



Shopping Event Reliability

SREcon16

Jun Liu
liujun01@baidu.com
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@Jun Liu

- **Architect, SRE team, Baidu Nuomi, China**
  - Baidu Nuomi （Local Life O2O Service Platform）
- **Areas of focus**
  - Infrastructure ：distributed computing/storage/scheduling
  - Performance
  - Reliability
  - Capacity
- **liujun01@baidu.com**

Agenda

- Introduction
- The Challenges of SER
- Practice of SER
- What we learned

Introduction：Baidu Nuomi



- **Nuomi (糯米) means sticky rice in Chinese**
- **Local Life O2O Service Platform**
  - Food，Movie，Hotel，Takeaway，Tourism ，Ticket， Home Services …
- **Spiral-Up Business**
  - Millions of orders per day
  - Hundreds of millions of GMV per day

Introduction : Shopping Events of Nuomi @2015

Shopping event is a most significant marketing approach in China. It is just like a war for SRE **nearly every month.**



The Challenges

- Much More **User Traffic**
- Much More **Seckill**

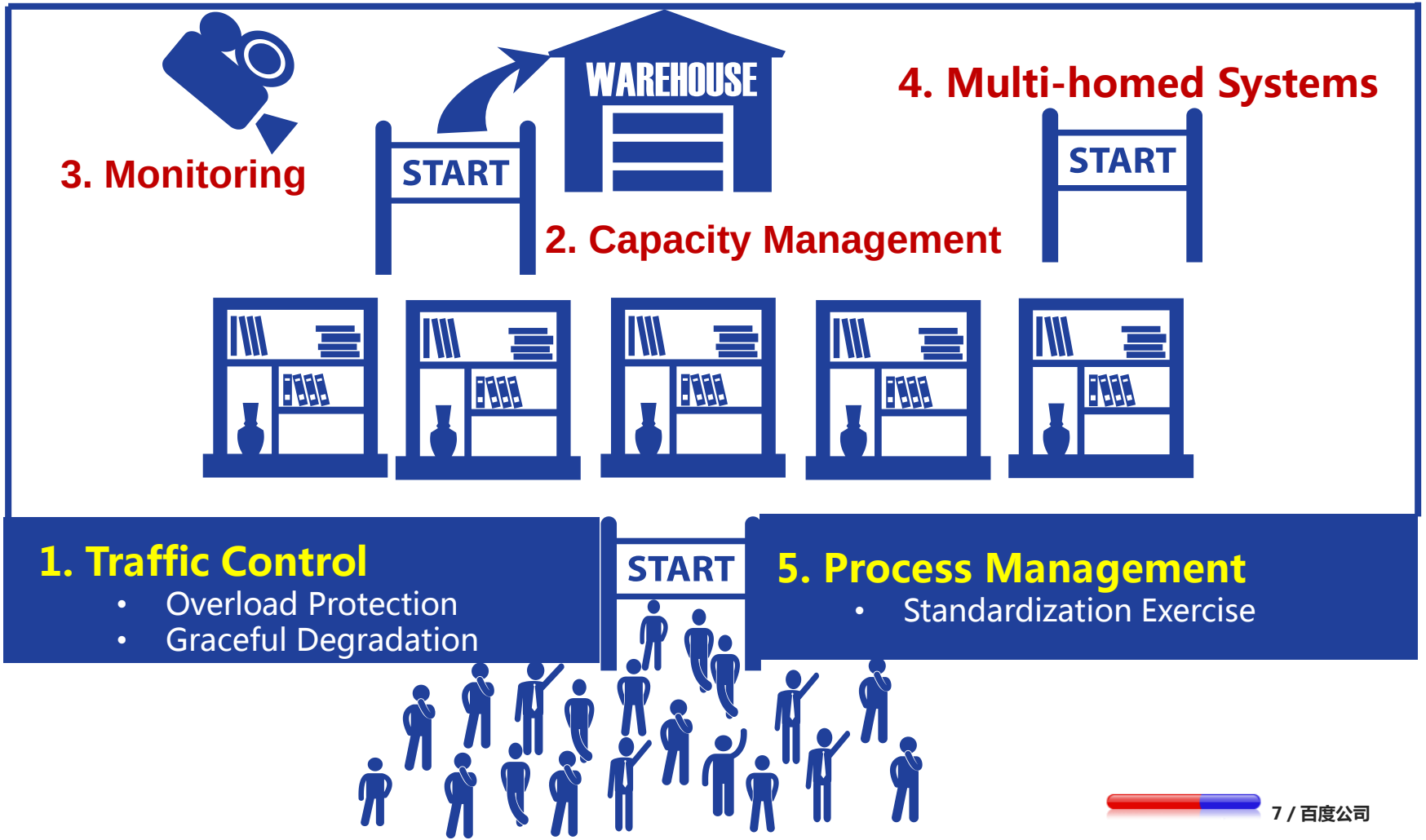


Shopping event **The Day before**

- Much More **Different Engineers**
