Step 1: Clone the Repository

```bash
git clone https://github.com/ndeepakprasanth/dapr-eks-pubsub-ready.git
cd dapr-eks-pubsub-ready
```

Step 2: Set execute permissions

```
chmod +x oneclick.sh
chmod +x test.sh
chmod +x scripts/*.sh
```

Step 3: One-Click deployment

```
# Replace with your AWS Account ID
ACCOUNT_ID=946248011760 ./oneclick.sh
```

Step 4: Verify deployment

```
# Check pods (should show 2/2 Ready)
    kubectl -n dapr-apps get pods -o wide
    # Check services
    kubectl -n dapr-apps get svc
    # Check Dapr components
    kubectl -n dapr-apps get components
```

Step 5: Test Pub/Sub functionality

```
./test.sh
```

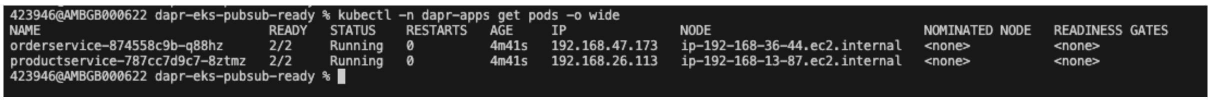
Step 6: View ECR repositories

```
aws ecr describe-repositories --region us-east-1
```

Step 7: Clean up when completed

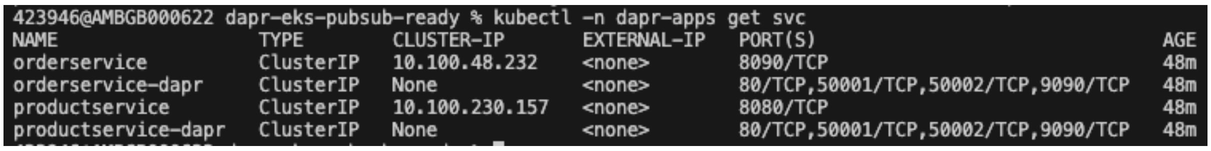
```
./destroy.sh
```

1. Running pods:



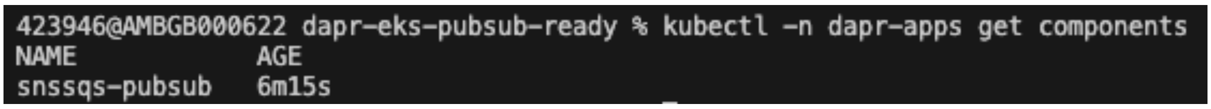
```
423946@AMBGB000622 dapr-eks-pubsub-ready % kubectl -n dapr-apps get pods -o wide
NAME                             READY   STATUS    RESTARTS   AGE     IP               NODE                           NOMINATED NODE   READINESS GATES
orderservice-874558c9b-q88hz     2/2     Running   0          4m41s   192.168.47.173   ip-192-168-36-44.ec2.internal  <none>           <none>
productservice-787cc7d9c7-8ztmz  2/2     Running   0          4m41s   192.168.26.113   ip-192-168-13-87.ec2.internal  <none>           <none>
423946@AMBGB000622 dapr-eks-pubsub-ready % 
```

