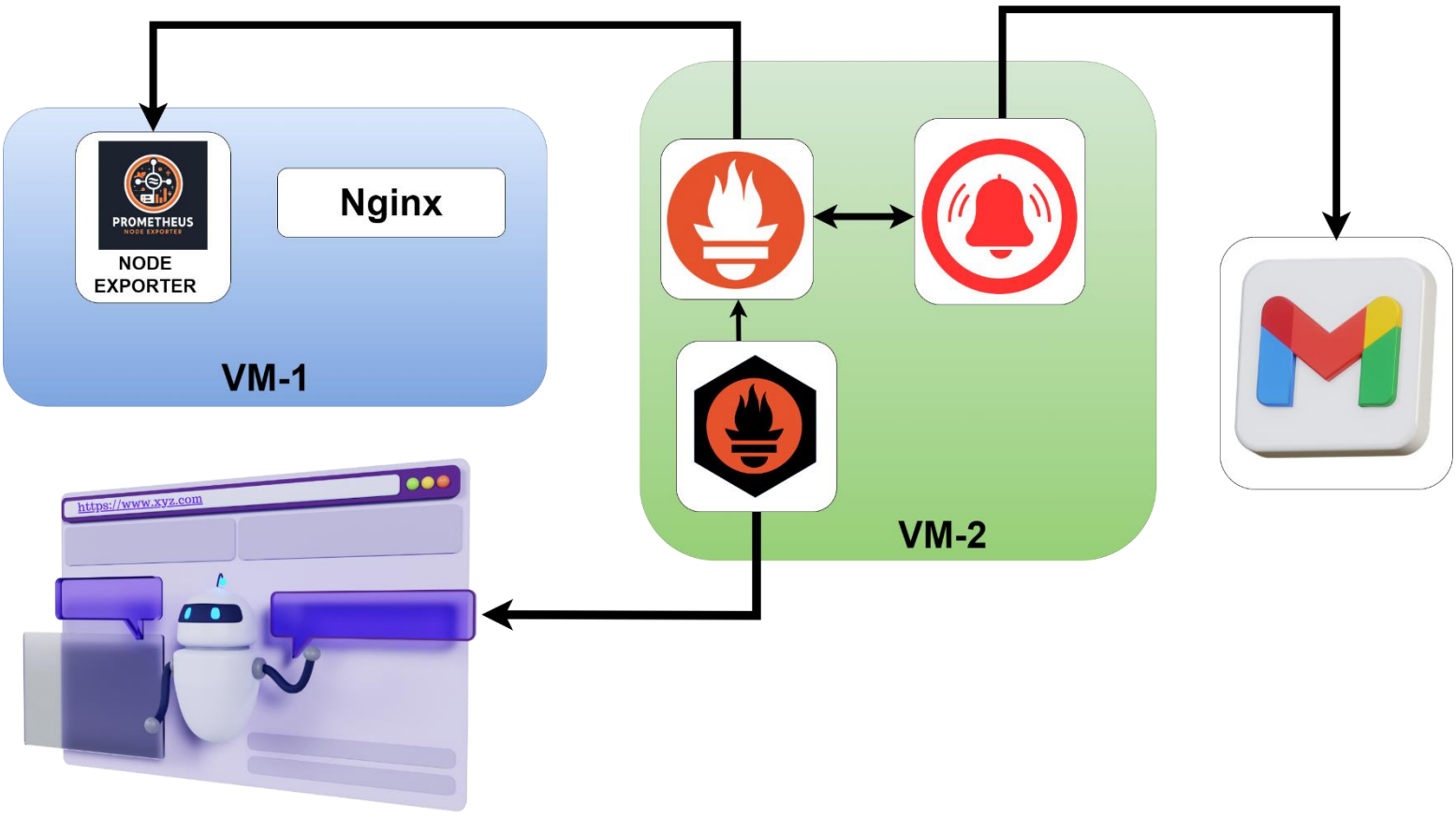
DevOps Shack

# Ultimate DevOps Monitoring Project

[Click Here To Enrol To Batch-5 | DevOps & Cloud DevOps]



### Prerequisites

- Ensure you have `wget` and `tar` installed on both VMs.
- Ensure you have appropriate permissions to download, extract, and run these binaries.
- Replace `<version>` with the appropriate version number you wish to download.