- Much More **Marketing Events**

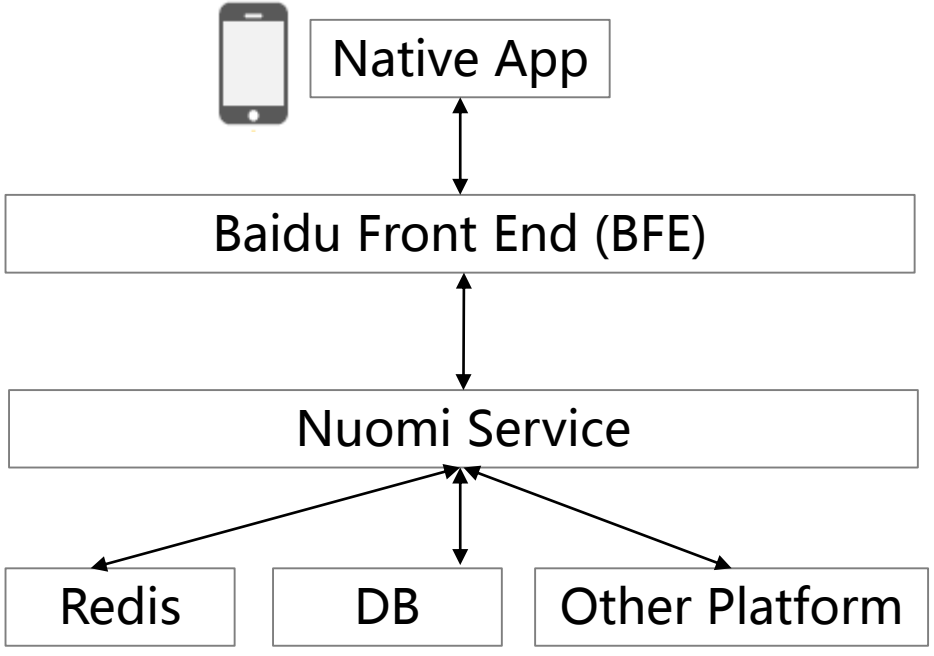


Overview: SRE FOR SER



1. Practice of Traffic Control

Practice of Traffic Control—Overload Protection



- **Avoid Avalanche**
- **Handling Overload**
  - **Native app-side throttling**
  - **Global Protection （BFE）**
  - Service Protection
  - Database Protection
  - Other Platform
- **Based**
  - Utilization of resource
  - Active state of CPU
  - Quota of QPS
  - Receive buffer

Practice of Traffic Control—Graceful Degradation

Flexible Reliability

- **Grade and decouple the features**
- Independent seckill service

Static environment

- **Old service and data mirror image**
- Simple, Independent, Automatic, **Keep high hit rate**

Comfortable Notice

- **Be used in service failes widely**
- Simple, Independent, Automatic

2. Practice of Capacity Management

Practice of Capacity Planning

Scenario-Based Shopping Event Capacity Planning

- Marketing Event Scene
- Customer behavior Scene

Capacity Indicators

Business Objectives

- Active users
- QPS
- GMV
- The number of coupons
- ...