2. Services:



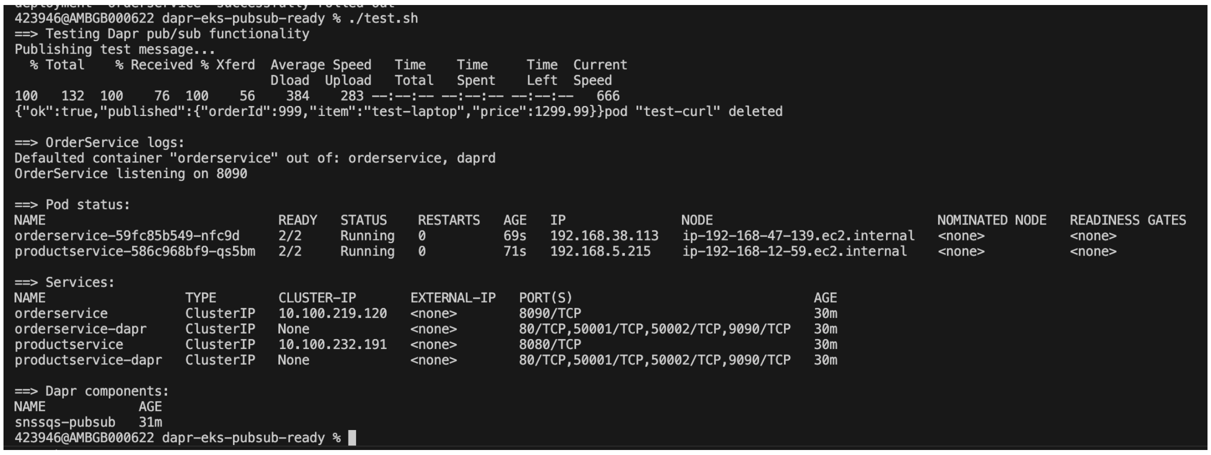
```
423946@AMBGB000622 dapr-eks-pubsub-ready % kubectl -n dapr-apps get svc
NAME                  TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)                               AGE
orderservice          ClusterIP   10.100.48.232    <none>        8090/TCP                              48m
orderservice-dapr     ClusterIP   None             <none>        80/TCP,50001/TCP,50002/TCP,9090/TCP   48m
