



TEMENOS
REGIONAL
FORUM

Chengdu, China – 18-19 July 2019



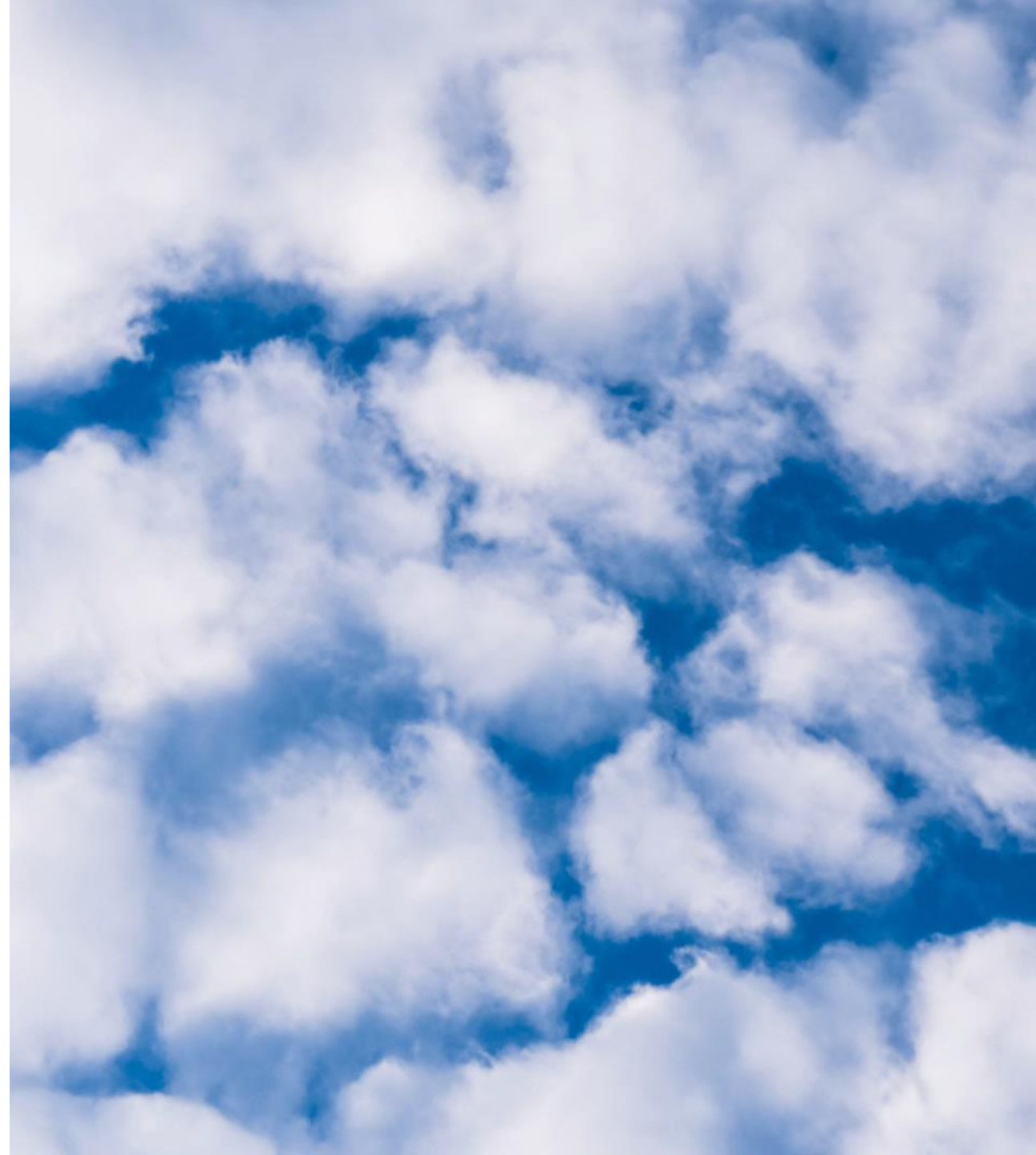
TEMENOS
THE BANKING SOFTWARE COMPANY



| 迈向云技术

Frankie Wai

