How to Monitor Microservices

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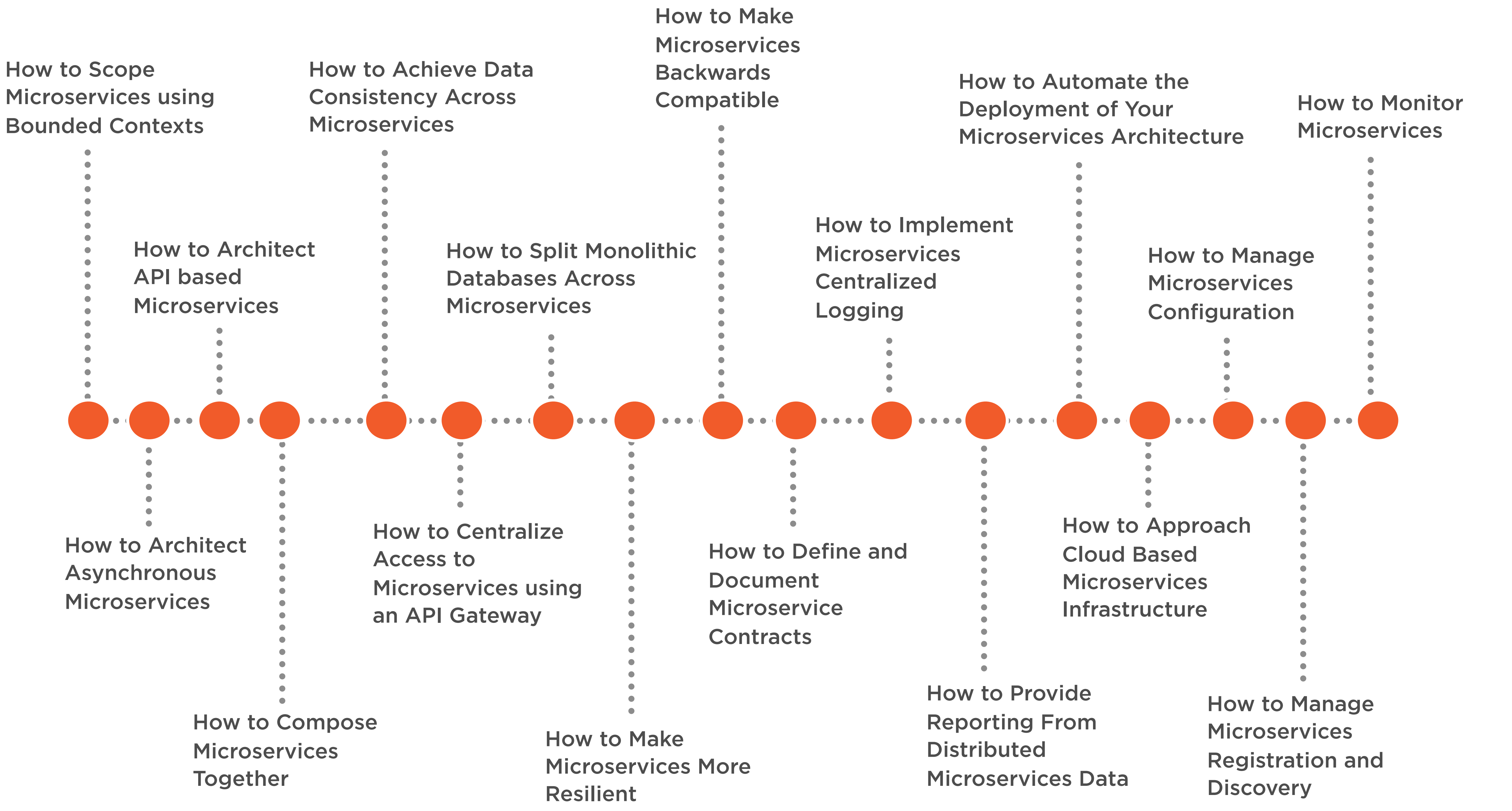
Microservices Architectural Design Patterns Playbook



