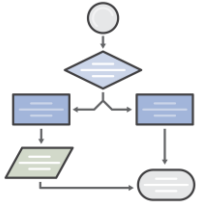# Area Code Finder

● Requirement

○ Deliverable Screenshot

○ Solution Architect.

○ Installation Guide
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What does "Area Code Finder" do?

- **User Scenario**

    How many times you're curious about where is the strange phone number called from? You may want to know. Area

    code finder will help you search location of a provided area code. I collected nearly 400 area codes and locations in

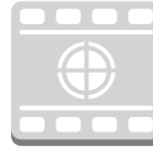   *North America, and loaded them into my backend Aurora database.*

    Please try it now https://tri-alb-clb-https-1496351026.us-west-2.elb.amazonaws.com:3001

    Using AWS CloudFormation implements automate full stack, self contained, automatically deployment on AWS
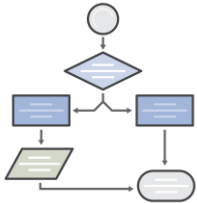
aws

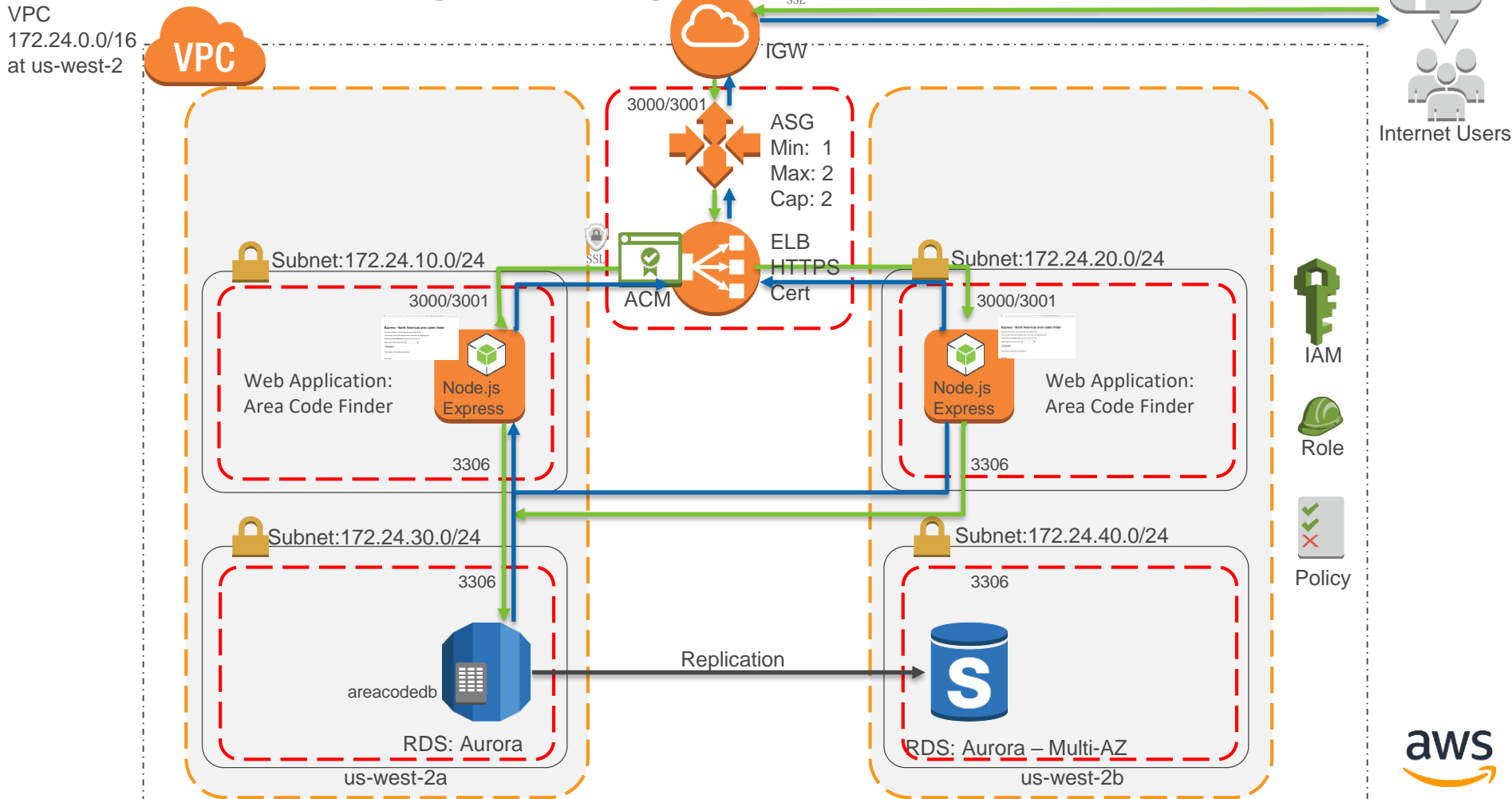# Response to Trinimbus Assignment

Requirement
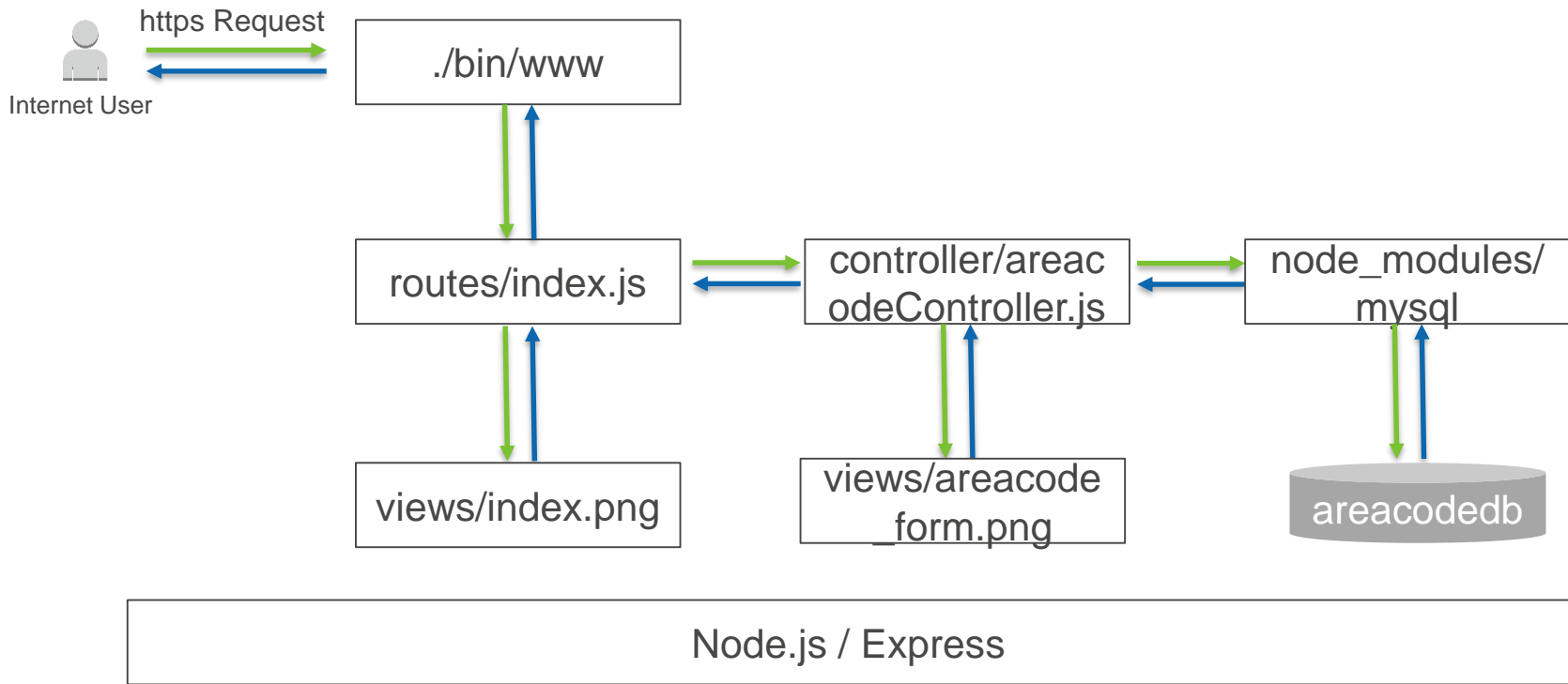
Deliverable Screenshot

Solution Architect.