18th July 2019



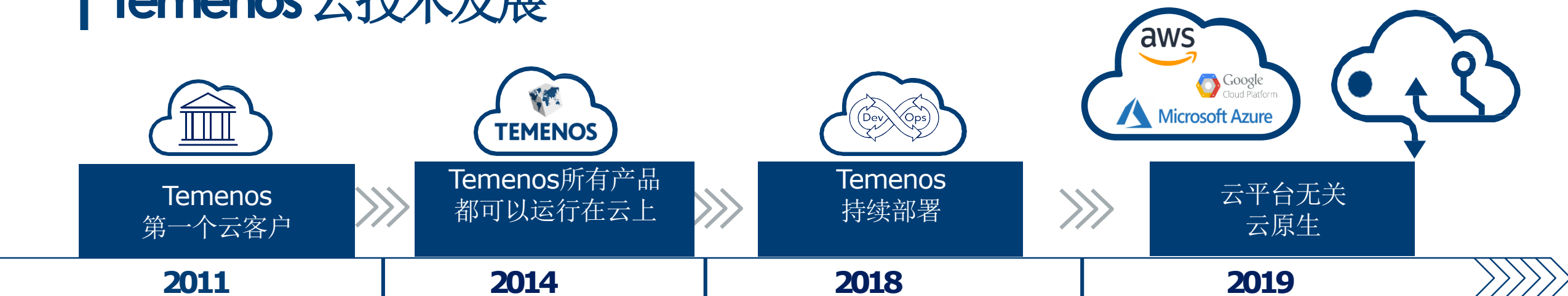
| 为什么要云？

简单

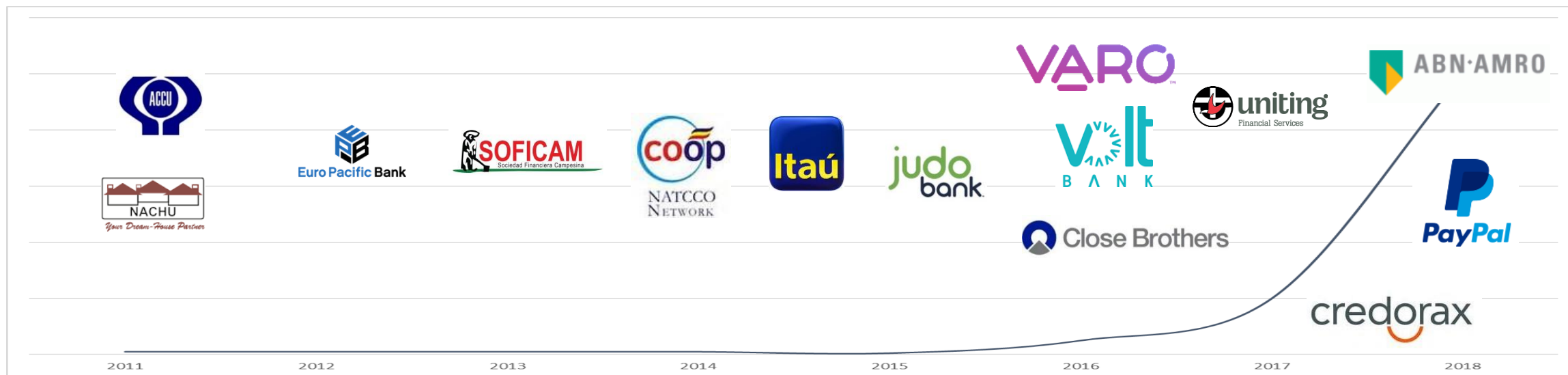
Away - More appears like less by simply moving it far, far away

