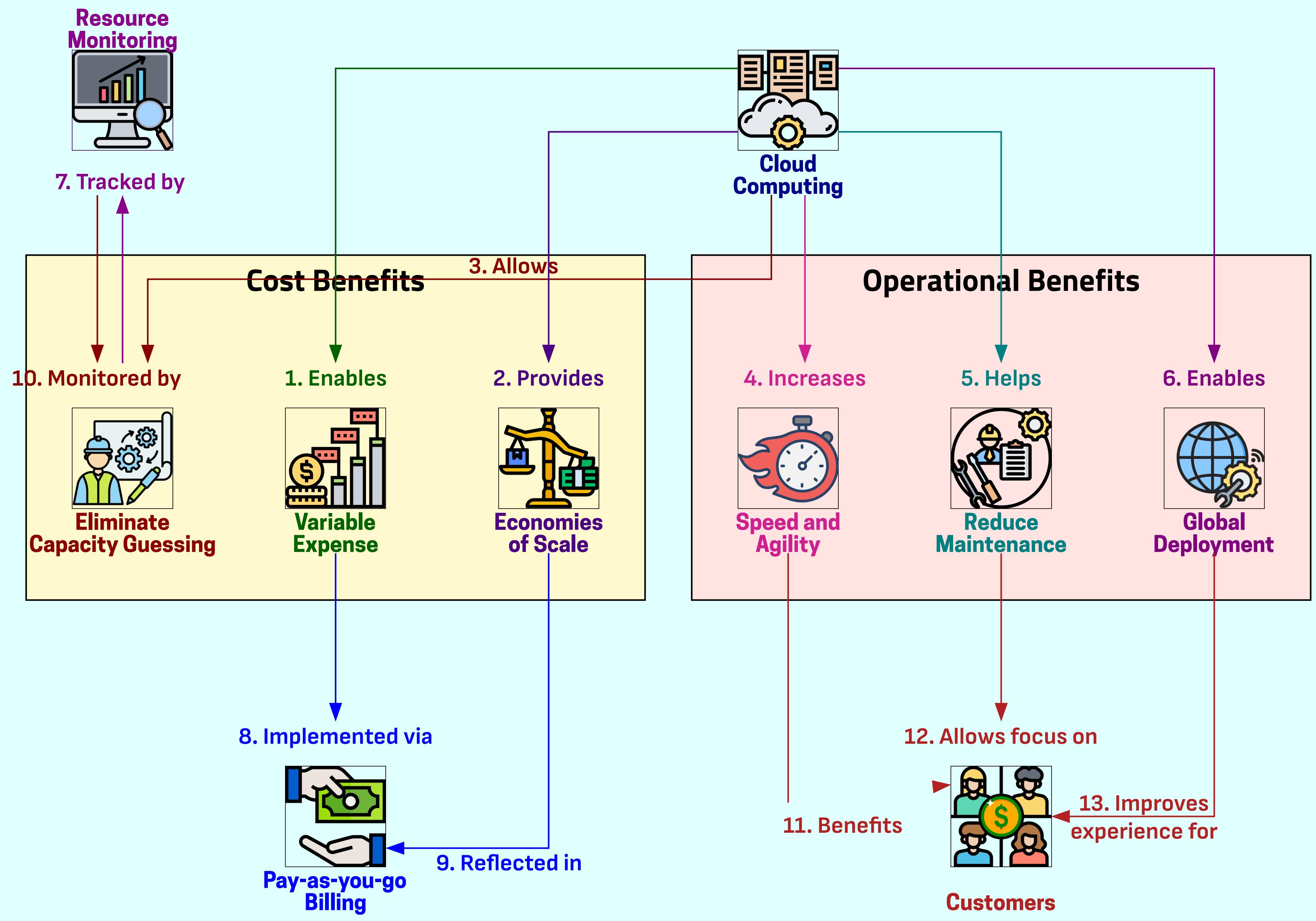
Cloud Computing Benefits



Benefits of Cloud Computing

- 5. Reduce data center maintenance costs
- 6. Focus on innovation
- 7. Eliminate infrastructure management
- 8. No server maintenance

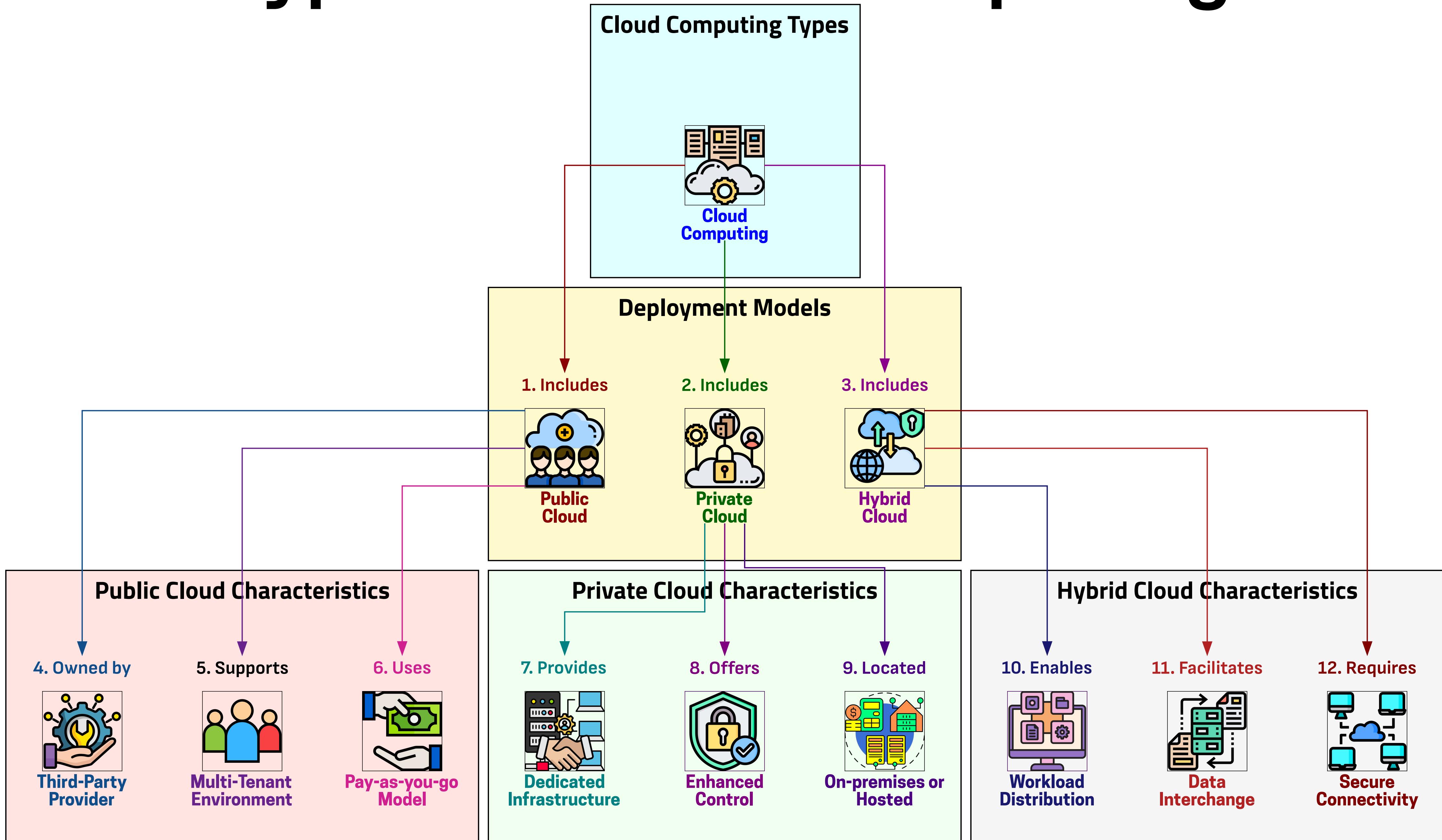
Cloud Computing Benefits



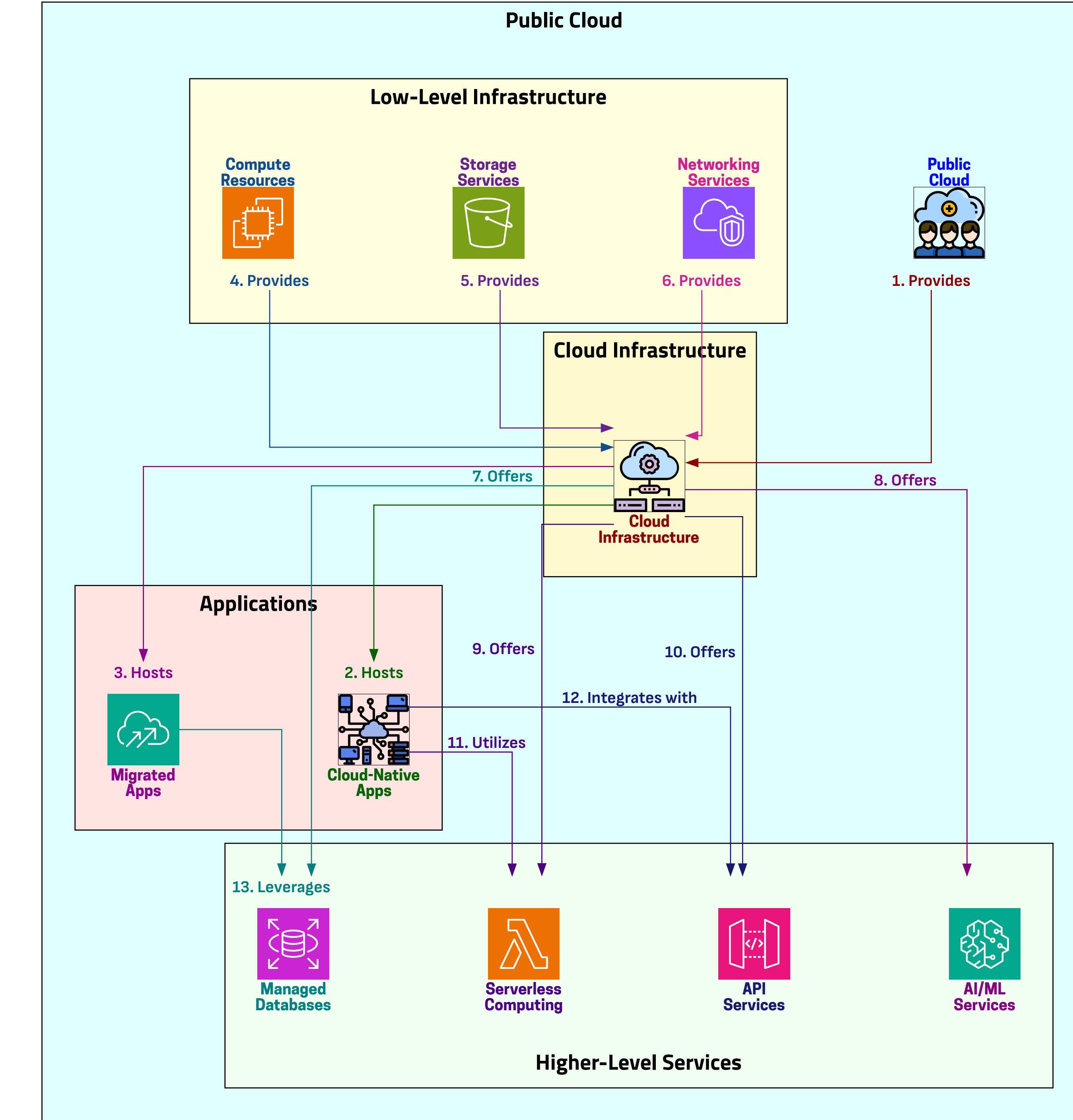
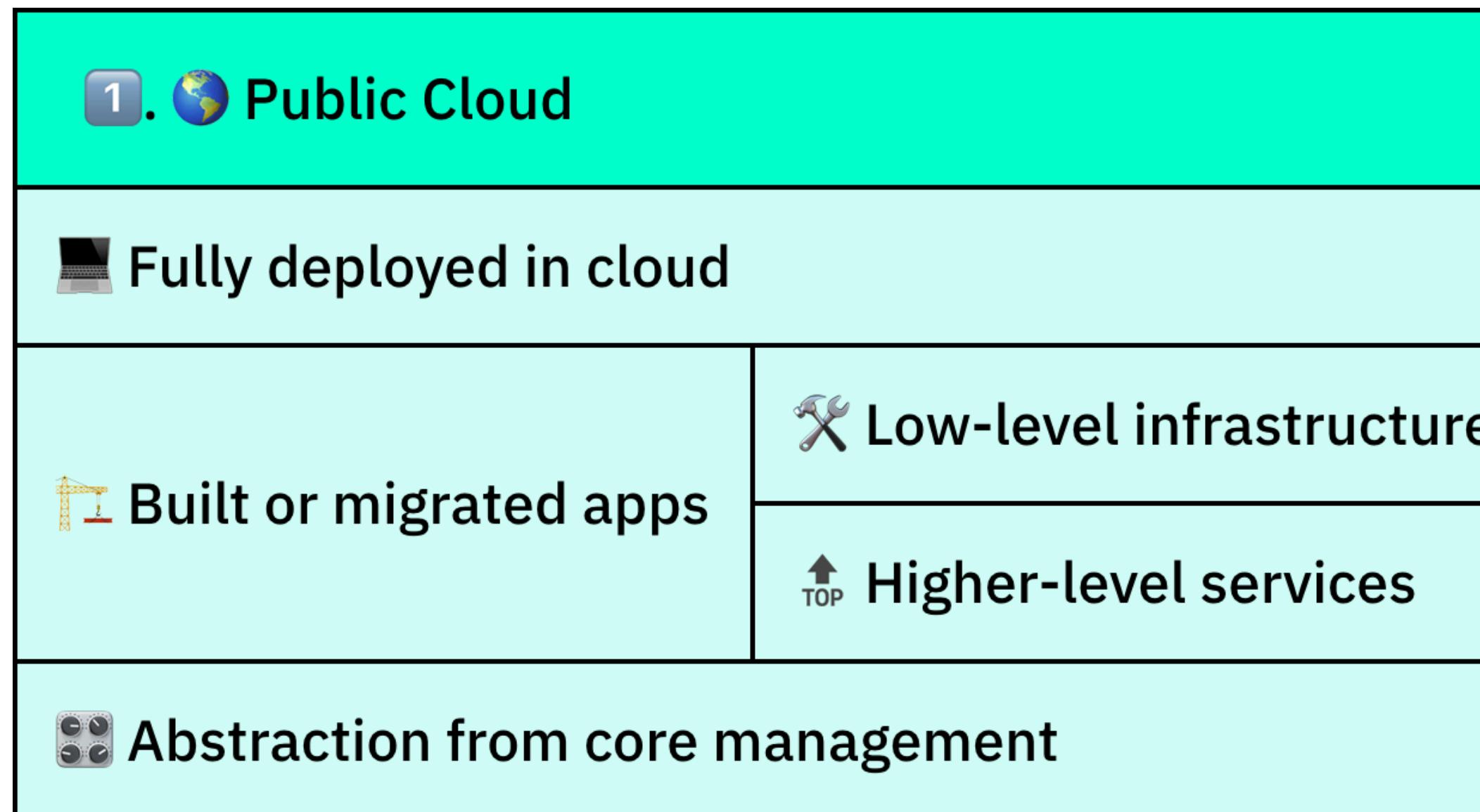
Benefits of Cloud Computing

- 6. 🌎 Global deployment in minutes
- 7. 🌏 Multiple region deployment
- 8. ⏳ Lower latency
- 9. 😊 Better customer experience

Types of Cloud Computing



Types of Cloud Computing - Public Cloud



Private Cloud

1. Resources Deployed On-Premises

🔧 Uses virtualization, resource management tools

🔒 Provides dedicated resources

☁️ Without many cloud computing benefits

2. Aims

↗ Increase resource utilization

📱 Application management

⚙️ Virtualization technologies

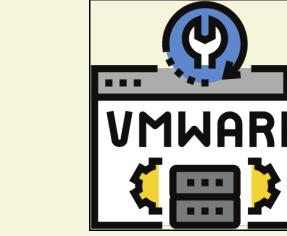
3. Resembles

💻 Legacy IT infrastructure

Private Cloud (On-Premises)

