



Amazon Route 53



What is Amazon Route 53?

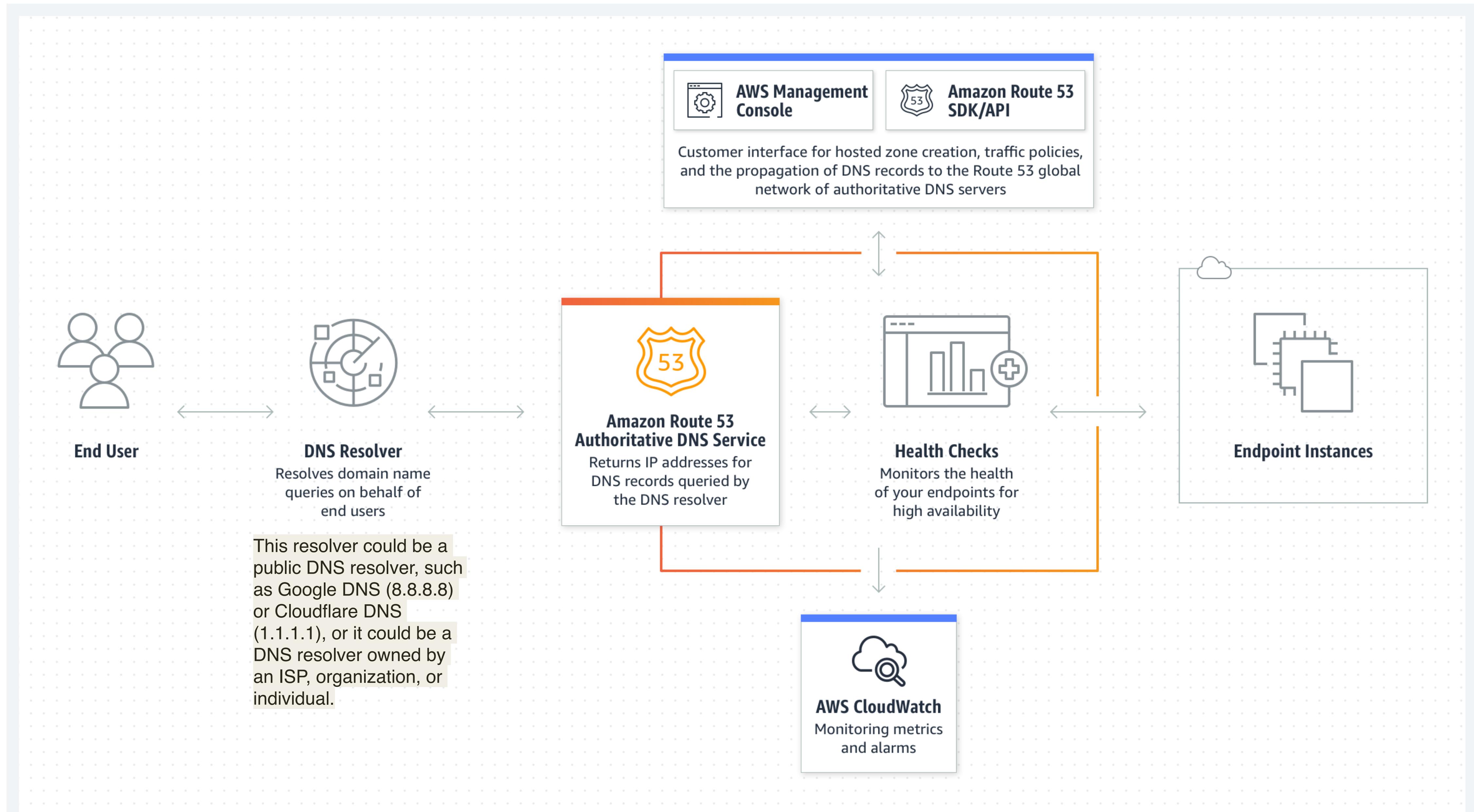


- 1 🌐 A highly available and scalable cloud DNS web service
 - 🔗 Connects user requests to AWS infrastructure
 - 🌐 Can route to non-AWS infrastructure
- 2 💡 Extremely reliable and cost-effective
 - 📦 Leverages AWS global network
 - 🚦 Manages application traffic effectively
- 3 🔄 Supports DNS management, domain registration, and health checking
 - 📝 Manages DNS records
 - ✍️ Registers new domains
 - 💖 Conducts health checks on resources
- 4 🚀 Ensures low query latency and high availability
 - 🌐 Global network of DNS servers
 - ⚡ Answers queries from nearest server
- 5 🛡️ Offers advanced routing options
 - 🌍 Geolocation routing
 - ⌚ Latency-based routing
 - 🔁 Weighted round robin