The Laws of Simplicity, John Maeda

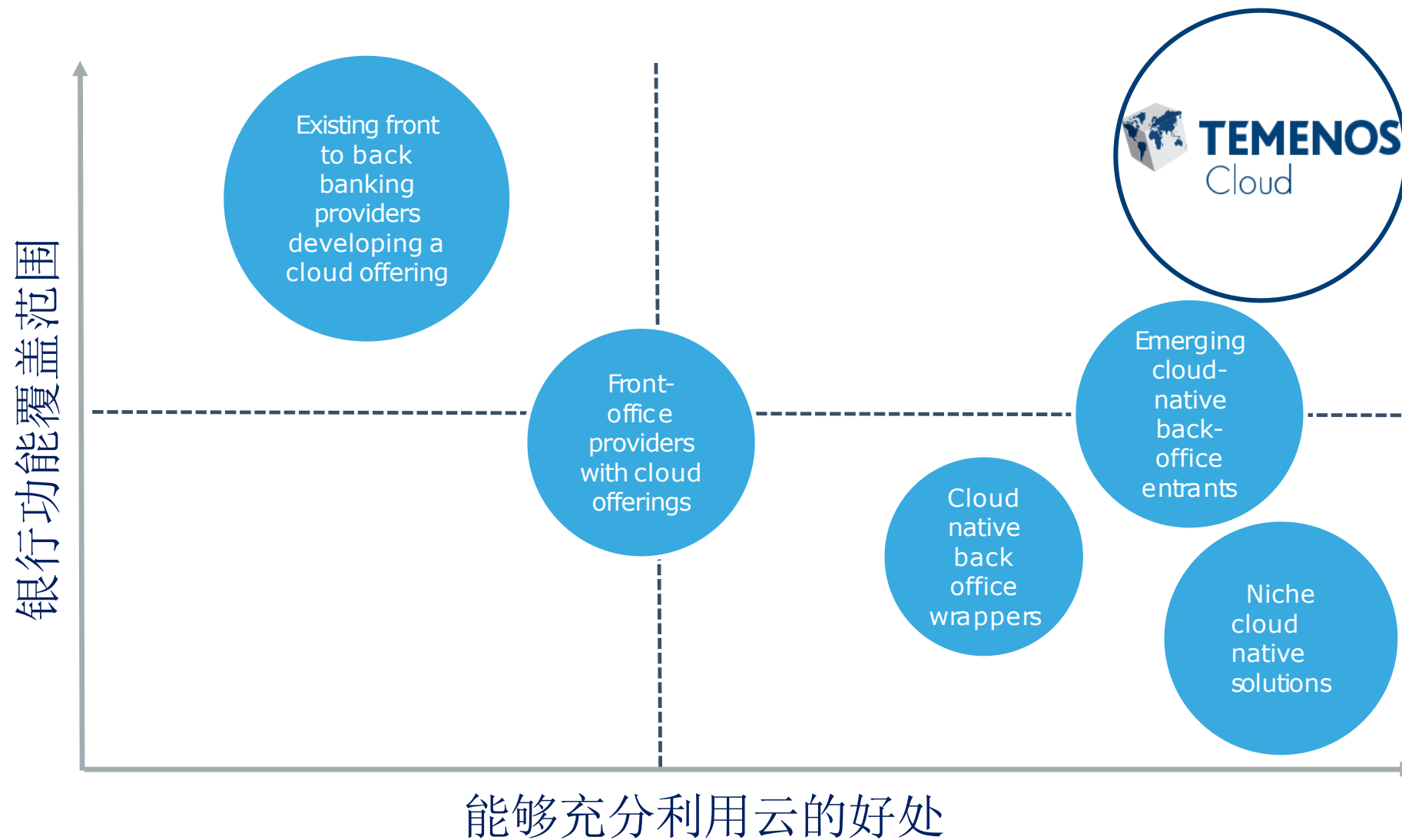
Temenos 云技术发展



Temenos积累了比其他银行软件供应商更多的云专业知识和经验



Temenos在云技术之定位



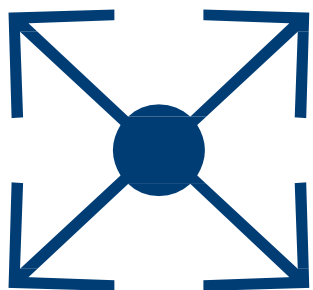
实际案例需求 - 香港虚拟银行



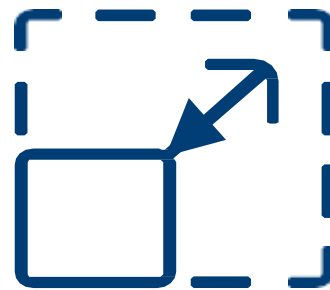
Active-Active
双活



Resilience
高可用性

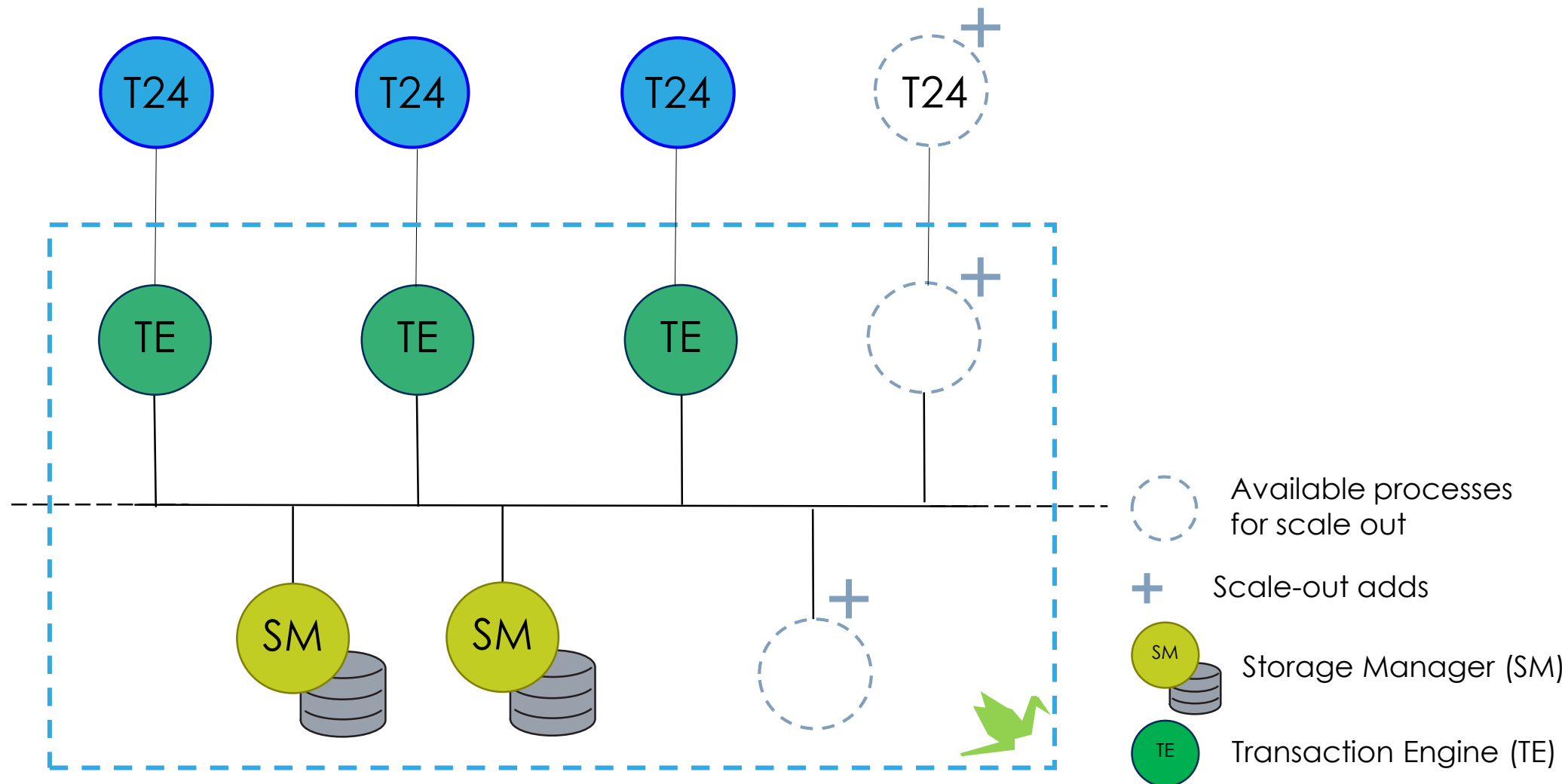


Diversified risk
分散风险

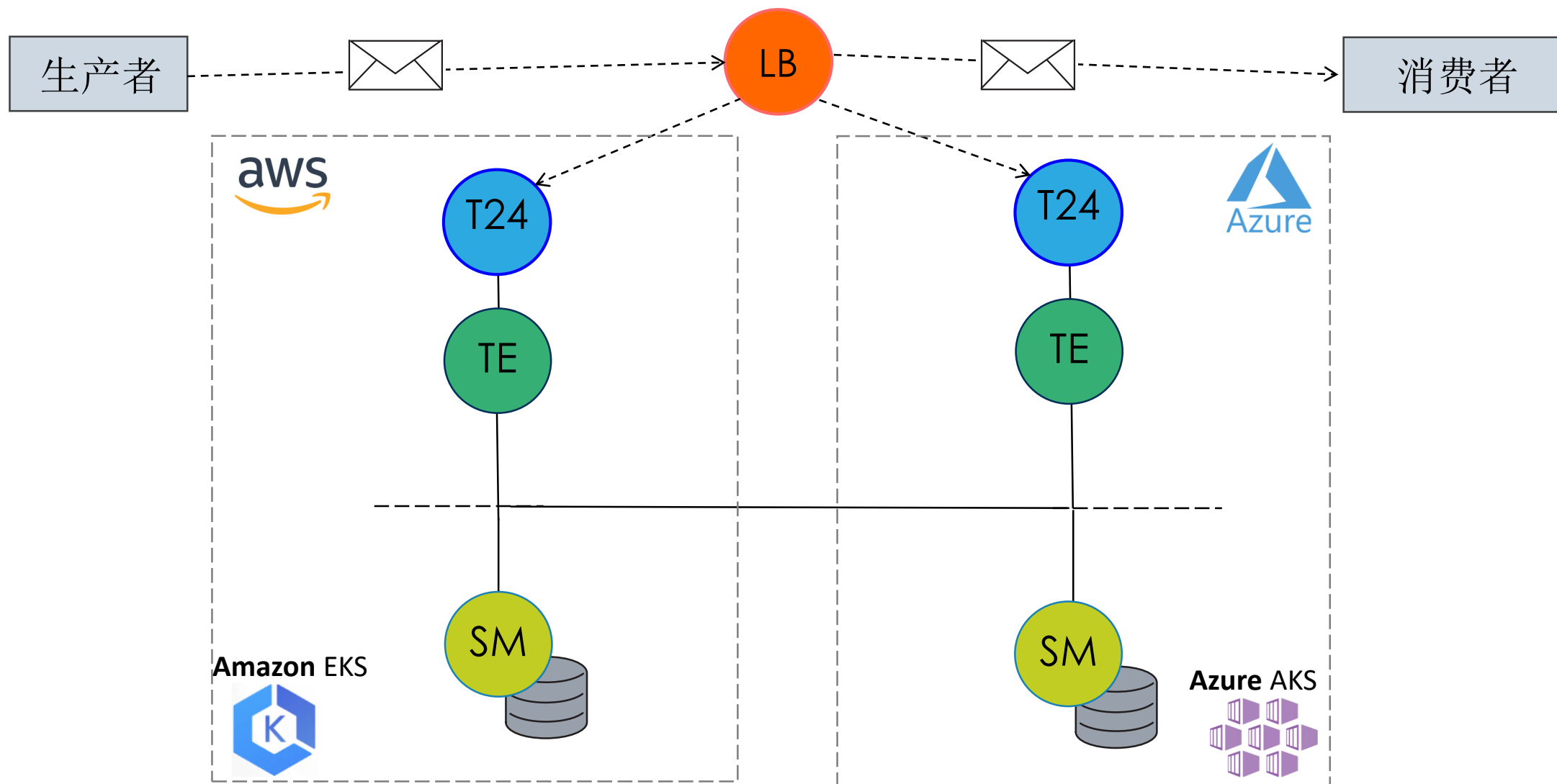


Scale on-demand
按需扩展

T24 Transact + NuoDB – 强强联合



跨不同云的部署架构



Azure云控制台

Microsoft Azure

<<

+ Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function Apps

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Search resources, services

Home > Virtual machines

Virtual machines

Temenos