productservice        ClusterIP   10.100.230.157   <none>        8080/TCP                              48m
productservice-dapr   ClusterIP   None             <none>        80/TCP,50001/TCP,50002/TCP,9090/TCP   48m
```

3. Dapr compoents



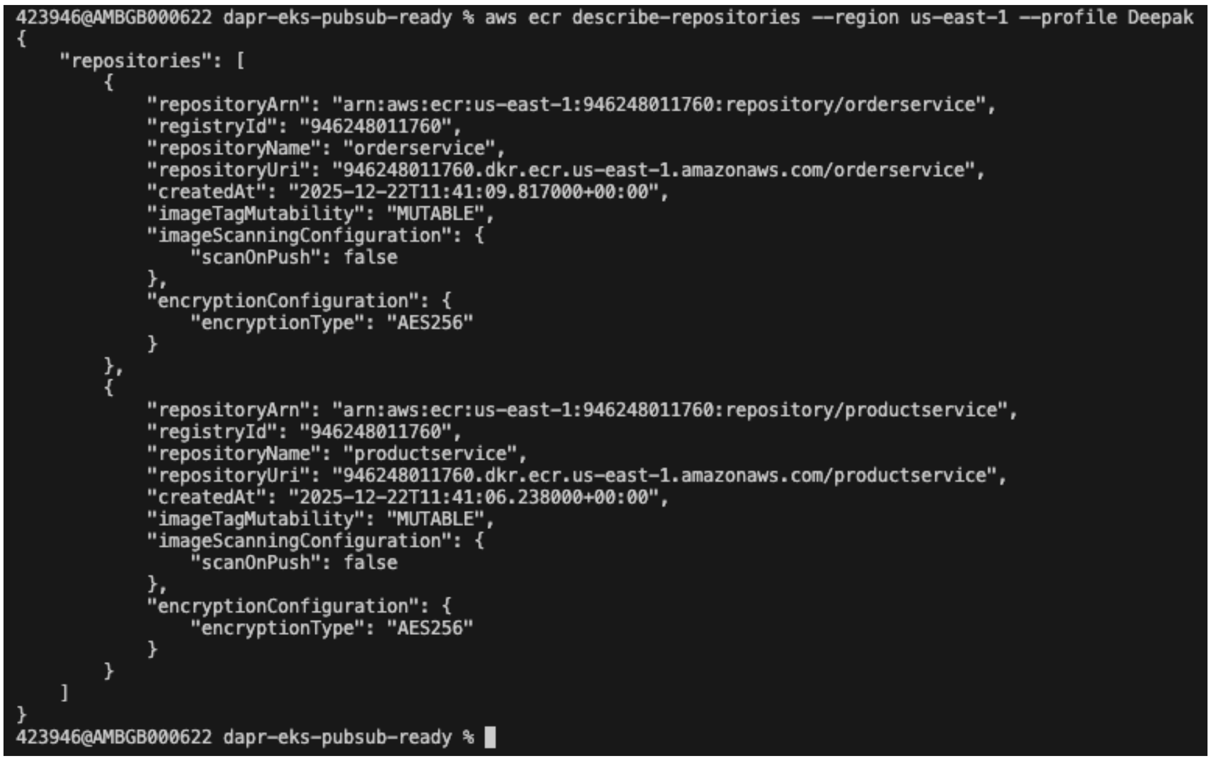
```
423946@AMBGB000622 dapr-eks-pubsub-ready % kubectl -n dapr-apps get components
NAME            AGE
snssqs-pubsub   6m15s
```