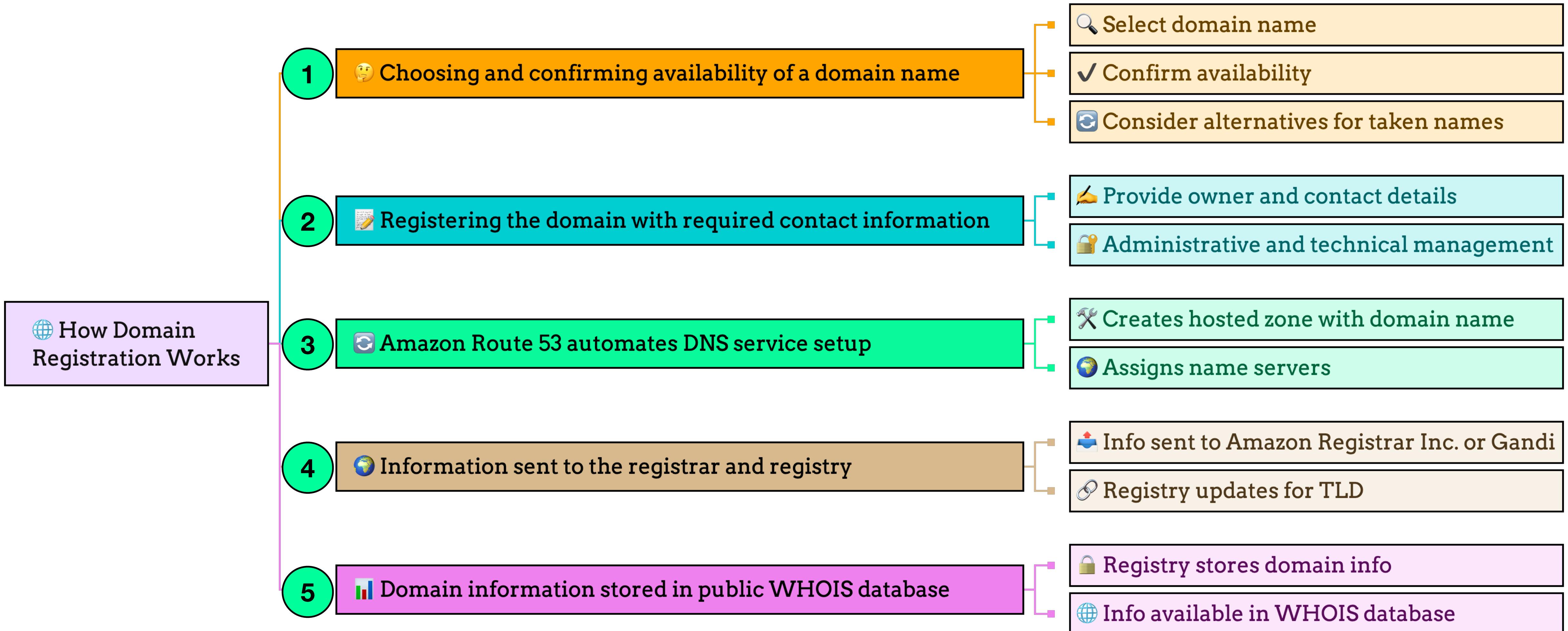
Route 53

High Level Overview

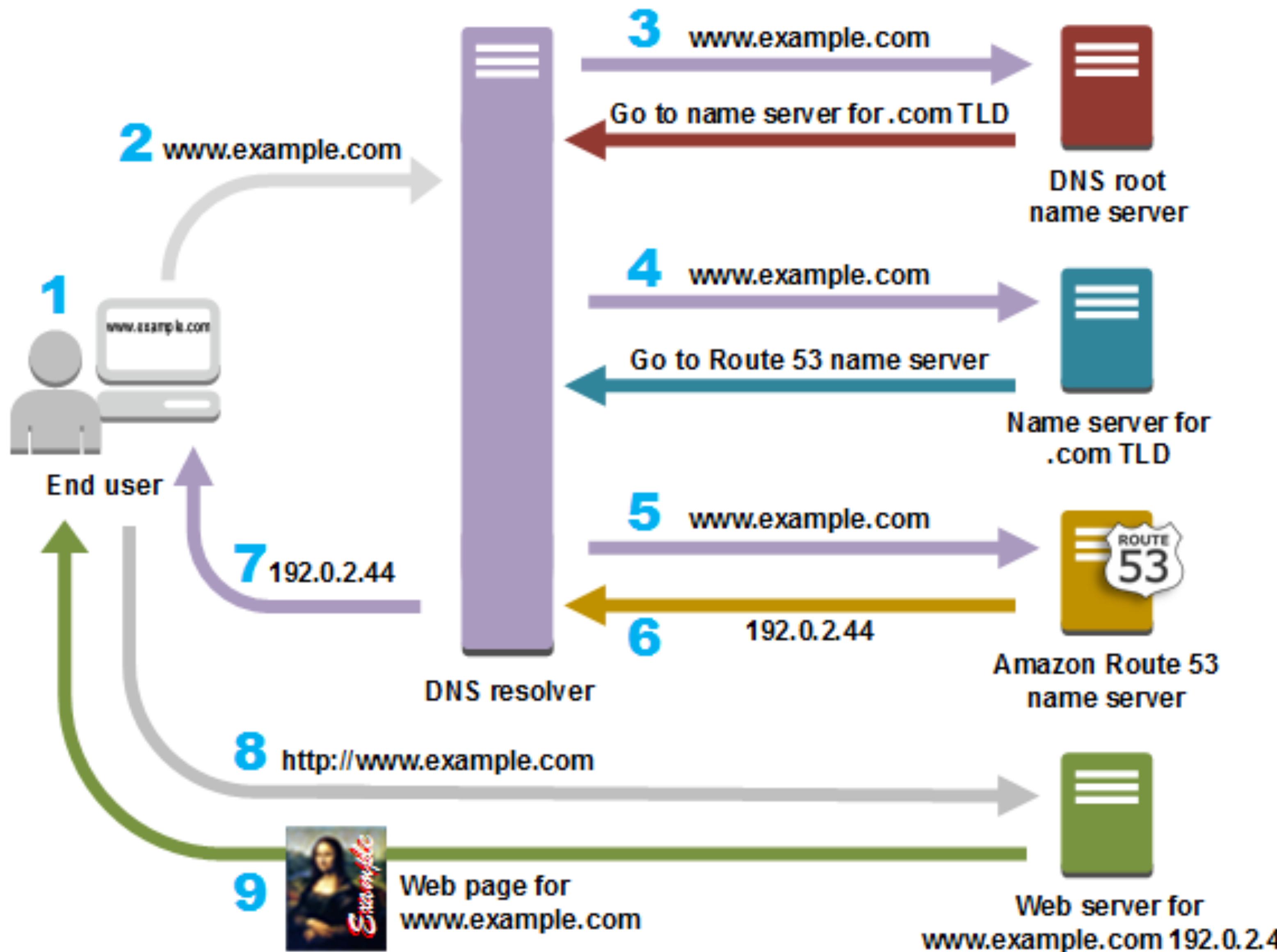




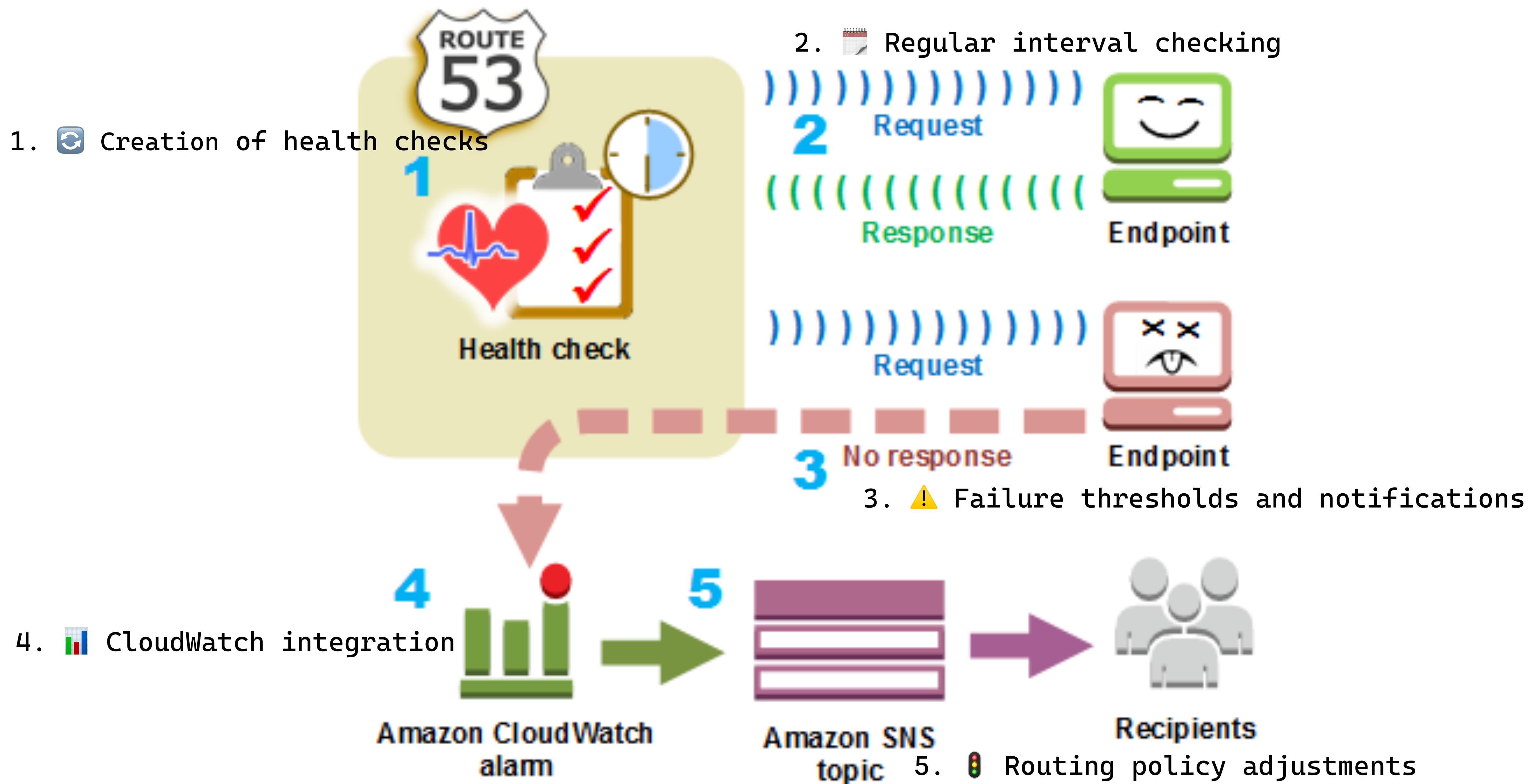
How Domain Registration Works.



How Amazon Route 53 routes traffic for your domain

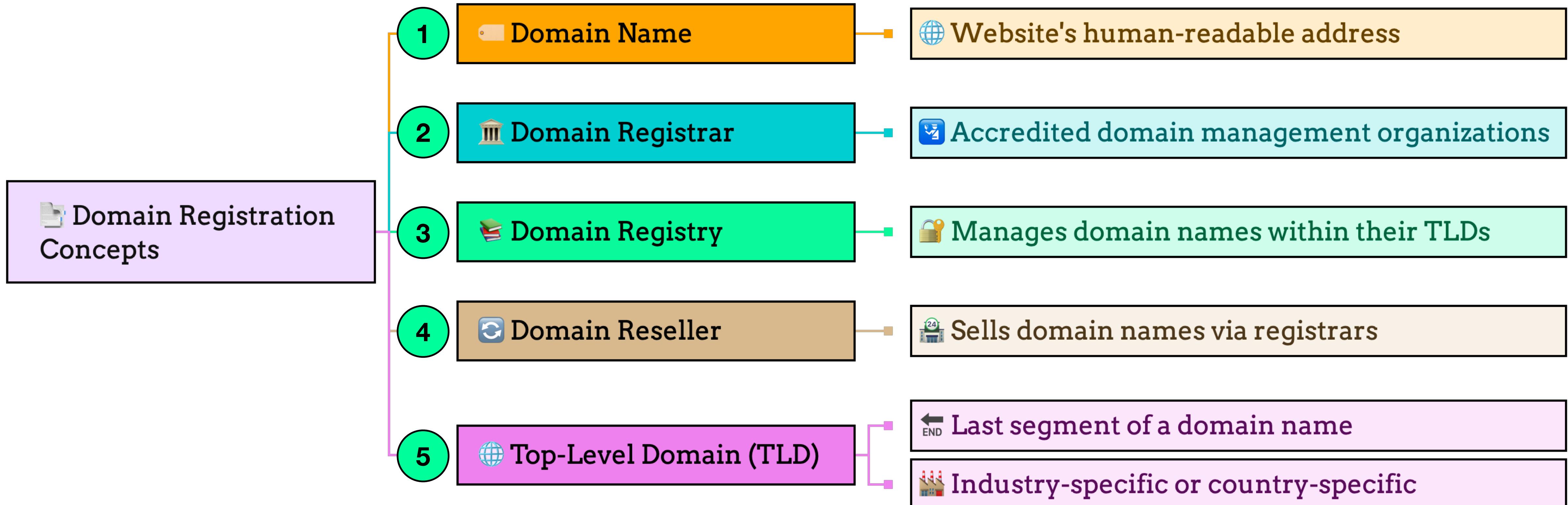


How Amazon Route 53 Checks the Health of Your Resources.





Domain Registration Concepts.