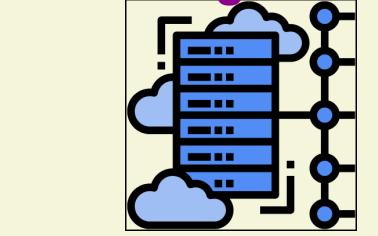
Virtualization Technologies

Hypervisor Platform



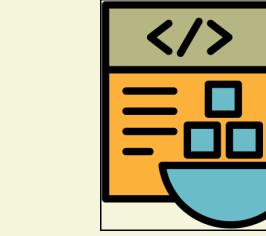
1. Uses

Virtual Machine Management



2. Utilizes

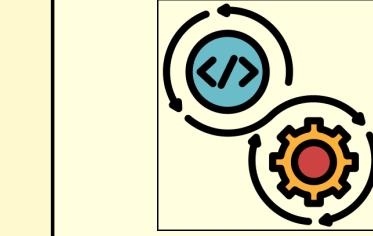
Container Platform



3. Implements

Resource Management Tools

Orchestration Tools



4. Employs

Monitoring Systems



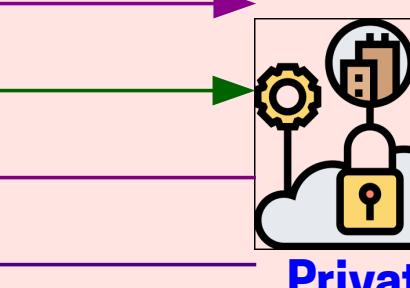
5. Integrates

Automation Tools



6. Leverages

On-Premises Infrastructure



Private Cloud

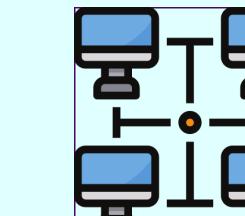
Physical Hardware

7. Runs on



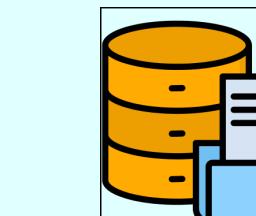
Physical Servers

8. Connected via



Networking Equipment

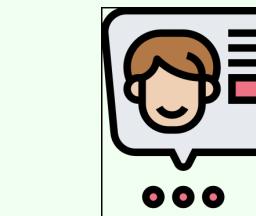
9. Stores on



Storage Systems

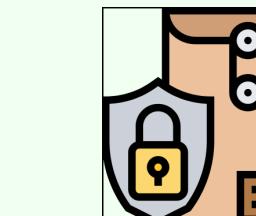
Security & Control

10. Enforces



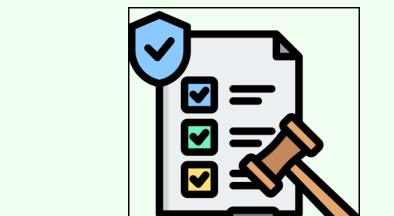
Access Control

11. Implements



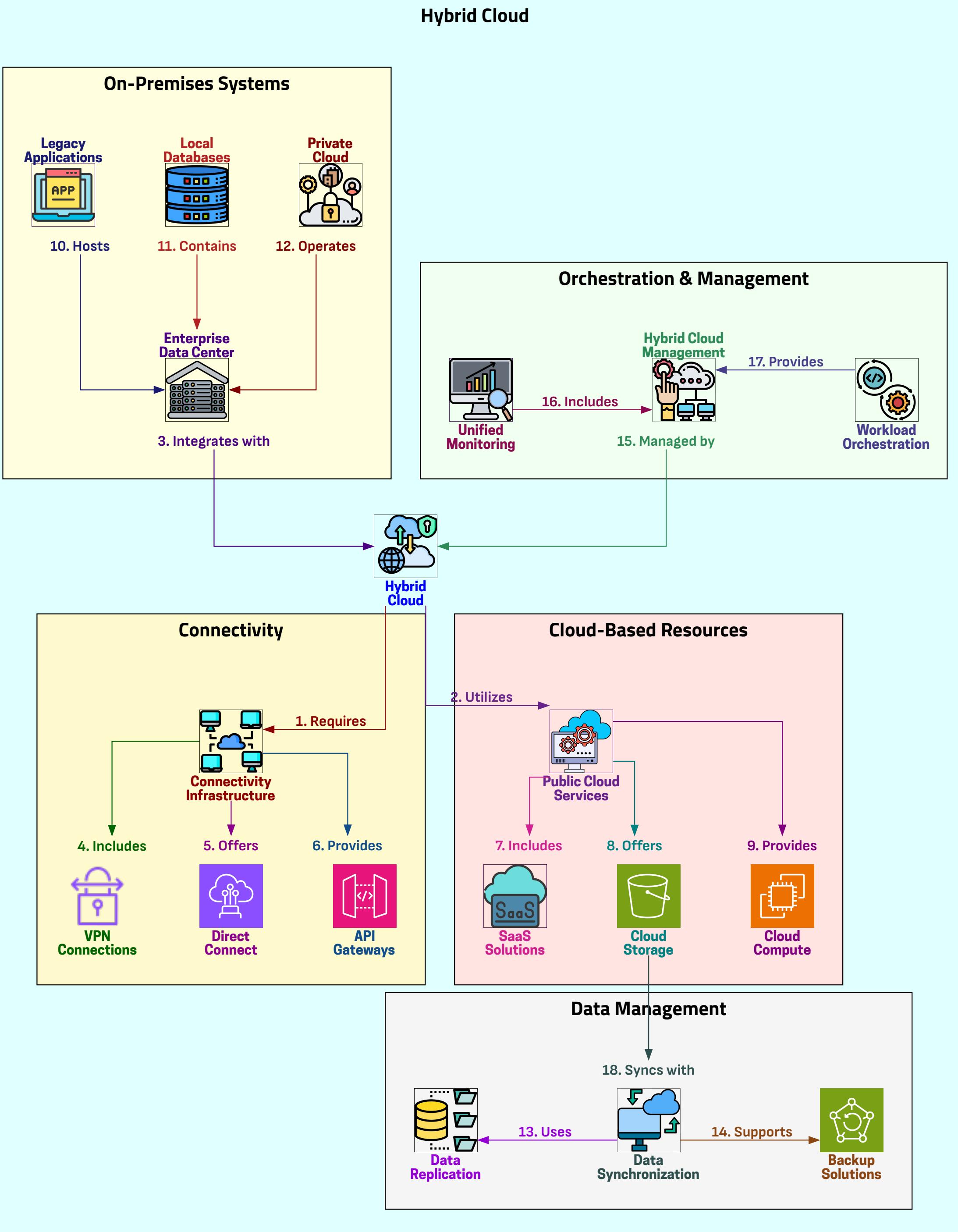
Data Protection

12. Maintains



Compliance Tools

Hybrid Cloud



3. Hybrid

Connects cloud and on-premises

Extends infrastructure to cloud

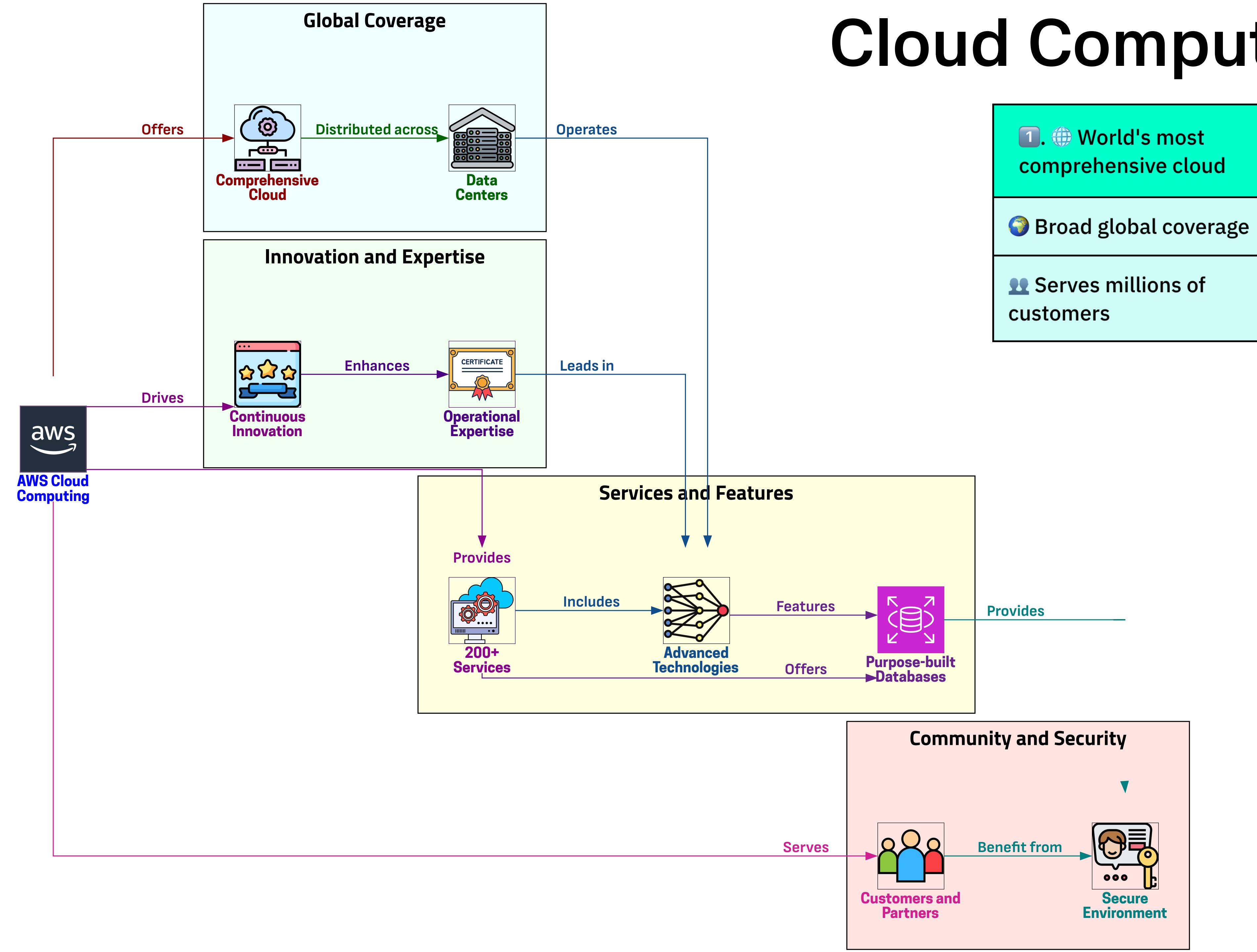
Links cloud to internal systems

Common for organizations

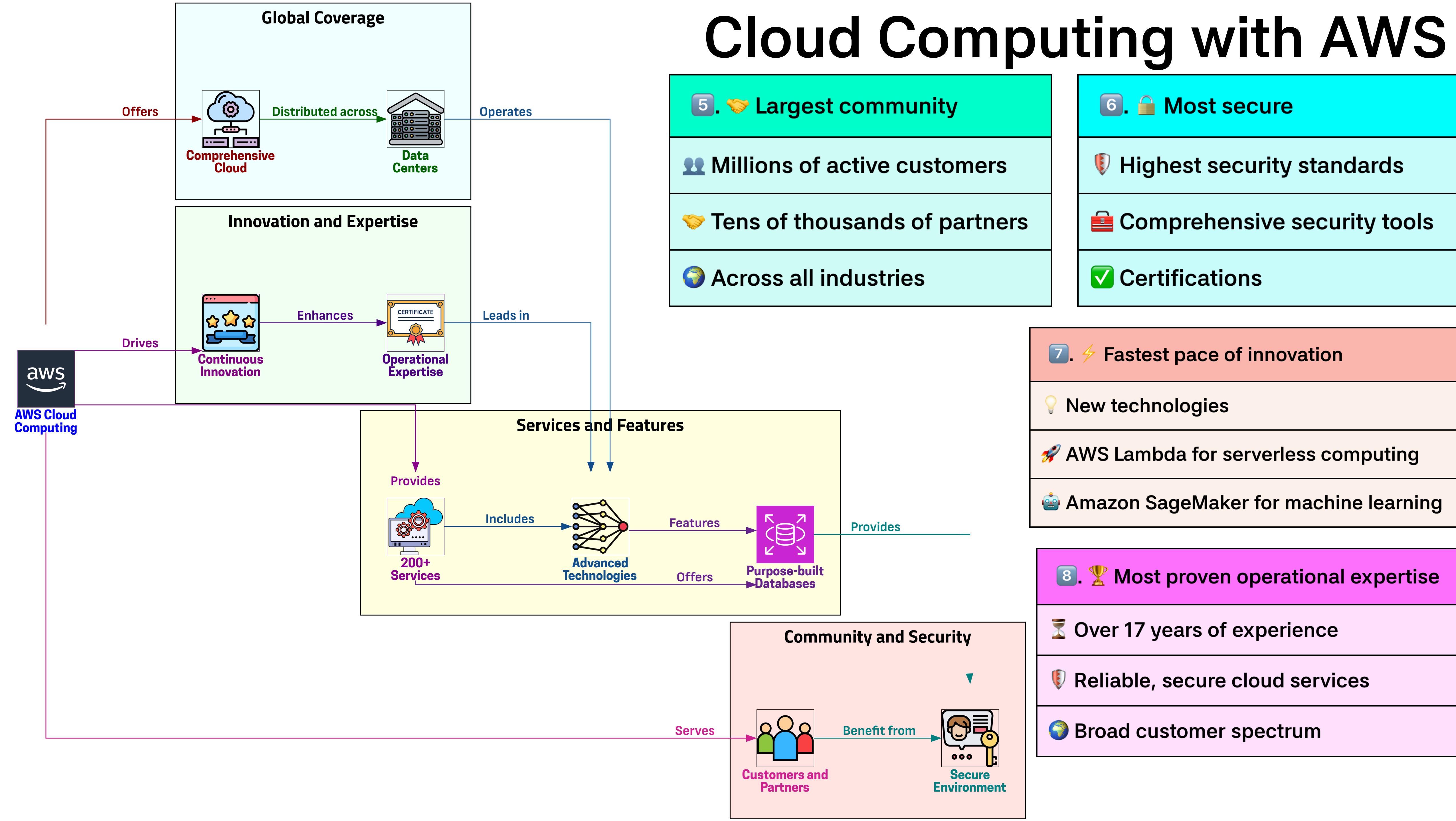
Expanding infrastructure

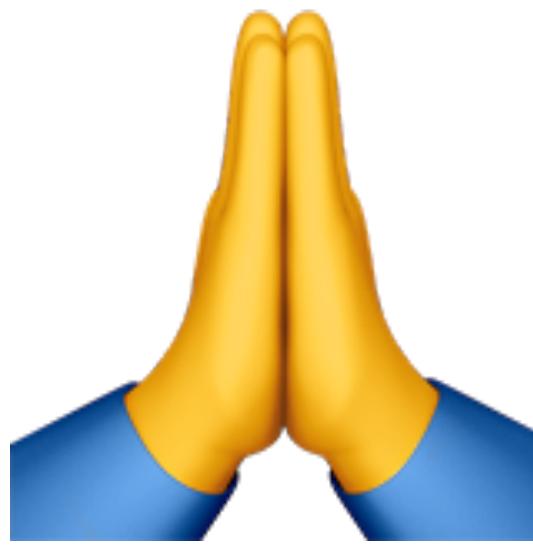
Maintaining on-premises connection

Cloud Computing with AWS



Cloud Computing with AWS





**Thanks
for
Watching**

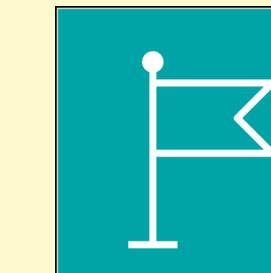
1. Launched Regions

33 Regions
12 34

Multiple Availability Zones per region

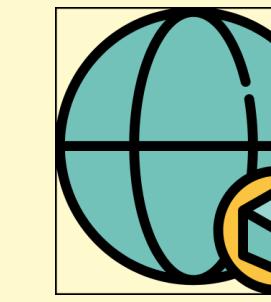
Regions and Availability Zones

1. Comprises



33 Launched Regions

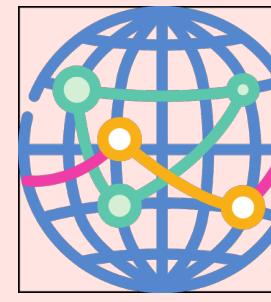
2. Contains



105 Availability Zones

Edge Network

3. Utilizes

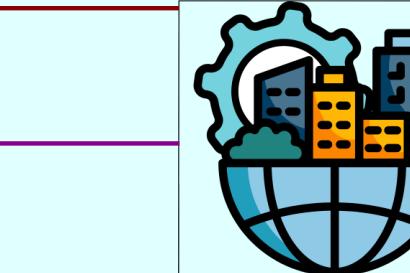


600+ Points of Presence

4. Includes



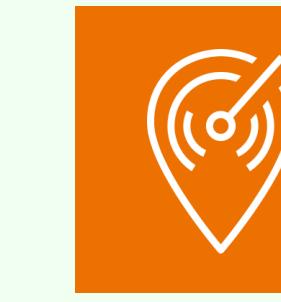
13 Regional Edge Caches



AWS Global Infrastructure

Specialized Infrastructure

5. Offers



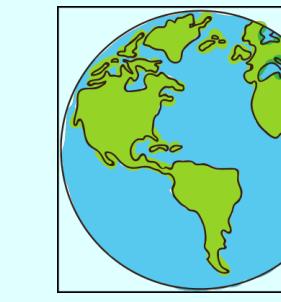
38 Local Zones

6. Provides



29 Wavelength Zones

7. Covers



245 Countries and Territories Served

8. Supports



115 Direct Connect Locations

2. Availability Zones

105 AZs
12 34

3. Points of Presence and Edge Caches

600+ Points of Presence
12 34

13 Regional Edge Caches
12 34

5. Global Coverage

245 Countries and Territories
12 34

4. Specialized Zones

Local Zones

38 Local Zones
12 34

Wavelength Zones

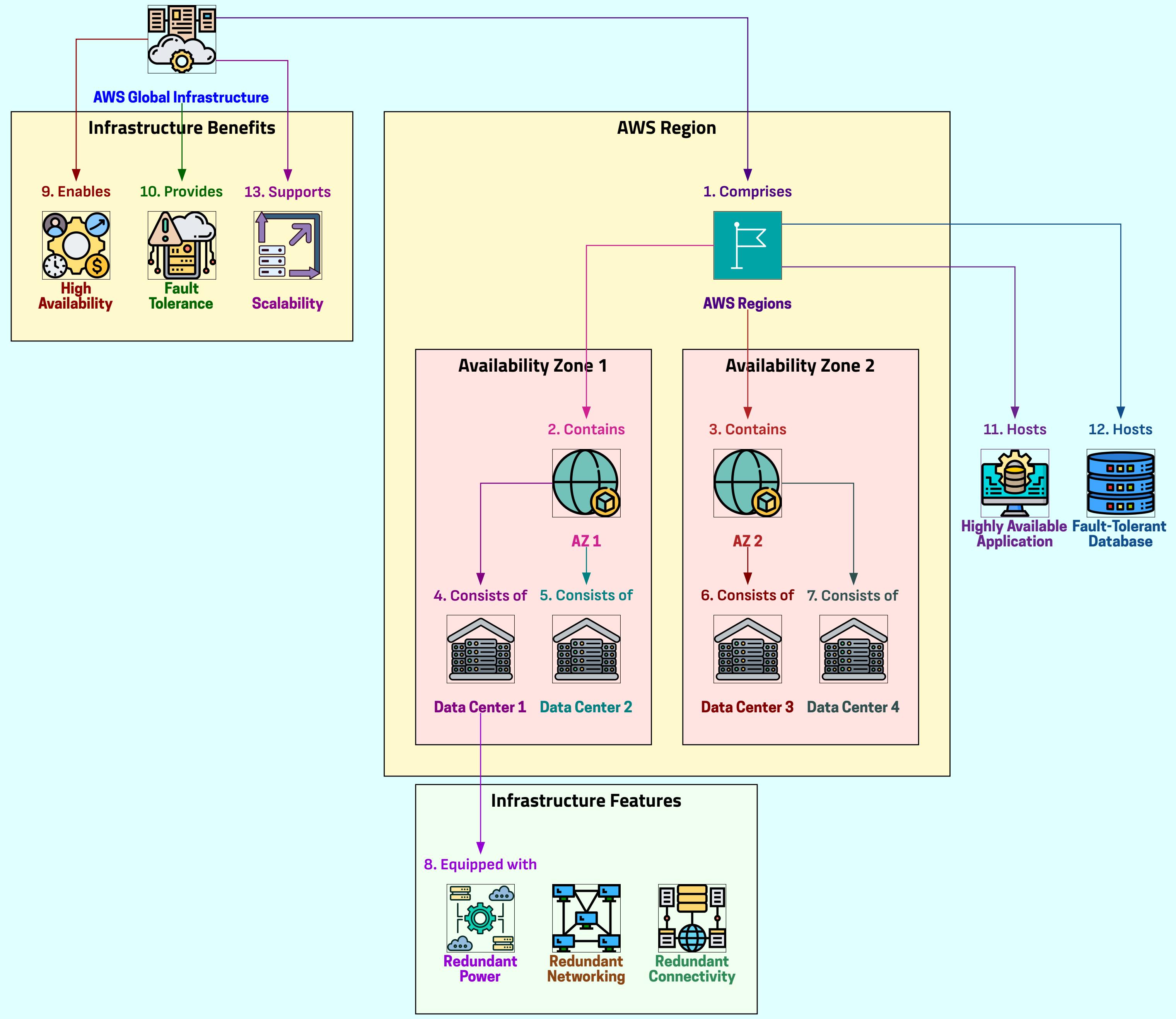
29 Wavelength Zones
12 34

Ultralow latency applications

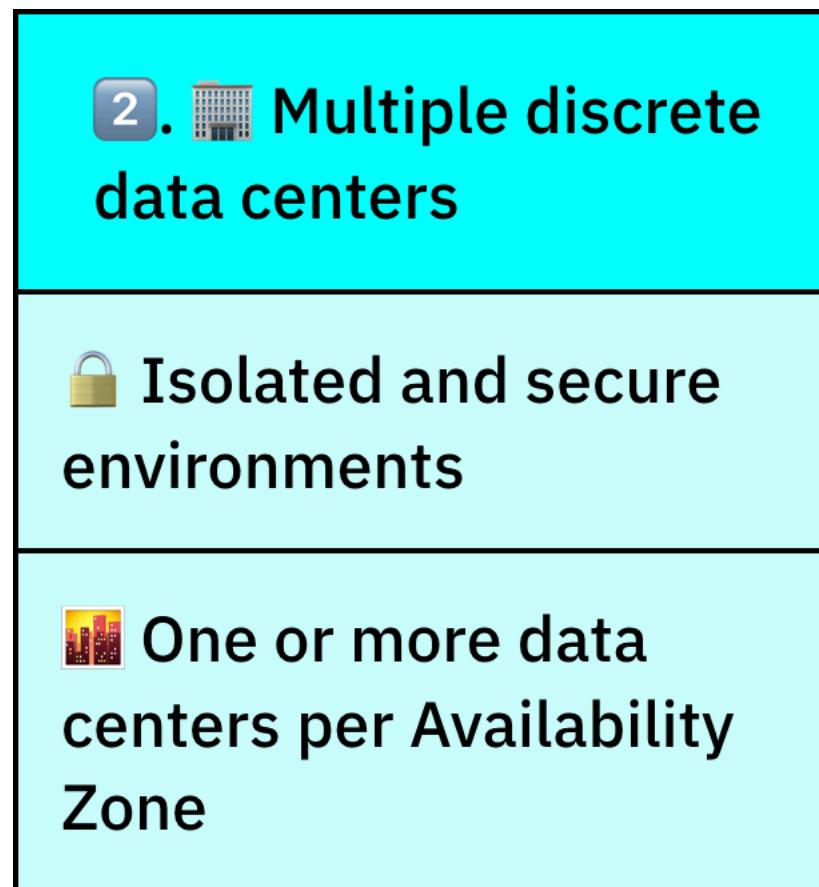
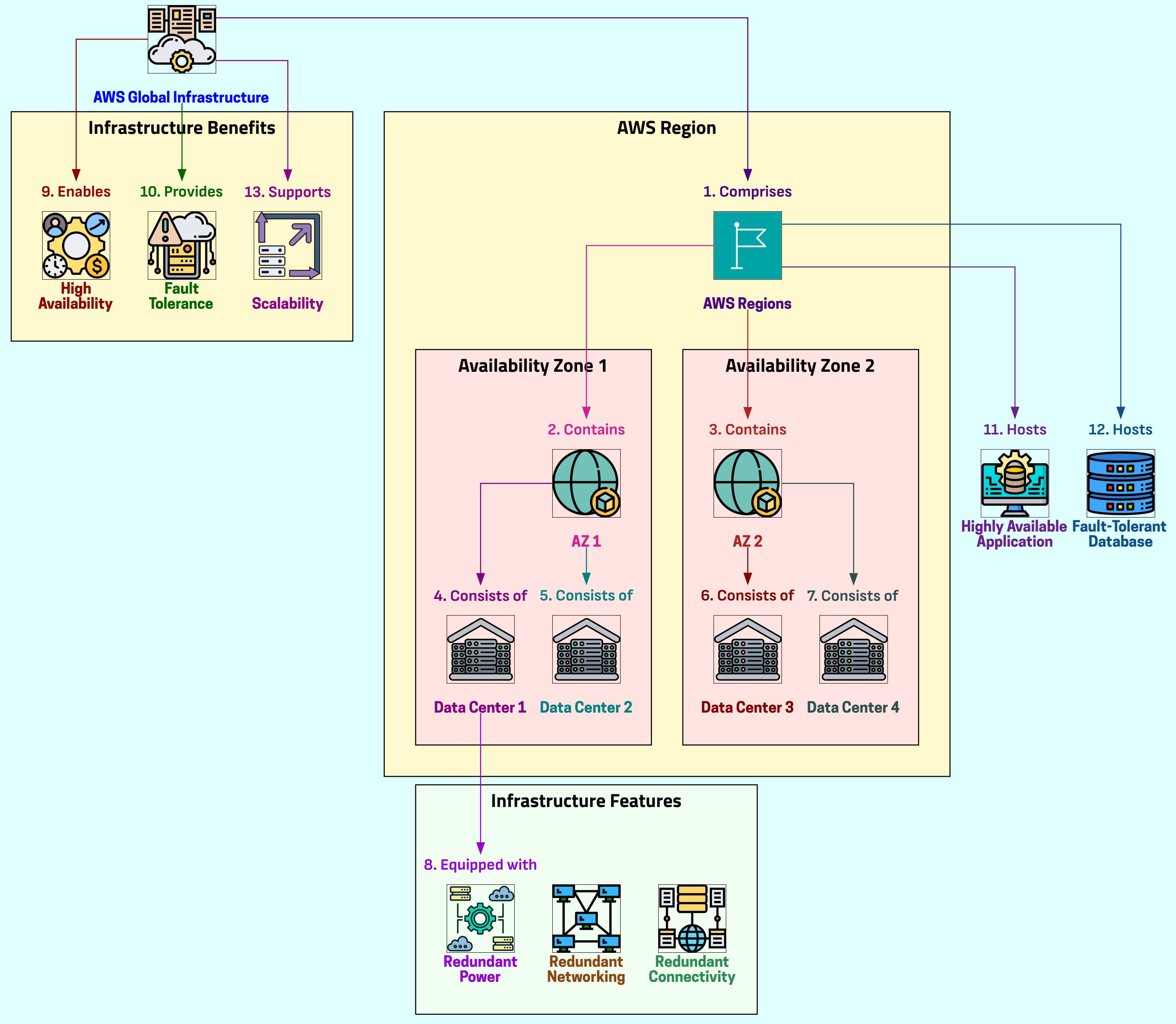
6. Direct Connect Locations

115 Locations
12 34

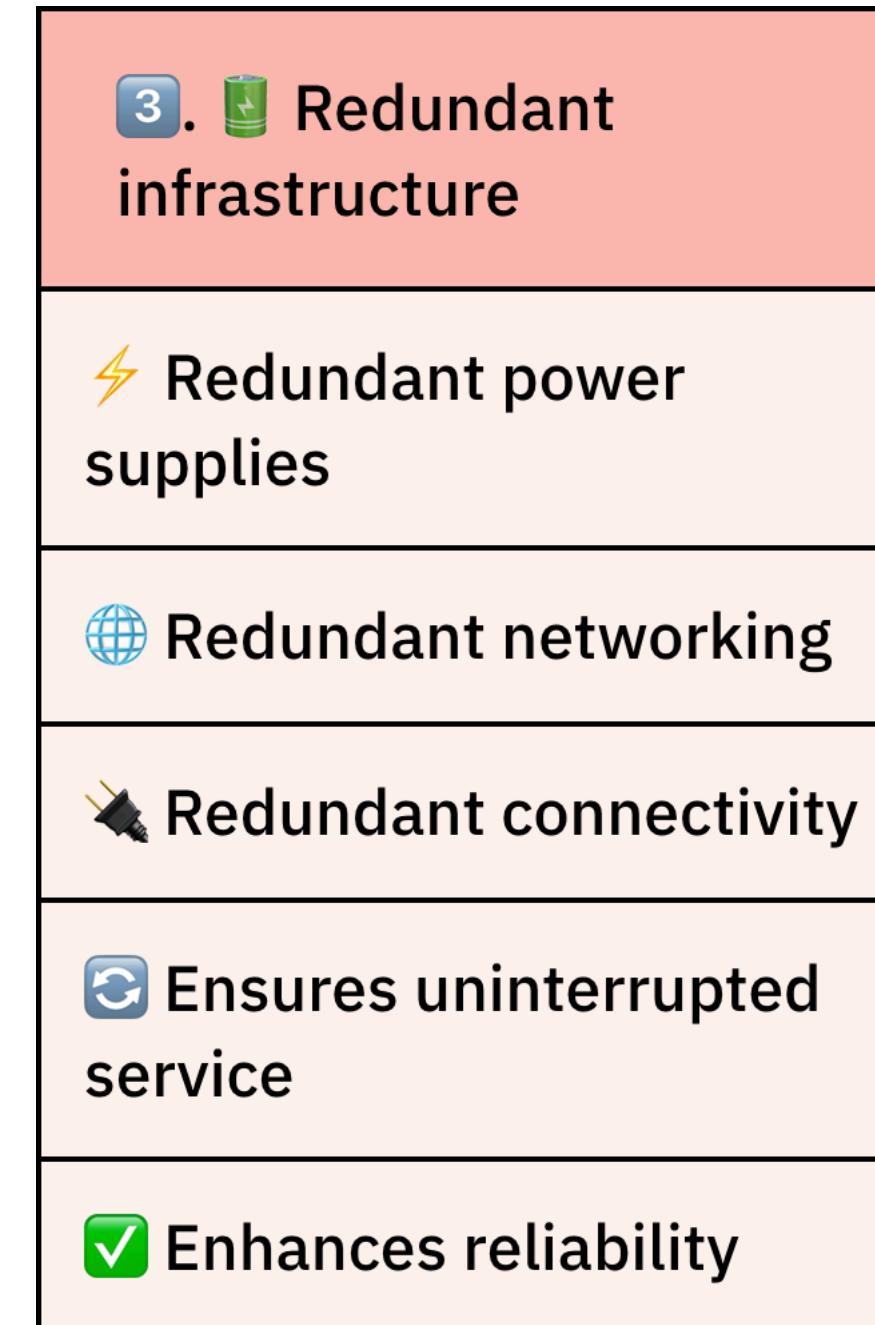
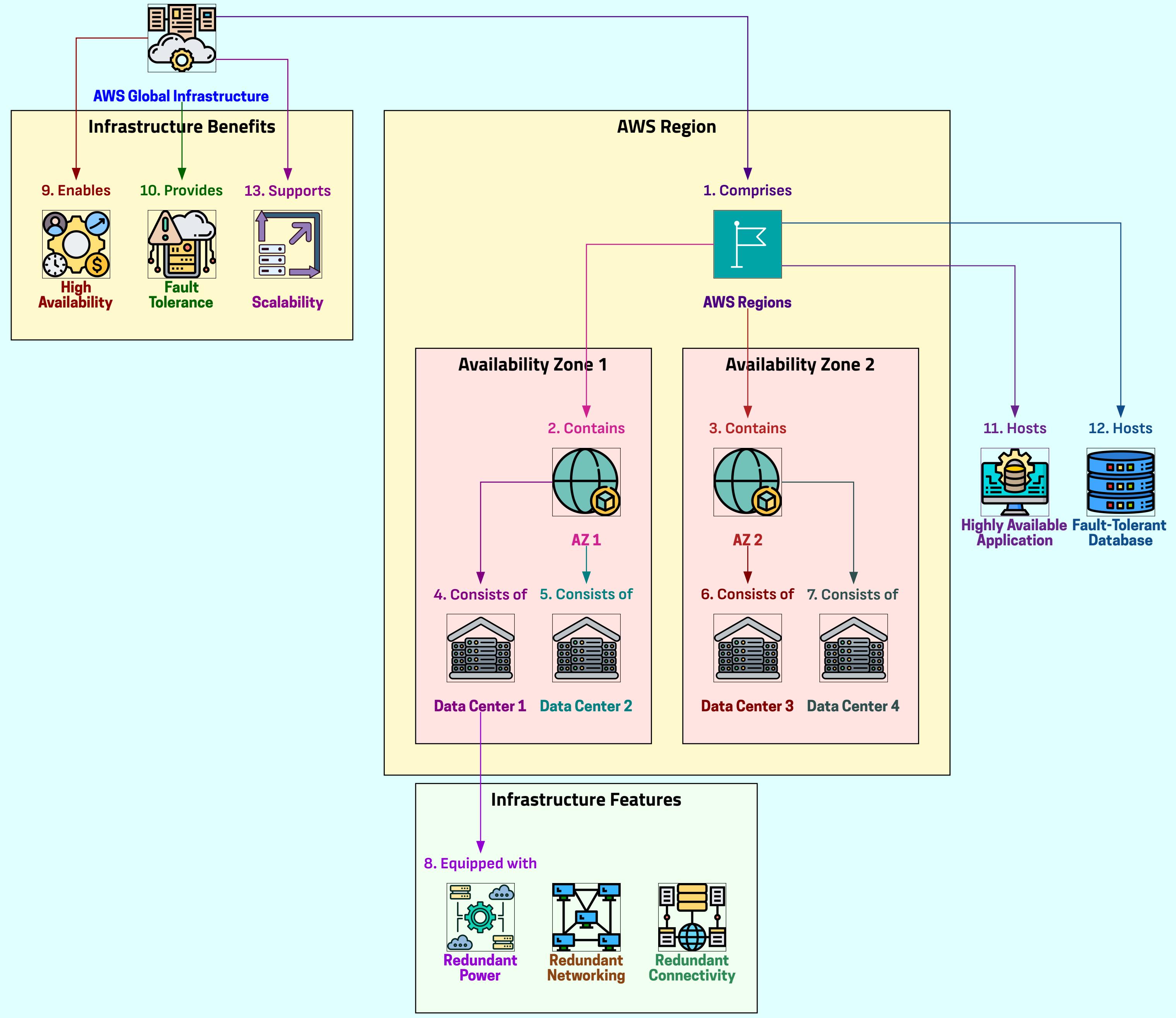
Global Infrastructure of AWS Cloud