4. Test Pub/Sub



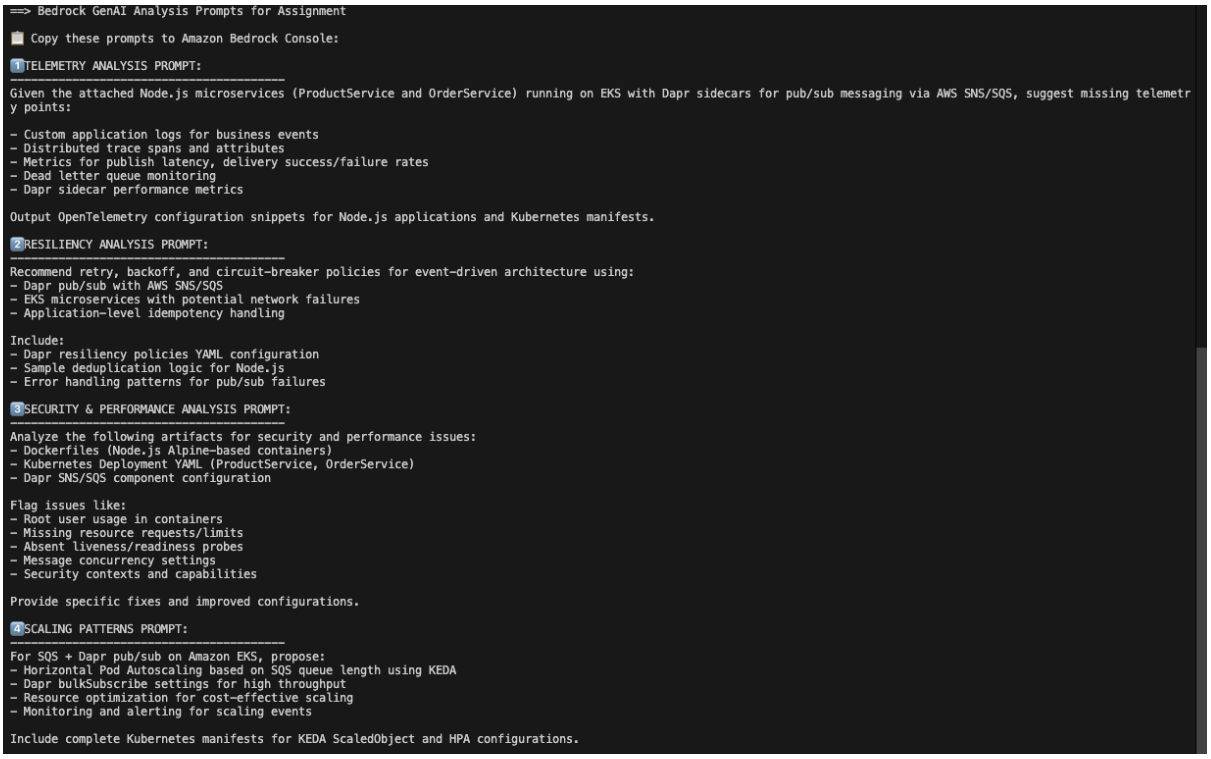
```
deployment "orderservice" successfully rolled out
423946@AMBGB000622 dapr-eks-pubsub-ready % ./test.sh
==> Testing Dapr pub/sub functionality
Publishing test message...
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   132  100    76  100    56    384    283 --:--:-- --:--:-- --:--:--   666
{"ok":true,"published":{"orderId":999,"item":"test-laptop","price":1299.99}}pod "test-curl" deleted

==> OrderService logs:
Defaulted container "orderservice" out of: orderservice, daprd
OrderService listening on 8090

==> Pod status:
NAME                              READY   STATUS    RESTARTS   AGE   IP               NODE                              NOMINATED NODE   READINESS GATES
orderservice-59fc85b549-nfc9d     2/2     Running   0          69s   192.168.38.113   ip-192-168-47-139.ec2.internal   <none>           <none>
productservice-586c968bf9-qs5bm   2/2     Running   0          71s   192.168.5.215    ip-192-168-12-59.ec2.internal    <none>           <none>

==> Services:
NAME                  TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)                                AGE
orderservice          ClusterIP   10.100.219.120   <none>        8090/TCP                               30m
orderservice-dapr     ClusterIP   None             <none>        80/TCP,50001/TCP,50002/TCP,9090/TCP   30m
productservice        ClusterIP   10.100.232.191   <none>        8080/TCP                               30m
productservice-dapr   ClusterIP   None             <none>        80/TCP,50001/TCP,50002/TCP,9090/TCP   30m

==> Dapr components:
NAME            AGE
snssqs-pubsub   31m
423946@AMBGB000622 dapr-eks-pubsub-ready % 
```