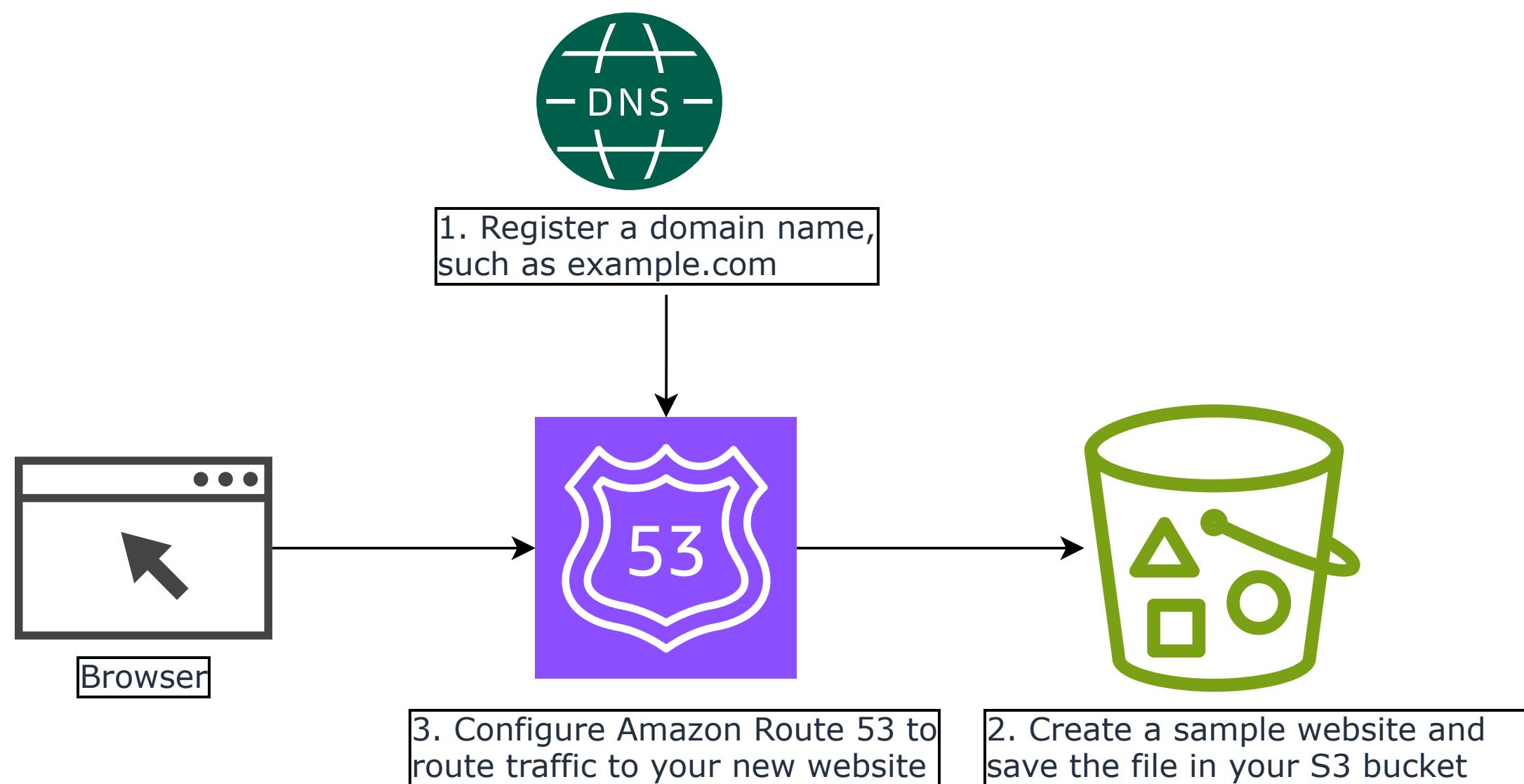


Domain Name System (DNS) Concepts.

1. **Alias Record:** Points one domain to another, For AWS resources
2. **Authoritative Name Server:** Definitive DNS info, Responds to DNS resolver requests
3. **CIDR Block:** Range of IP addresses, For virtual subnets
4. **DNS Query:** Request for domain info, Typically IP address response
5. **DNS Resolver:** Processes DNS queries, Communicates with name servers
6. **Domain Name System (DNS):** Translates domain names to IP addresses, For device location on internet
7. **Hosted Zone:** Container for DNS records, Routes domain/subdomain traffic
8. **IP Address:** Numerical network label, For device communication
9. **Name Servers:** Translates domain names to IPs, Routes internet traffic
10. **Private DNS:** Local DNS for AWS VPCs, Routes internal traffic
11. **Recursive Name Server:** Known as DNS resolver, Requests info from sequence of servers
12. **Record (DNS Record):** Routes traffic for domains, Entries in hosted zone
13. **Reusable Delegation Set:** Set of name servers for multiple zones, Simplifies DNS management
14. **Routing Policy:** Determines DNS query responses, Based on conditions
15. **Subdomain:** Part of a larger domain, E.g., 'store.example.com'
16. **Time to Live (TTL):** DNS answer cache duration, Before update request to Route 5

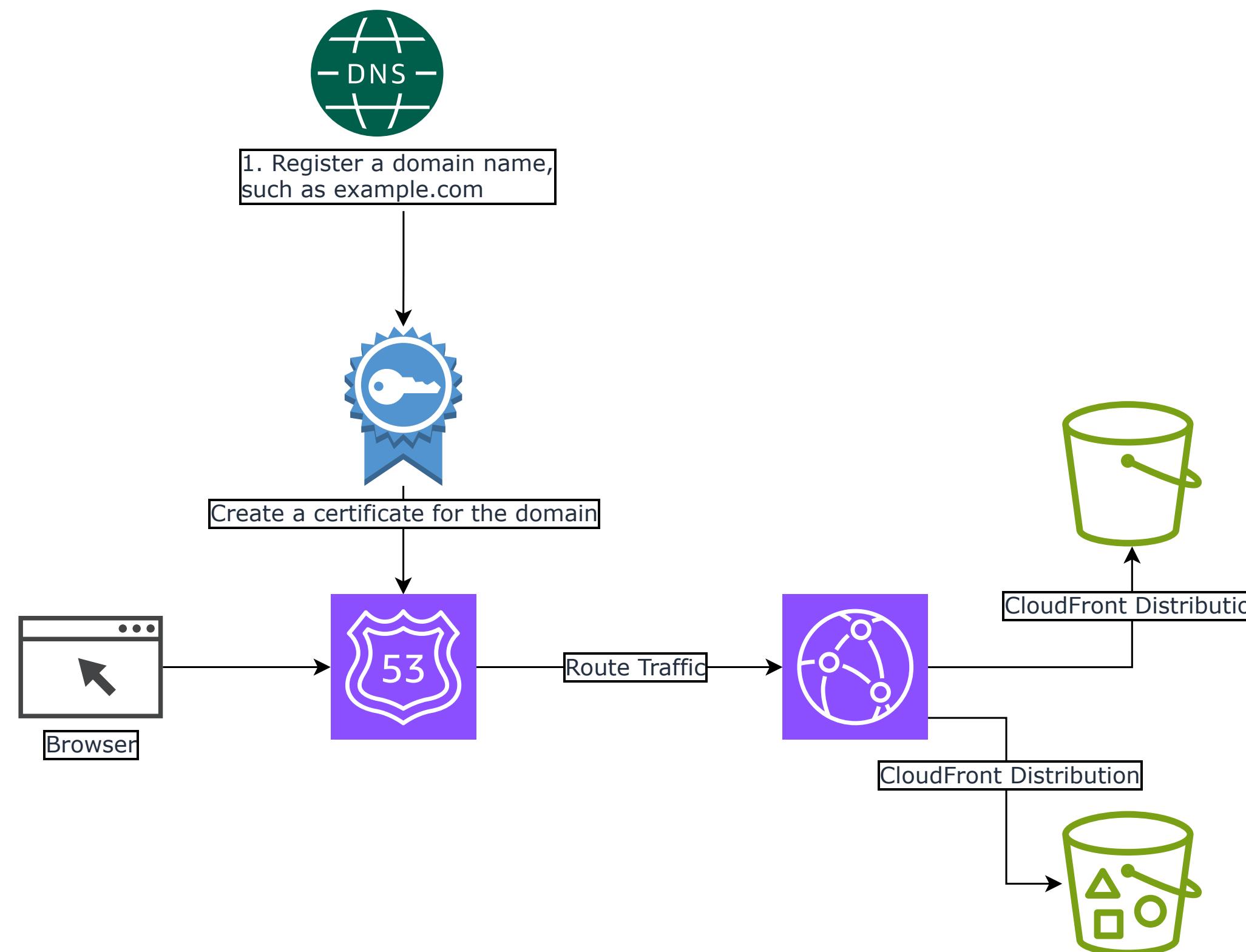


Use Your Domain for a Static Website in an Amazon S3 Bucket.



1. Register a Domain
2. Create S3 Bucket for Root Domain
3. Configure Bucket for Hosting
4. Set up Redirection (Optional)
5. Upload Website Content
6. Edit Block Public Access Settings
7. Attach Bucket Policy
8. Test Domain Endpoint
9. Route Traffic via Route 53
10. Test Your Website

Using CloudFront to Serve a Static Website.



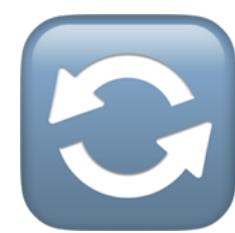
1. 🌎 Register your domain name
2. 🔒 Create a domain certificate
3. 💧 Create S3 buckets for website and subdomain
4. 📄 Upload your website to the S3 bucket
5. ☁️ Create CloudFront distributions
6. 🔧 Configure Route 53 to route traffic
7. ✅ Verify secure website access



Registering a New Domain in Route 53.



- 1 Choose a domain name**
 - ID Unique, memorable
 - ✨ Reflects brand, service
- 2 Purchase through AWS Marketplace**
 - 🛍️ Find domain name
 - 💻 Seamless registration
- 3 Domain registration process**
 - 📋 Enter contact information
 - 🔍 Agree to terms
- 4 Set up DNS settings**
 - 🔧 Configure DNS
 - 🌐 Manage traffic
- 5 Configure privacy protection**
 - 🕵️ Hide personal information
 - 🔒 Enhance security
- 6 Verify domain ownership**
 - ✓ Email confirmation
 - 👉 Ensure rightful ownership
- 7 Manage domain billing**
 - 💳 Billing preferences
 - 📅 Track fees, renewal



Transferring Domain Registration to Route 53.