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AWS VPC Landing Zone Design

VPC
172.24.0.0/16
at us-west-2

VPC

SSL

IGW

Internet Users

3000/3001

ASG
Min: 1
Max: 2
Cap: 2

SSL

ELB
HTTPS
Cert

ACM

Subnet:172.24.10.0/24

3000/3001

Node.js
Express

Web Application:
Area Code Finder

3306

Subnet:172.24.20.0/24

3000/3001

Node.js
Express

Web Application:
Area Code Finder

3306

IAM

Role

Policy

Subnet:172.24.30.0/24

3306

areacodedb

RDS: Aurora

us-west-2a

Replication

Subnet:172.24.40.0/24

3306
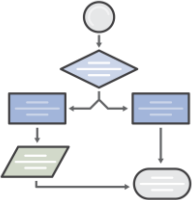
RDS: Aurora – Multi-AZ

us-west-2b

aws

Web Application Architecture

• The Web Application is created from scratch based on Node.js and Express

Response to Trinimbus Assignment

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CloudFormation Deployment

- Full web application stack is auto-deployed via CloudFormation, by providing only 8 parameters and 1 click to implement CloudFormation

- Leverage intrinsic functions to avoid hard coding

- ELB and ASG are automatically configured in CloudFormation

- RDS Aurora multi-AZs cluster/instance are automatically created by CloudFormation. Table and data are created and loaded automatically by User Data + Python scripts.

aws

CloudFormation resources mapping

VPC
172.24.0.0/16
at us-west-2

"AWS::EC2::VPC"
"acfVPC"

https://cnf-areac-trihaela-1smwcdoc9wgo6-2061926940.us-west-2.elb.amazonaws.com:3001/

IGW

"AWS::EC2::InternetGateway"
"ACFIGW"

Internet Users

"Outputs"
"WebsiteURL"

"AWS::EC2::RouteTable"
"ACFPublicRouteTable"

"AWS::EC2::NetworkAcl"
"ACFPublicNetworkAcl"

"AWS::EC2::SecurityGroup"
"ACFSGALBGeneral"
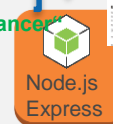
3000/3001

ASG
Min: 1
Max: 2
Cap: 2

ELB
HTTPS
Cert

"AWS::AutoScaling::LaunchConfiguration"
"ACFLaunchConfiguration"
"AWS::AutoScaling::AutoScalingGroup"
"ACFAutoScalingGroup"

"AWS::EC2::Subnet"
"ACFSBPUB1722410"
Subnet:172.24.10.0/24

"AWS::EC2::Subnet"
"ACFSBPUB1722420"
Subnet:172.24.20.0/24

ACM

"AWS::EC2::SecurityGroup"
"ACFSGWebApplicationGeneral"

3000/3001

Web Application:
Area Code Finder

Node.js
Express

"AWS::ElasticLoadBalancing::LoadBalancer"
"ACFElasticLoadBalancer"

3000/3001

Node.js
Express

Web Application:
Area Code Finder

IAM

Role

Policy

3306

3306

"AWS::EC2::Subnet"
"ACFSBPUB1722430"
Subnet:172.24.30.0/24

"AWS::EC2::Subnet"
"ACFSBPUB1722440"
Subnet:172.24.40.0/24

"AWS::EC2::SecurityGroup"
"ACFSGDBGeneral"

3306

"AWS::RDS::DBInstance"
"acfrdsdbinstance1"

3306

"AWS::RDS::DBInstance"
"acfrdsdbinstance2"

areacodedb

Replication

"AWS::RDS::DBCluster"
"acfrdsdbcluster"