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Microservices Architecture

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Overview

Microservices Monitoring

Monitor Key Metrics

Monitor SLA Metrics

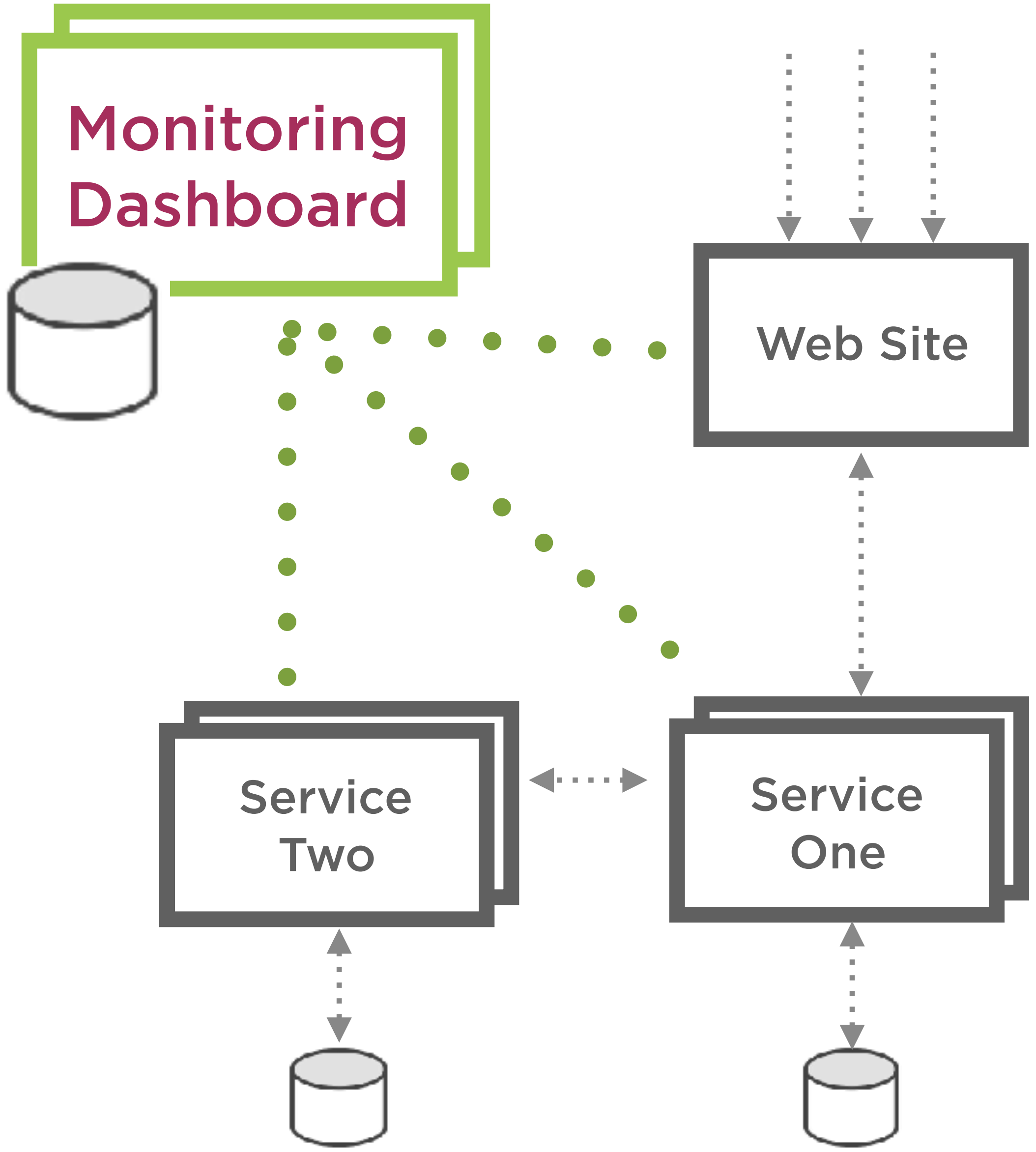
Monitoring Dashboards

Alerting and Monitoring

Defining Thresholds for Alerts

Monitoring Tools and Patterns

Microservices Monitoring



Why the need to monitor

- Microservices complexity
- High availability is a requirement

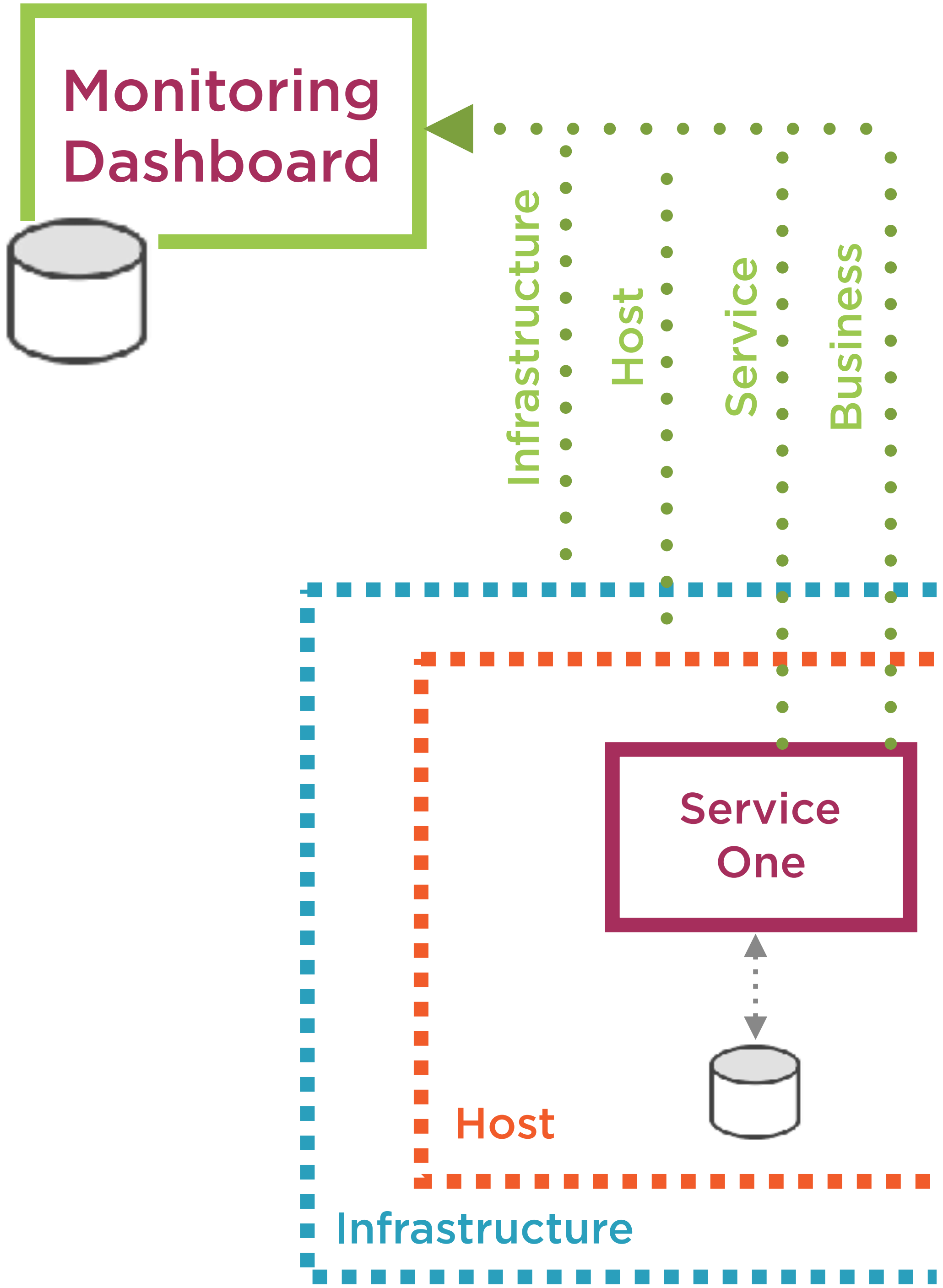
Causes of microservices outages

- Deployment issues
- Delayed and long repair
- Downstream dependency issues

Monitoring is the proactive solution

- Know the state of all components
- Know the state at every stage
- Collect all statistics using metrics