- 1 Confirm TLD support by Route 53 ✓ Verify TLD support
- 2 (Optional) Transfer DNS service Transfer DNS
To Route 53 / other provider
- 3 Change current registrar settings 🔒 Unlock domain
🔑 Obtain auth code
- 4 Get name server names 🔒 Secure name servers
- 5 Request the transfer 🚀 Initiate request
🔒 Provide auth code
- 6 AISPL (India) only: Pay fee 💰 Pay transfer fee
- 7 Click confirmation & authorization links 🔗 Verify via email
- 8 Update domain configuration ⚙️ Complete setup



Making Route 53 the DNS Service for an Active Domain.

1. 📖 Get current DNS configuration

Collect info from existing DNS provider

2. 🌐 Create a hosted zone

Domain's home in Route 53

Manage DNS records

3. 🖊️ Create records

Replicate DNS settings

4. ⏲ Lower TTL settings

Reduces cache time

Aids smoother transition

5. 🔑 Remove DS record (if DNSSEC configured)

🚫 Prevents validation issues during transfer

6. ⏳ Wait for old TTL to expire

Ensures DNS resolvers request current info

Facilitates seamless switch

7. ⚡ Update NS records to Route 53 servers

➡ Redirects DNS queries to new setup

8. 📈 Monitor traffic

👀 Ensure proper functioning post-migration

9. ⚡ Increase TTL for NS record

✓ Revert TTL after confirming stability

⚡ Improves efficiency

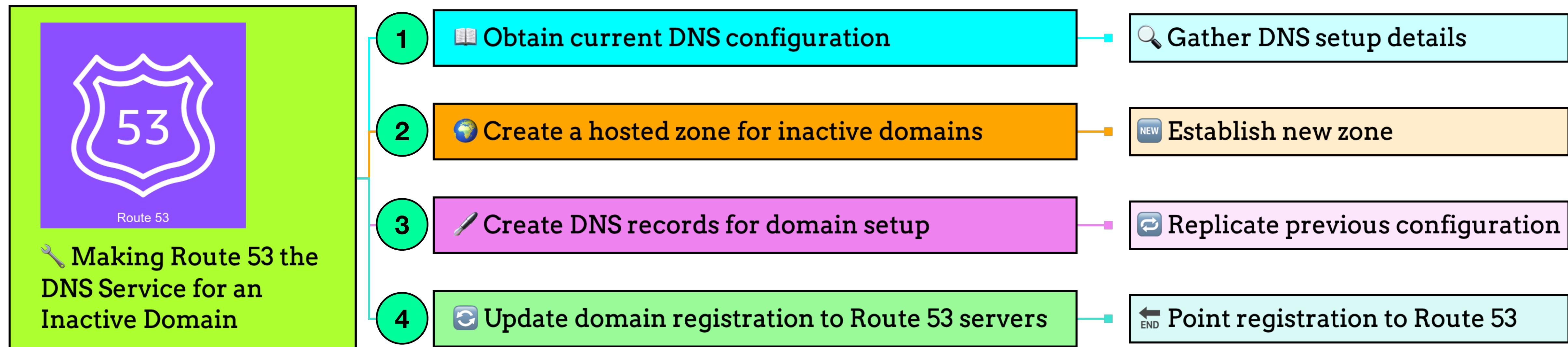
10. ➡ Transfer domain registration to Route 53 (optional)

✅ Consolidates domain management within AWS

11. ✅ Re-enable DNSSEC (if required)

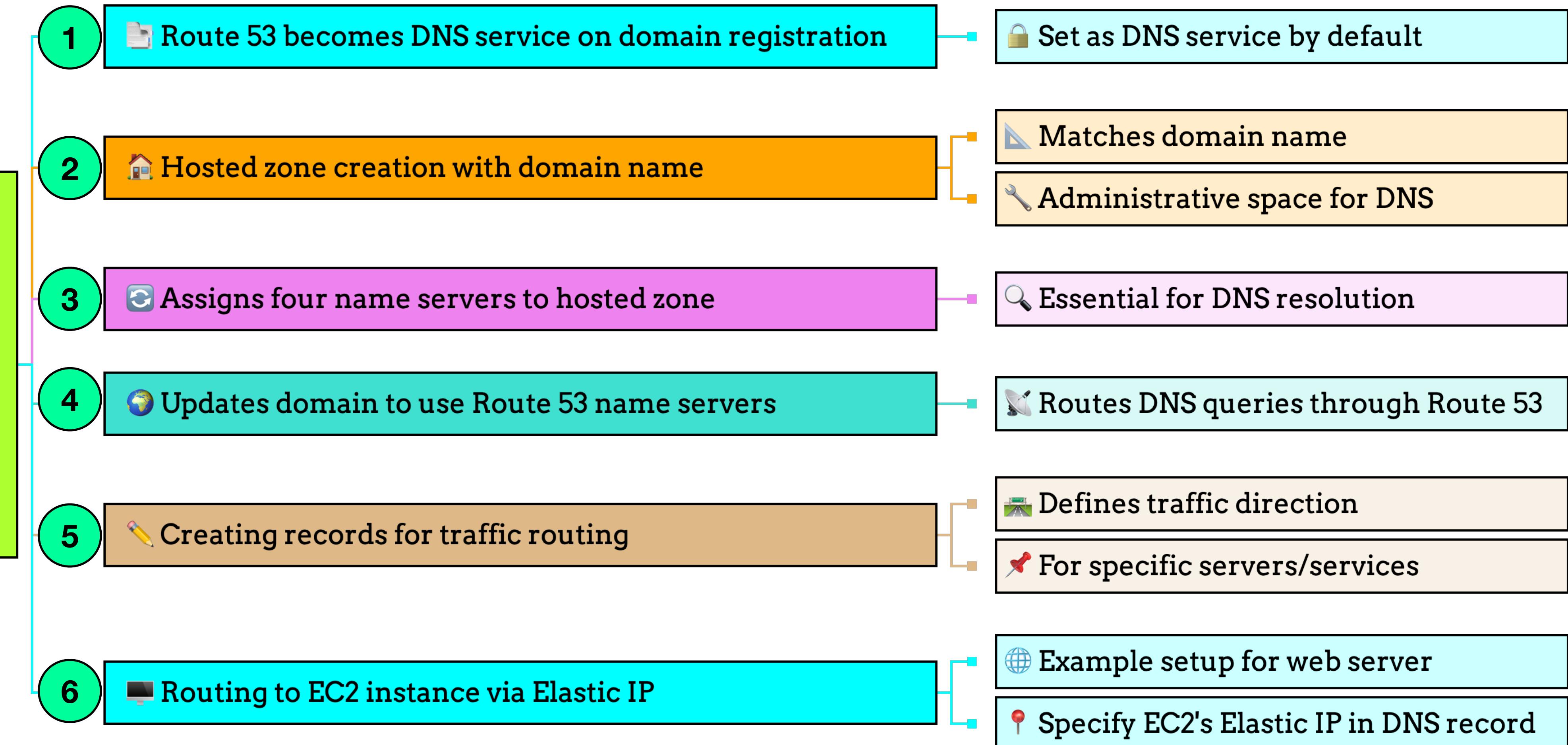
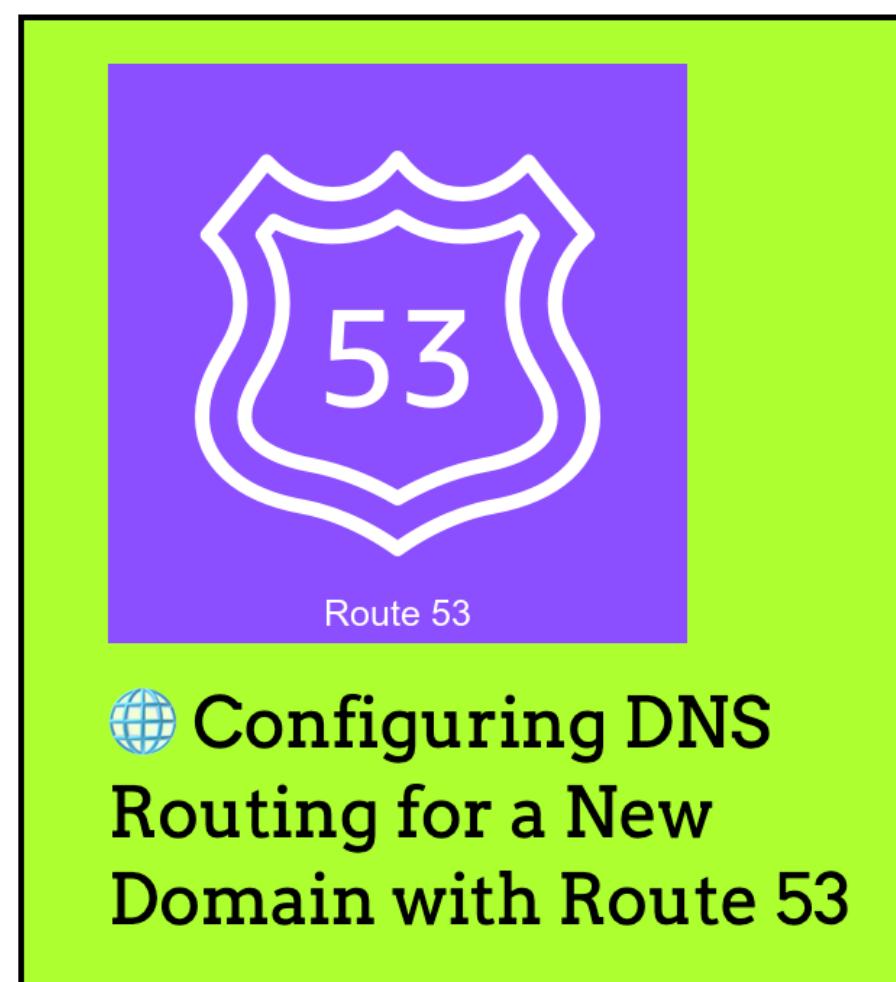
🔒 Maintains security standards

Making Route 53 the DNS Service for an Inactive Domain.