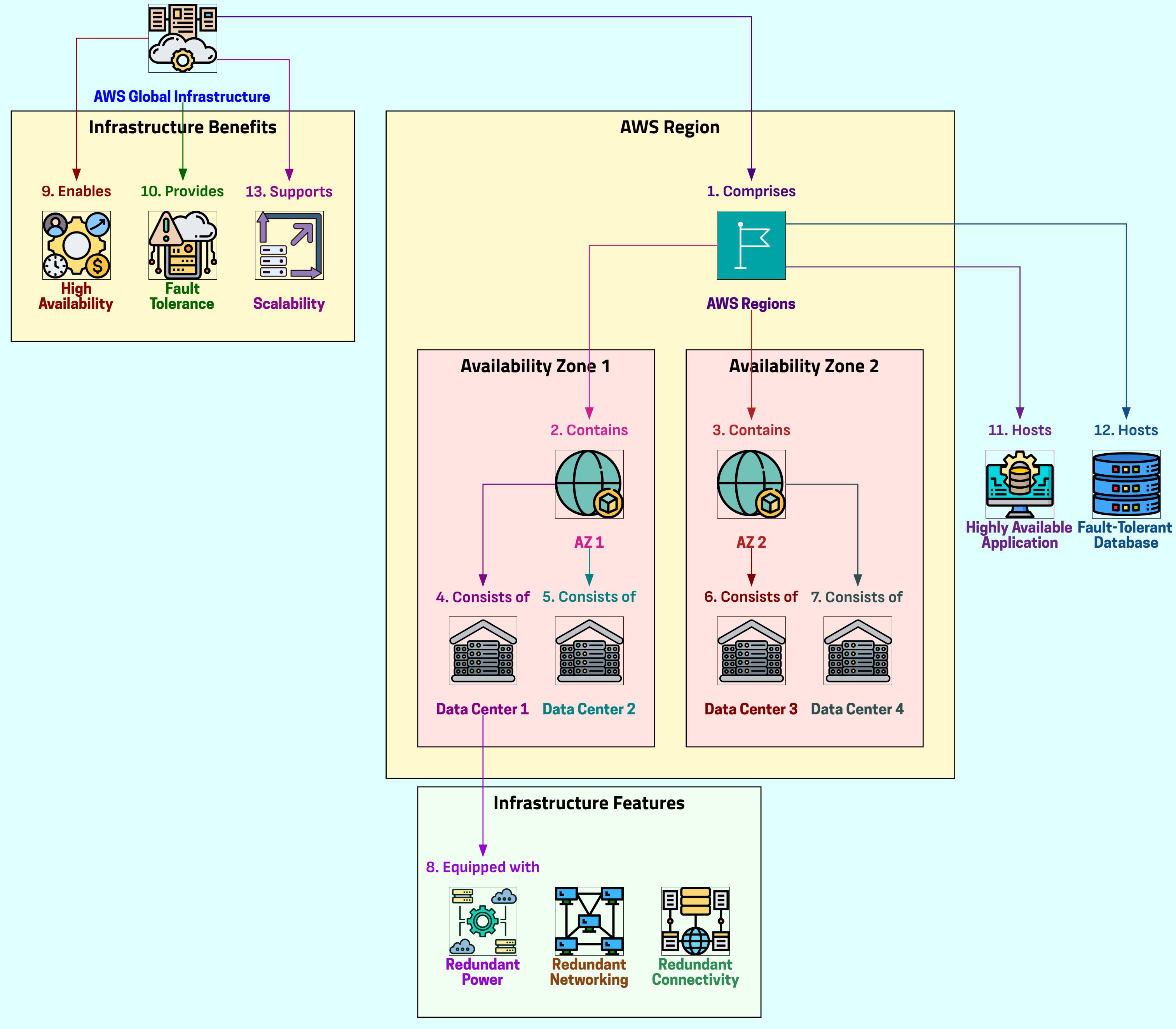
Global Infrastructure of AWS Cloud



Global Infrastructure of AWS Cloud

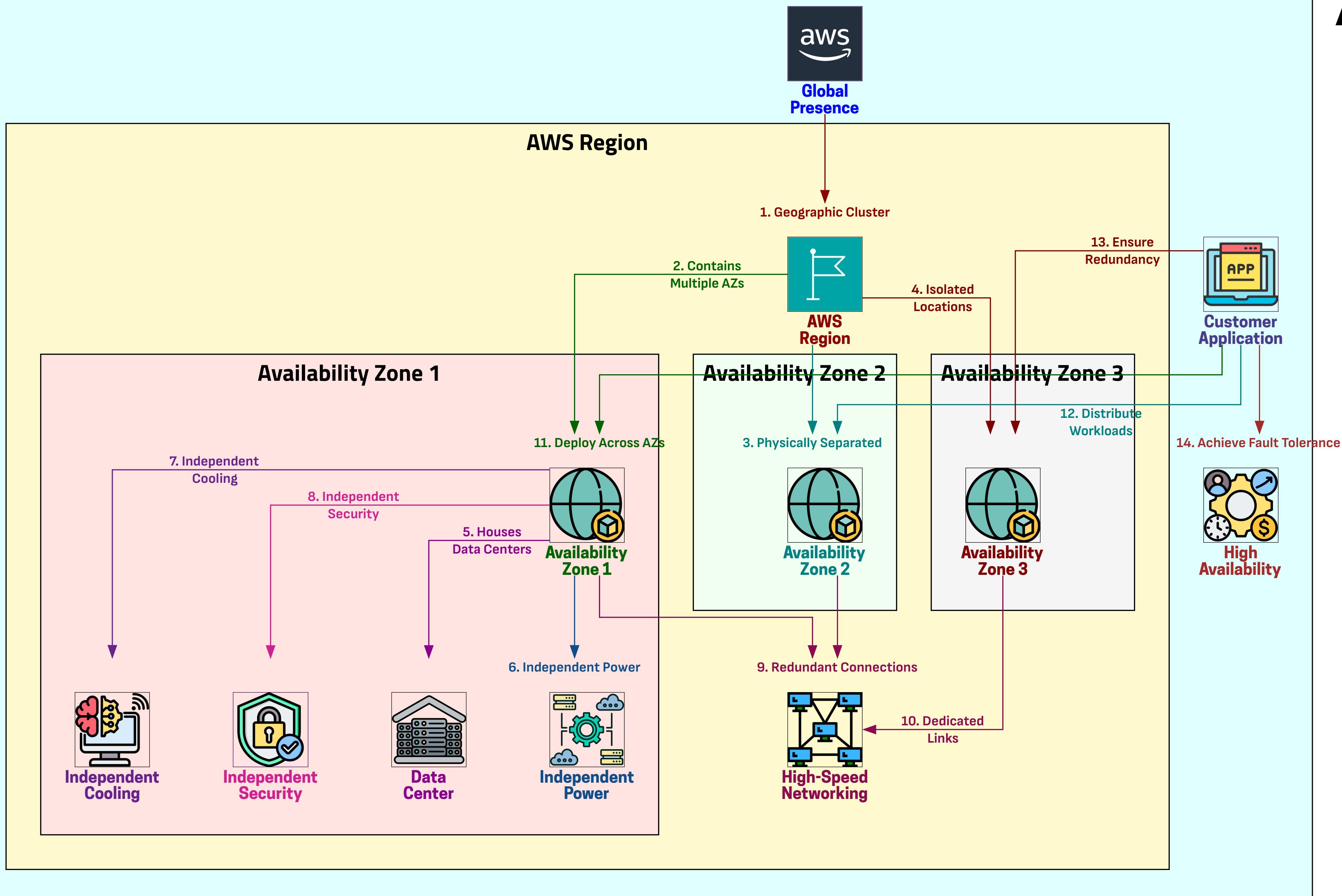


Global Infrastructure of AWS Cloud



4. Advanced architecture benefits	
High availability	Surpasses single data center capabilities
Fault tolerance	Resilient application deployment
Scalability	Scalable database deployment

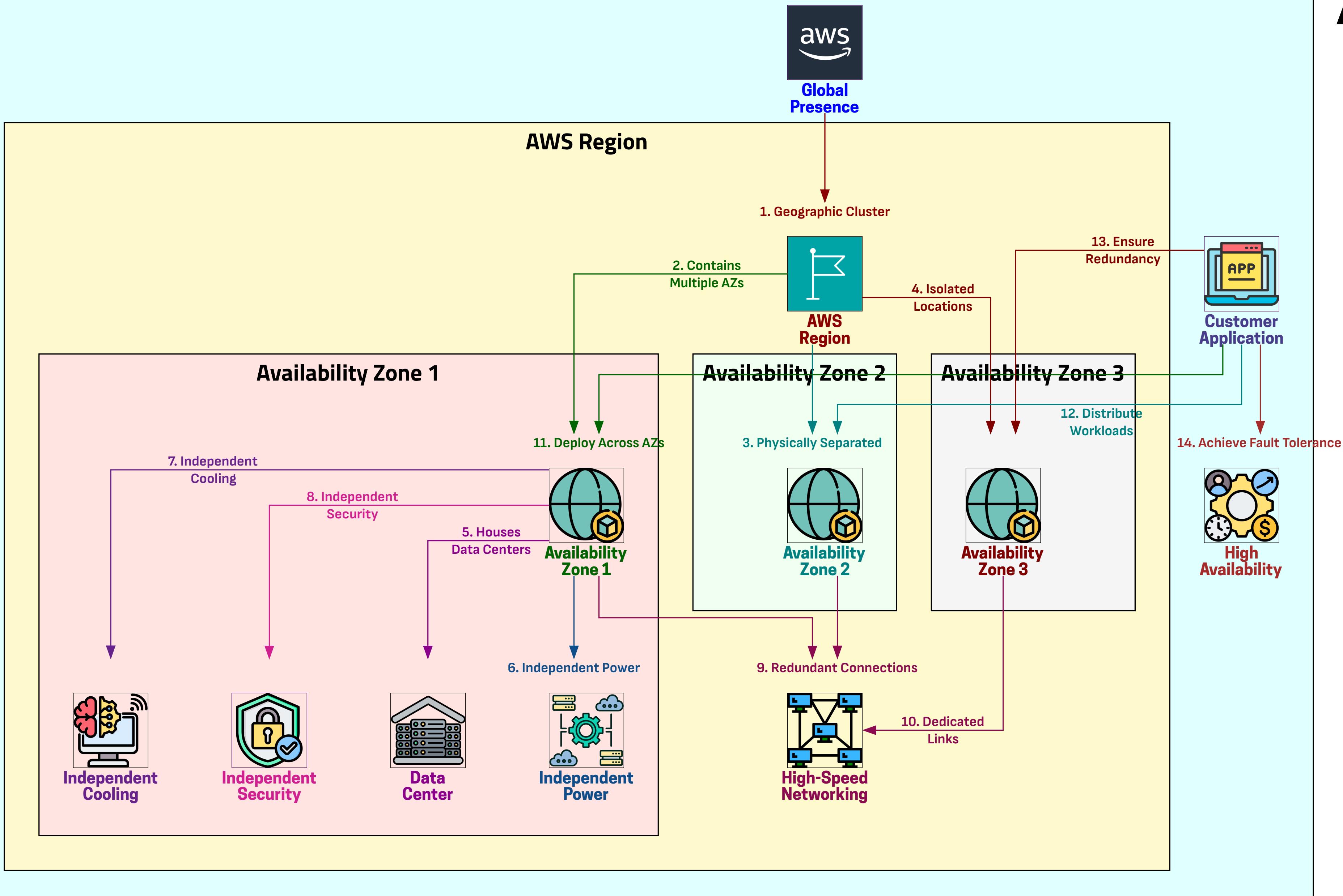
AWS Global Infrastructure



AWS Regions and Availability Zones

1. Concept of AWS Region
 - Physical locations worldwide
 - Clustered data centers
2. Availability Zones (AZs)
 - Logical data centers
 - Groups within each Region
 - 1234 Groups within each Region
3. Minimum of three AZs per Region
 - Geographic area
 - Isolated and physically separate

AWS Global Infrastructure



AWS Regions and Availability Zones

4. Multiple AZ design advantages

vs Compared to single data center regions

✓ Reliability benefits

🔧 Fault tolerance improvements

5. Independent infrastructure

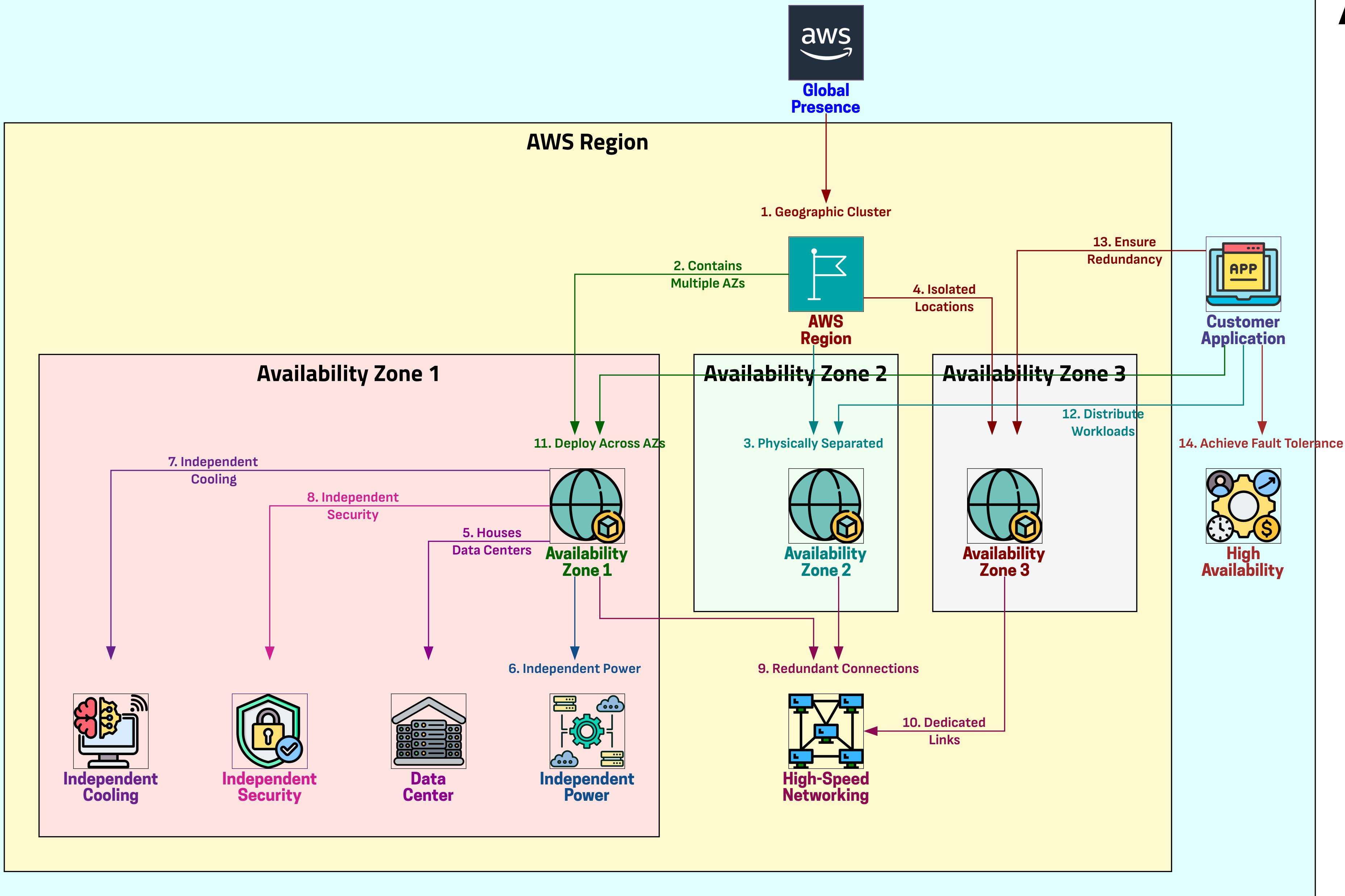
⚡ Power

❄ Cooling

🔒 Physical security

⟳ Uninterrupted service

AWS Global Infrastructure



AWS Regions and Availability Zones

- 6. Redundant, ultra-low-latency networks
 - Interconnected AZs
 - High-speed networking
 - Ultra-low latency communication
- 7. High availability application design
 - Run across multiple AZs
 - Greater fault-tolerance
 - High availability



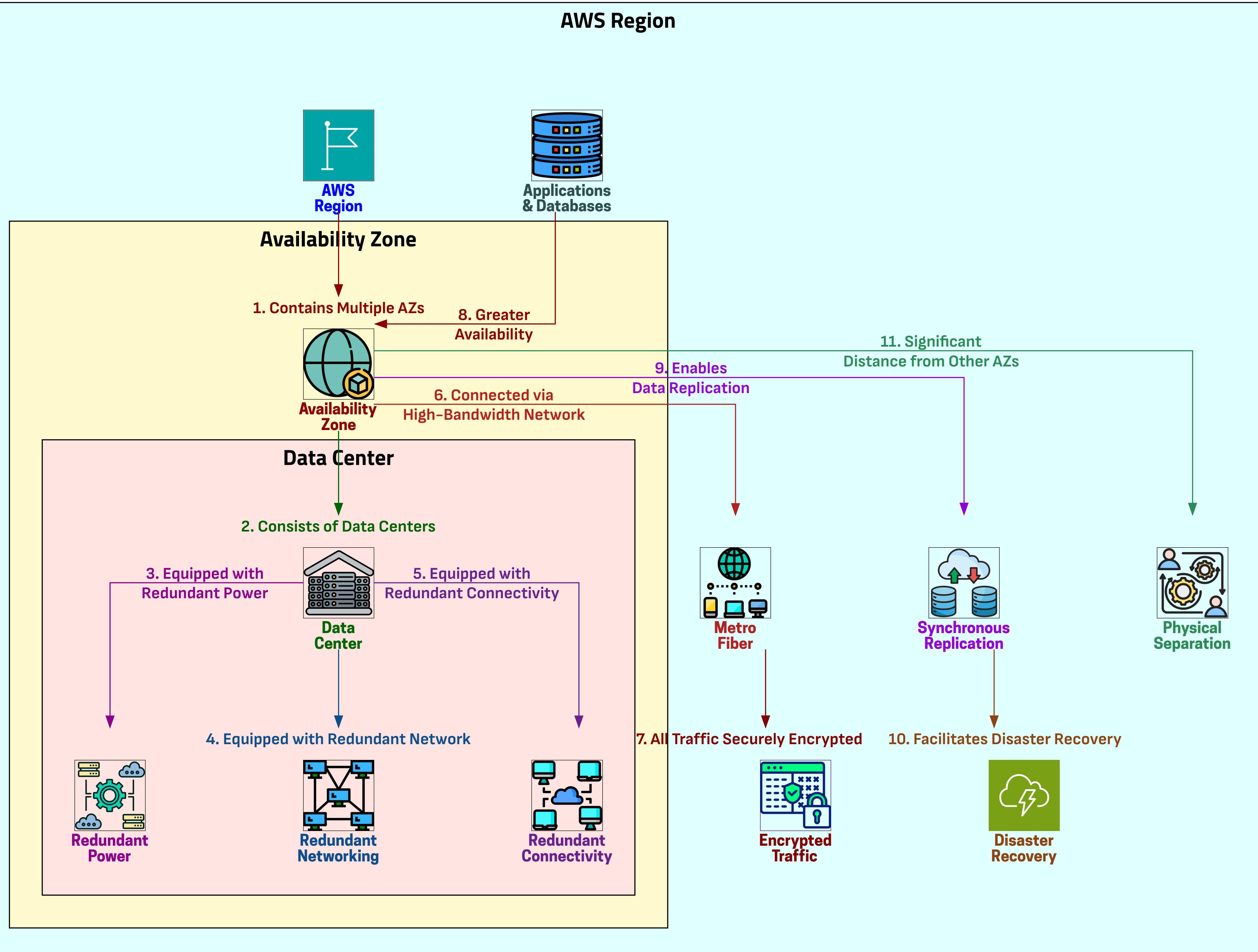
[North America](#) [South America](#) [Europe](#) [Middle East](#) [Africa](#) [Asia Pacific](#) [Australia and New Zealand](#)