Monitor Key Metrics



Host and infrastructure metrics

- State of hosts and infrastructure
- State affects microservices

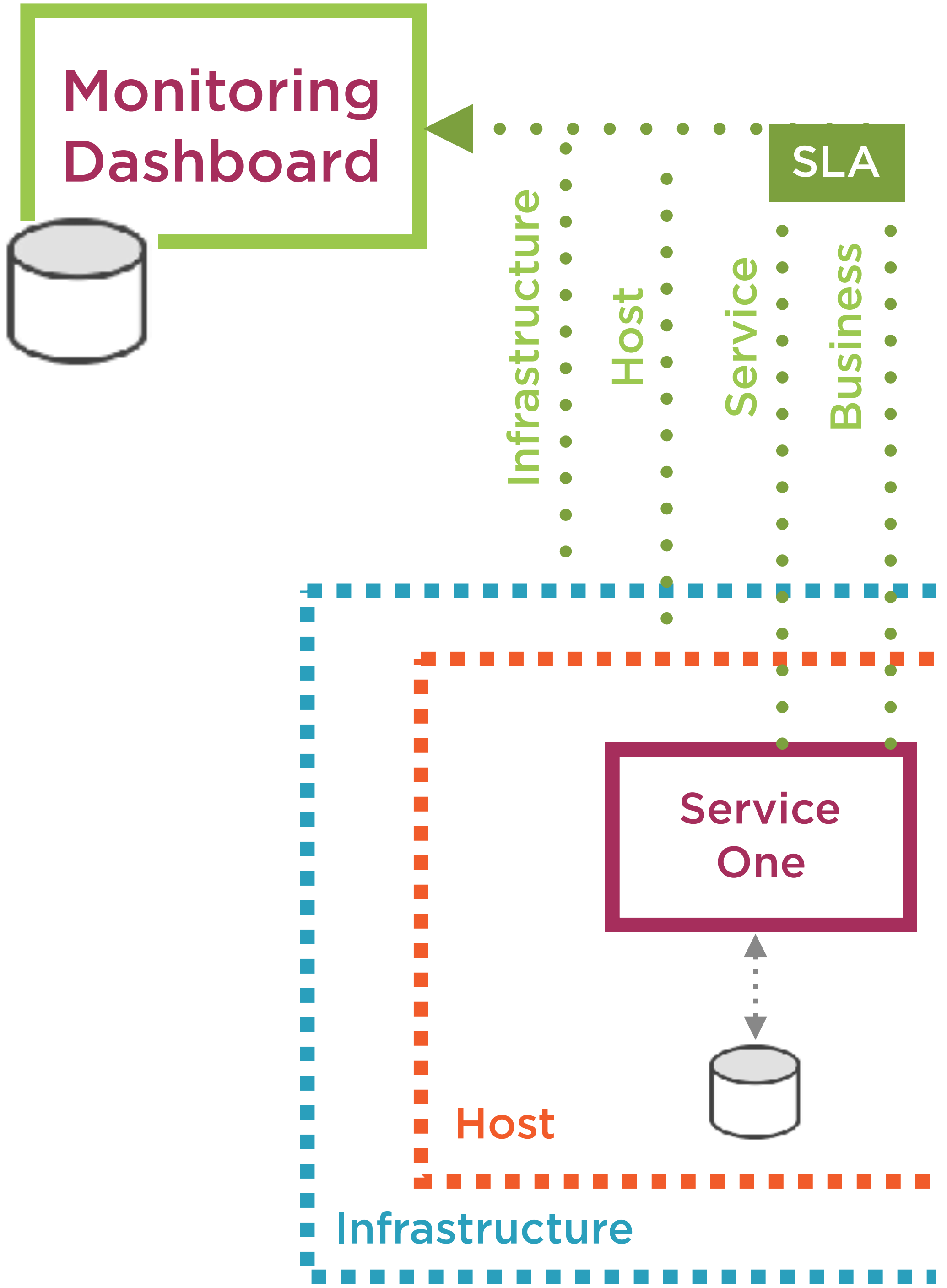
Monitor microservice metrics

- Availability
- Response rate
- Success or failures of endpoints
- Errors, exceptions and timeouts
- Health of dependencies
- Metrics at different stages