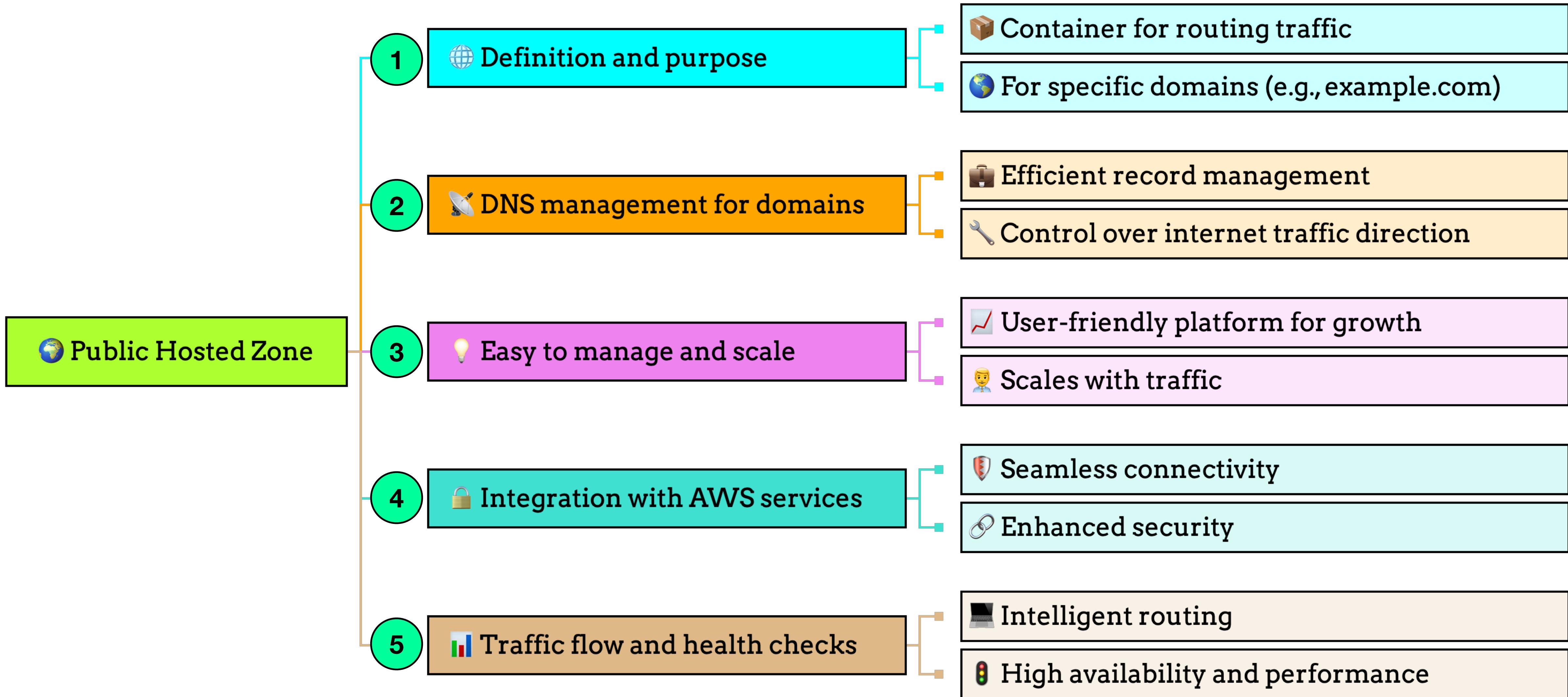


Configuring DNS Routing for a New Domain with Route 53.



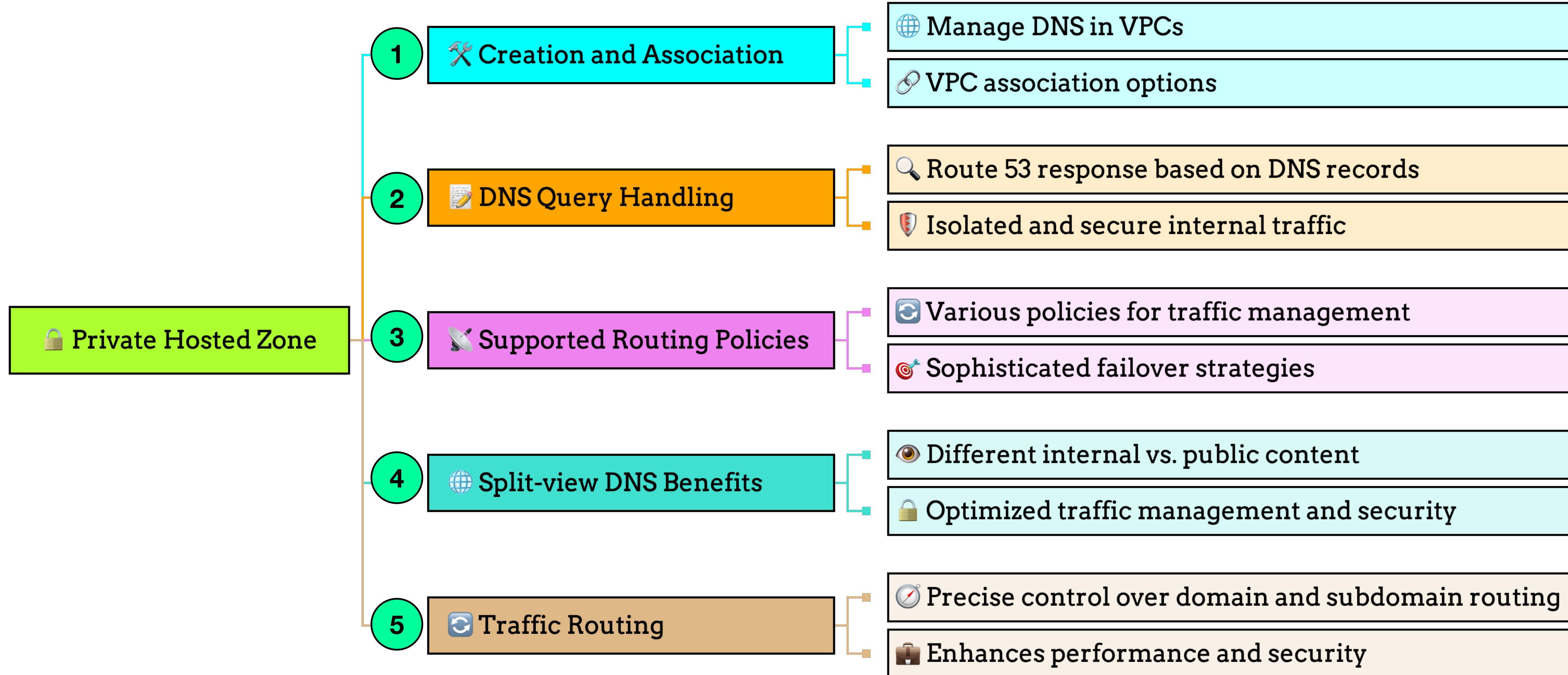


Public Hosted Zone.