### VM-1 (Node Exporter)

1. **Download Node Exporter**

   ```
   wget
   https://github.com/prometheus/node_exporter/releases/download/v1.8.1/
   node_exporter-1.8.1.linux-amd64.tar.gz
   ```

2. **Extract Node Exporter**

   ```
   tar xvfz node_exporter-1.8.1.linux-amd64.tar.gz
   ```

3. **Start Node Exporter**

4. ```
   cd node_exporter-1.8.1.linux-amd64
   ./node_exporter &
   ```

### VM-2 (Prometheus, Alertmanager, Blackbox Exporter)

Prometheus

1. **Download Prometheus**

   ```
   wget
   https://github.com/prometheus/prometheus/releases/download/v2.52.0/pr
   ometheus-2.52.0.linux-amd64.tar.gz
   ```

2. **Extract Prometheus**

   ```
   tar xvfz prometheus-2.52.0.linux-amd64.tar.gz
   ```

3. **Start Prometheus**

4. ```
   cd prometheus-2.52.0.linux-amd64
   ./prometheus --config.file=prometheus.yml &
   ```

Alertmanager

1. **Download Alertmanager**

   ```
   wget
   https://github.com/prometheus/alertmanager/releases/download/v0.27.0/
   alertmanager-0.27.0.linux-amd64.tar.gz
   ```

2. **Extract Alertmanager**

   ```
   tar xvfz alertmanager-0.27.0.linux-amd64.tar.gz
   ```

3. **Start Alertmanager**

4. ```
   cd alertmanager-0.27.0.linux-amd64
   ./alertmanager --config.file=alertmanager.yml &
   ```

Blackbox Exporter

1. **Download Blackbox Exporter**

   ```
   wget
   https://github.com/prometheus/blackbox_exporter/releases/download/v0.
   25.0/blackbox_exporter-0.25.0.linux-amd64.tar.gz
   ```

2. **Extract Blackbox Exporter**

   ```
   tar xvfz blackbox_exporter-0.25.0.linux-amd64.tar.gz
   ```

3. **Start Blackbox Exporter**

4. ```
   cd blackbox_exporter-0.25.0.linux-amd64
   ./blackbox_exporter &
   ```

## Notes:

- The `&` at the end of each command ensures the process runs in the background.
- Ensure that you have configured the `prometheus.yml` and `alertmanager.yml` configuration files correctly before starting the services.
- Adjust the firewall and security settings to allow the necessary ports (typically 9090 for Prometheus, 9093 for Alertmanager, 9115 for Blackbox Exporter, and 9100 for Node Exporter) to be accessible.

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# Prometheus and Alertmanager Configuration

## Prometheus Configuration (`prometheus.yml`)

### Global Configuration

```
global:
  scrape_interval: 15s                # Set the scrape interval to every 15
seconds. Default is every 1 minute.
  evaluation_interval: 15s            # Evaluate rules every 15 seconds.
The default is every 1 minute.
  # scrape_timeout is set to the global default (10s).
```

### Alertmanager Configuration

```
alerting:
  alertmanagers:
    - static_configs:
        - targets:
          - 'localhost:9093'          # Alertmanager endpoint
```

### Rule Files

```
rule_files:
   - "alert_rules.yml"                # Path to alert rules file
  # - "second_rules.yml"              # Additional rule files can be added
here
```

### Scrape Configuration

#### Prometheus Itself

```
scrape_configs:
  - job_name: "prometheus"            # Job name for Prometheus

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.

    static_configs:
      - targets: ["localhost:9090"]   # Target to scrape (Prometheus
itself)
```

#### Node Exporter

```
  - job_name: "node_exporter"         # Job name for node exporter

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.
```

```
    static_configs:
      - targets: ["3.110.195.114:9100"]  # Target node exporter endpoint
```

### Blackbox Exporter

```
  - job_name: 'blackbox'              # Job name for blackbox exporter
    metrics_path: /probe              # Path for blackbox probe
    params:
      module: [http_2xx]              # Module to look for HTTP 200
response
    static_configs:
      - targets:
        - http://prometheus.io        # HTTP target
        - https://prometheus.io       # HTTPS target
        - http://3.110.195.114:8080/  # HTTP target with port 8080
    relabel_configs:
      - source_labels: [__address__]
        target_label: __param_target
      - source_labels: [__param_target]
        target_label: instance
      - target_label: __address__
        replacement: 13.235.248.225:9115  # Blackbox exporter address
```