Business metrics

- Hidden issues and failures
- Sudden changes in behavior

Monitor SLA Metrics



Monitor SLAs at all levels

- Service level
- Service endpoint level

Examples of SLA metrics

- Throughput and uptime
- Concurrent clients
- Average response times

Impact of dependencies on SLAs

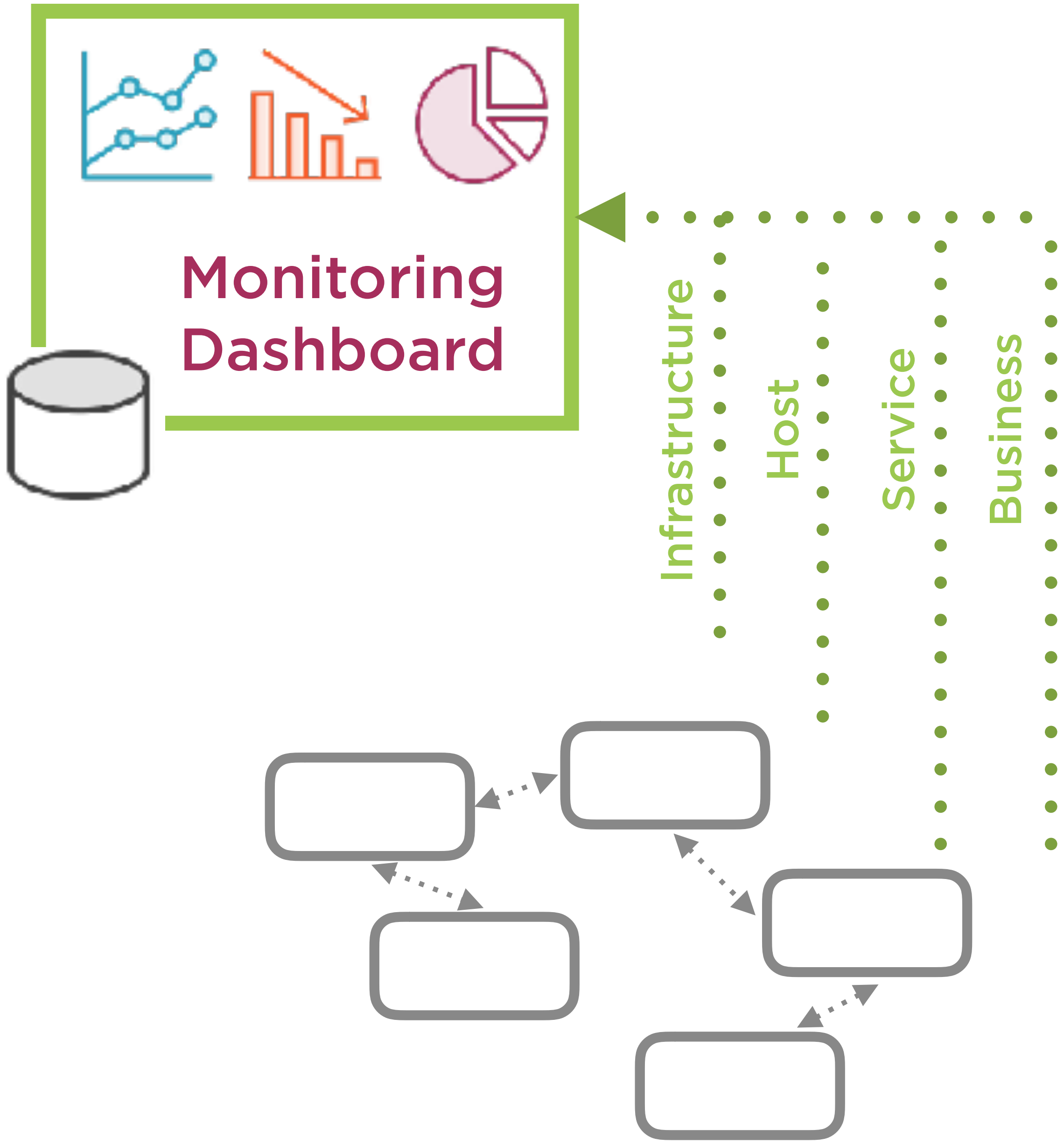
- Monitor dependencies

Use SLA monitoring to alert

- Actionable alerts to fix SLA issues