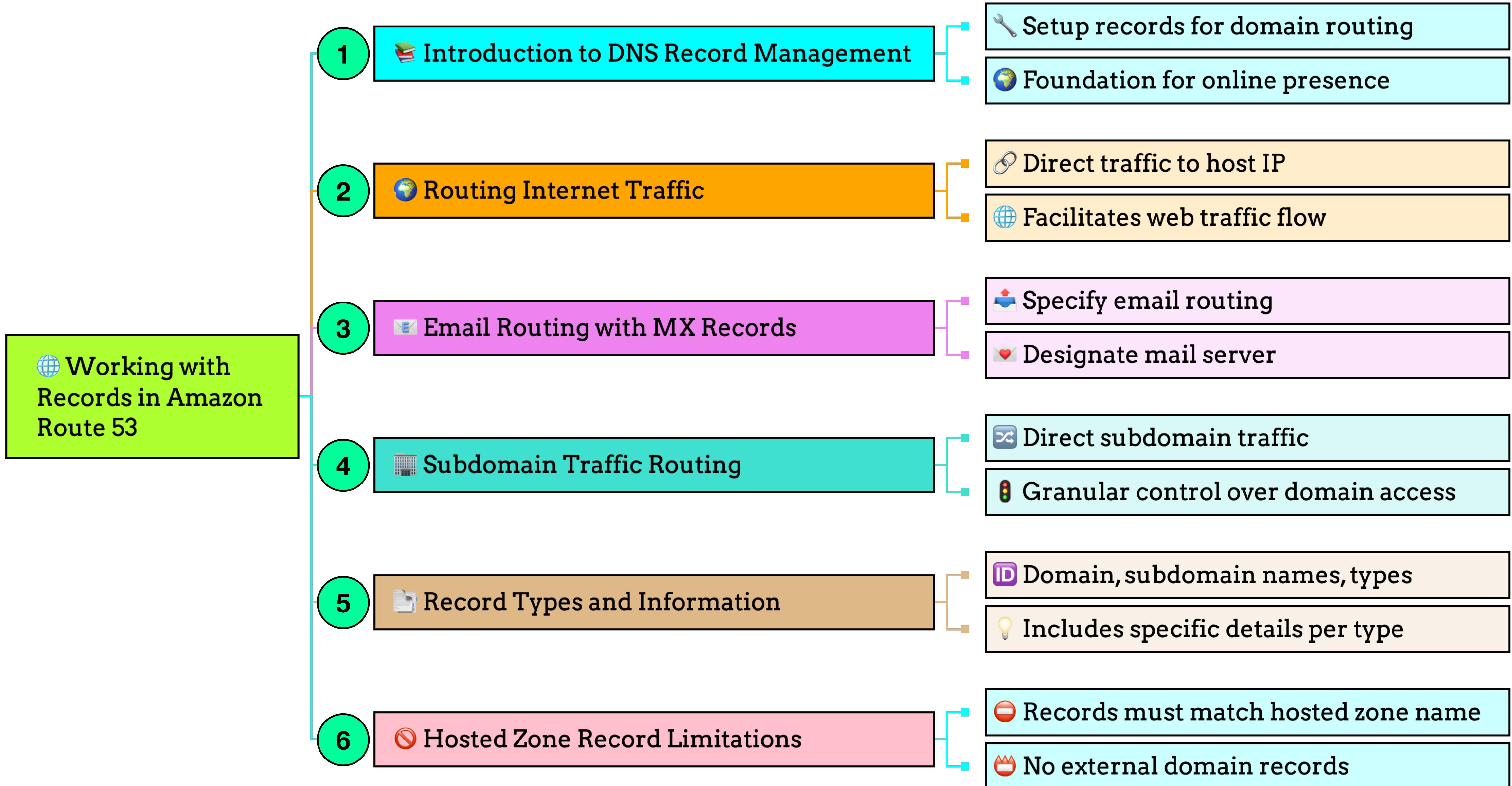




Private Hosted Zone.



Working with Records in Amazon Route 53.

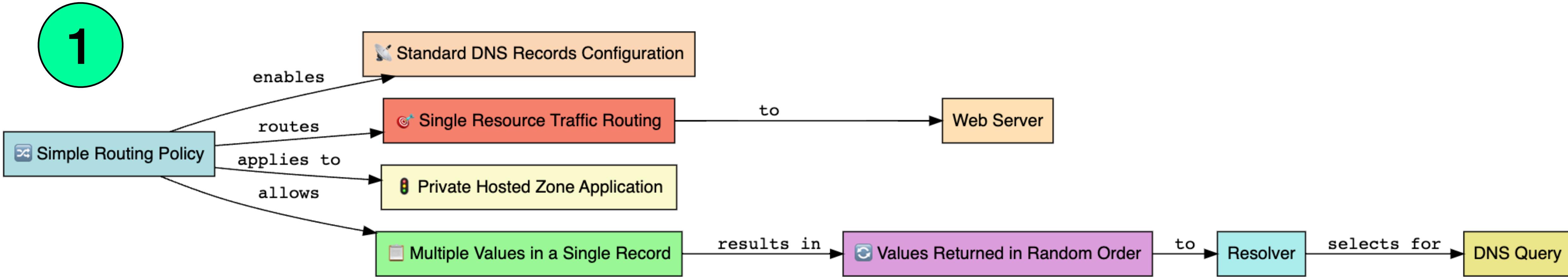




Routing Policies in Amazon Route 53



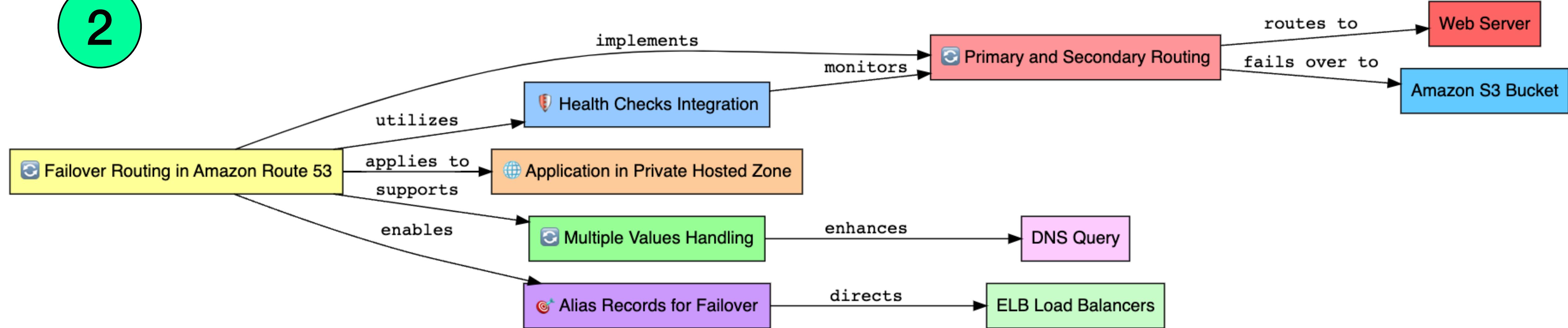
1. **Simple Routing Policy:** Single resource traffic, Straightforward setups
2. **Failover Routing Policy:** Active-passive failover, Reliability, availability
3. **Geolocation Routing Policy:** Routes by requester location, Localize content, reduce latency
4. **Geoproximity Routing Policy:** Directs based on resource, user location, Optional traffic flow adjustment
5. **Latency Routing Policy:** Lowest latency routing, Best AWS region response time
6. **IP-based Routing Policy:** Routes by IP address, Granular decisions
7. **Multivalue Answer Routing Policy:** Up to eight healthy records, Random selection
8. **Weighted Routing Policy:** Distributes traffic by weight, Experimentation, phased rollouts



🔗 Simple Routing Policy in Amazon Route 53

1. ⚡ **Standard DNS Records Configuration:** 🔧 Configures standard DNS, ❌ No complex routing options
2. 🎯 **Single Resource Traffic Routing:** 🏠 To a singular resource, 🌐 Web server hosting
3. 🚨 **Private Hosted Zone Application:** 🔒 Internal network management
4. 📋 **Multiple Values in a Single Record:** 🔄 Load distribution, 🔢 Multiple IP addresses
5. 🔄 **Values Returned in Random Order:** 🎲 Random to resolver, ✅ Resolver selects one

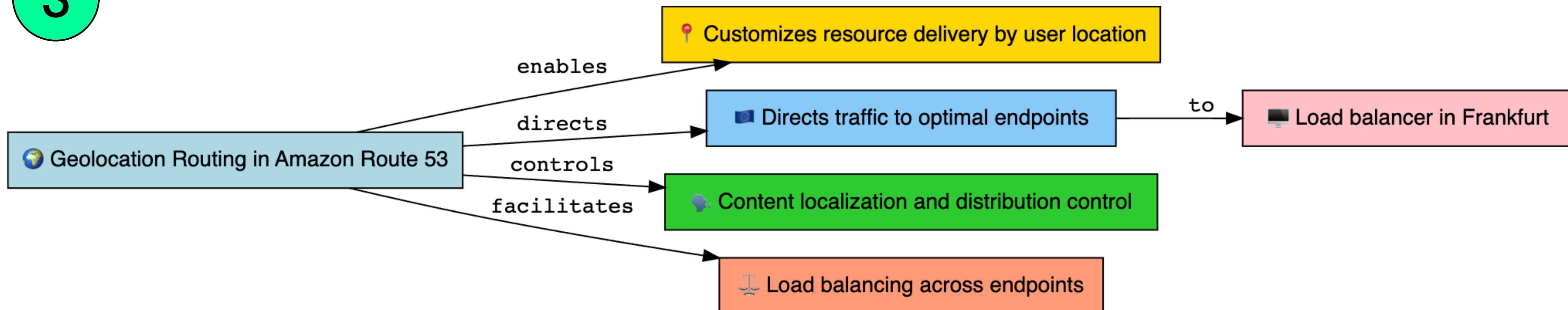
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🔄 Failover Routing in Amazon Route 53

1. **🔄 Primary and Secondary Routing:** 🚑➡🌐 Direct web server to S3
2. **🛡️ Health Checks Integration:** 💔🔄❤️ Monitor and switch resources
3. **🌐 Application in Private Hosted Zone:** 🔒🔧 Internal network management
4. **🔄 Multiple Values Handling:** 📋🔄🔢 Flexible DNS responses
5. **🎯 Alias Records for Failover:** ➡🎲🎯 Direct queries based on health