5. ECR repositories with pushed images



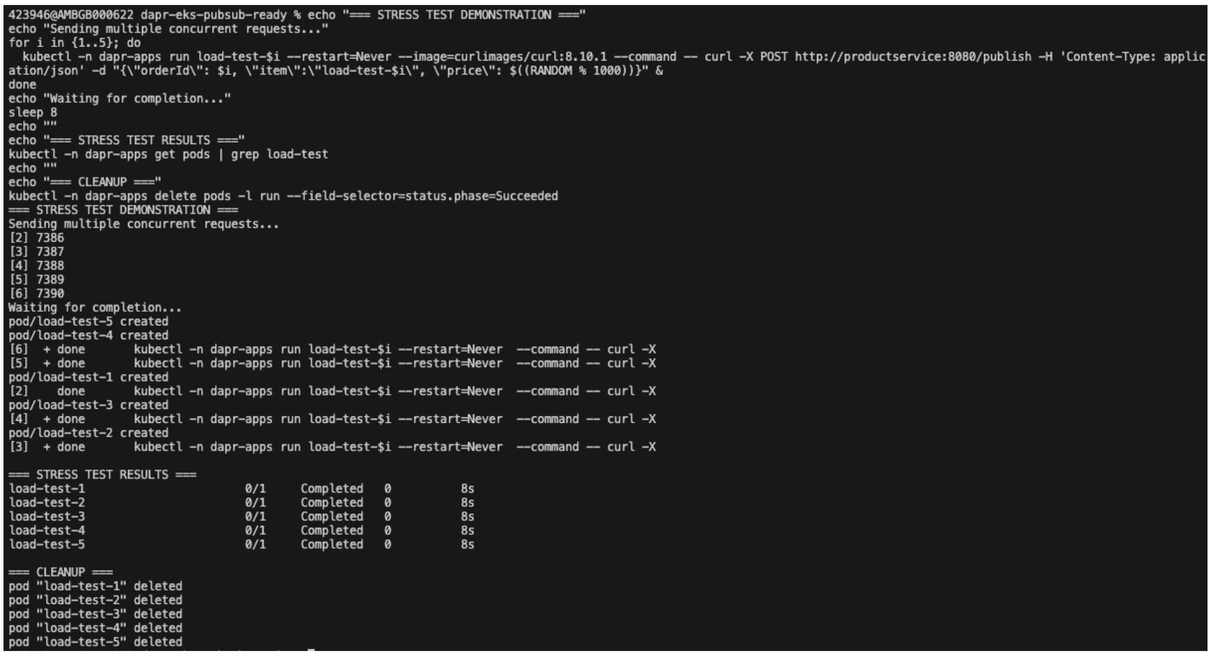
```
423946@AMBGB000622 dapr-eks-pubsub-ready % aws ecr describe-repositories --region us-east-1 --profile Deepak
{
    "repositories": [
        {
            "repositoryArn": "arn:aws:ecr:us-east-1:946248011760:repository/orderservice",
            "registryId": "946248011760",
            "repositoryName": "orderservice",
            "repositoryUri": "946248011760.dkr.ecr.us-east-1.amazonaws.com/orderservice",
            "createdAt": "2025-12-22T11:41:09.817000+00:00",
            "imageTagMutability": "MUTABLE",
            "imageScanningConfiguration": {
                "scanOnPush": false
            },
            "encryptionConfiguration": {
                "encryptionType": "AES256"
            }
        },
        {
            "repositoryArn": "arn:aws:ecr:us-east-1:946248011760:repository/productservice",
            "registryId": "946248011760",
            "repositoryName": "productservice",
            "repositoryUri": "946248011760.dkr.ecr.us-east-1.amazonaws.com/productservice",
            "createdAt": "2025-12-22T11:41:06.238000+00:00",
            "imageTagMutability": "MUTABLE",
            "imageScanningConfiguration": {
                "scanOnPush": false
            },
            "encryptionConfiguration": {
                "encryptionType": "AES256"
            }
        }
    ]
}
423946@AMBGB000622 dapr-eks-pubsub-ready % 
```