Communicate SLA issues early

Monitoring Dashboards



Display and collect metrics

Real-time

Centralized, accessible and standardized

Simple, visual and minimal information

- Graphs showing metrics over time

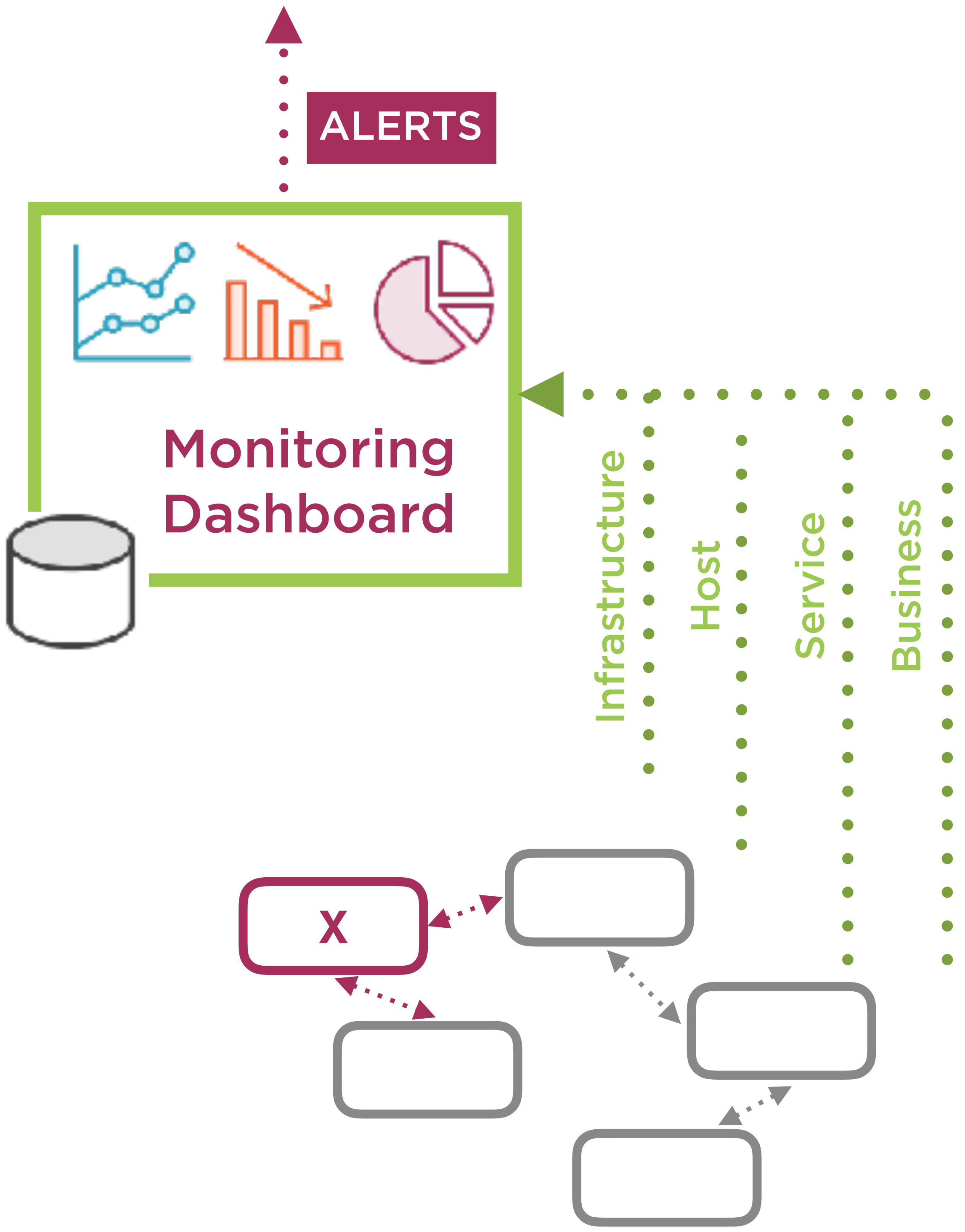
Highlights effectiveness of monitoring

What to display

- Metrics and their alerts
- Metrics for each environment and phase
- Correlate metrics to events