+ Add

⌚ Reservations

≡ Edit columns

🔄 Refresh

Assign tags

▶ Start

↺ Restart








Subscriptions: TechnologyArchitecture

Filter by name...

MC_active-aks-rg_active-azure-poc_uksouth

All types

7 items

<input type="checkbox"/>	NAME ↑↓	TYPE ↑↓	STATUS
<input type="checkbox"/>	 aks-nodepool1-39448453-0	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-3	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-4	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-5	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-6	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-7	Virtual machine	Running
<input type="checkbox"/>	 aks-nodepool1-39448453-8	Virtual machine	Running

AWS云控制台

aws

Services ▾

Resource Groups ▾

★

Spot Requests

Reserved Instances

Dedicated Hosts

Capacity Reservations

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

Lifecycle Manager

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

LOAD BALANCING

Load Balancers

Target Groups

AUTO SCALING

Launch

Save up to 90% on Compute

Optimize compute costs by creating your Auto Scaling group with a launch template to combine EC2 On-Demand, Spot, and RIs.

Create Auto Scaling group

Actions ▾

Filter:

<input type="checkbox"/>	Name	Launch Configuration / ▾	Instances ▾	Desired ▾	Min ▾	M
<input type="checkbox"/>	active-aws-poc-worker-nodes-NodeGroup-1W75TT8UEKT9N	active-aws-poc-worker-...	3	3	3	10

Auto Scaling Group: active-aws-poc-worker-nodes-NodeGroup-1W75TT8UEKT9N

Details

Activity History

Scaling Policies

Instances

Monitoring

Notifications


Tags


Scheduled Actions

Actions ▾

Filter: Any Health Status ▾ Any Lifecycle State ▾

<input type="checkbox"/>	Instance ID	Lifecycle ▾	Launch Configuration / Template
<input type="checkbox"/>	i-050c6d36214bfc06	InService	active-aws-poc-worker-nodes-NodeLaunchConfig-XNPTZS0M4TAH
<input type="checkbox"/>	i-0c81c4c00794b89c4	InService	active-aws-poc-worker-nodes-NodeLaunchConfig-XNPTZS0M4TAH
<input type="checkbox"/>	i-0e8ed2e290972596e	InService	active-aws-poc-worker-nodes-NodeLaunchConfig-XNPTZS0M4TAH