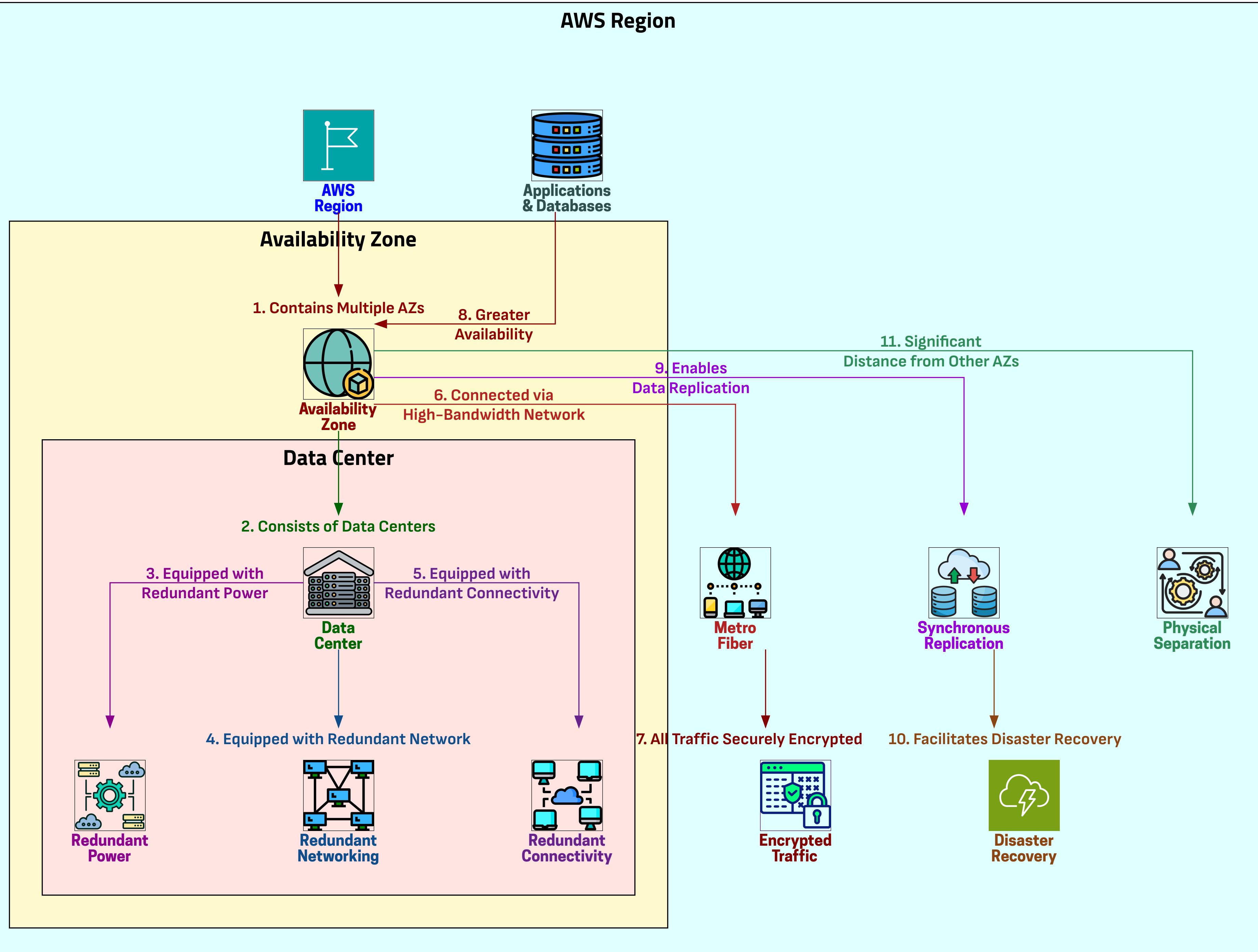
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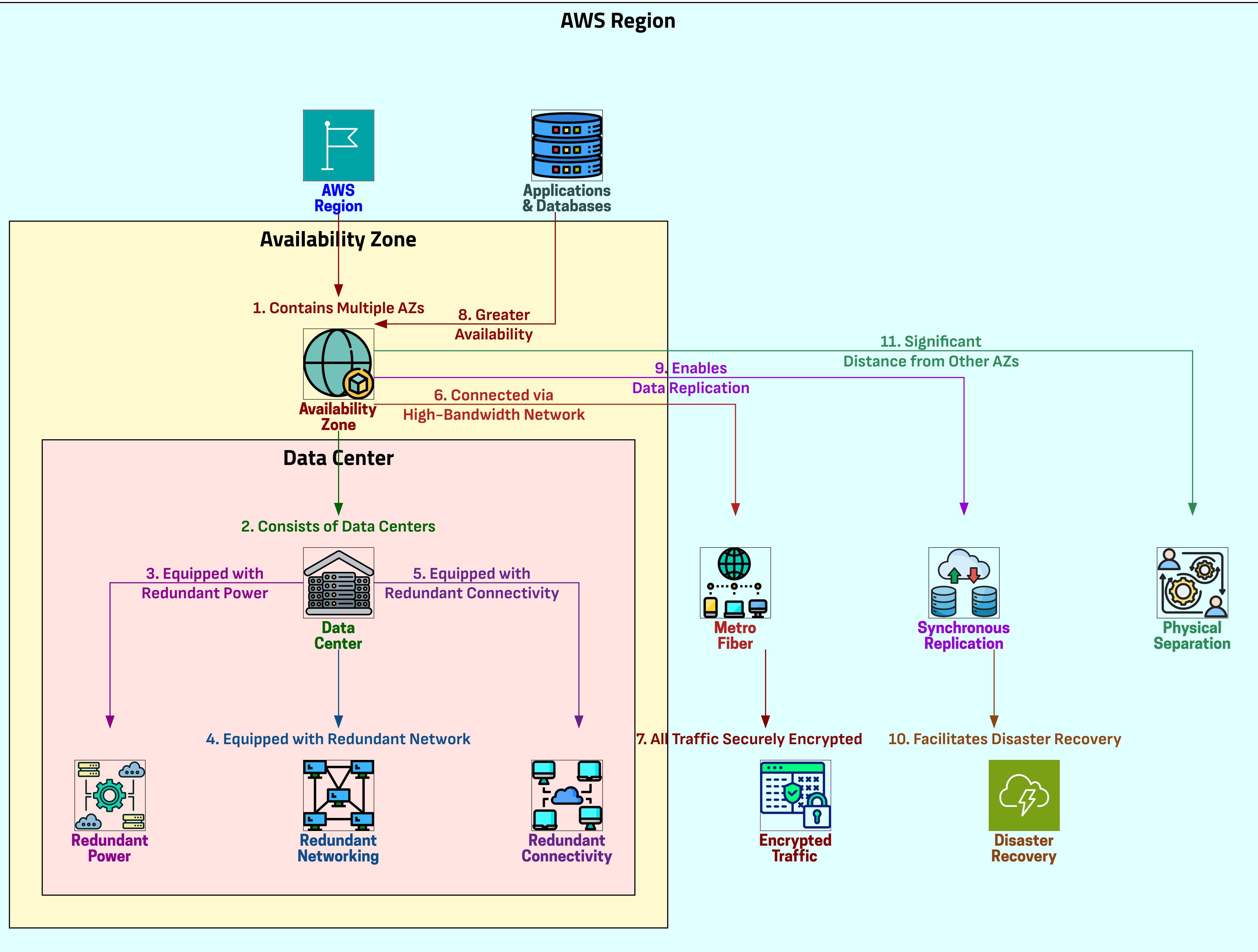
Availability Zones



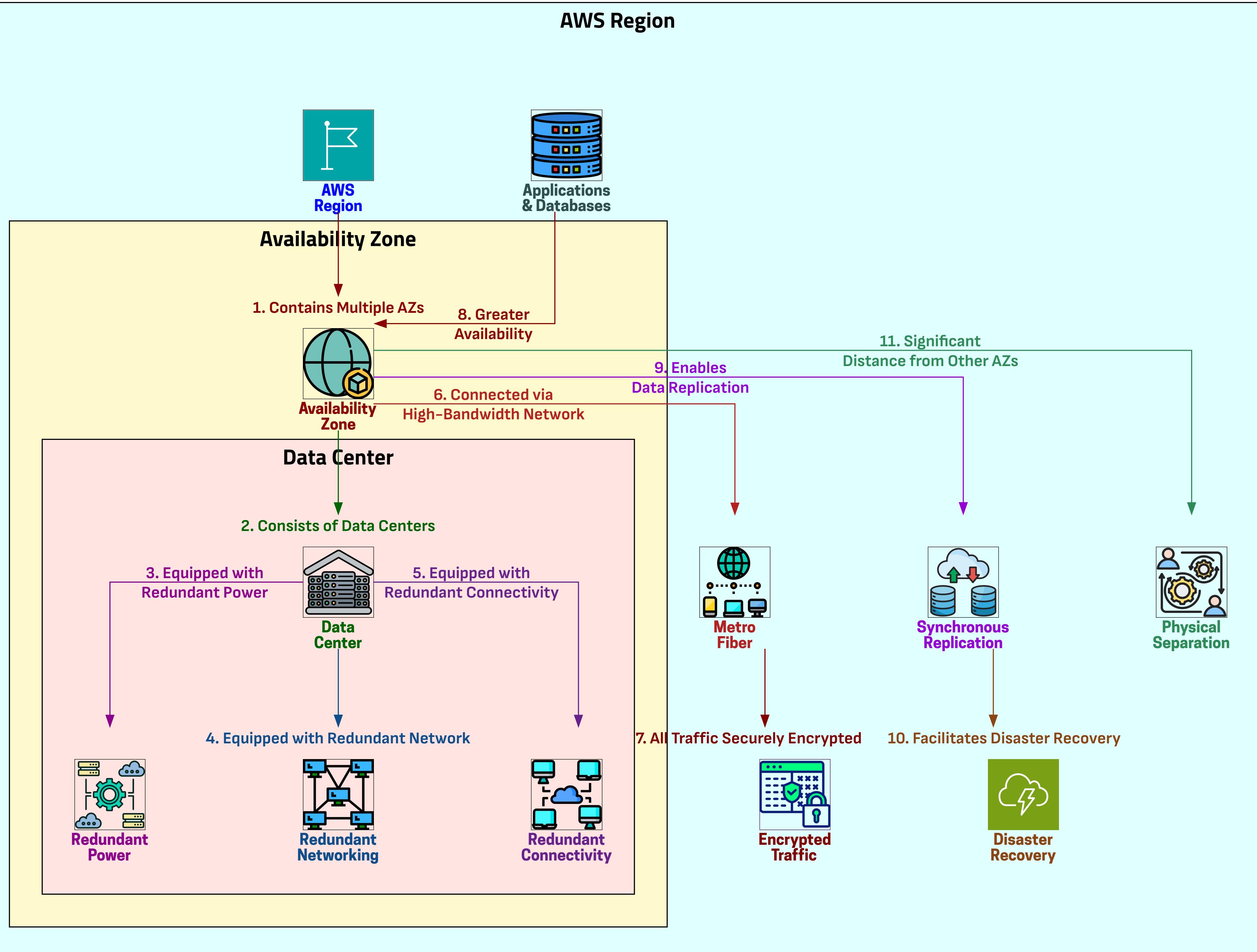
Availability Zones



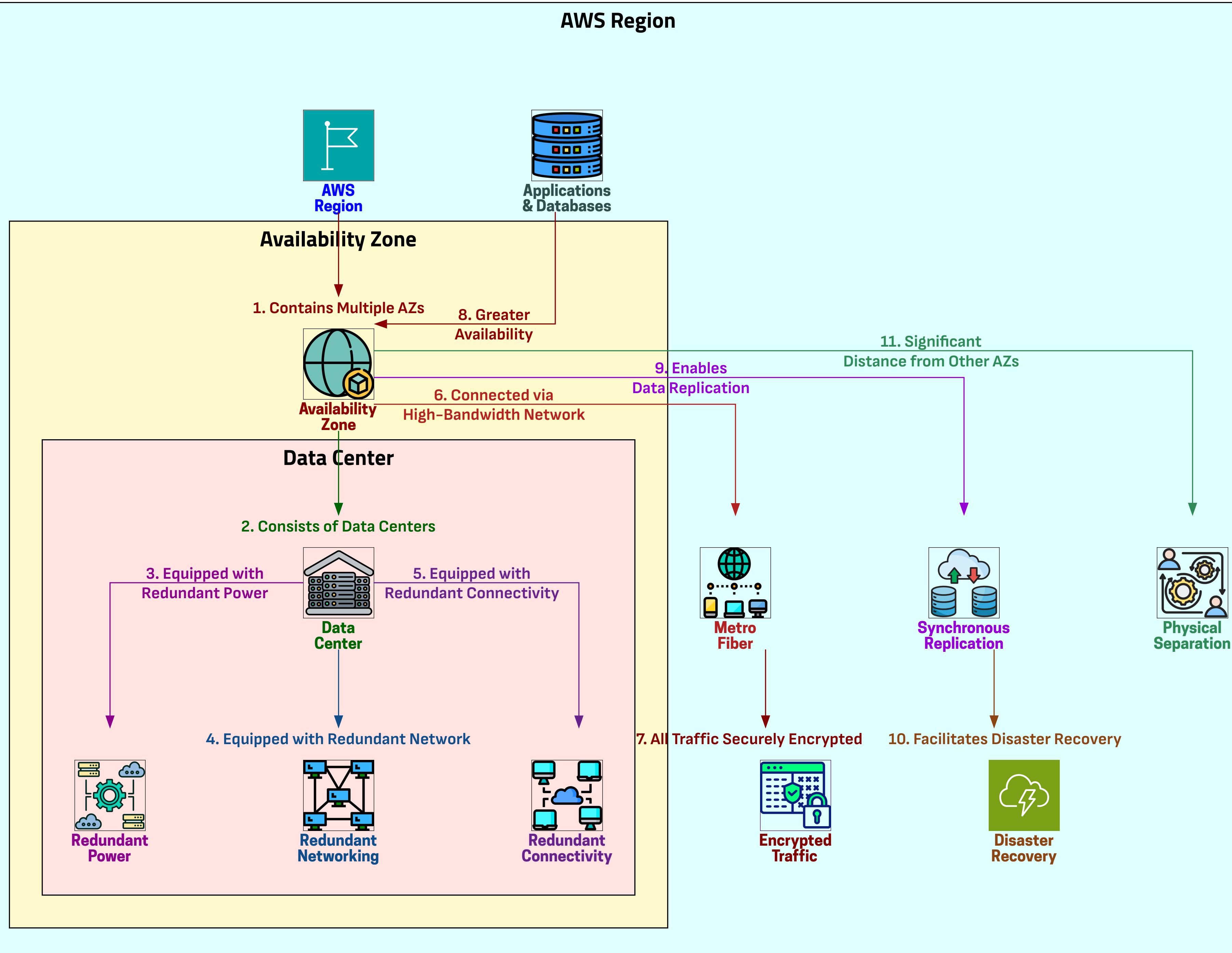
Availability Zones



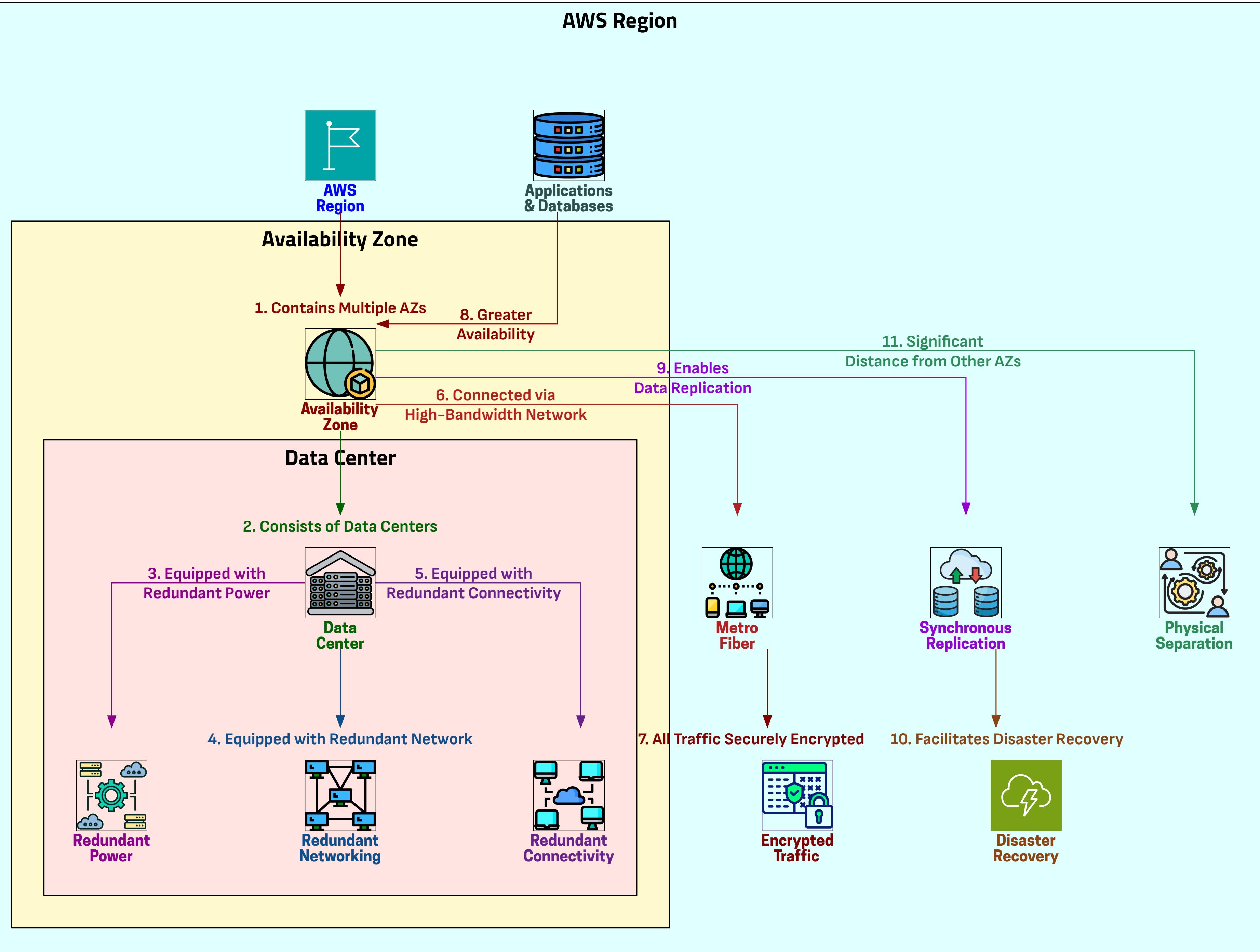
Availability Zones



Availability Zones



Availability Zones



North America Region

North America

US West (Oregon) Region

Availability Zones: 4

Launched 2011

Local Zones: 7

Launched 2019

Canada (Central) Region**

Availability Zones: 3

Launched 2016

Learn more at [AWS Canada](#)