Use to help define thresholds for alerts

Alerting and Monitoring



Real-time monitoring and alerting

When to alert

- Key metrics change
- SLA metrics change
- All metrics surpass thresholds

Make alerts configurable

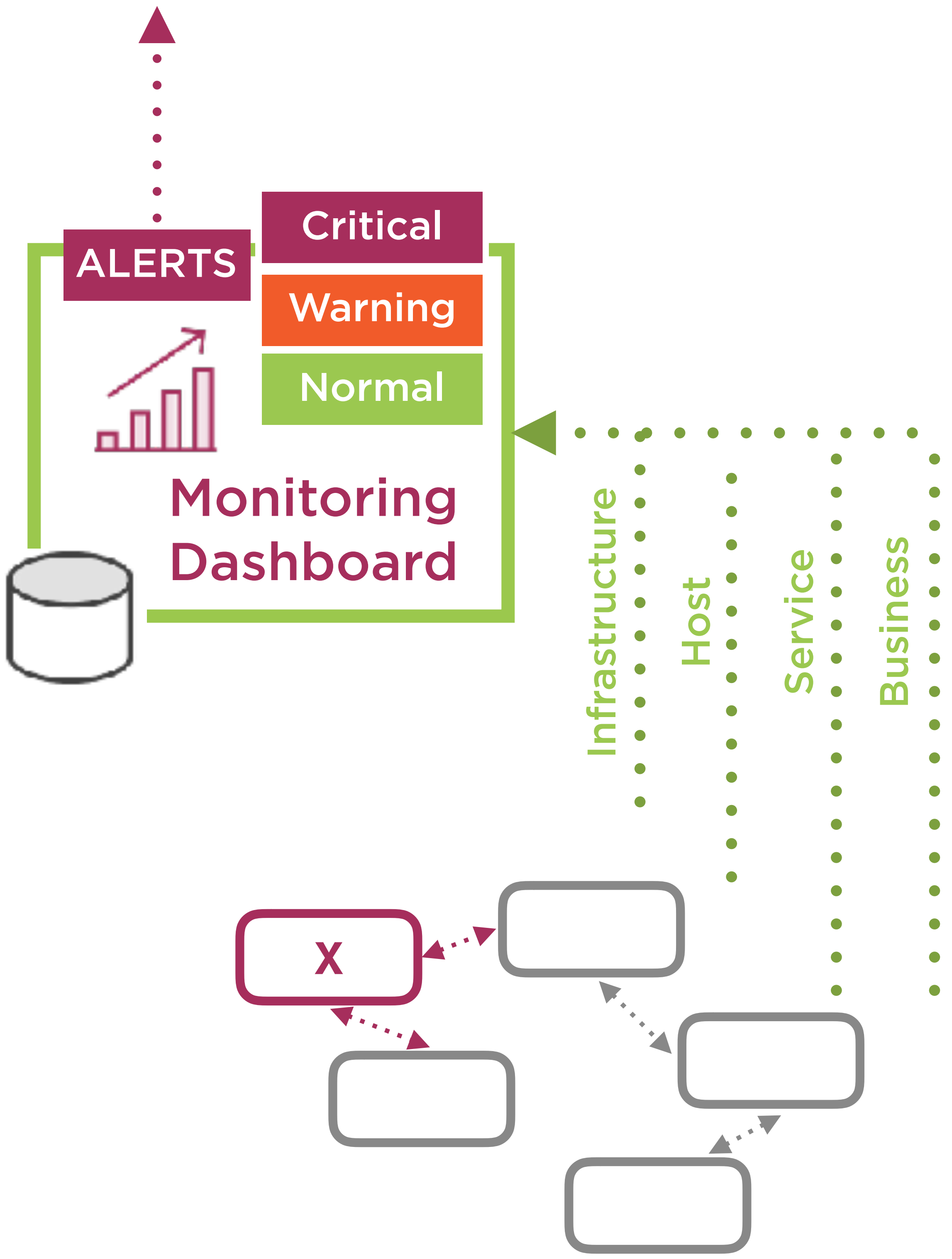
Actionable alerting

Avoid non-actionable alerts

Informative alerts

- Include links to service documentation
- Include links to monitoring dashboard