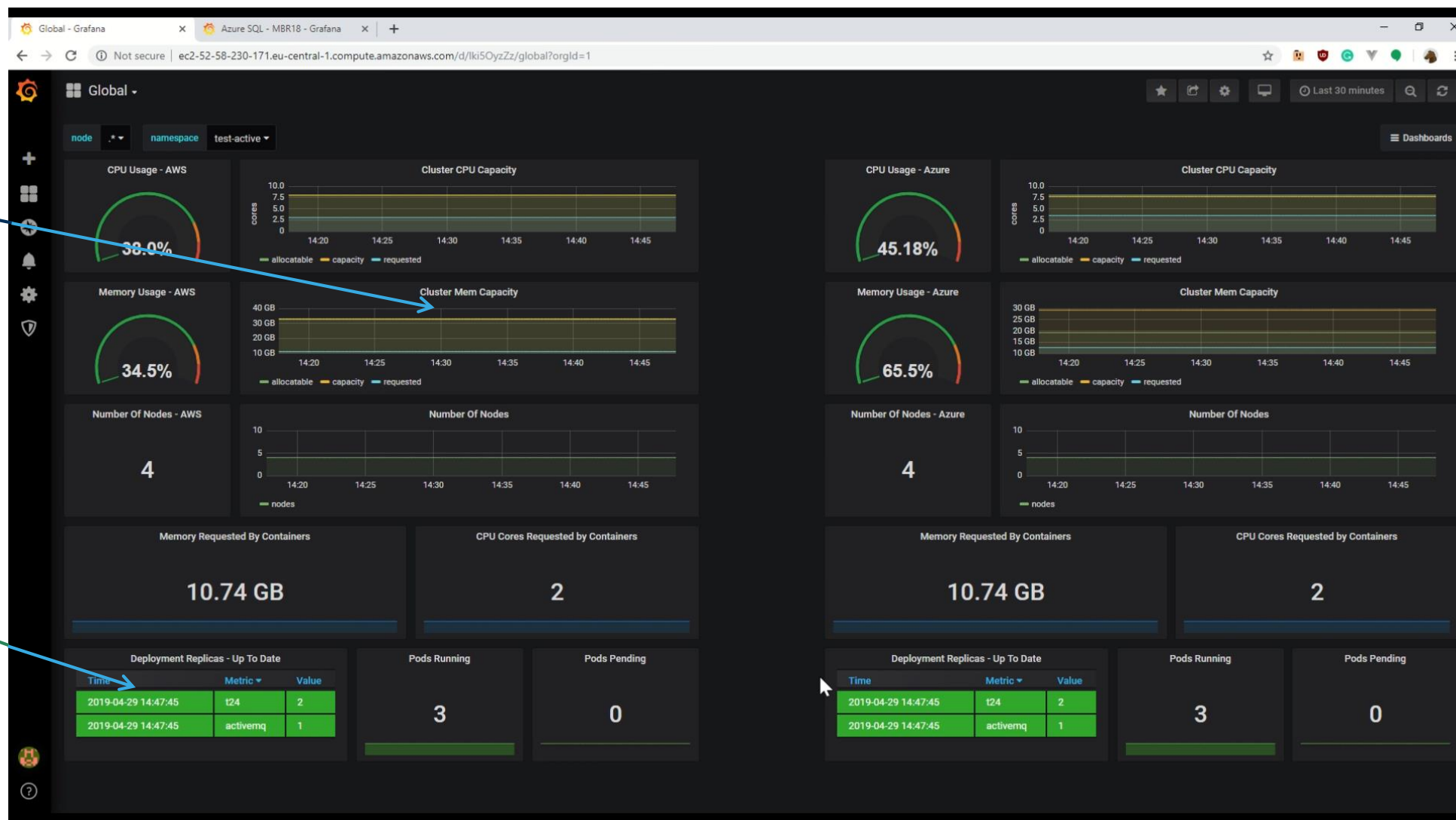
TEMENOS

nuODB

AWS和Azure集群集中管理仪表盘