Service Level Objectives

- Latency
- Reliability

Load Testing

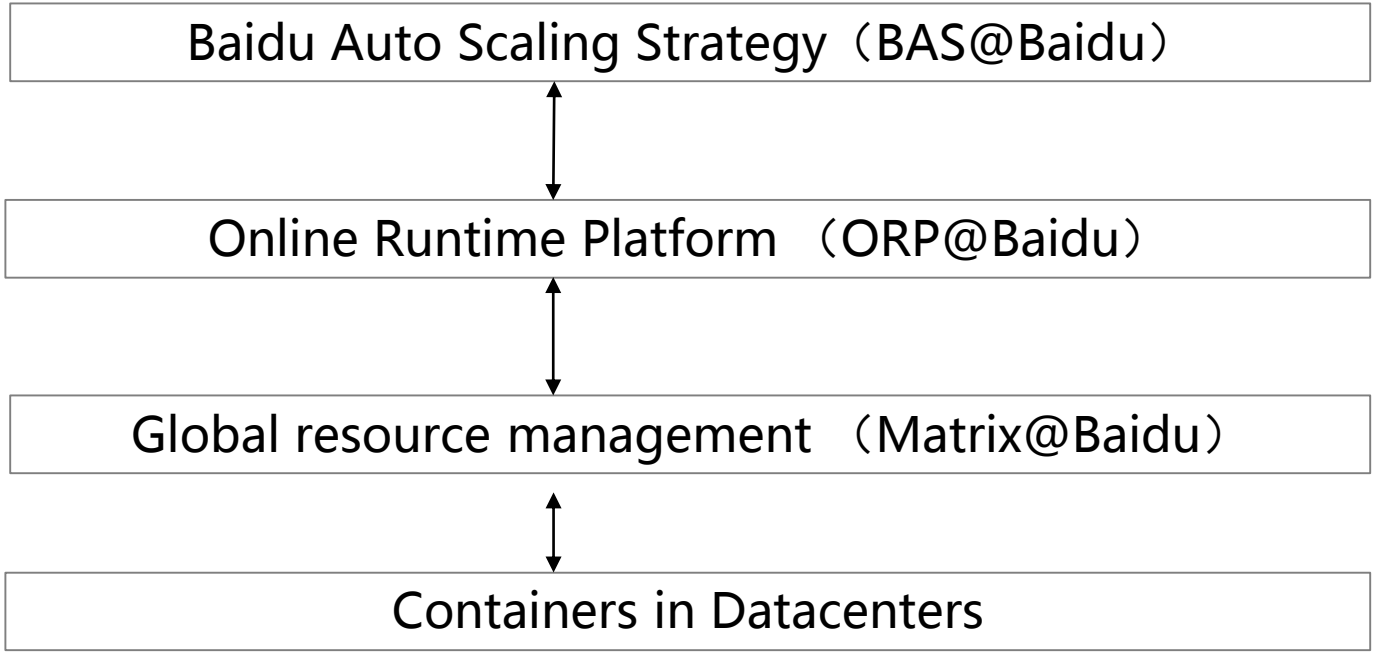
Load Testing Tools

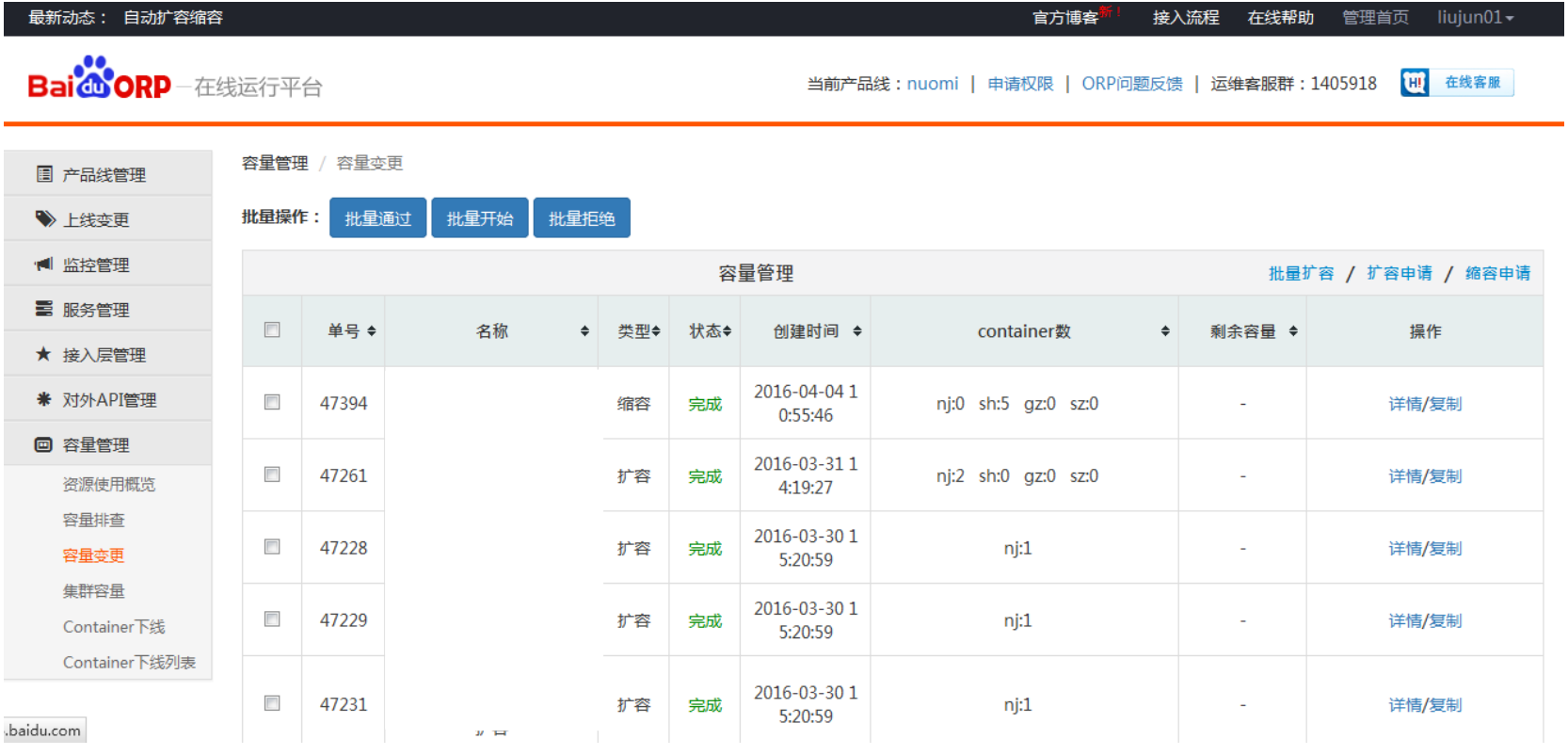
- Simulation tool: read and write, independent
- Playback tool：historical request data