Defining Thresholds for Alerts



Ranges required for effective alerting

Types of thresholds

- Normal state
- Warning state
- Critical state

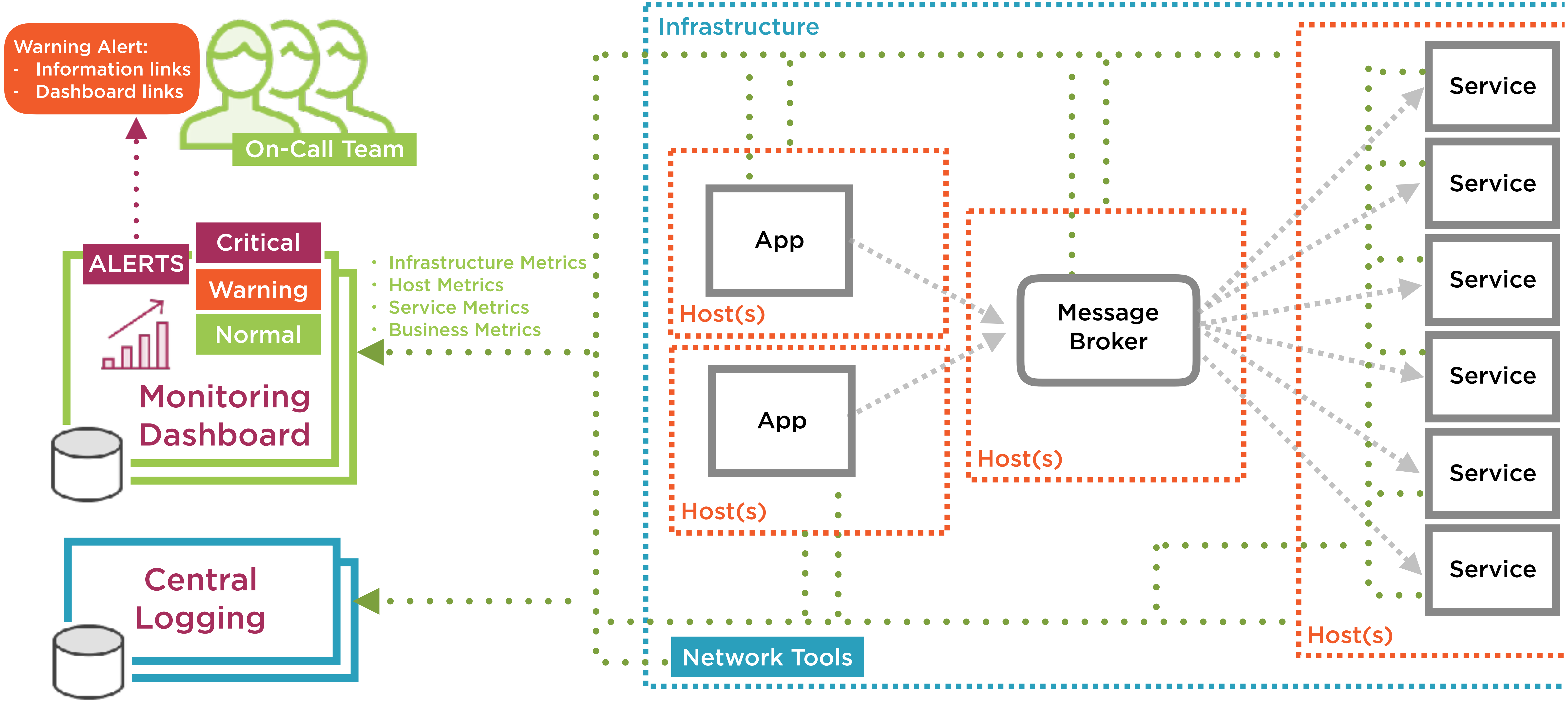
Warning alerts prevent outages

Effective levels for thresholds

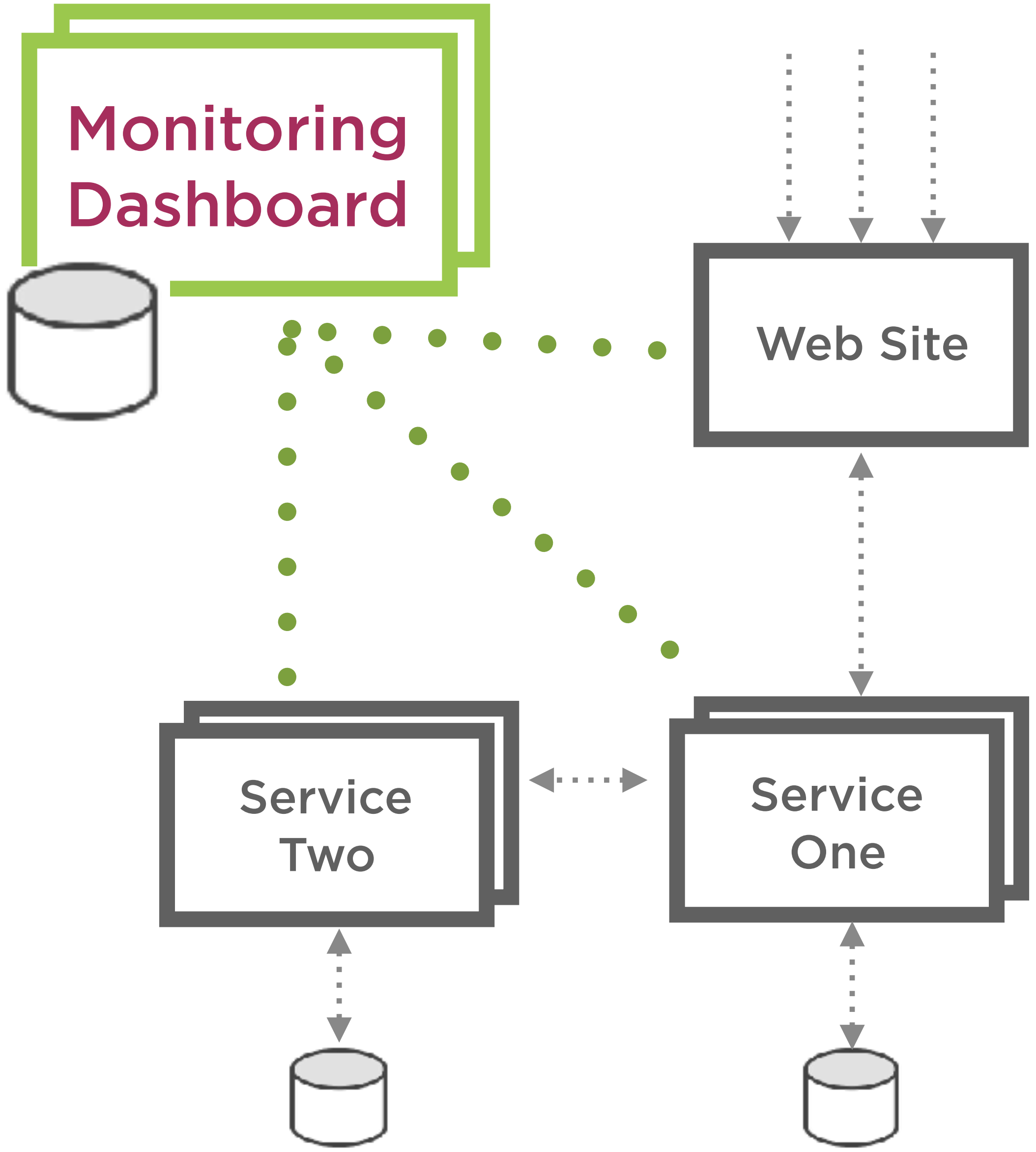
Defining thresholds

- Use historical data
- Performance testing and load testing data
- Expected traffic for normal thresholds