US East (Northern Virginia) Region

Availability Zones: 6

Launched 2006

Local Zones: 10

Launched 2020

US West (Northern California) Region

Availability Zones: 3*

Launched 2009

US East (Ohio) Region

Availability Zones: 3

Launched 2016

Canada West (Calgary) Region

Availability Zones: 3

Launched 2023

GovCloud (US-West) Region

Availability Zones: 3

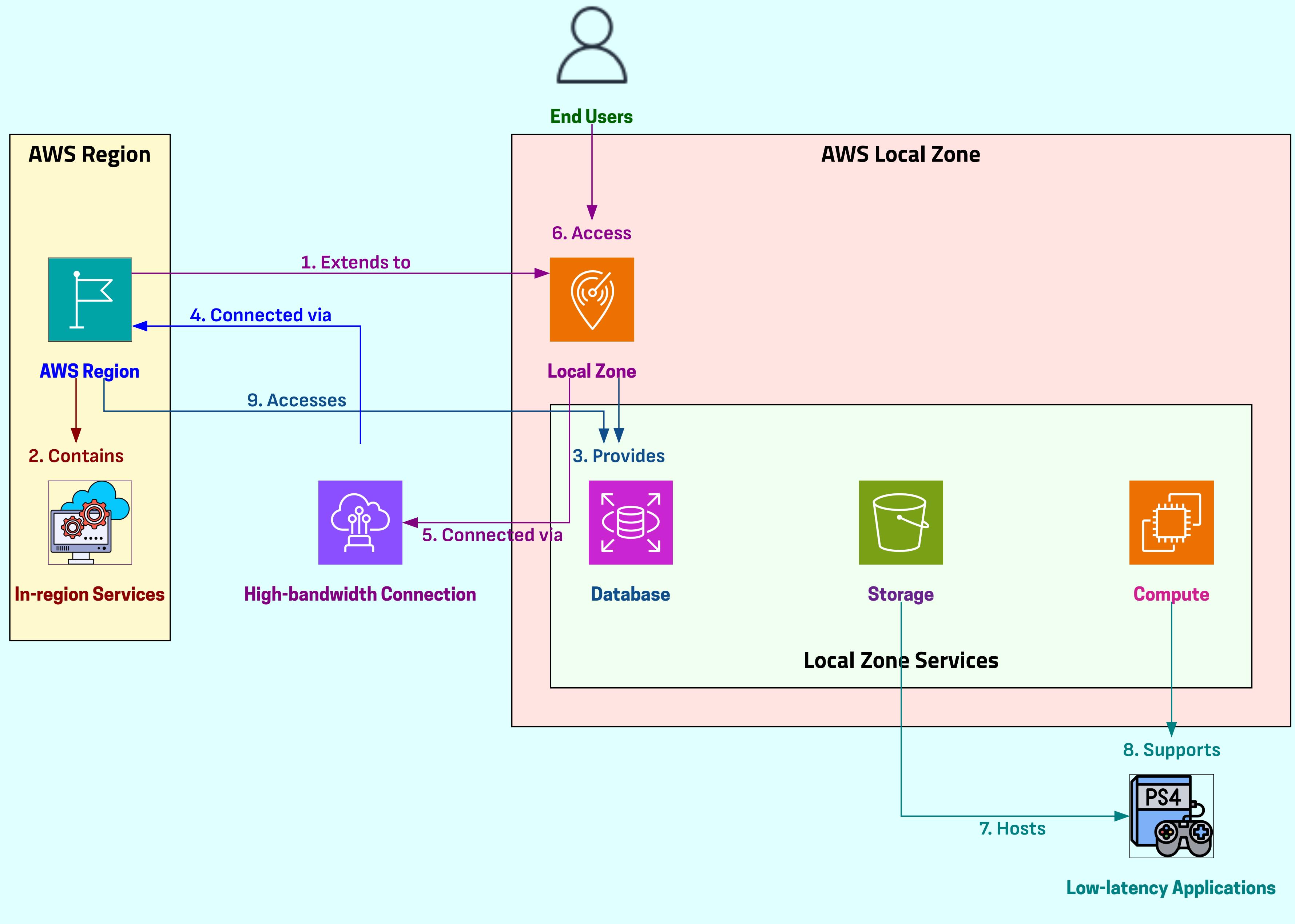
Launched 2011

GovCloud (US-East) Region

Availability Zones: 3

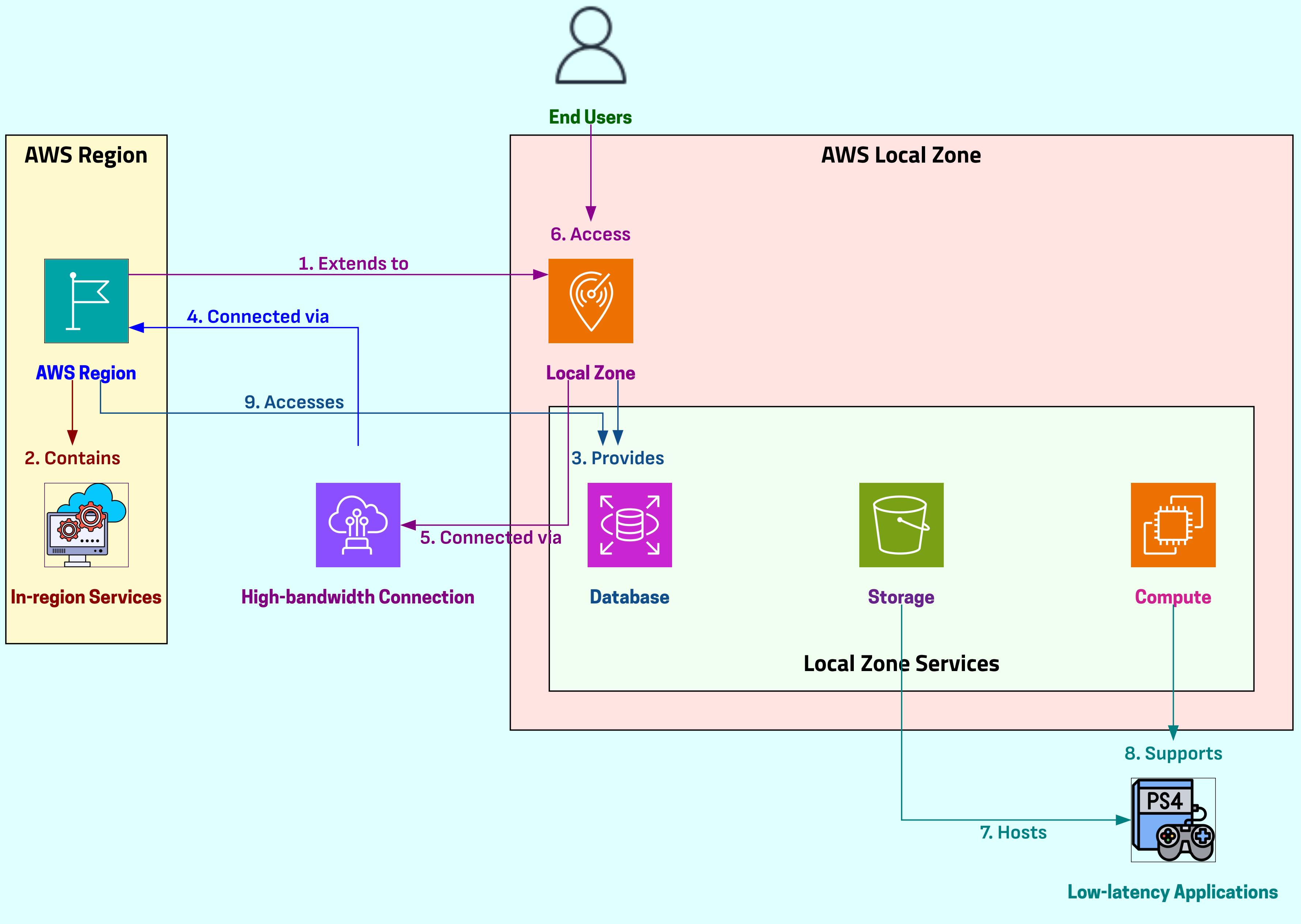
Launched 2018

AWS Local Zones



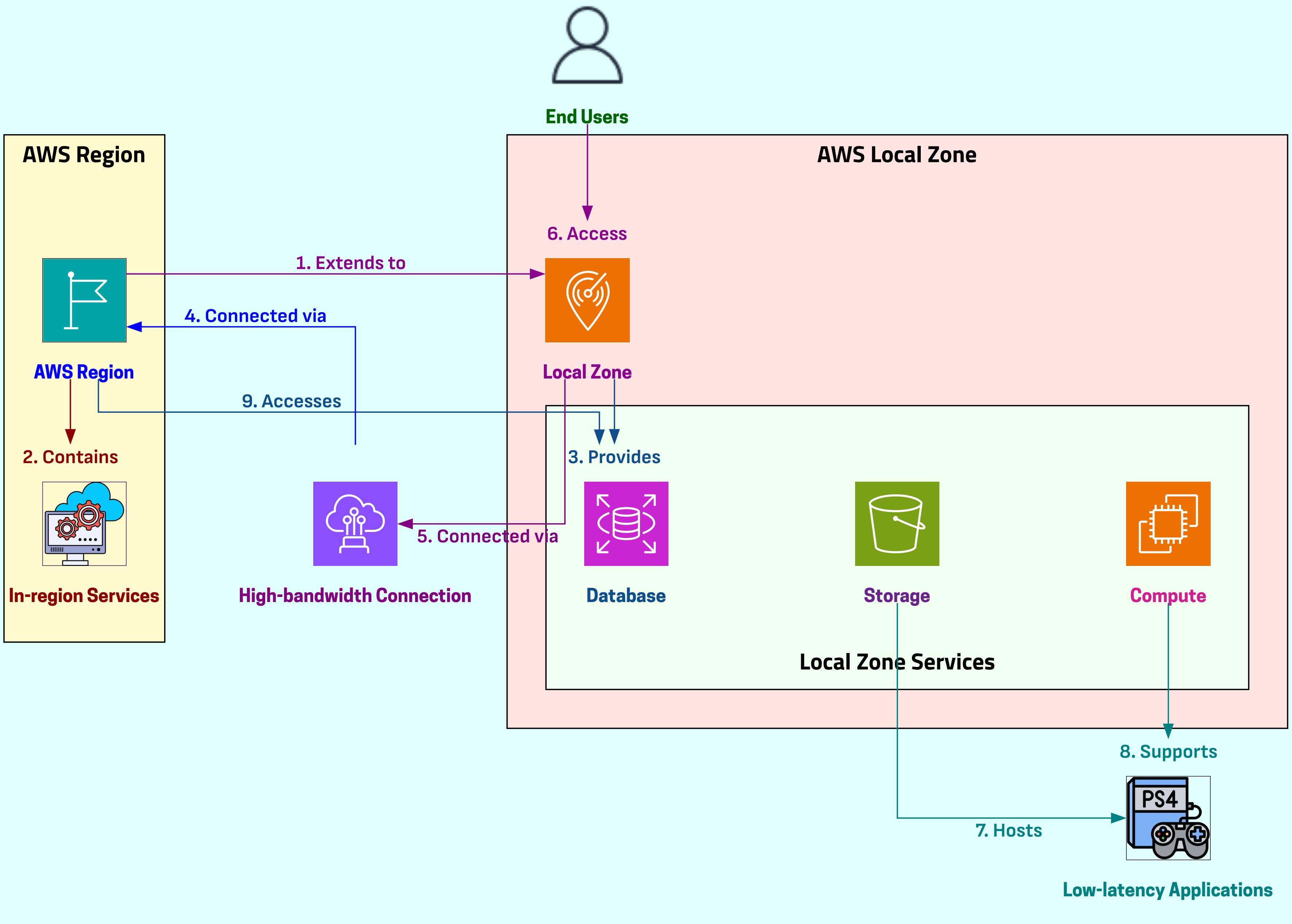
- 1. 🚀 Compute, storage, and database services closer to users
- 2. Geographically closer to end-users
- 3. Minimizes latency
- 4. Essential AWS services
 - Compute
 - Storage
 - Database
- 5. Ideal for high-demand, low-latency applications
 - Single-digit millisecond latencies
 - Media content creation
 - Real-time gaming
 - Machine learning

AWS Local Zones



3. Extension of AWS Regions
Connected to existing AWS Region
Select AWS services
Near-user latency-sensitive applications

AWS Local Zones



4. High-bandwidth, secure connection to AWS Region

Robust Connection

Local workloads

AWS Region

Easy Access

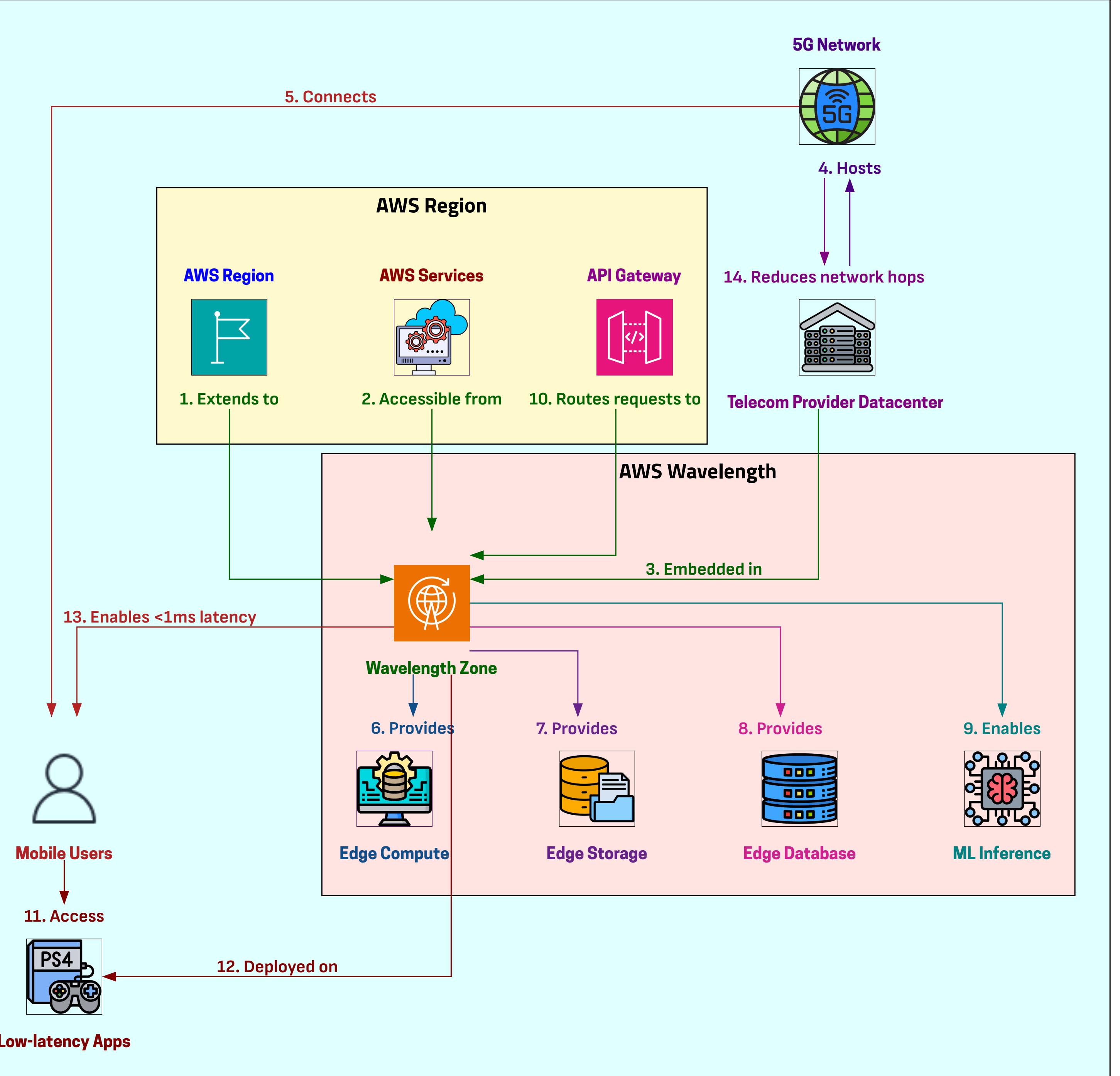
In-region services

Familiar tools

APIs

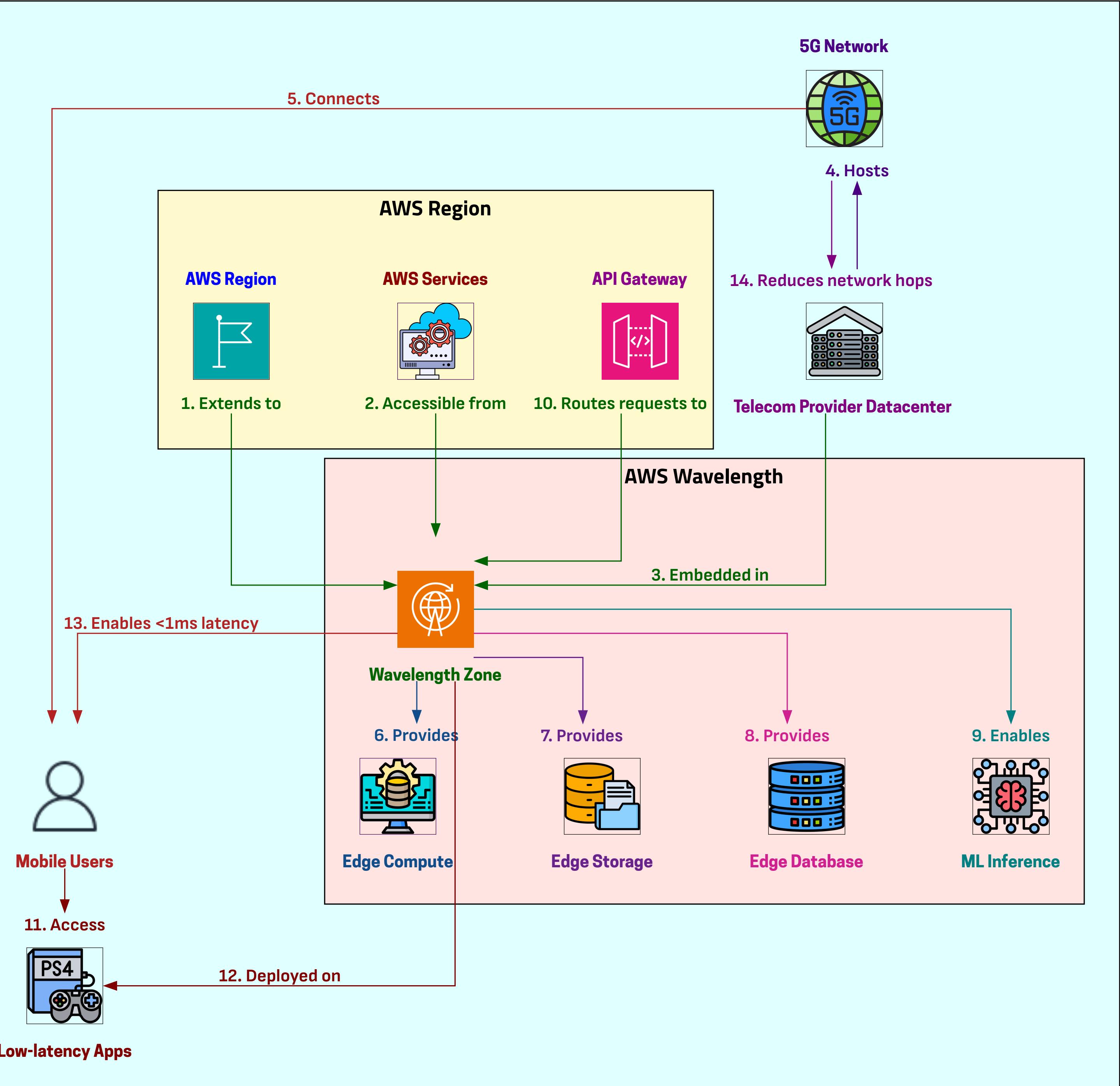
Toolsets

AWS Wavelength



- 1. Single-digit millisecond latencies to mobile devices
- 2. Deploy applications to Wavelength Zones
 - Developers deploy applications
 - Close to users
- 3. Embedded in telecommunications datacenters at 5G edge
 - Specifically designed
 - Leverage high speed
 - Low latency of 5G

AWS Wavelength



4. 🛠️ Seamless access to AWS services in the region

Full access

Comprehensive range of AWS services

Despite edge location

5. 🎮 Ideal for gaming, live streaming, ML inference, AR/VR

Gaming

Live streaming

ML inference

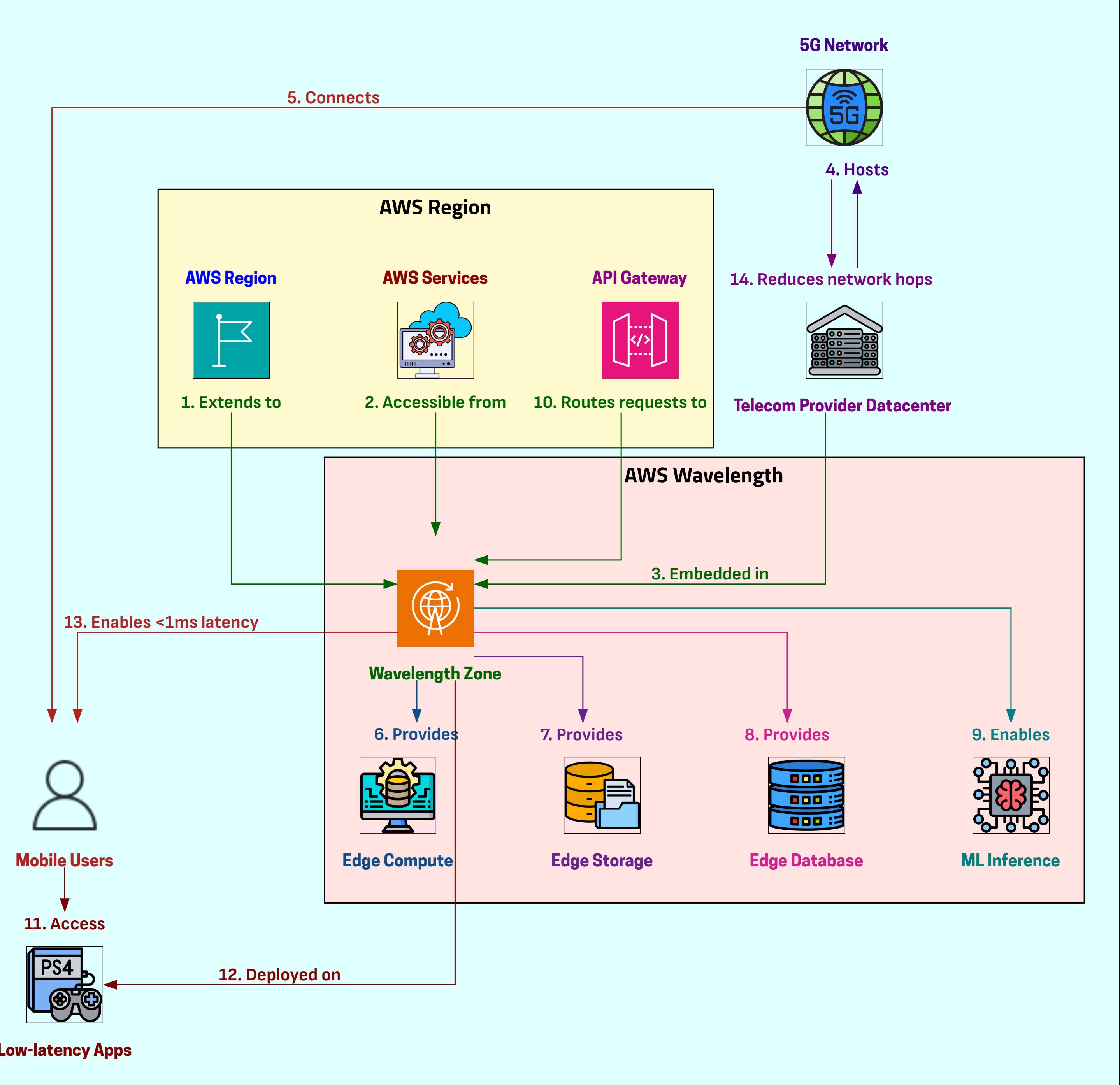
AR/VR

Ultra-low latency applications

Enhanced user experiences

Real-time interactive applications

AWS Wavelength



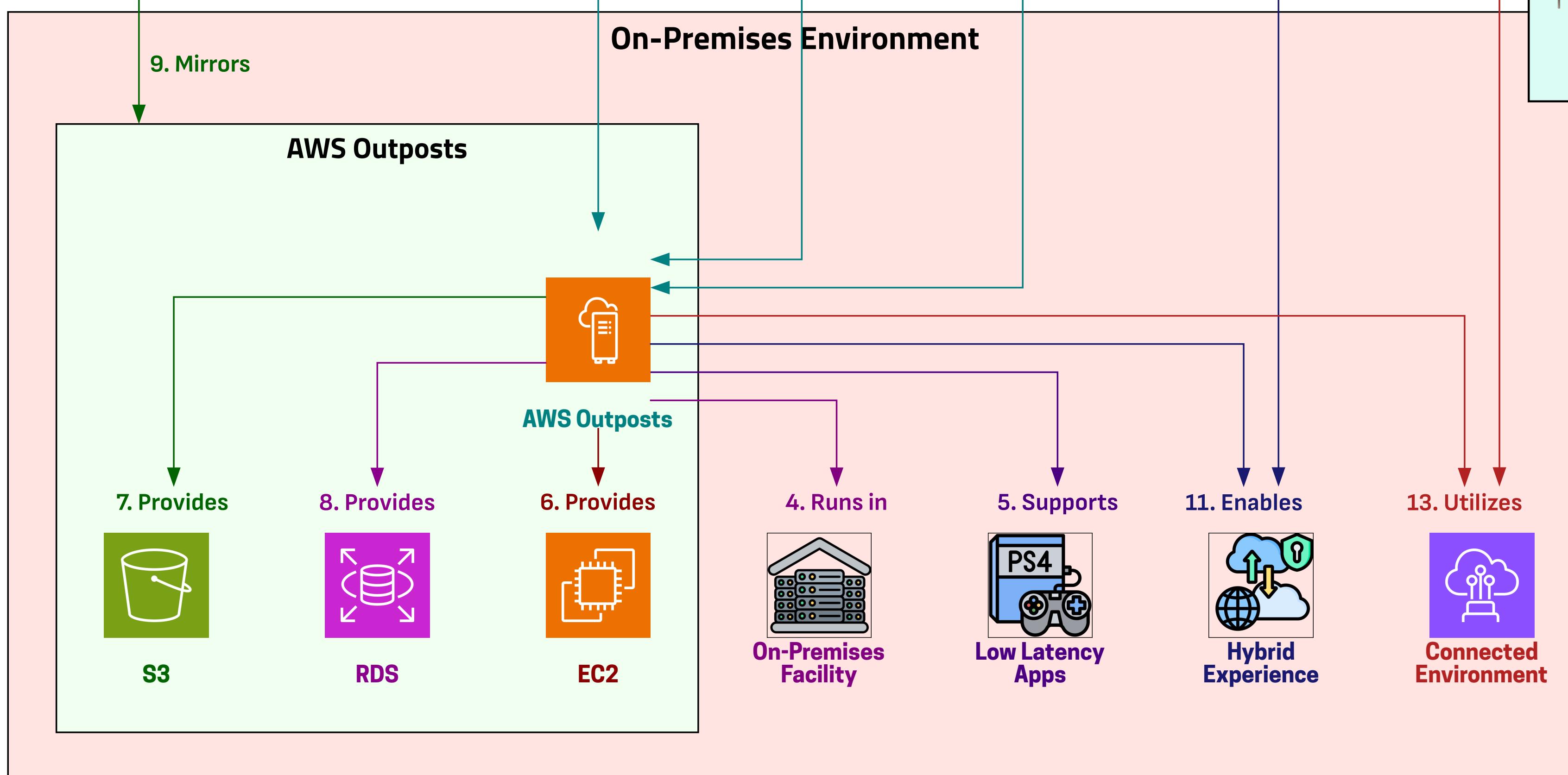
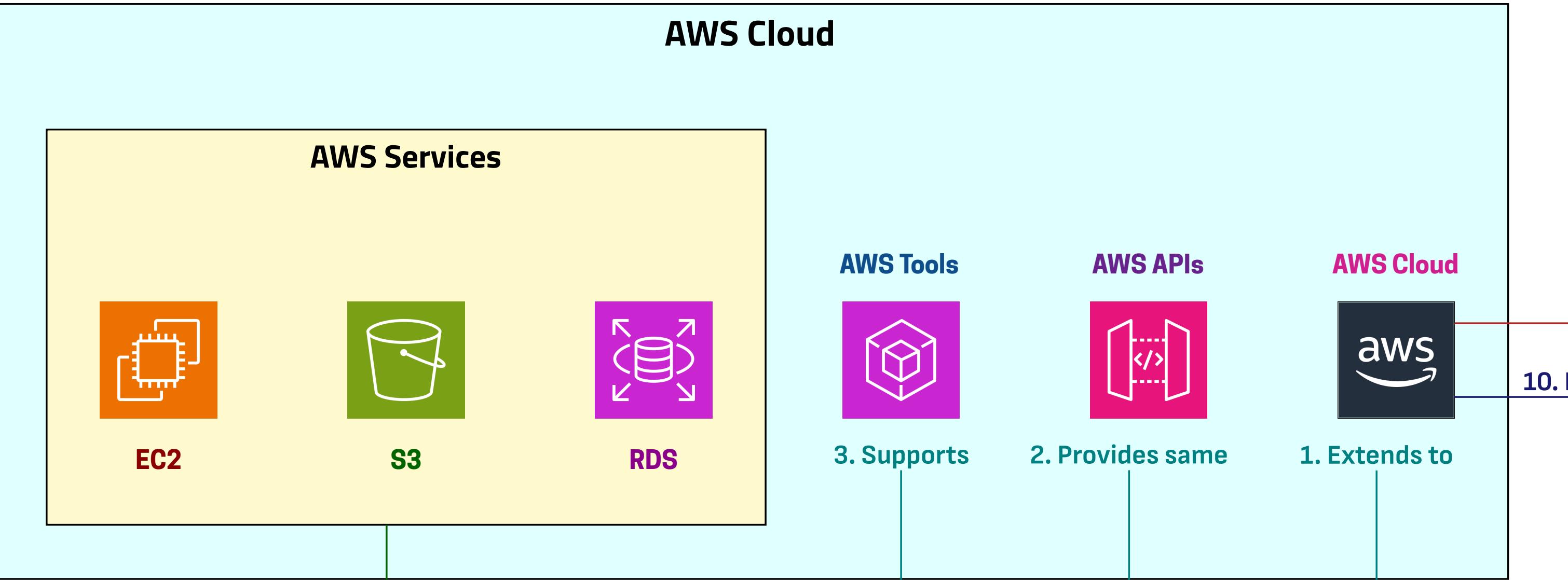
6. 🛣️ Minimizes latency to connect to applications