6. Bedrock analysis



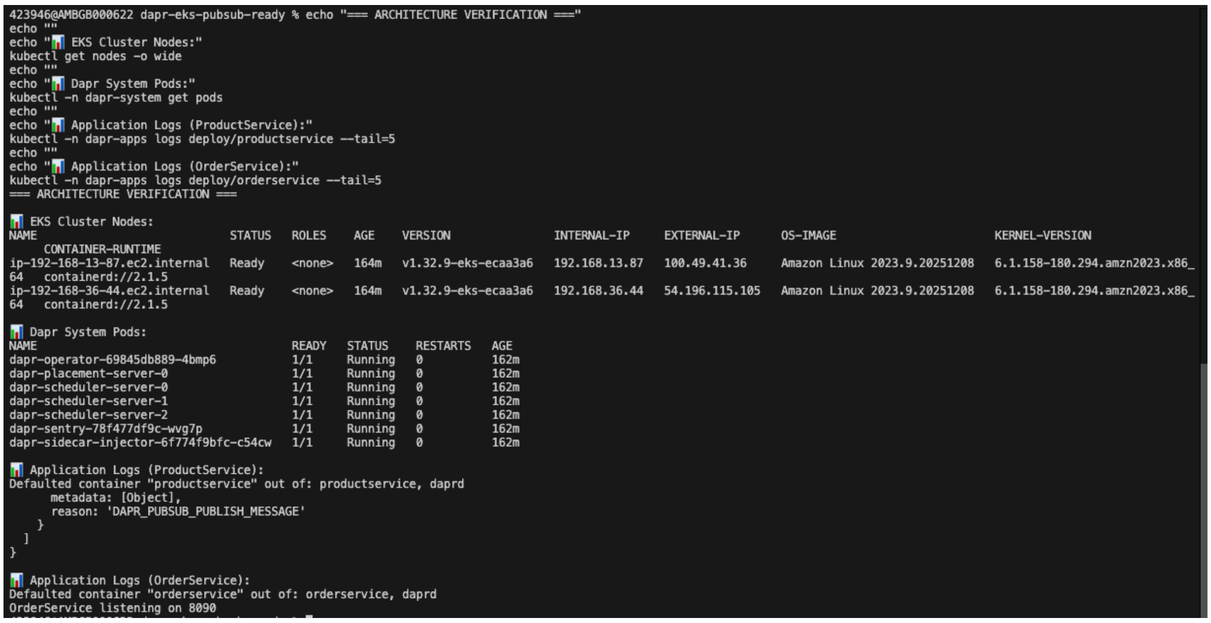
```
==> Bedrock GenAI Analysis Prompts for Assignment

📋 Copy these prompts to Amazon Bedrock Console:

1️⃣TELEMETRY ANALYSIS PROMPT:
----------------------------------------
Given the attached Node.js microservices (ProductService and OrderService) running on EKS with Dapr sidecars for pub/sub messaging via AWS SNS/SQS, suggest missing telemetr
y points:

- Custom application logs for business events
- Distributed trace spans and attributes
- Metrics for publish latency, delivery success/failure rates
- Dead letter queue monitoring
- Dapr sidecar performance metrics

Output OpenTelemetry configuration snippets for Node.js applications and Kubernetes manifests.

2️⃣RESILIENCY ANALYSIS PROMPT:
----------------------------------------
Recommend retry, backoff, and circuit-breaker policies for event-driven architecture using:
- Dapr pub/sub with AWS SNS/SQS
- EKS microservices with potential network failures
- Application-level idempotency handling

Include:
- Dapr resiliency policies YAML configuration
- Sample deduplication logic for Node.js
- Error handling patterns for pub/sub failures

3️⃣SECURITY & PERFORMANCE ANALYSIS PROMPT:
----------------------------------------
Analyze the following artifacts for security and performance issues:
- Dockerfiles (Node.js Alpine-based containers)
- Kubernetes Deployment YAML (ProductService, OrderService)
- Dapr SNS/SQS component configuration

Flag issues like:
- Root user usage in containers
- Missing resource requests/limits
- Absent liveness/readiness probes
- Message concurrency settings
- Security contexts and capabilities

Provide specific fixes and improved configurations.

4️⃣SCALING PATTERNS PROMPT:
----------------------------------------
For SQS + Dapr pub/sub on Amazon EKS, propose:
- Horizontal Pod Autoscaling based on SQS queue length using KEDA
- Dapr bulkSubscribe settings for high throughput
- Resource optimization for cost-effective scaling
- Monitoring and alerting for scaling events

Include complete Kubernetes manifests for KEDA ScaledObject and HPA configurations.
```