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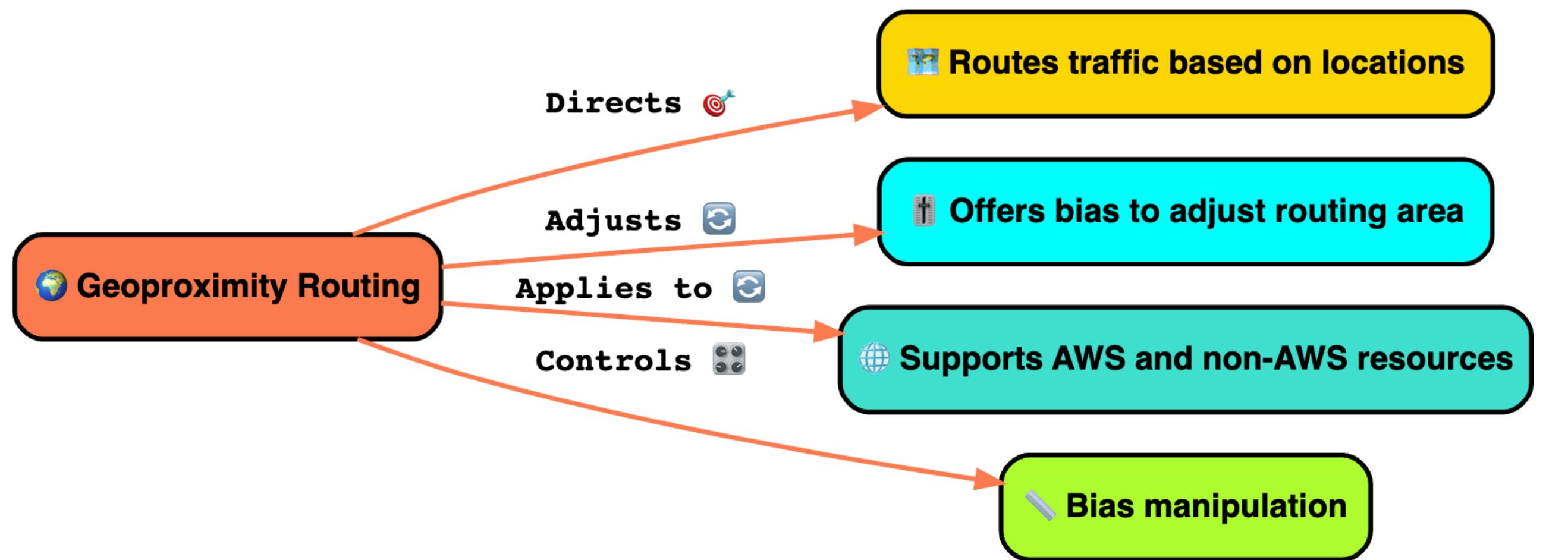


Geolocation Routing in Amazon Route 53

1. ⚡ Customizes resource delivery by user location: 🌎 Targeted content delivery
2. 🇪🇺 Directs traffic to optimal endpoints: 💻 Load balancer in Frankfurt
3. 💬 Content localization and distribution control: 🔒 Match language or restrict distribution
4. ⚖️ Load balancing across endpoints: 🚀 High availability and performance



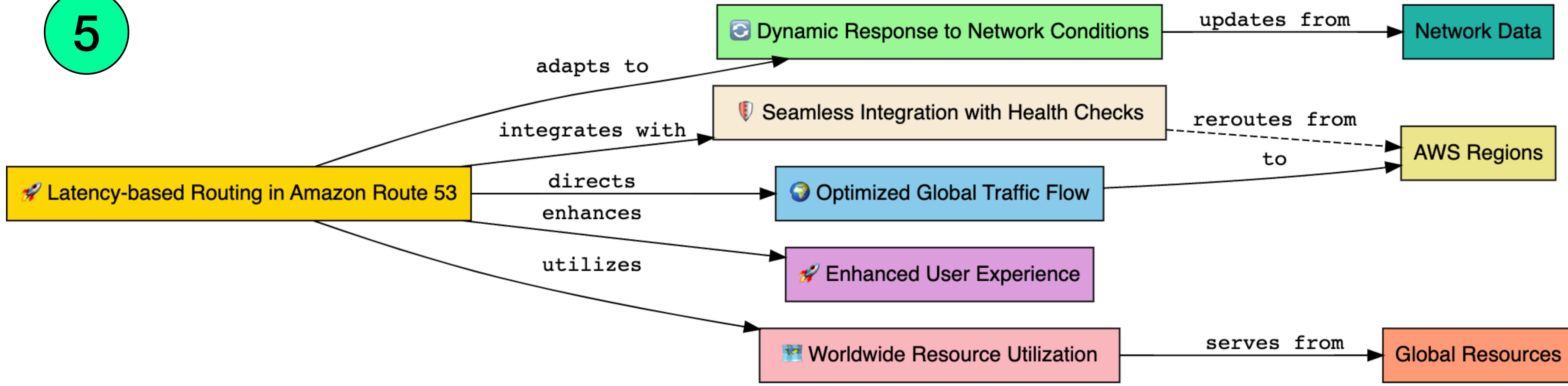
Geoproximity Routing in Amazon Route 53



Geoproximity Routing in Amazon Route 53

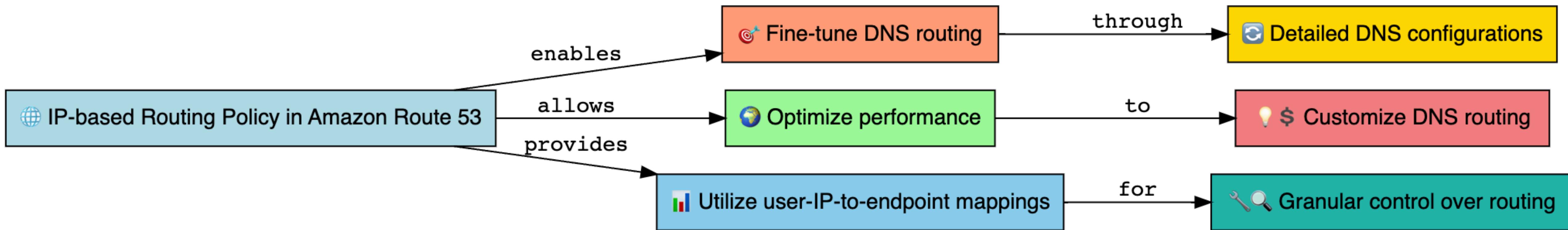
1. **Routes traffic based on locations:** Directs to nearest resource, Optimizes for reduced latency
2. **Offers bias to adjust routing area:** Fine-tuning of geographic region, Increases or reduces the area
3. **Supports AWS and non-AWS resources:** AWS: Regions or Local Zones, Non-AWS: Latitude and longitude
4. **Bias manipulation:** Positive to expand region, Negative to shrink region, Affects traffic routing

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🚀 Latency-based Routing in Amazon Route 53

1. 🌎 **Optimized Global Traffic Flow:** 🏁 Lowest latency AWS region
2. ⚡ **Dynamic Response to Network Conditions:** ⏱ Continually updated latency
3. 🌎 **Worldwide Resource Utilization:** 📈 Optimal global resource use
4. 🚀 **Enhanced User Experience:** 💻 Improved load times, smoother interactions
5. 🛡️ **Seamless Integration with Health Checks:** ⚡ Automatic rerouting to healthy endpoints

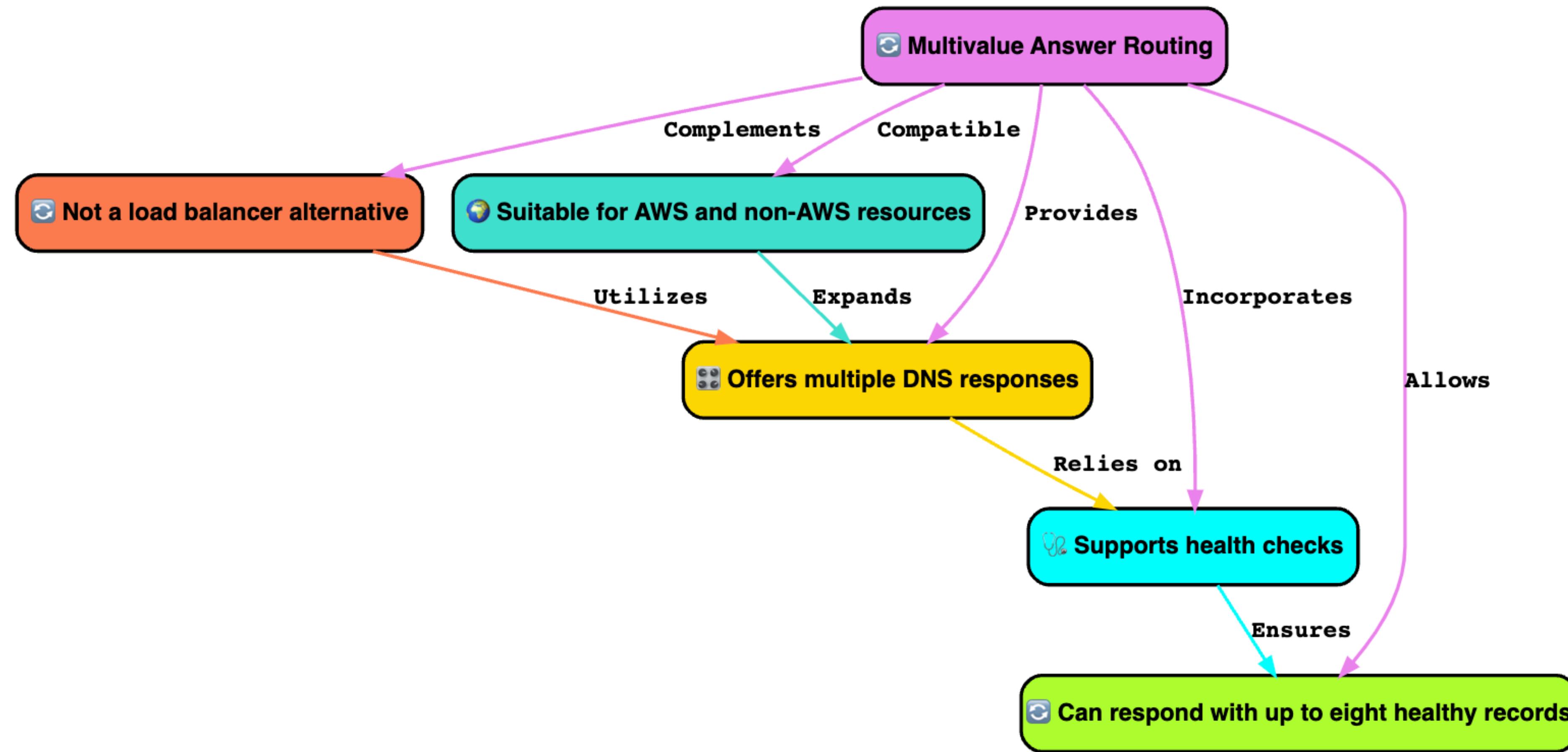


IP-based Routing Policy in Amazon Route 53

1. **Fine-tune DNS routing based on network understanding:** **Detailed DNS configurations**
2. **Optimize performance or reduce network costs:** **Customize DNS routing**
3. **Utilize user-IP-to-endpoint mappings for precise control:** **Granular control over routing**