- AWS services at 5G edge
- Reduced latency
- Cloud application connections

7. 💡 Reduces network hops and latency over 100ms

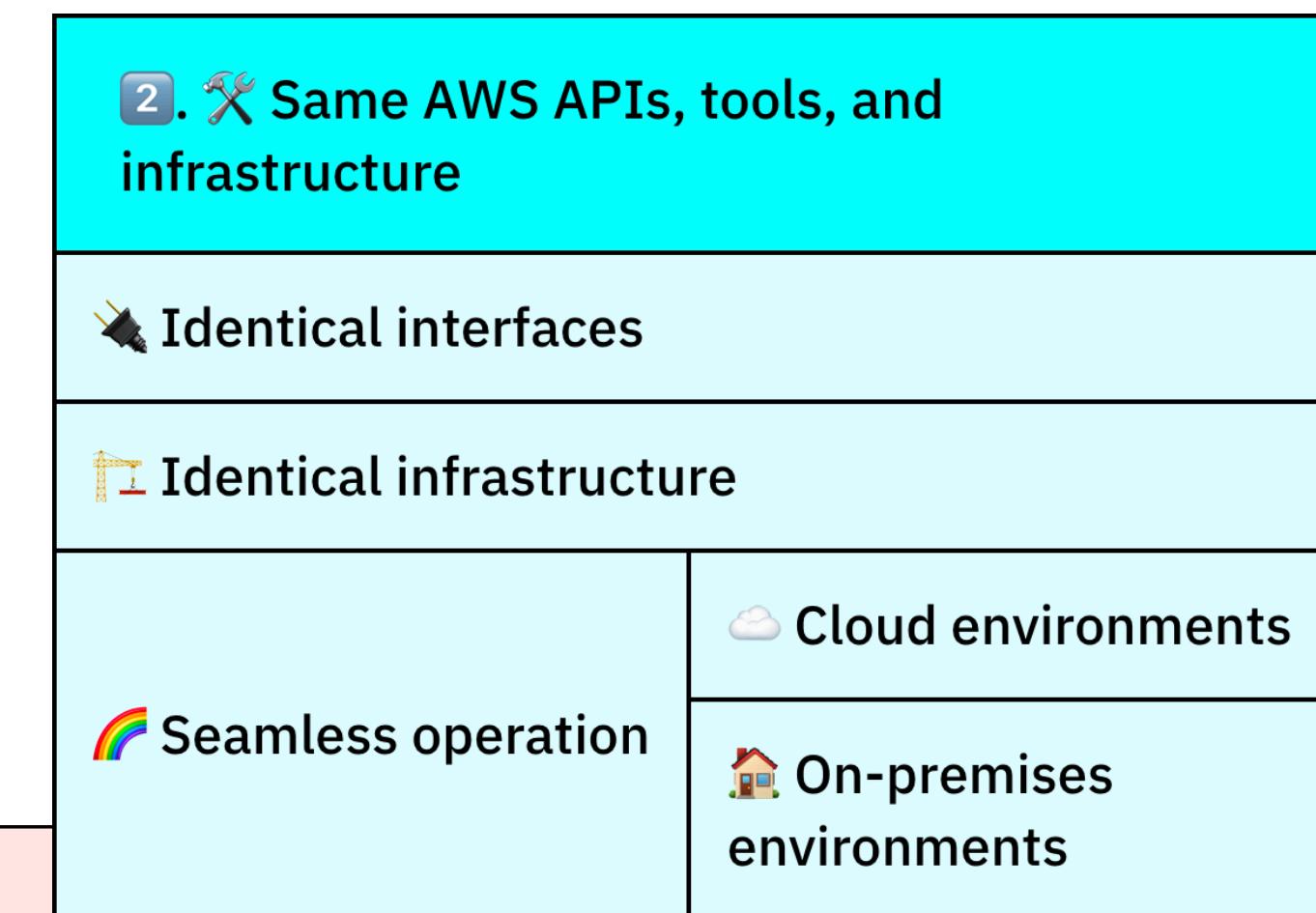
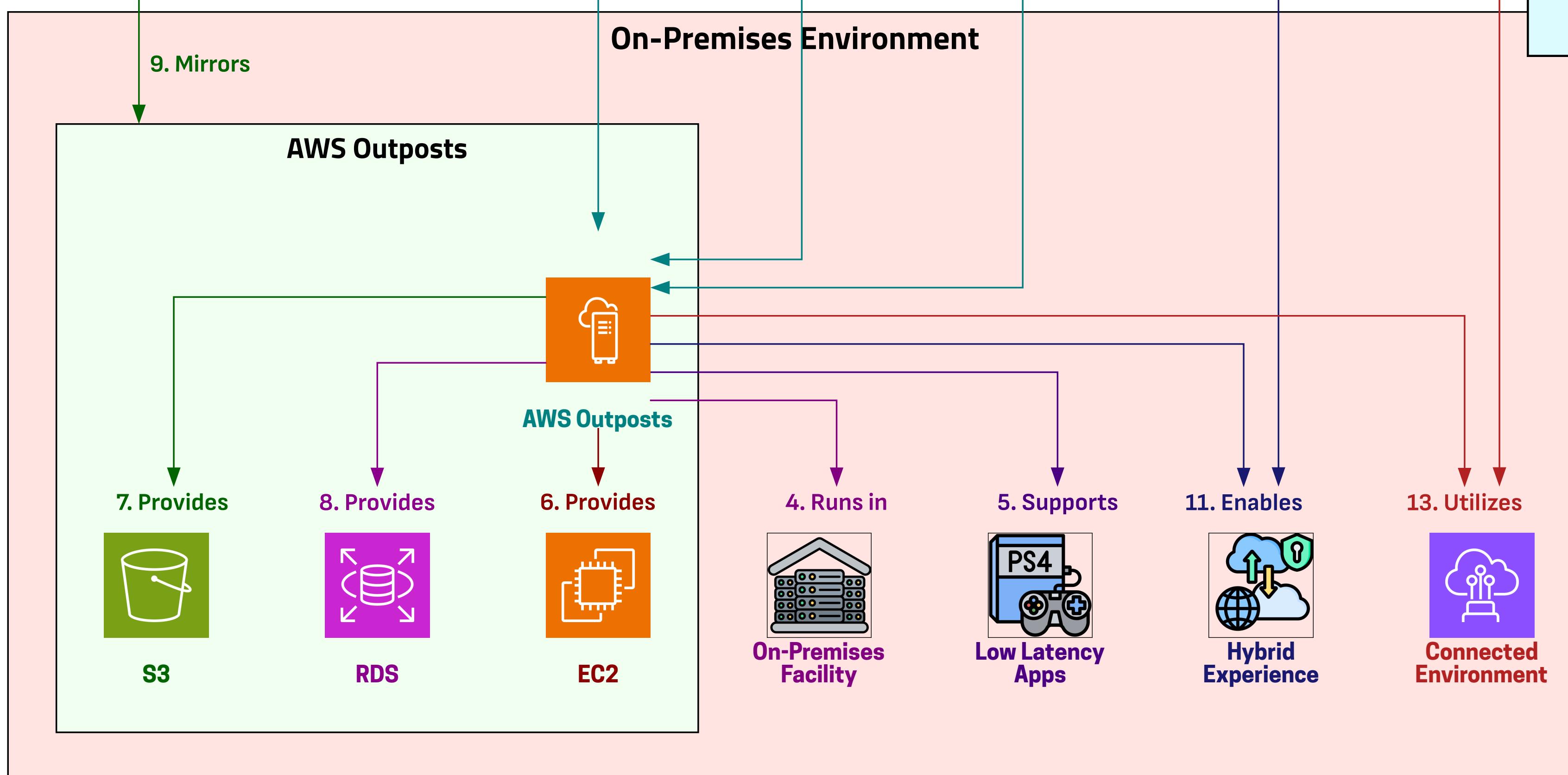
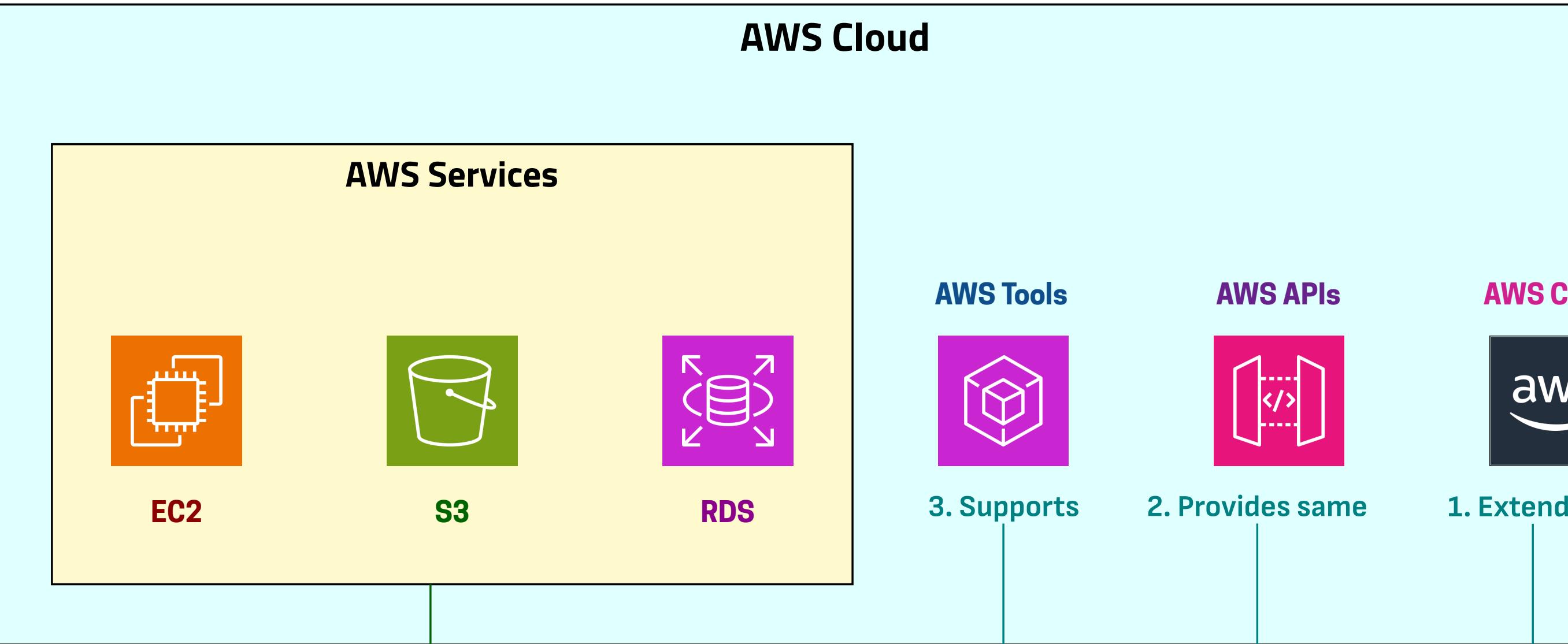
- 🔗 Direct traffic to Wavelength Zones
- 📶 Within mobile provider's network
- 🚫 Avoids internet traversal delays

AWS Outposts

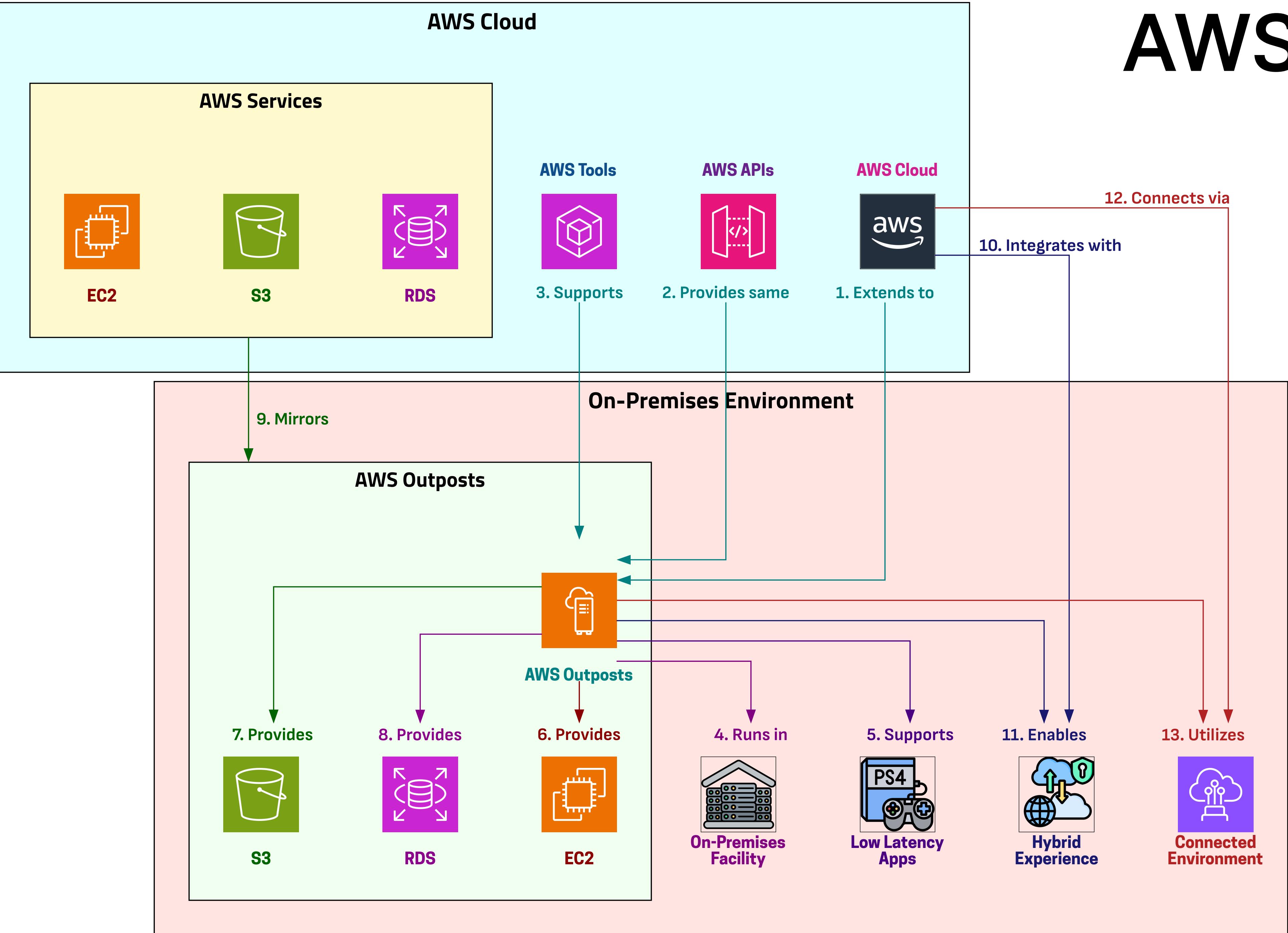


1. 🏠 Native AWS services on-premises	
☁️ Extends AWS services	
🏗️ Extends AWS infrastructure	
🔧 Extends AWS operating models	
📍 Deployment locations	Data center
📡 Co-location space	On-premises facility

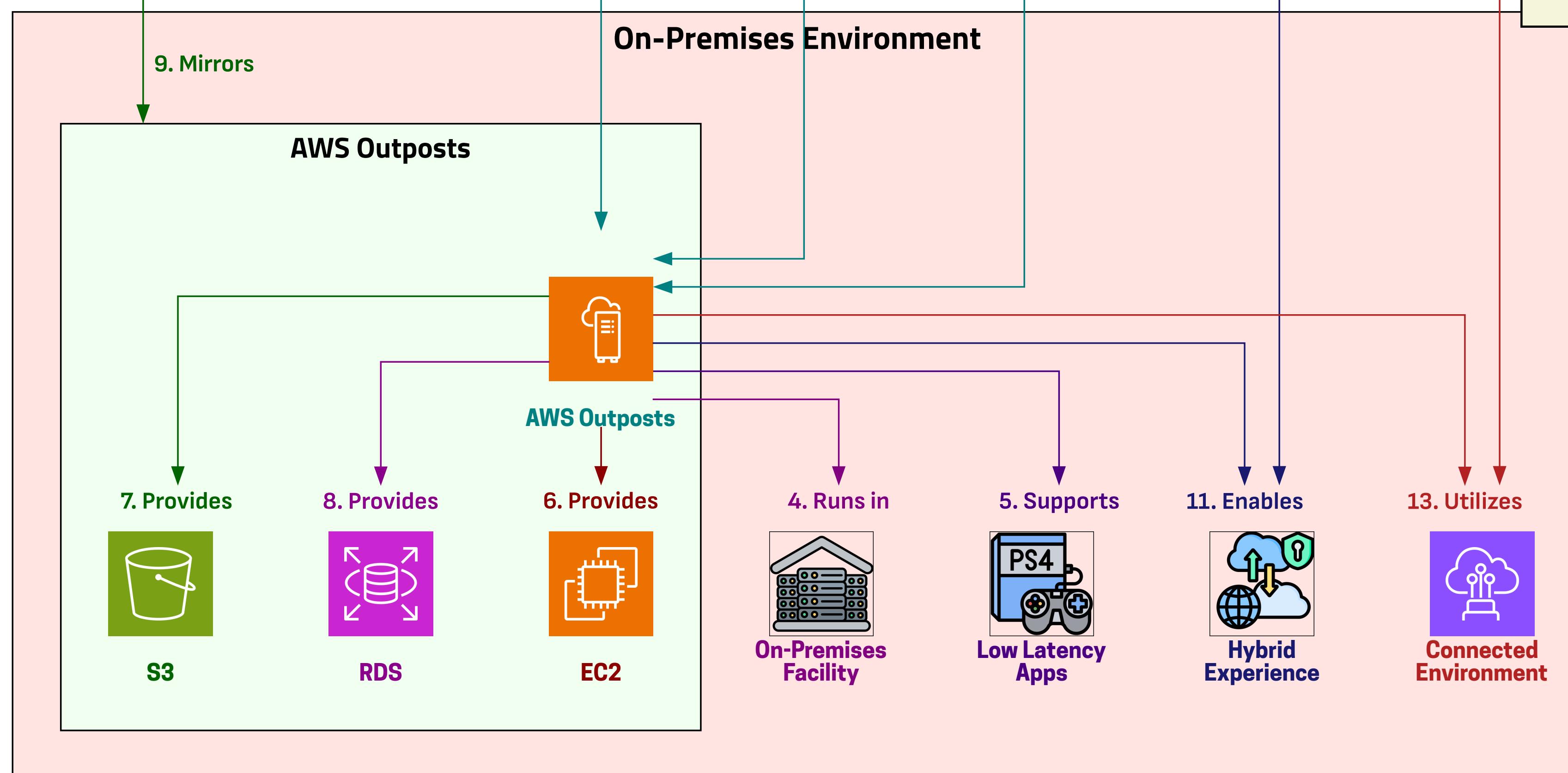
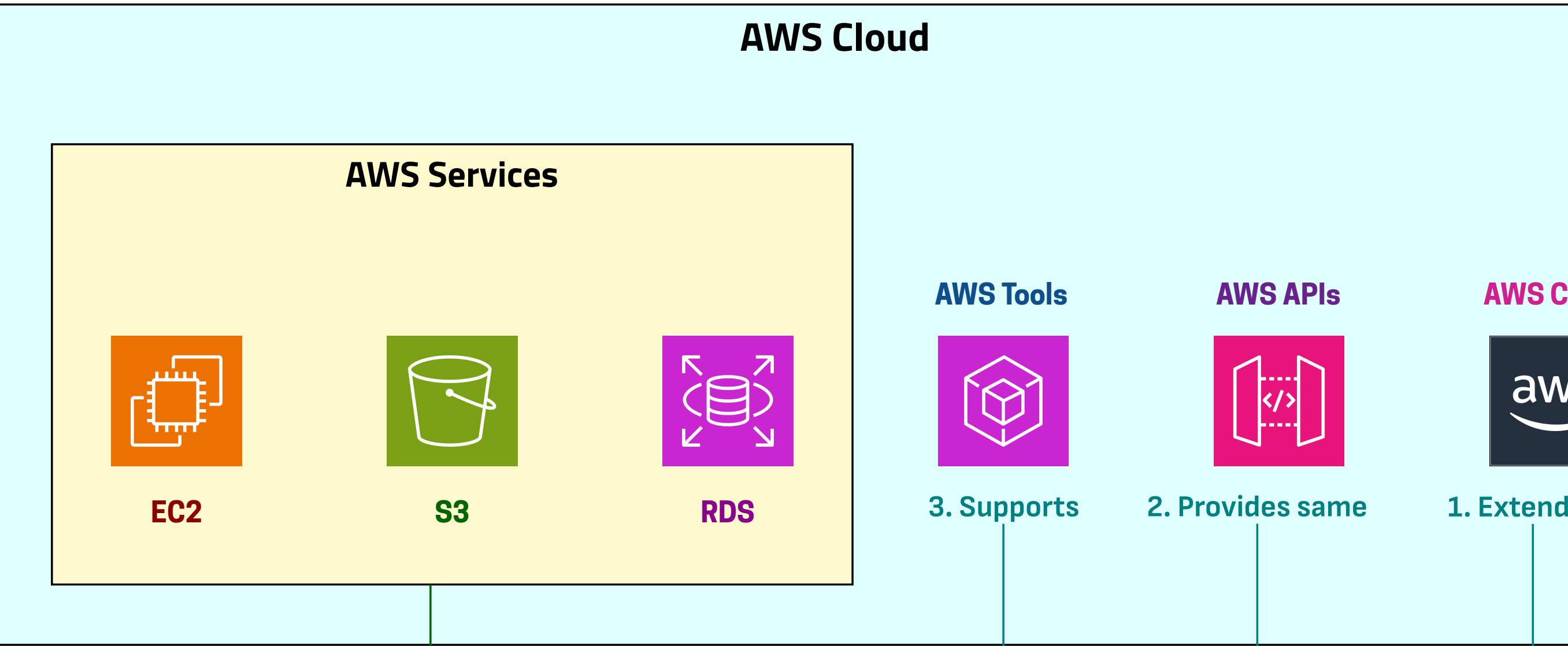
AWS Outposts