7. Stress test output



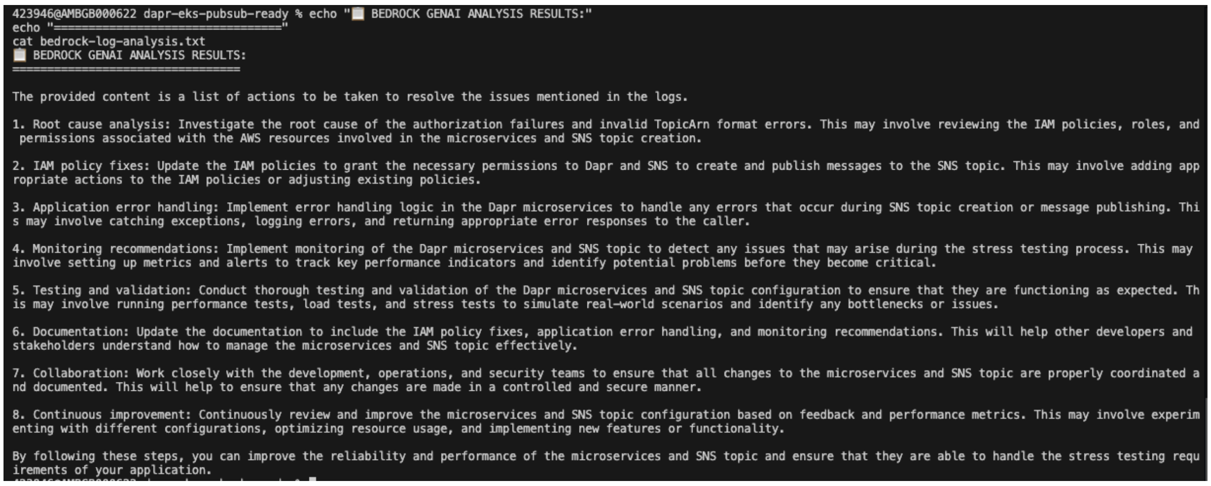
```
423946@AMBGB000622 dapr-eks-pubsub-ready % echo "=== STRESS TEST DEMONSTRATION ==="
echo "Sending multiple concurrent requests..."
for i in {1..5}; do
  kubectl -n dapr-apps run load-test-$i --restart=Never --image=curlimages/curl:8.10.1 --command -- curl -X POST http://productservice:8080/publish -H 'Content-Type: applic
ation/json' -d "{\"orderId\": $i, \"item\":\"load-test-$i\", \"price\": $((RANDOM % 1000))}" &
done
echo "Waiting for completion..."
sleep 8
echo ""
echo "=== STRESS TEST RESULTS ==="
kubectl -n dapr-apps get pods | grep load-test
echo ""
echo "=== CLEANUP ==="
kubectl -n dapr-apps delete pods -l run --field-selector=status.phase=Succeeded
=== STRESS TEST DEMONSTRATION ===
Sending multiple concurrent requests...
[2] 7386
[3] 7387
[4] 7388
[5] 7389
[6] 7390
Waiting for completion...
pod/load-test-5 created
pod/load-test-4 created
[6]  + done       kubectl -n dapr-apps run load-test-$i --restart=Never  --command -- curl -X
[5]  + done       kubectl -n dapr-apps run load-test-$i --restart=Never  --command -- curl -X
pod/load-test-1 created
[2]    done       kubectl -n dapr-apps run load-test-$i --restart=Never  --command -- curl -X
pod/load-test-3 created
[4]  + done       kubectl -n dapr-apps run load-test-$i --restart=Never  --command -- curl -X
pod/load-test-2 created
[3]  + done       kubectl -n dapr-apps run load-test-$i --restart=Never  --command -- curl -X

=== STRESS TEST RESULTS ===
load-test-1                      0/1     Completed   0          8s
load-test-2                      0/1     Completed   0          8s
load-test-3                      0/1     Completed   0          8s
load-test-4                      0/1     Completed   0          8s
load-test-5                      0/1     Completed   0          8s

=== CLEANUP ===
pod "load-test-1" deleted
pod "load-test-2" deleted
pod "load-test-3" deleted
pod "load-test-4" deleted
pod "load-test-5" deleted
```