- Data collection tool： hardware (utilization) & software (SLOs)

Capacity Model

- Correlation analysis
- Finding Minimum water level

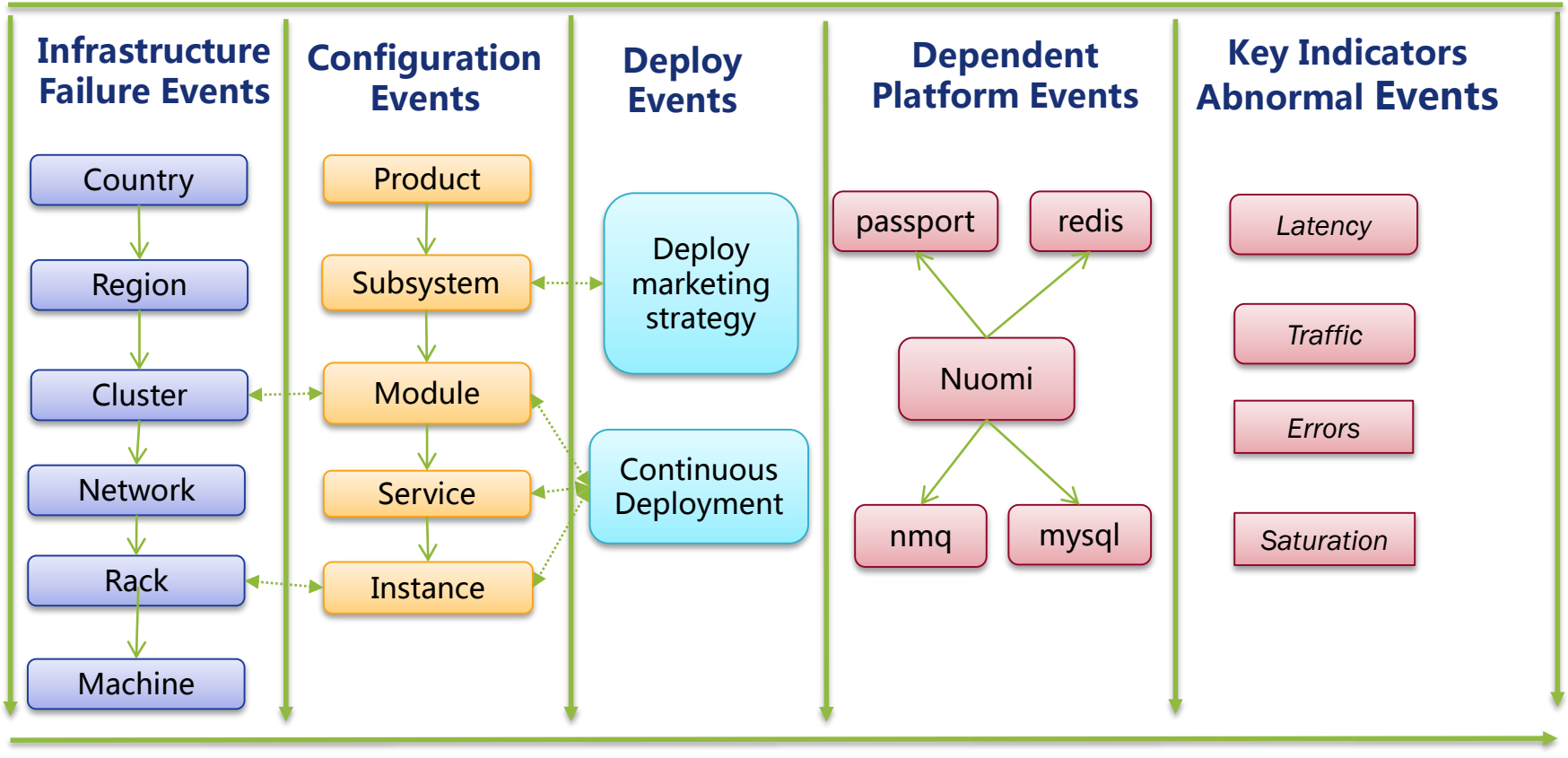
Practice of Elastic Container Infrastructure