AWS Outposts

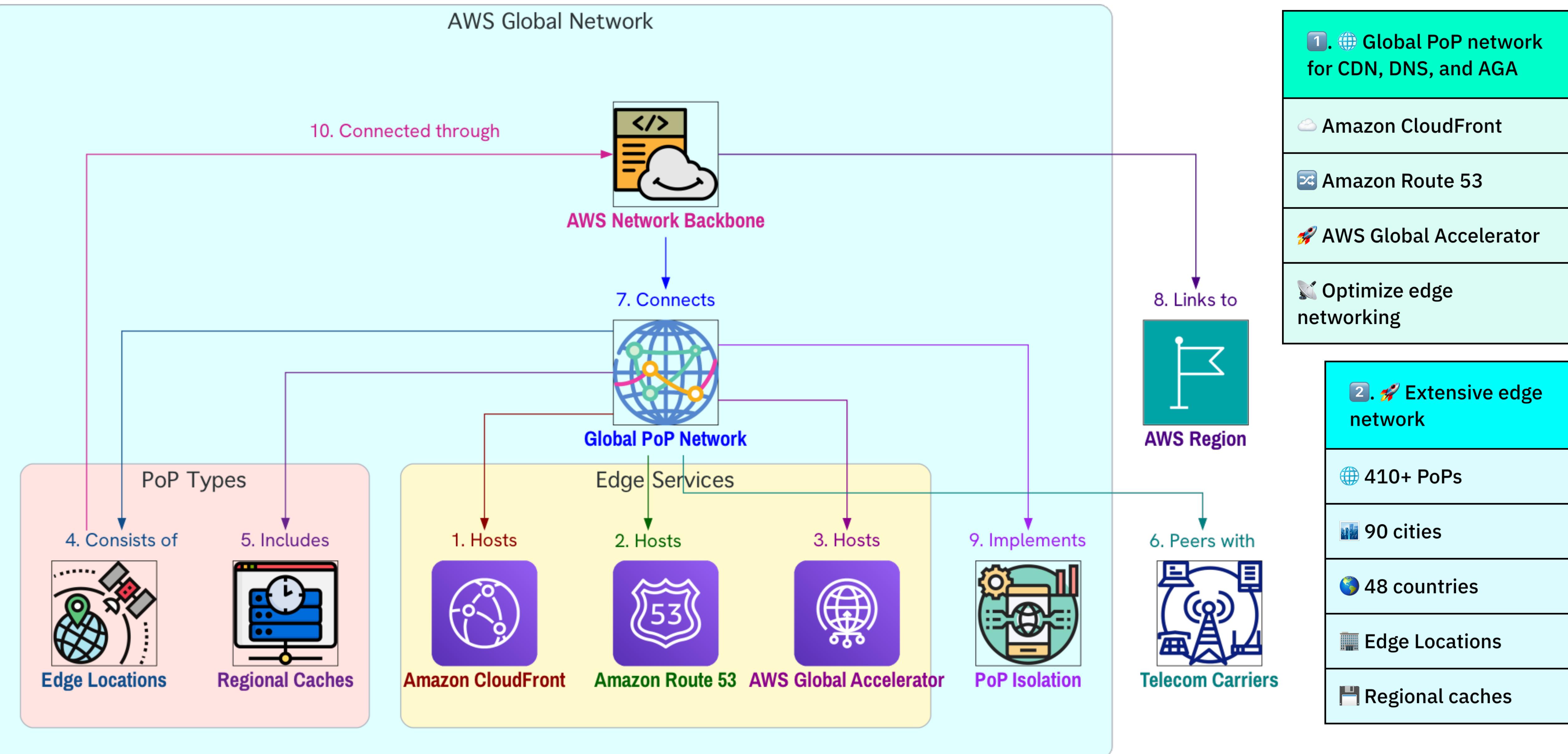


AWS Outposts

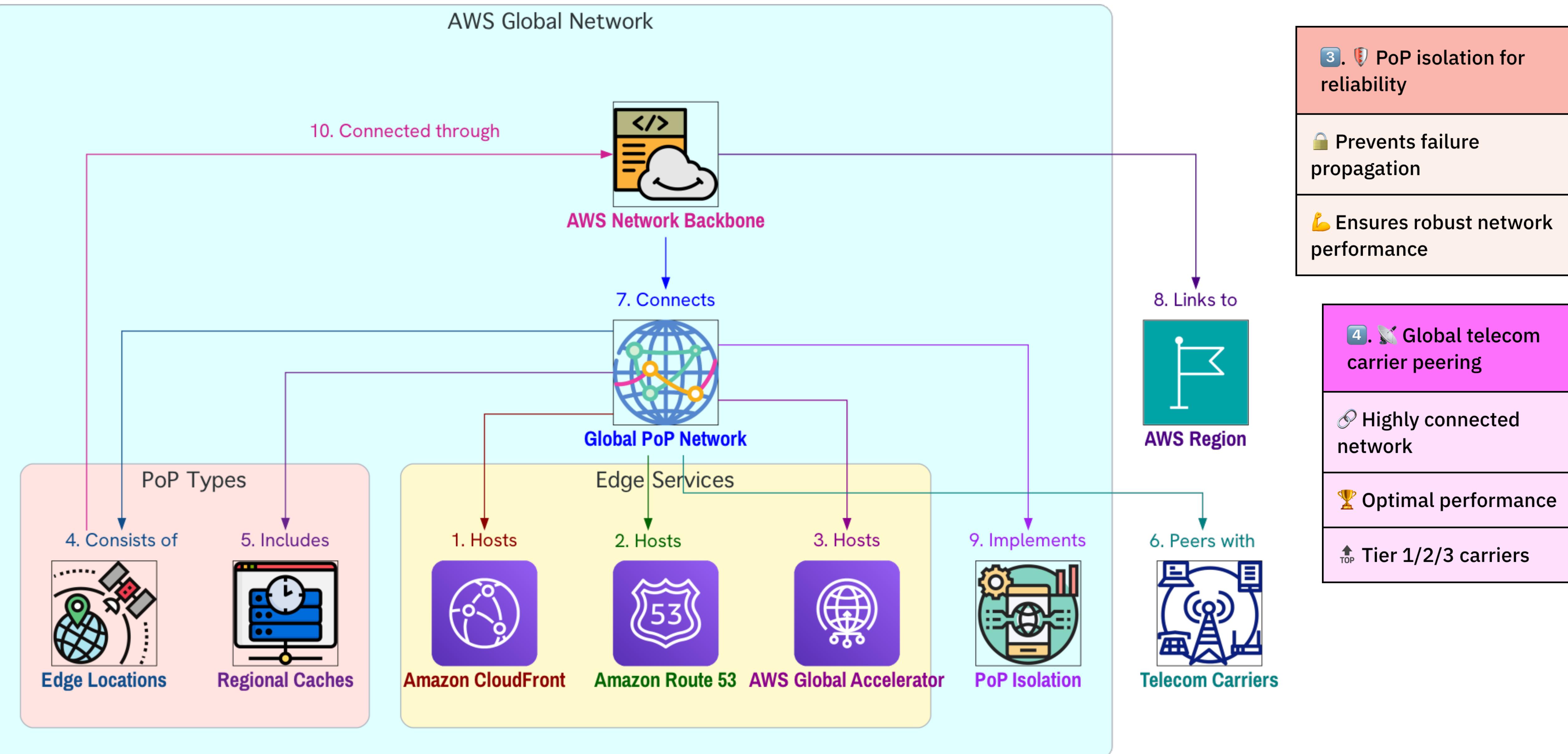


- 5. 💡 Supports low latency or local data processing needs
- 6. ⚡ Immediate data processing
- 7. 🏎️ Latency-sensitive applications
- 8. 📍 Proximity benefits
 - Closer to data sources
 - Closer to users