8. Logs screenshot:



```
423946@AMBGB000622 dapr-eks-pubsub-ready % echo "=== ARCHITECTURE VERIFICATION ==="
echo ""
echo "📊 EKS Cluster Nodes:"
kubectl get nodes -o wide
echo ""
echo "📊 Dapr System Pods:"
kubectl -n dapr-system get pods
echo ""
echo "📊 Application Logs (ProductService):"
kubectl -n dapr-apps logs deploy/productservice --tail=5
echo ""
echo "📊 Application Logs (OrderService):"
kubectl -n dapr-apps logs deploy/orderservice --tail=5
=== ARCHITECTURE VERIFICATION ===

📊 EKS Cluster Nodes:
NAME                          STATUS   ROLES    AGE    VERSION               INTERNAL-IP     EXTERNAL-IP      OS-IMAGE                         KERNEL-VERSION
     CONTAINER-RUNTIME
ip-192-168-13-87.ec2.internal   Ready    <none>   164m   v1.32.9-eks-ecaa3a6   192.168.13.87   100.49.41.36     Amazon Linux 2023.9.20251208   6.1.158-180.294.amzn2023.x86_
64   containerd://2.1.5
ip-192-168-36-44.ec2.internal   Ready    <none>   164m   v1.32.9-eks-ecaa3a6   192.168.36.44   54.196.115.105   Amazon Linux 2023.9.20251208   6.1.158-180.294.amzn2023.x86_
64   containerd://2.1.5

📊 Dapr System Pods:
NAME                                    READY   STATUS    RESTARTS   AGE
dapr-operator-69845db889-4bmp6          1/1     Running   0          162m
dapr-placement-server-0                 1/1     Running   0          162m
dapr-scheduler-server-0                 1/1     Running   0          162m
dapr-scheduler-server-1                 1/1     Running   0          162m
dapr-scheduler-server-2                 1/1     Running   0          162m
dapr-sentry-78f477df9c-wvg7p            1/1     Running   0          162m
dapr-sidecar-injector-6f774f9bfc-c54cw   1/1     Running   0          162m

📊 Application Logs (ProductService):
Defaulted container "productservice" out of: productservice, daprd
      metadata: [Object],
      reason: 'DAPR_PUBSUB_PUBLISH_MESSAGE'
    }
  ]
}

📊 Application Logs (OrderService):
Defaulted container "orderservice" out of: orderservice, daprd
OrderService listening on 8090
```

9. Bedrock analysis



```
423946@AMBGB000622 dapr-eks-pubsub-ready % echo "📋 BEDROCK GENAI ANALYSIS RESULTS:"
echo "================================="
cat bedrock-log-analysis.txt
📋 BEDROCK GENAI ANALYSIS RESULTS:
=================================

The provided content is a list of actions to be taken to resolve the issues mentioned in the logs.

1. Root cause analysis: Investigate the root cause of the authorization failures and invalid TopicArn format errors. This may involve reviewing the IAM policies, roles, and
 permissions associated with the AWS resources involved in the microservices and SNS topic creation.

2. IAM policy fixes: Update the IAM policies to grant the necessary permissions to Dapr and SNS to create and publish messages to the SNS topic. This may involve adding app
ropriate actions to the IAM policies or adjusting existing policies.

3. Application error handling: Implement error handling logic in the Dapr microservices to handle any errors that occur during SNS topic creation or message publishing. Thi
s may involve catching exceptions, logging errors, and returning appropriate error responses to the caller.

4. Monitoring recommendations: Implement monitoring of the Dapr microservices and SNS topic to detect any issues that may arise during the stress testing process. This may
involve setting up metrics and alerts to track key performance indicators and identify potential problems before they become critical.

5. Testing and validation: Conduct thorough testing and validation of the Dapr microservices and SNS topic configuration to ensure that they are functioning as expected. Th
is may involve running performance tests, load tests, and stress tests to simulate real-world scenarios and identify any bottlenecks or issues.

6. Documentation: Update the documentation to include the IAM policy fixes, application error handling, and monitoring recommendations. This will help other developers and
stakeholders understand how to manage the microservices and SNS topic effectively.

7. Collaboration: Work closely with the development, operations, and security teams to ensure that all changes to the microservices and SNS topic are properly coordinated a
nd documented. This will help to ensure that any changes are made in a controlled and secure manner.

8. Continuous improvement: Continuously review and improve the microservices and SNS topic configuration based on feedback and performance metrics. This may involve experim
enting with different configurations, optimizing resource usage, and implementing new features or functionality.

By following these steps, you can improve the reliability and performance of the microservices and SNS topic and ensure that they are able to handle the stress testing requ
irements of your application.
```