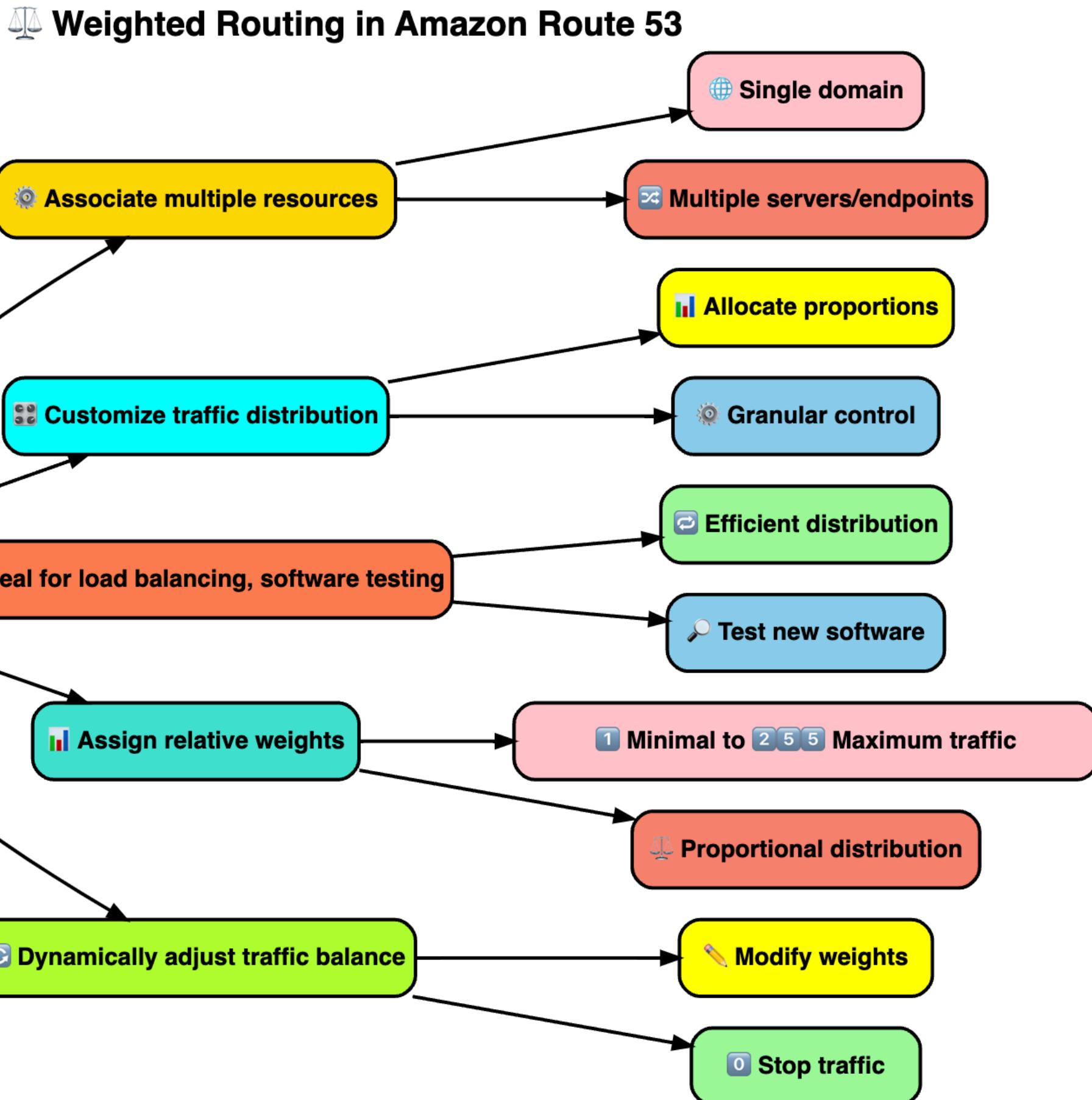
⌚ Multivalue Answer Routing in Amazon Route 53

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⌚ Multivalue Answer Routing in Amazon Route 53

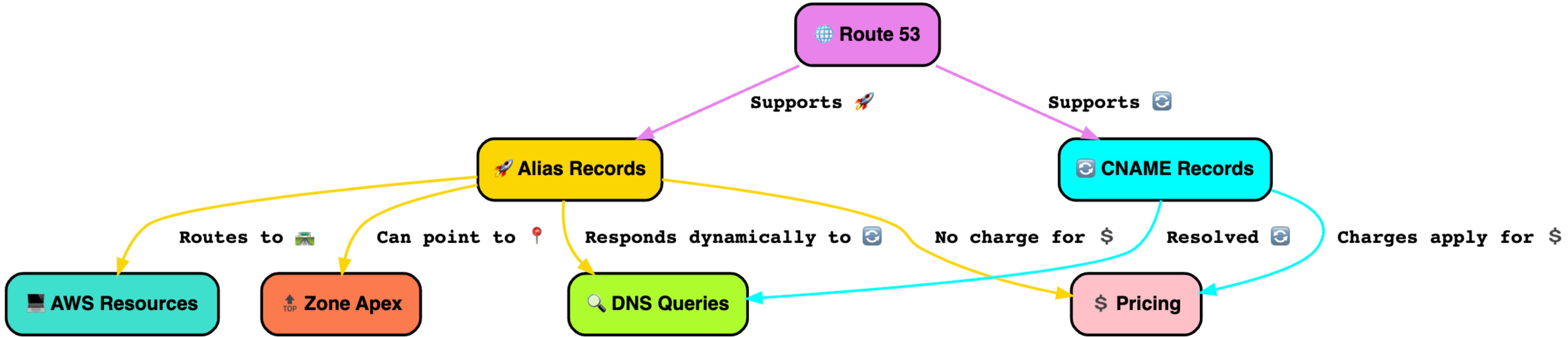
1. **🎛️ Offers multiple DNS responses:** ⚙️ Configures multiple values, 🛫 Improves availability, load distribution
2. **SuccessListener Supports health checks for resources:** ✅ Ensures returning of healthy IPs, 🚑 Enhances reliability, uptime
3. **⌚ Not a load balancer alternative:** + Complements load balancing, 🚦 Simpler traffic distribution method
4. **🌐 Suitable for AWS and non-AWS resources:** 🔗 AWS Regions, Local Zones, ⏵ Uses latitude, longitude for non-AWS
5. **🎲 Can respond with up to eight healthy records:** 🎲 Up to eight responses, ⚡ Enhances traffic distribution



Weighted Routing in Amazon Route 53

1. **Associate multiple resources:** Single domain, Multiple servers/endpoints
2. **Customize traffic distribution:** Allocate proportions, Granular control
3. **Ideal for load balancing, software testing:** Efficient distribution, Test new software
4. **Assign relative weights:** Minimal to Maximum traffic, Proportional distribution
5. **Dynamically adjust traffic balance:** Modify weights, Stop traffic

🔄 Choosing Between Alias and Non-Alias Records



🔄 Choosing Between Alias and Non-Alias Records

1. **🚀 Alias Records: Route 53 Extension for DNS:** Extends DNS functionality, **gMaps** Routes to AWS resources, Route 53 records
2. **📍 Zone Apex Alias: Exclusive Feature:** Points to zone apex (e.g., example.com), **vs** Unlike CNAME records
3. **⌚ Dynamic DNS Query Response:** Dynamically responds with values, **🔧** Supports various AWS services
4. **💡 Alias vs. CNAME: Key Differences:** Routes to specific AWS resources, **🚧** Supports zone apex pointing, **🆓** No charges for DNS queries to AWS resources
5. **\$ Pricing: Alias vs. CNAME:** No charge for alias record queries, **💰** CNAME queries are charged

Supported DNS Record Types in Amazon Route 53

1.  **A Record Type:**  Maps domain names to IPv4,  Directs traffic to server
2.  **AAAA Record Type:**  Maps domain names to IPv6,  Directs IPv6 traffic
3.  **CAA Record Type:**  Specifies allowed CAs,  Enhances security
4.  **CNAME Record Type:**  Redirects one domain to another,  Excludes zone apex
5.  **DS Record Type:**  Connects child zone's DNSKEY,  Ensures secure delegation
6.  **MX Record Type:**  Directs email to mail server,  Based on priority
7.  **NAPTR Record Type:**  Regex-based rewriting rules,  Maps names to URLs or names
8.  **NS Record Type:**  Lists authoritative name servers,  Critical for DNS lookup
9.  **PTR Record Type:**  Maps IP to hostname,  BACK Used in reverse DNS lookups
10.  **SOA Record Type:**  Provides domain, zone info,  Includes admin's email
11.  **SPF Record Type:**  Outdated, use TXT for SPF,  Lists authorized mail servers
12.  **SRV Record Type:**  Specifies port for services,  Facilitates VoIP, messaging, email
13.  **TXT Record Type:**  Stores text information,  Verifies ownership, security



**Thanks
for
Watching**