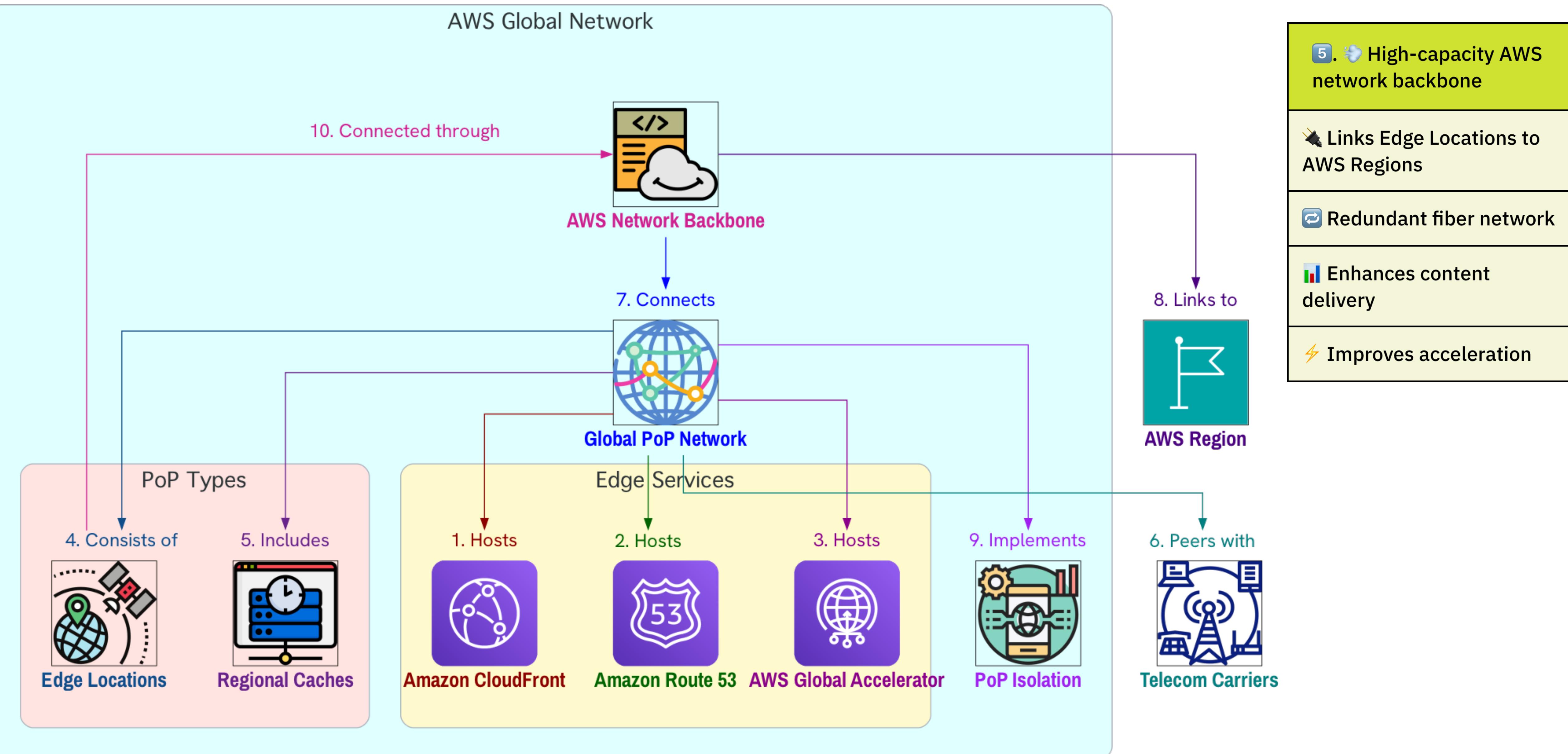
AWS Points of Presence



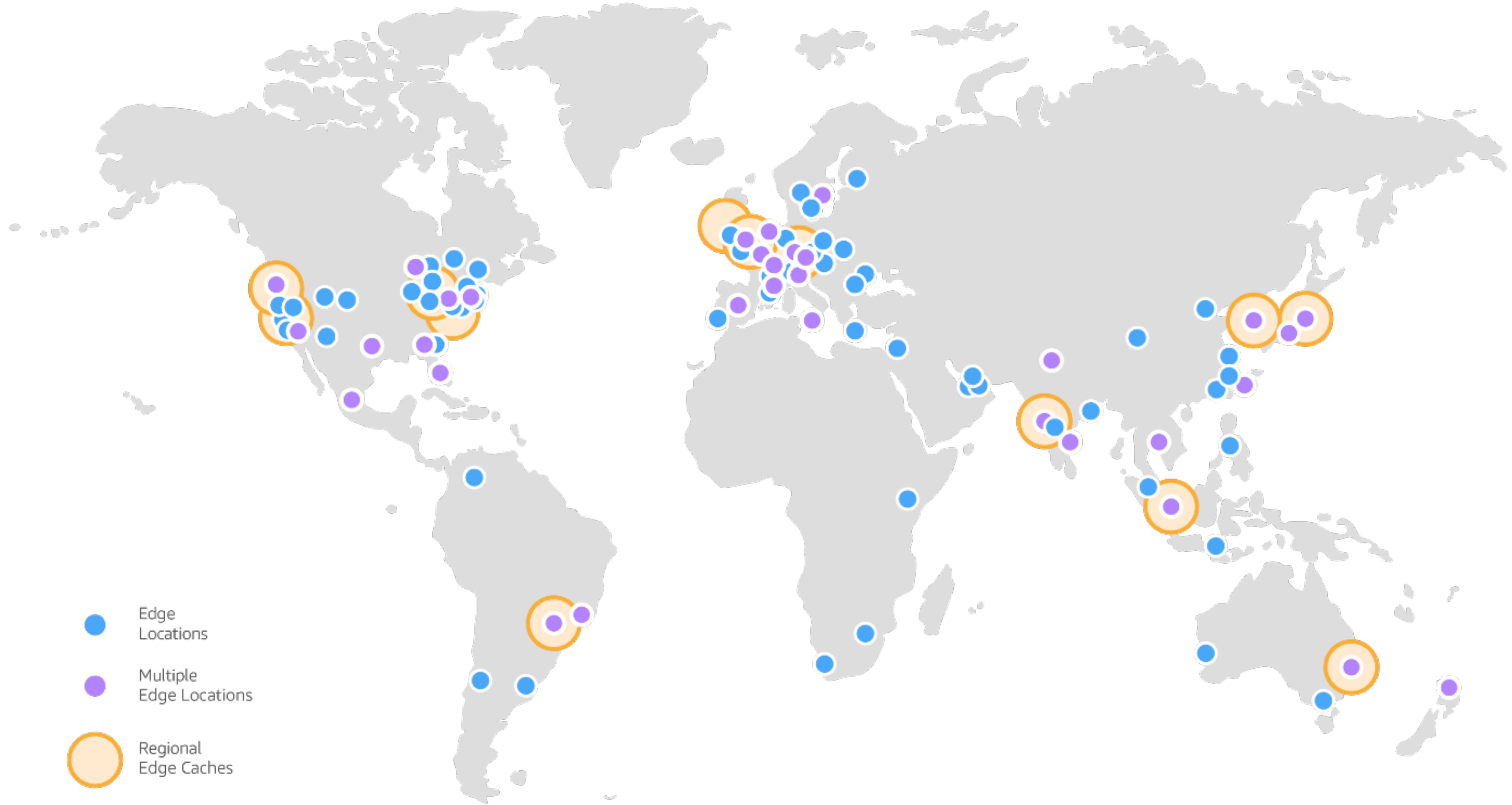
AWS Points of Presence



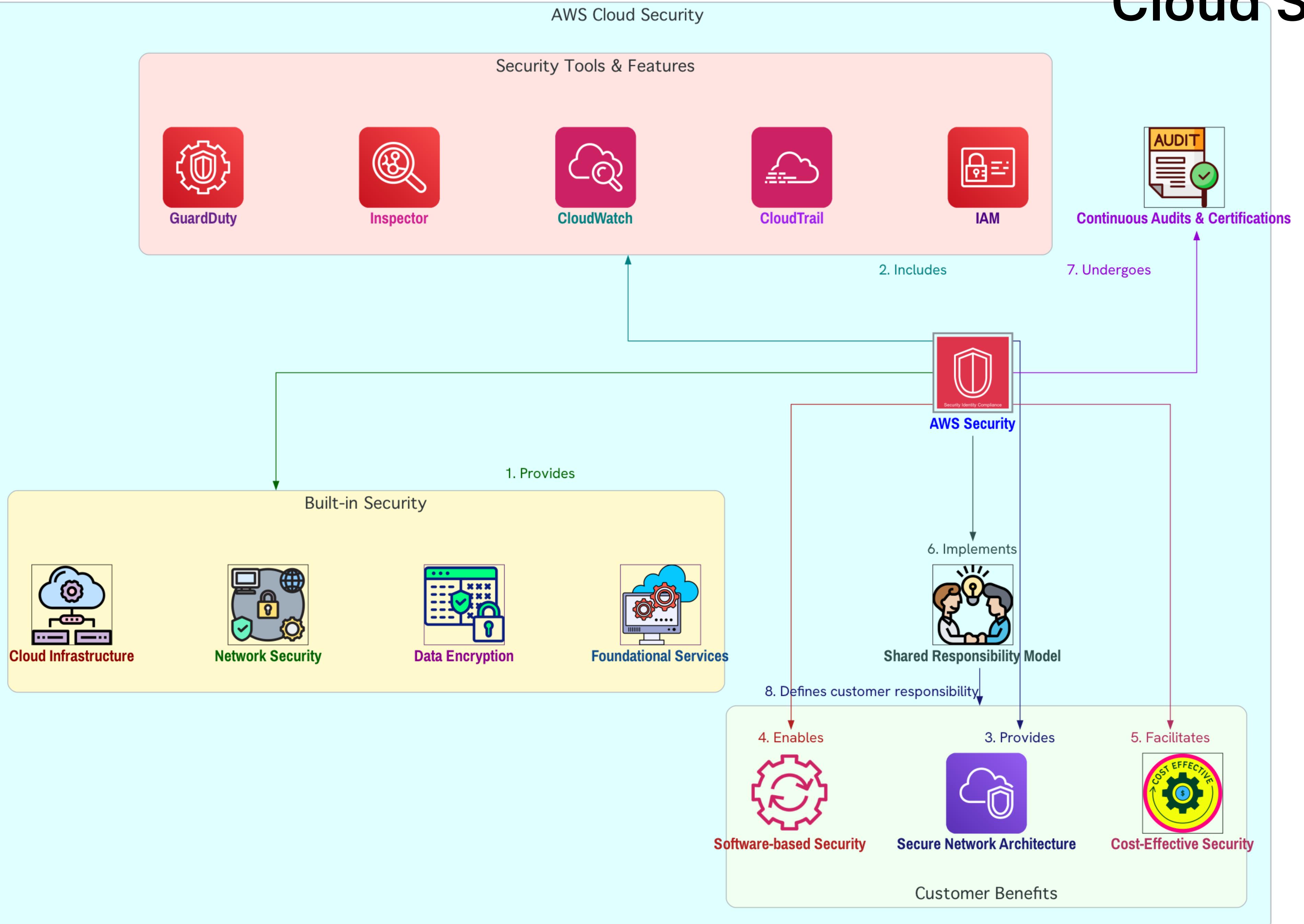
AWS Points of Presence



Amazon CloudFront Global Edge Network



Cloud Security at AWS



1. Highest security priority

Helps organizations leverage cloud securely

Ensures scalability and flexibility

2. Security built into cloud infrastructure

Foundational services

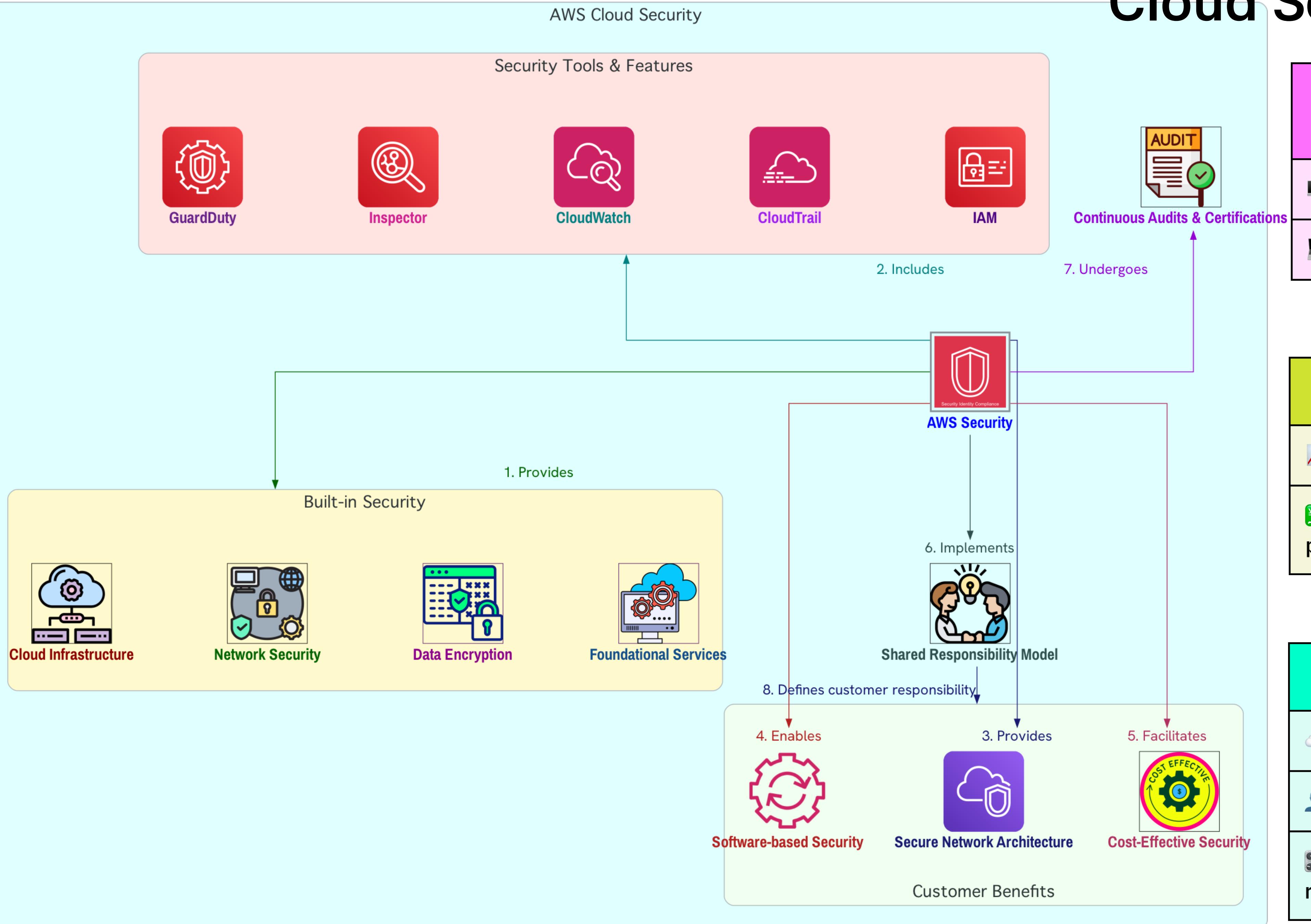
Enables tailored security measures

3. Benefits for AWS customers

Network architecture for sensitive organizations

Security without physical maintenance costs

Cloud Security at AWS



4. 🚀 Security without physical server management

Mirrors on-premises security

Utilizes software-based security tools

5. 💰 Lower cost, high security

Allows scaling and innovation

More cost-effective than on-premises solutions

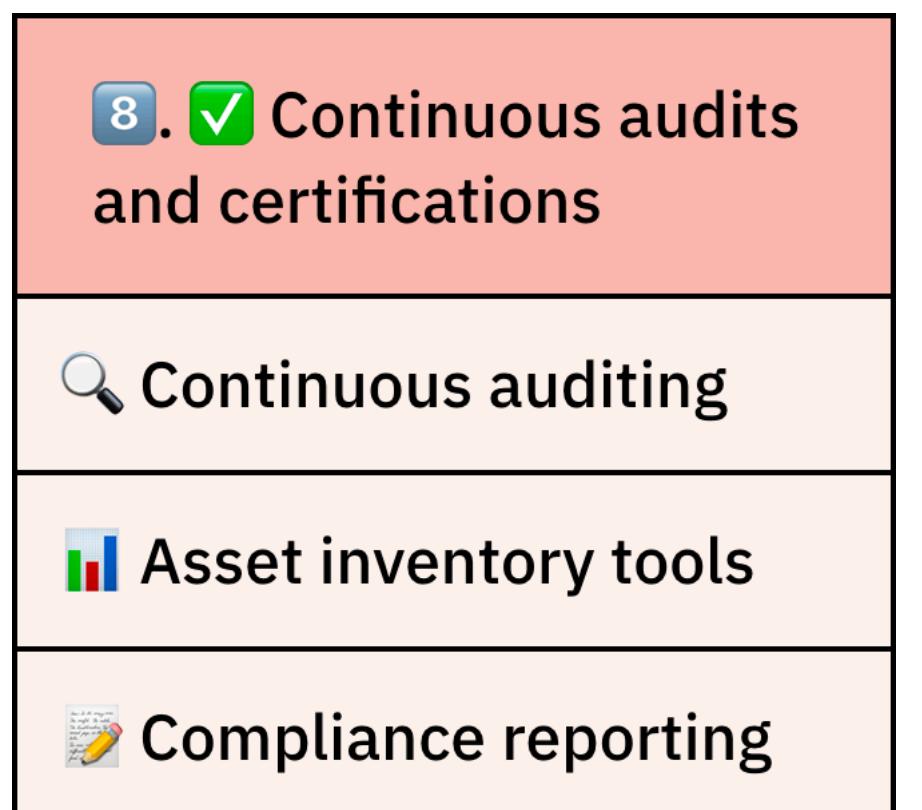
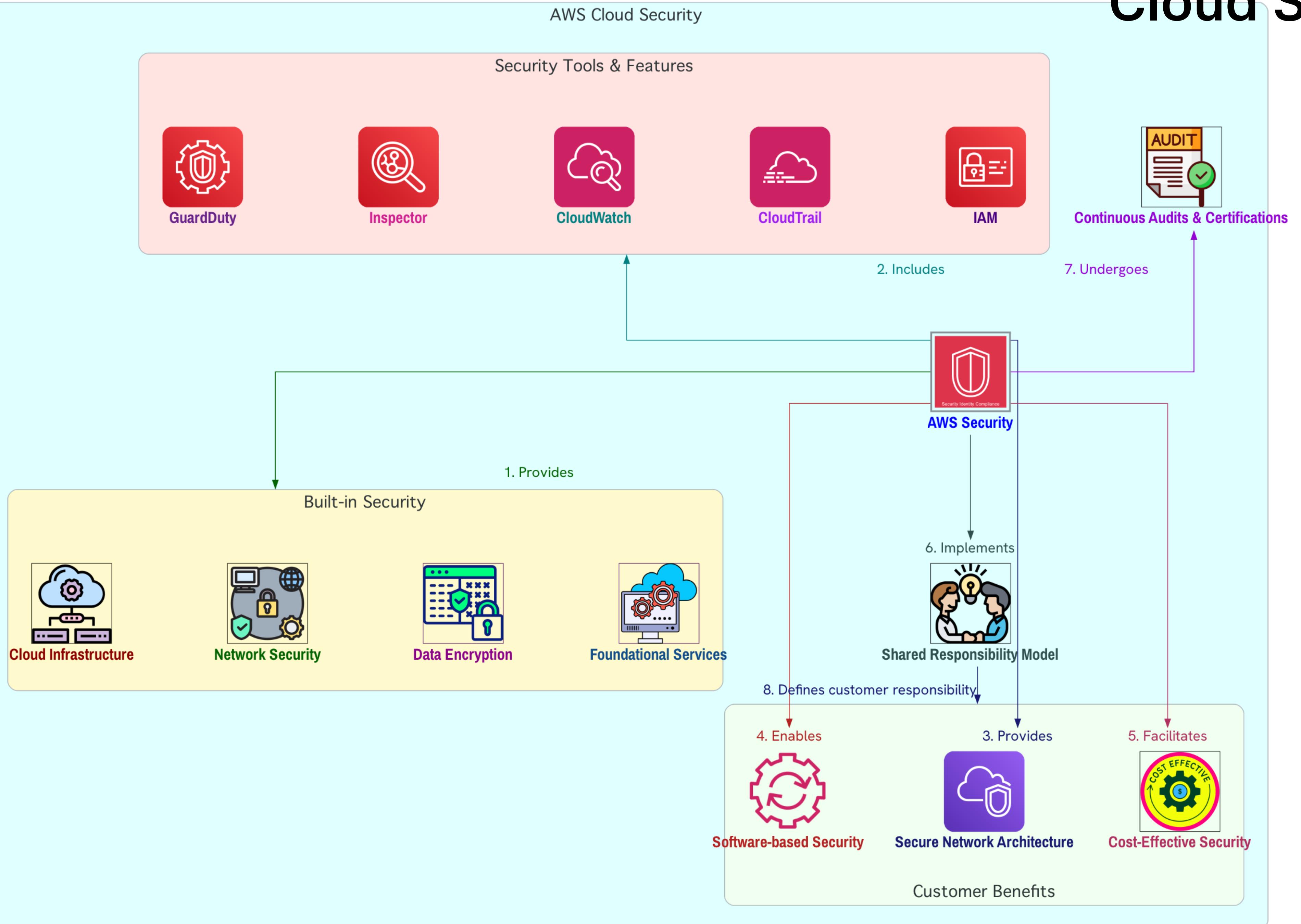
6. 🤝 Shared responsibility model

AWS: Security of the cloud

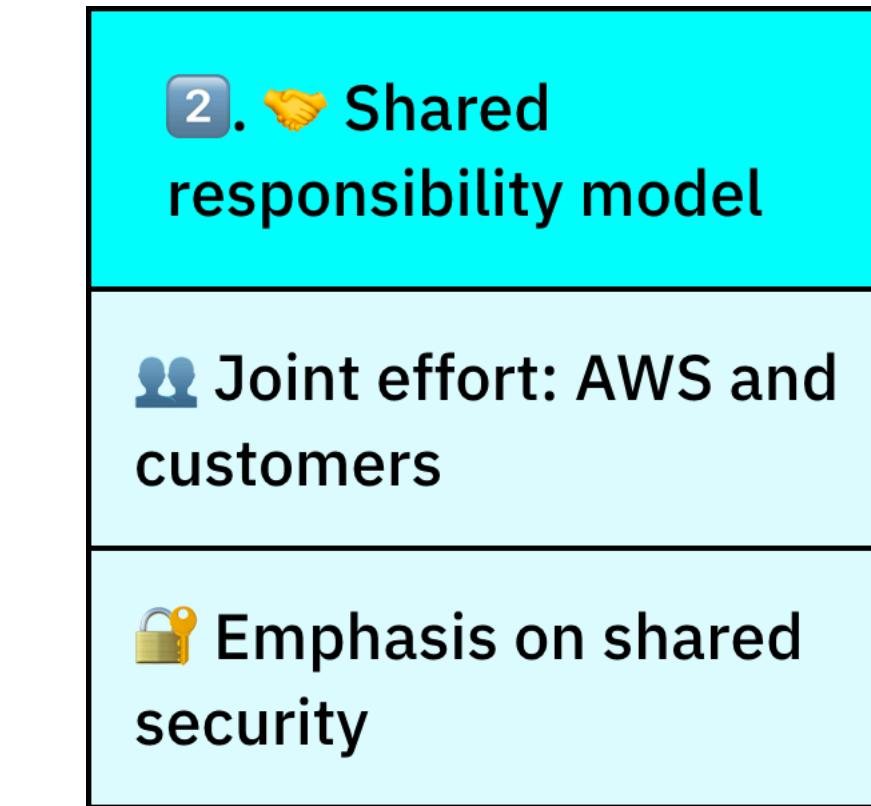
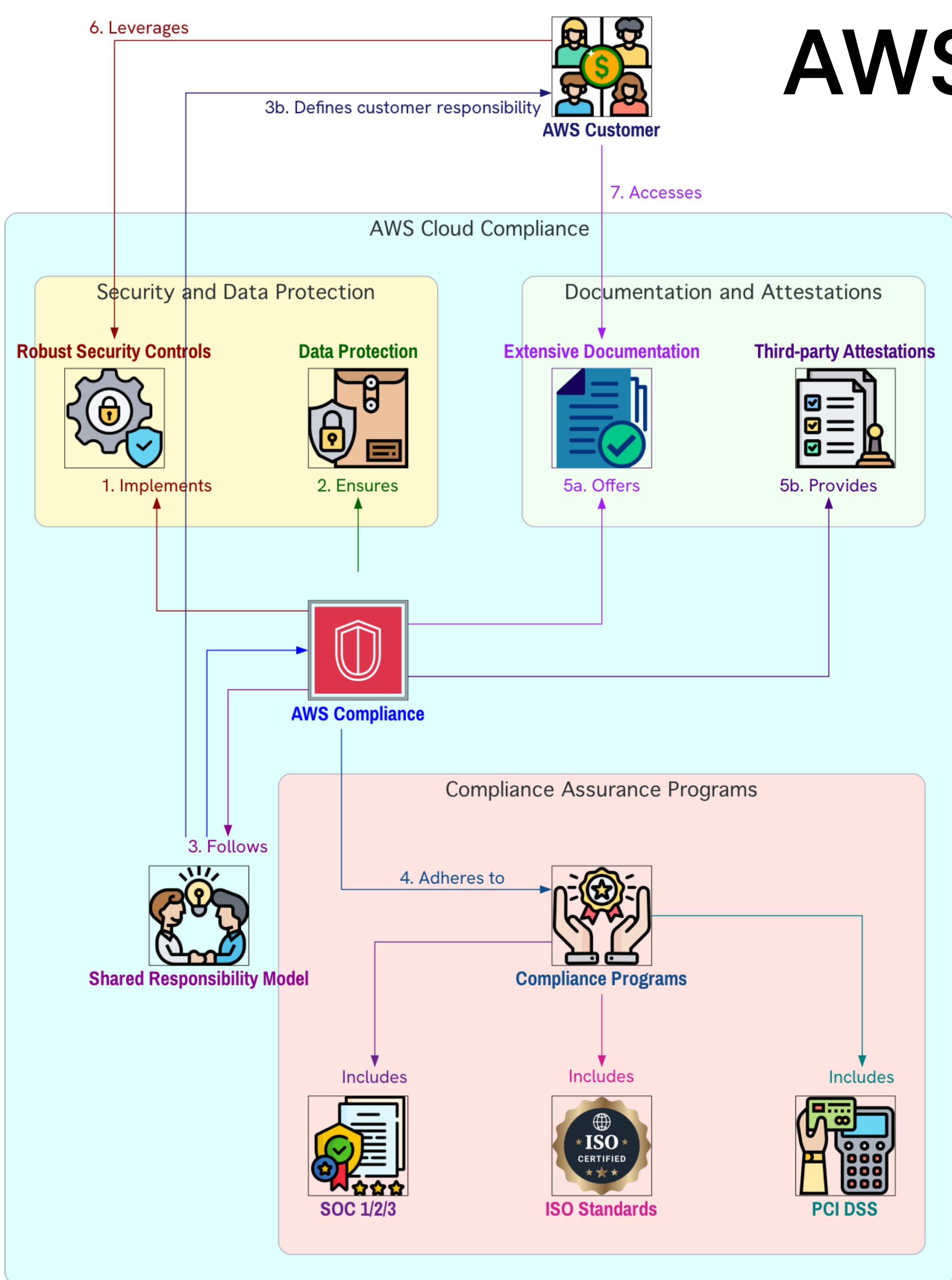
Customers: Security in the cloud

Customers maintain control over resources

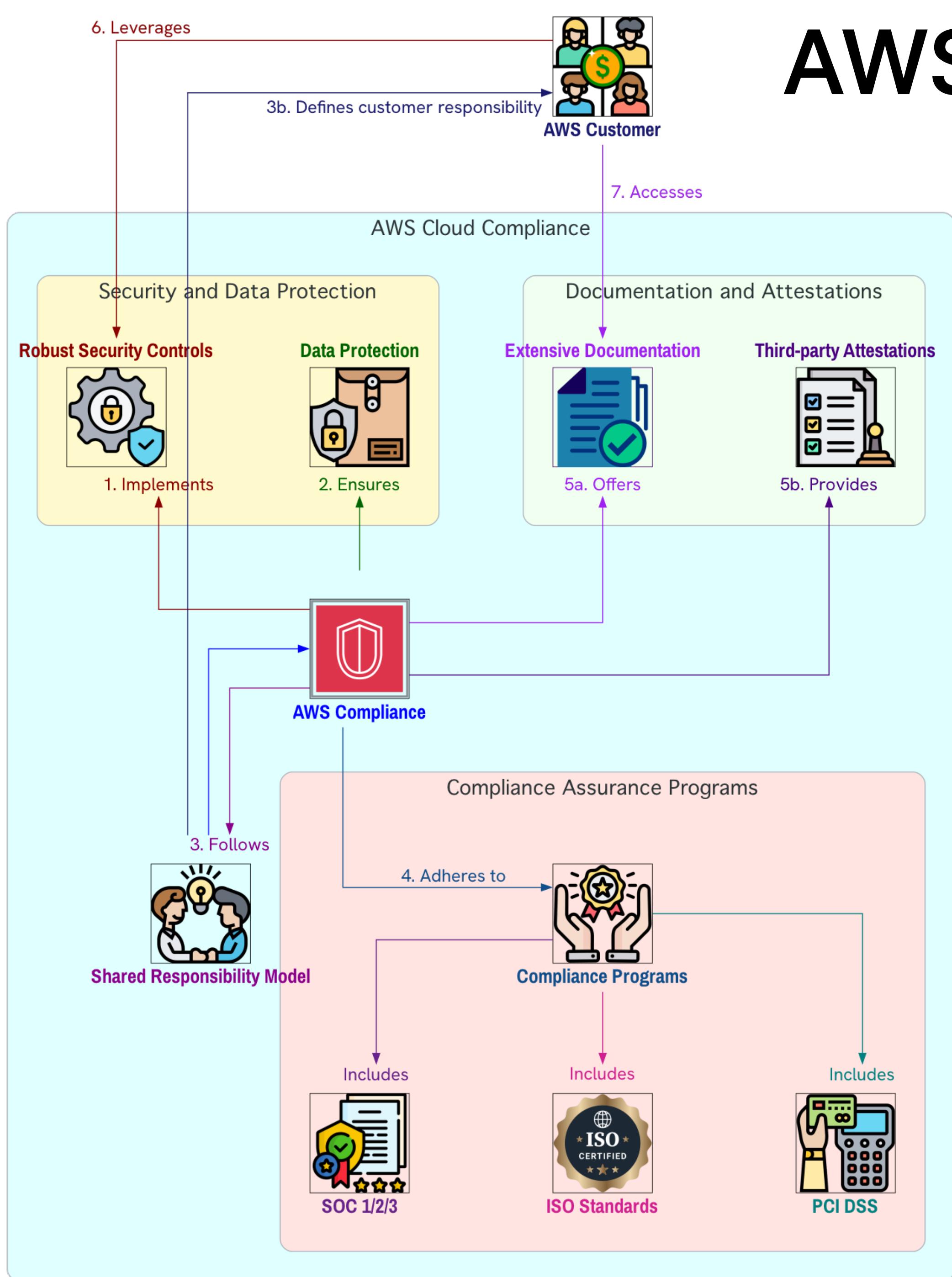
Cloud Security at AWS



AWS Cloud Compliance

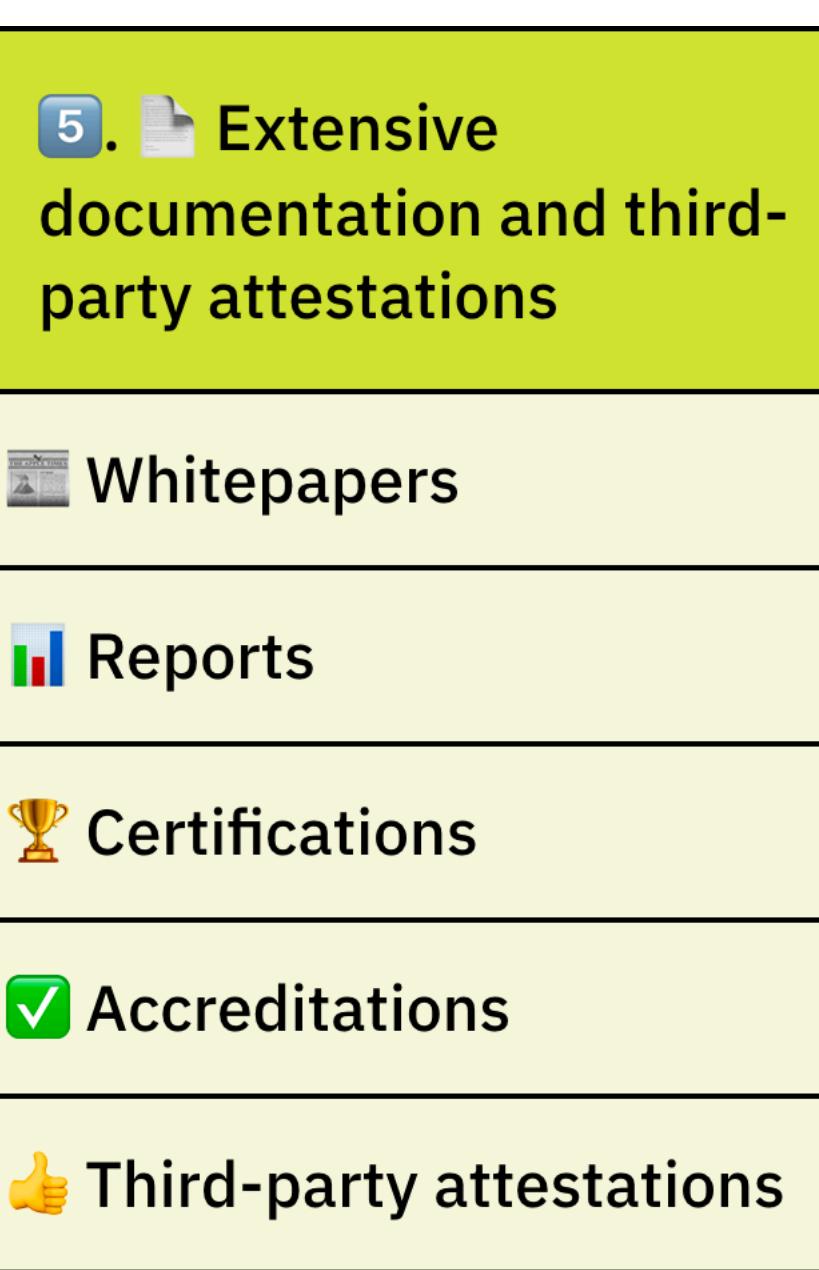
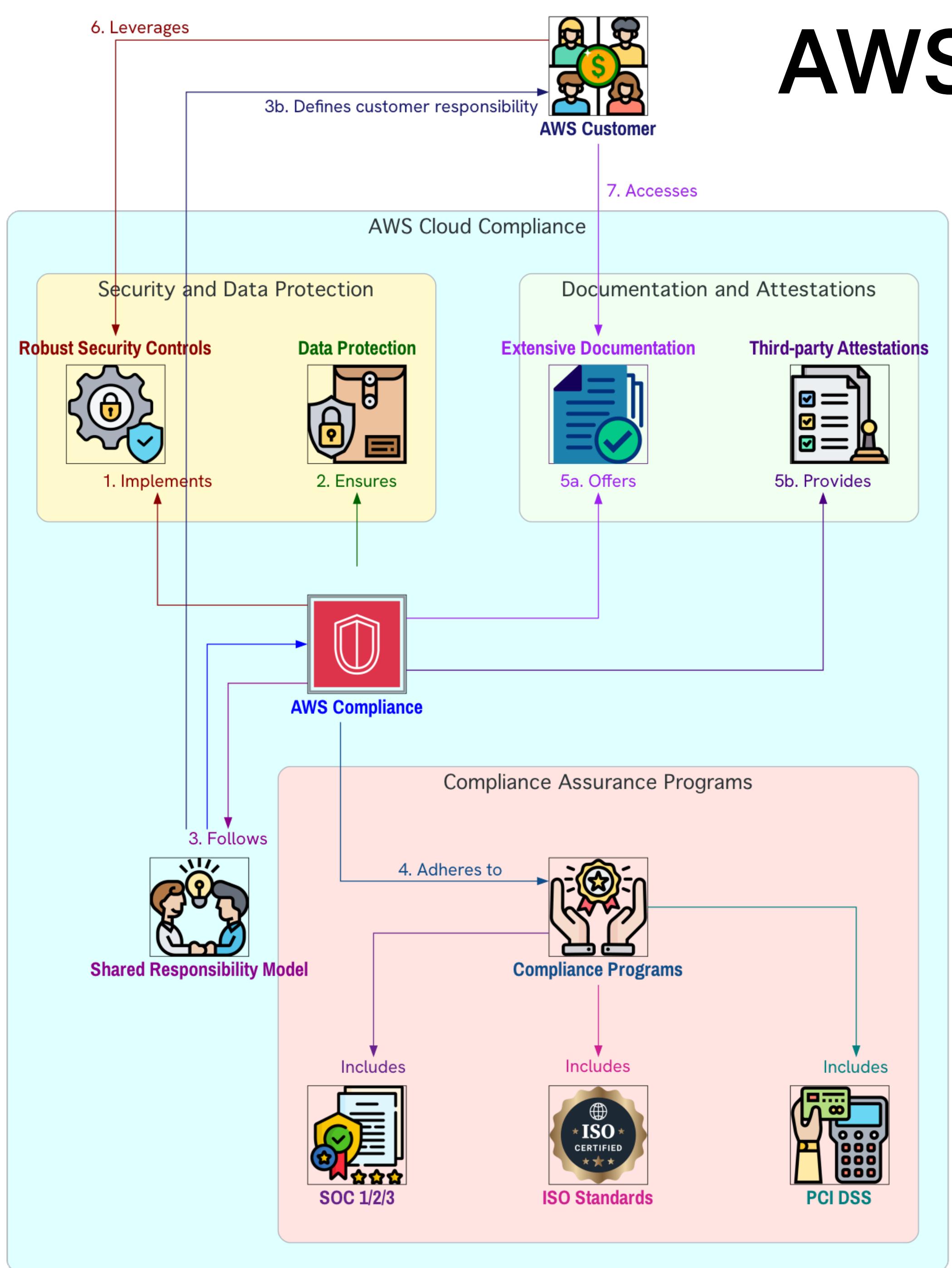


AWS Cloud Compliance

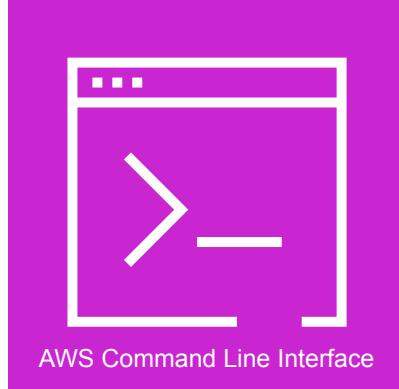


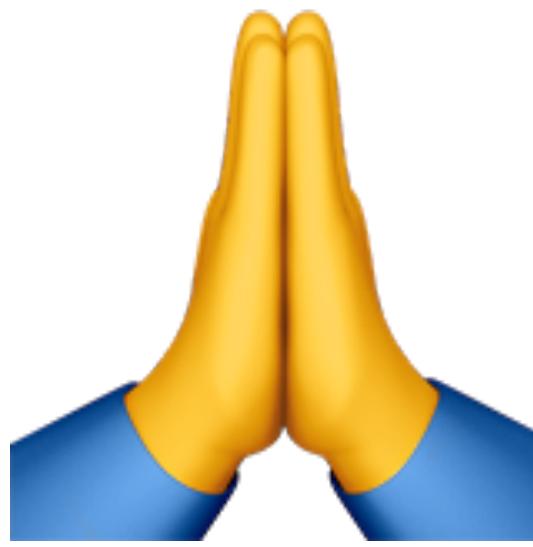
4. 🏆 Compliance with major assurance programs	
SOC compliance (Icon: Magnifying glass over document)	SOC 1/ISAE 3402 (Icon: Document)
	SOC 2 (Icon: Magnifying glass)
	SOC 3 (Icon: Document with chart)
Government standards (Icon: Column)	FISMA (Icon: American flag)
	DIACAP (Icon: Helmet)
	FedRAMP (Icon: Cloud)
PCI DSS Level 1 (Icon: Bar chart)	
ISO standards (Icon: Globe)	ISO 9001 (Icon: Line graph)
	ISO 27001 (Icon: Lock)
	ISO 27017 (Icon: Cloud)
	ISO 27018 (Icon: Pencil)

AWS Cloud Compliance



Accessing AWS services

- 1  AWS Management Console
- 2  AWS Command Line Interface
- 3  Software Development Kits



**Thanks
for
Watching**