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产品线管理
上线变更
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对外API管理
容量管理
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容量变更
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批量操作： 批量通过 批量开始 批量拒绝
容量管理
批量扩容 / 扩容申请 / 缩容申请
单号 名称 类型 状态 创建时间 container数 剩余容量 操作
47394 缩容 完成 2016-04-04 10:55:46 nj:0 sh:5 gz:0 sz:0 - 详情/复制
47261 扩容 完成 2016-03-31 14:19:27 nj:2 sh:0 gz:0 sz:0 - 详情/复制
47228 扩容 完成 2016-03-30 15:20:59 nj:1 - 详情/复制
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3. Practice of Monitoring

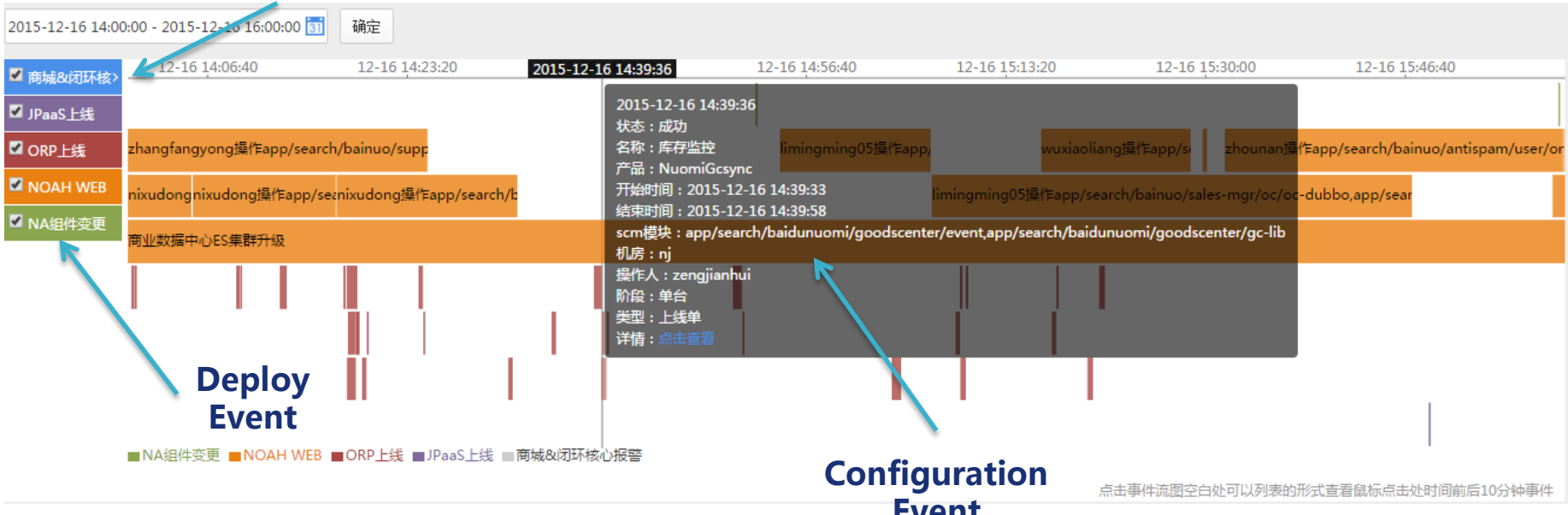
Monitoring ALL Events During Shopping Event