- Larger than expected traffic

Microservices Monitoring Patterns



Monitoring Tools



StatsD

Graphite

New Relic

PRTG

Nagios

Windows performance counters

Bespoke dashboards

Cloud provider tools

- Azure Application Insights

Many more…

Summary

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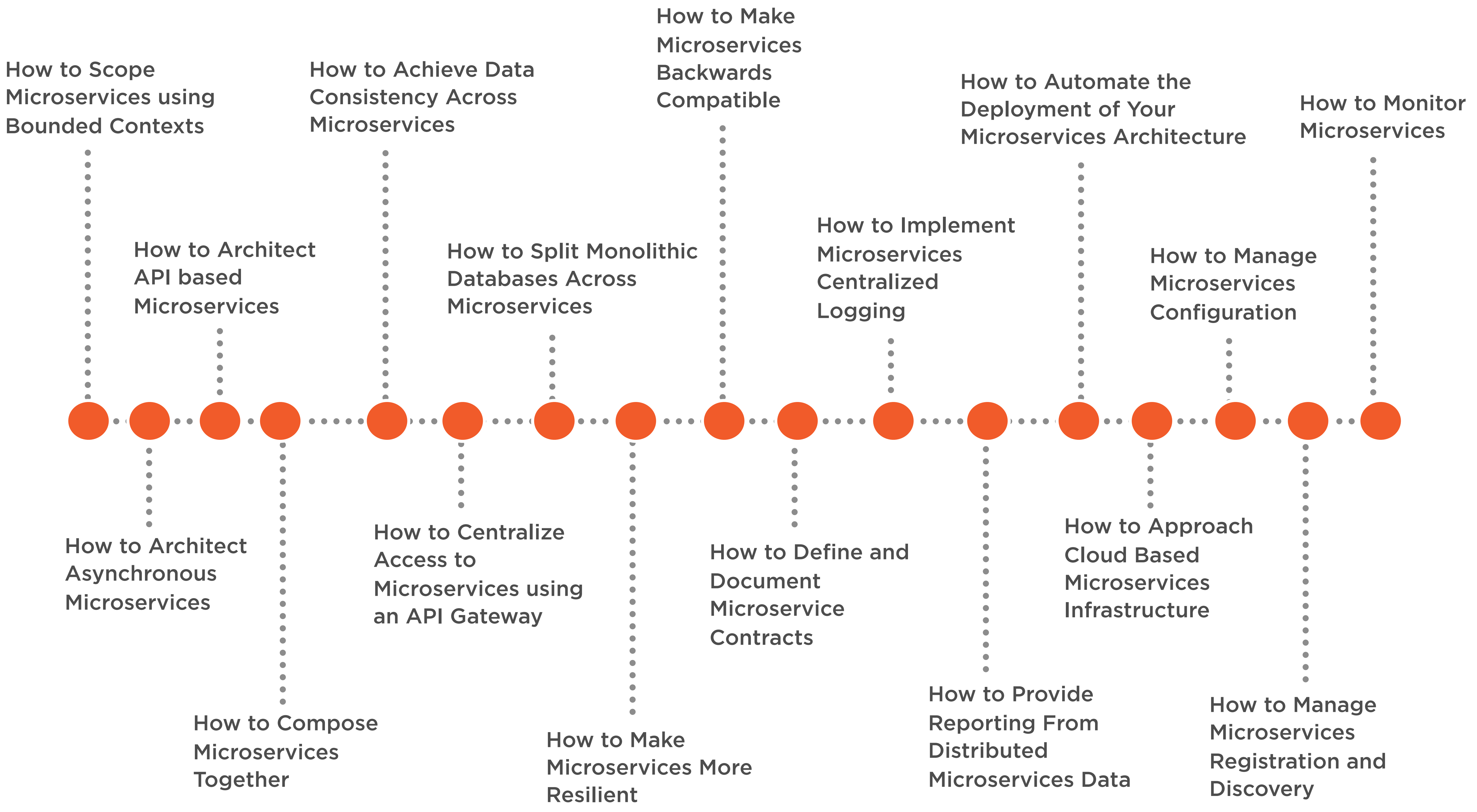

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