# Alert Rules Configuration (`alert_rules.yml`)

## Alert Rules Group

```
groups:
- name: alert_rules                   # Name of the alert rules group
  rules:
    - alert: InstanceDown
      expr: up == 0                   # Expression to detect instance down
      for: 1m
      labels:
        severity: "critical"
      annotations:
        summary: "Endpoint {{ $labels.instance }} down"
        description: "{{ $labels.instance }} of job {{ $labels.job }} has
been down for more than 1 minute."

    - alert: WebsiteDown
      expr: probe_success == 0        # Expression to detect website down
      for: 1m
      labels:
        severity: critical
      annotations:
        description: The website at {{ $labels.instance }} is down.
        summary: Website down

    - alert: HostOutOfMemory
      expr: node_memory_MemAvailable / node_memory_MemTotal * 100 < 25  #
Expression to detect low memory
      for: 5m
      labels:
        severity: warning
      annotations:
        summary: "Host out of memory (instance {{ $labels.instance }})"
```

```
        description: "Node memory is filling up (< 25% left)\n  VALUE = {{
$value }}\n  LABELS: {{ $labels }}"

    - alert: HostOutOfDiskSpace
      expr: (node_filesystem_avail{mountpoint="/"} * 100) /
node_filesystem_size{mountpoint="/"} < 50  # Expression to detect low disk
space
      for: 1s
      labels:
        severity: warning
      annotations:
        summary: "Host out of disk space (instance {{ $labels.instance }})"
        description: "Disk is almost full (< 50% left)\n  VALUE = {{ $value
}}\n  LABELS: {{ $labels }}"

    - alert: HostHighCpuLoad
      expr: (sum by (instance)
(irate(node_cpu{job="node_exporter_metrics",mode="idle"}[5m]))) > 80  #
Expression to detect high CPU load
      for: 5m
      labels:
        severity: warning
      annotations:
        summary: "Host high CPU load (instance {{ $labels.instance }})"
        description: "CPU load is > 80%\n  VALUE = {{ $value }}\n  LABELS:
{{ $labels }}"

    - alert: ServiceUnavailable
      expr: up{job="node_exporter"} == 0  # Expression to detect service
unavailability
      for: 2m
      labels:
        severity: critical
      annotations:
        summary: "Service Unavailable (instance {{ $labels.instance }})"
        description: "The service {{ $labels.job }} is not available\n
VALUE = {{ $value }}\n  LABELS: {{ $labels }}"

    - alert: HighMemoryUsage
      expr: (node_memory_Active / node_memory_MemTotal) * 100 > 90  #
Expression to detect high memory usage
      for: 10m
      labels:
        severity: critical
      annotations:
        summary: "High Memory Usage (instance {{ $labels.instance }})"
        description: "Memory usage is > 90%\n  VALUE = {{ $value }}\n
LABELS: {{ $labels }}"

    - alert: FileSystemFull
      expr: (node_filesystem_avail / node_filesystem_size) * 100 < 10  #
Expression to detect file system almost full
      for: 5m
      labels:
        severity: critical
      annotations:
        summary: "File System Almost Full (instance {{ $labels.instance
}})"
        description: "File system has < 10% free space\n  VALUE = {{ $value
}}\n  LABELS: {{ $labels }}"
```

# Alertmanager Configuration (`alertmanager.yml`)

## Routing Configuration

```
route:
  group_by: ['alertname']              # Group by alert name
  group_wait: 30s                      # Wait time before sending the first
notification
  group_interval: 5m                   # Interval between notifications
  repeat_interval: 1h                  # Interval to resend notifications
  receiver: 'email-notifications'      # Default receiver

receivers:
- name: 'email-notifications'          # Receiver name
  email_configs:
  - to: jaiswaladi246@gmail.com        # Email recipient
    from: test@gmail.com               # Email sender
    smarthost: smtp.gmail.com:587      # SMTP server
    auth_username: your_email          # SMTP auth username
    auth_identity: your_email          # SMTP auth identity
    auth_password: "bdmq omqh vvkk zoqx"  # SMTP auth password
    send_resolved: true                # Send notifications for resolved
alerts
```

## Inhibition Rules

```
inhibit_rules:
  - source_match:
      severity: 'critical'             # Source alert severity
    target_match:
      severity: 'warning'              # Target alert severity
    equal: ['alertname', 'dev', 'instance']  # Fields to match
```