Event-Flow Graph

Key Indicators
Abnormal Events

Time-varying events

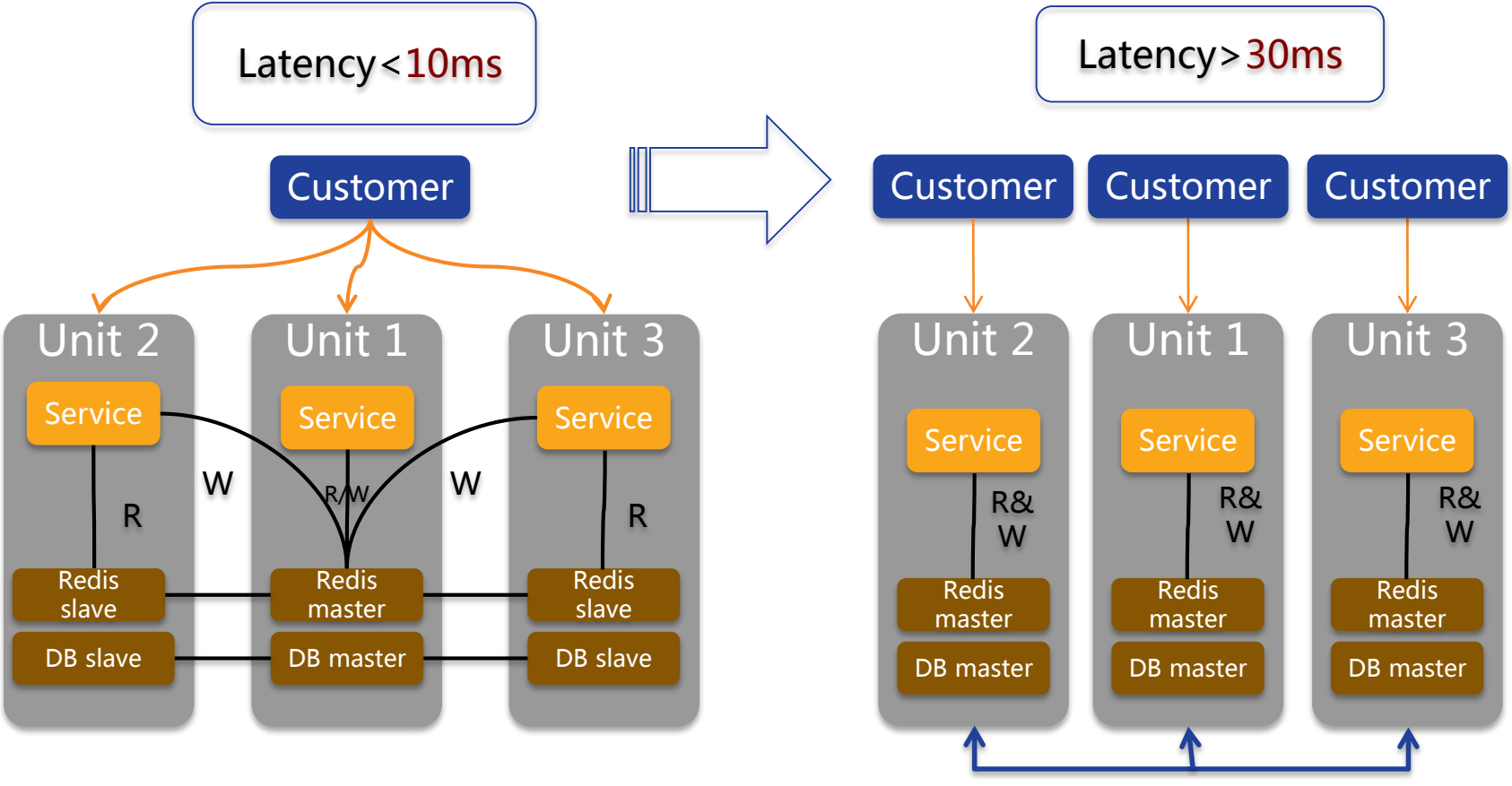


Deploy Event

Configuration Event

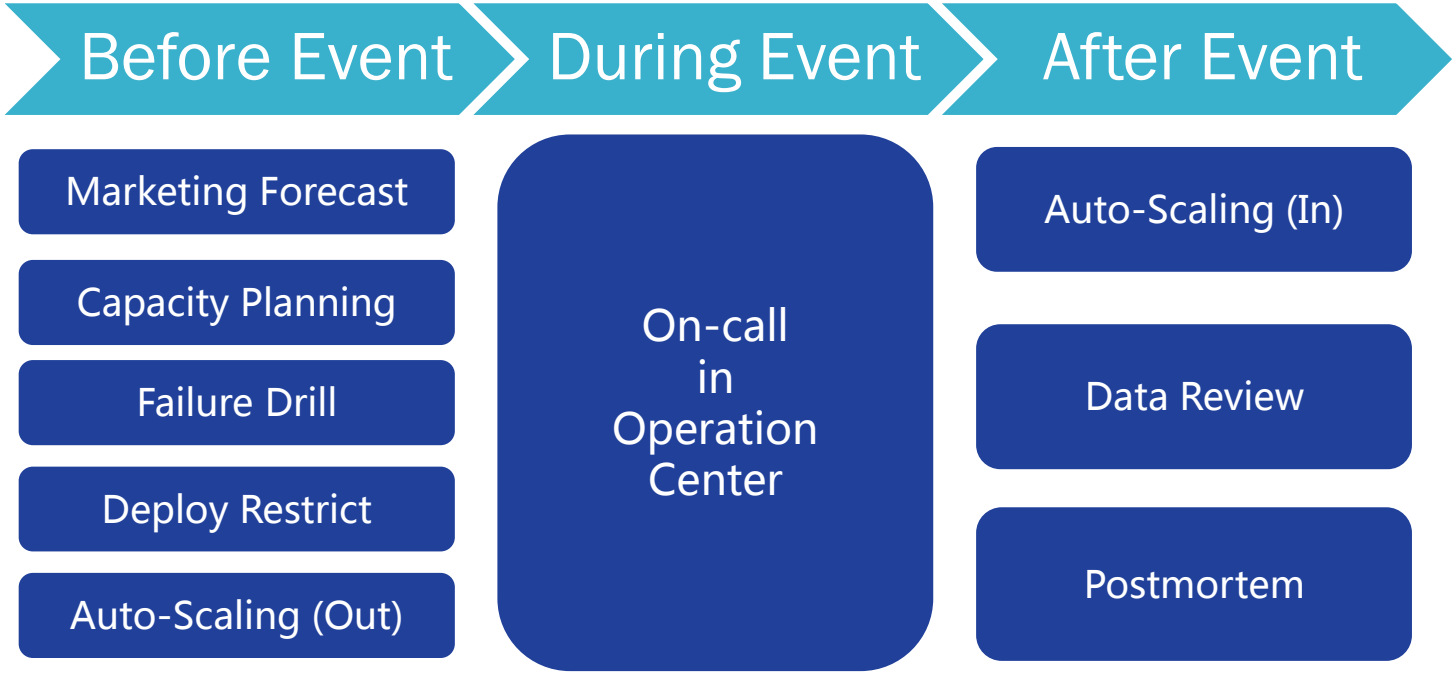
4. Practice of Multi-homed Systems

Multi-homed Systems



5. Practice of Process Management

Standardization



What we learned

Traffic Control

- Both over **protection and graceful degradation** are important because there are a lot of unpredictability in shopping event

Capacity Management

- **Scenario-Based**
- Considering business objectives and SLOs
- Collecting data of hardware (utilization) & software（SLOs）
- Using historical request data

Monitoring

- Monitoring all events in shopping event
- Building an **event-flow graph**

Multi-homed Systems

- **Unitized**

Process Management

- **Standardization**
- On-call in operation center

Thank You !

“This is not the end. It is not even the beginning of the end.
But it is, perhaps, the end of the beginning.”
-Winston Churchill