RDS: Aurora

RDS: Aurora – Multi-AZ

us-west-2a

us-west-2b

aws

Leverage cfn-init, cfn-signal and user data

```json
"Metadata" : {
    "Comment" : "Install packages, create files and exec commands",
    "AWS::CloudFormation::Init" : {
        "config" : {
            "packages" : {
              "yum" : {
                  "httpd" : []
              }
            },
            "services" : {
              "sysvinit" : {
                "httpd"    : { "enabled" : "true", "ensureRunning" : "true" }
              }
            }
        }
    }
},
```

```
"/opt/aws/bin/cfn-init -v ",
"        --stack ", { "Ref" : "AWS::StackName" },
"        --resource ACFLaunchConfiguration ",
"        --region ", { "Ref" : "AWS::Region" }, "\n",

"/opt/aws/bin/cfn-signal -e $? ",
"        --stack ", { "Ref" : "AWS::StackName" },
"        --resource ACFAutoScalingGroup ",
"        --region ", { "Ref" : "AWS::Region" }, "\n",
```

- Automatically install packages like httpd
- Automatically start service

aws

ELB and ASG are automatically configured via CloudFormation

```json
"Properties": {
    "SecurityGroups" : [{ "Ref" : "ACFSGALBGeneral" }],
    "Scheme" : "internet-facing",
    "Subnets" : [{ "Ref" : "ACFSBPUB1722410" }, { "Ref" : "ACFSBPUB1722420" }],
    "CrossZone" : "true",
    "Listeners": [
    {
        "InstancePort": { "Ref" : "ACFHTTPSPORT" },
        "InstanceProtocol": "HTTPS",
        "LoadBalancerPort": { "Ref" : "ACFHTTPSPORT" },
        "Protocol": "HTTPS",
        "SSLCertificateId" : { "Ref" :  "ACFSSLCertificationID" }
    }
    ],
    "HealthCheck" : {
        "Target" : {
            "Fn::Join" : [ "", [ "HTTPS:", { "Ref" : "ACFHTTPSPORT" }, "/" ] ]
        },
        "HealthyThreshold" : "10",
        "UnhealthyThreshold" : "5",
        "Interval" : "30",
        "Timeout" : "5"
    }
}
```

Load Balancer Protocol	Load Balancer Port	Instance Protocol	Instance Port
HTTPS	3001	HTTPS	3001

```json
"Properties": {
    "AutoScalingGroupName" : "ACF_AutoScalingGroup",
    "AvailabilityZones" : [ {"Fn::Join" : ["",[{ "Ref": "AWS::Region" },"a"]]}, {"Fn::Join" : ["",[{ "Re
    "DesiredCapacity": "2",
    "HealthCheckGracePeriod": "180",
    "HealthCheckType": "EC2",
    "LaunchConfigurationName": {"Ref": "ACFLaunchConfiguration"},
    "MaxSize": "2",
    "MinSize": "1",
    "LoadBalancerNames"  : [{"Ref": "ACFElasticLoadBalancer"}],
    "Tags" : [
        { "Key" : "Name", "Value" : "ACF_AutoScalingGroup", "PropagateAtLaunch" : "true" },
        { "Key" : "Application", "Value" : "Area Code Finder (ACF) - Autoscaling Group", "PropagateAtL
        { "Key" : "E-mail", "Value" : "jackcy99@hotmail.com", "PropagateAtLaunch" : "true" }
    ],
    "VPCZoneIdentifier": [{ "Ref" : "ACFSBPUB1722410" }, { "Ref" : "ACFSBPUB1722420" }]
}
```

Auto Scaling Group: TRI_HA_AutoScalingGroup

Details	Activity History	Scaling Policies	Instances	Monitoring	Notifications	Tags	Scheduled Actions	Lifecycle Hooks

Launch Configuration	cnf-areacodefinder-02-TRIHALaunchConfiguration-MBXZVJQ8CNDQ		
Launch Template			
Launch Template Version			
Service-Linked Role	arn:aws:iam::272462672480:role/aws-service-role/autoscaling.amazonaws.com/AWSServiceRoleForAutoScaling		
Load Balancers	cnf-areac-TRIHAEla-1SMWCDOC9WGO6		
Target Groups			
Desired	2	Availability Zone(s)	us-west-2a, us-west-2b
Min	1	Subnet(s)	subnet-b000bcfb,subnet-4f60f236
Max	2	Default Cooldown	300
Health Check Type	EC2	Placement Group	

aws

Response to Trinimbus Assignment

- Requirement

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- Solution Architect.

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aws

Deliverable Screenshot (Web Application)