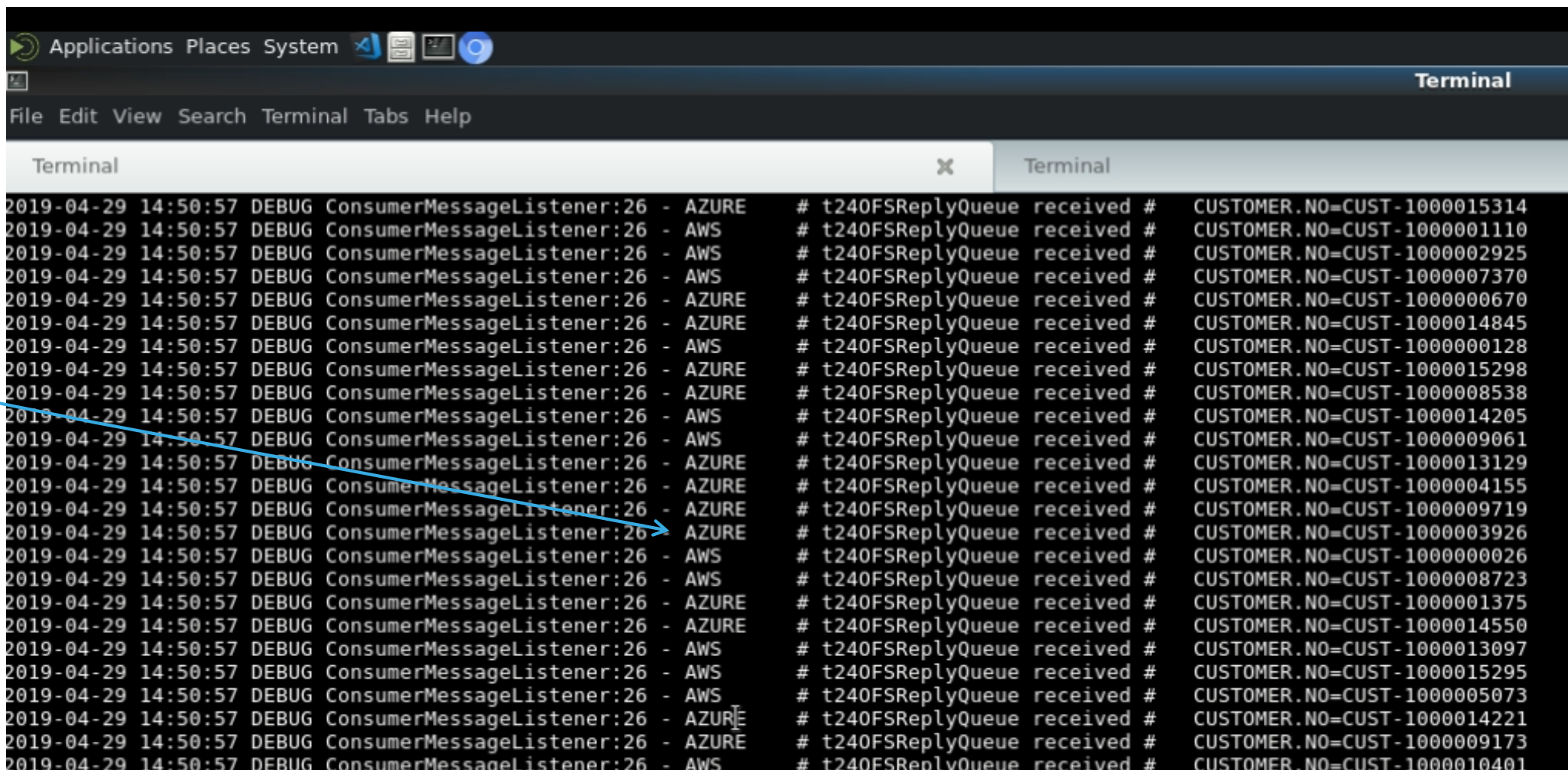
集群能力

集群健康
状态



多集群运行在AWS和Azure上

所有的集群
都在工作

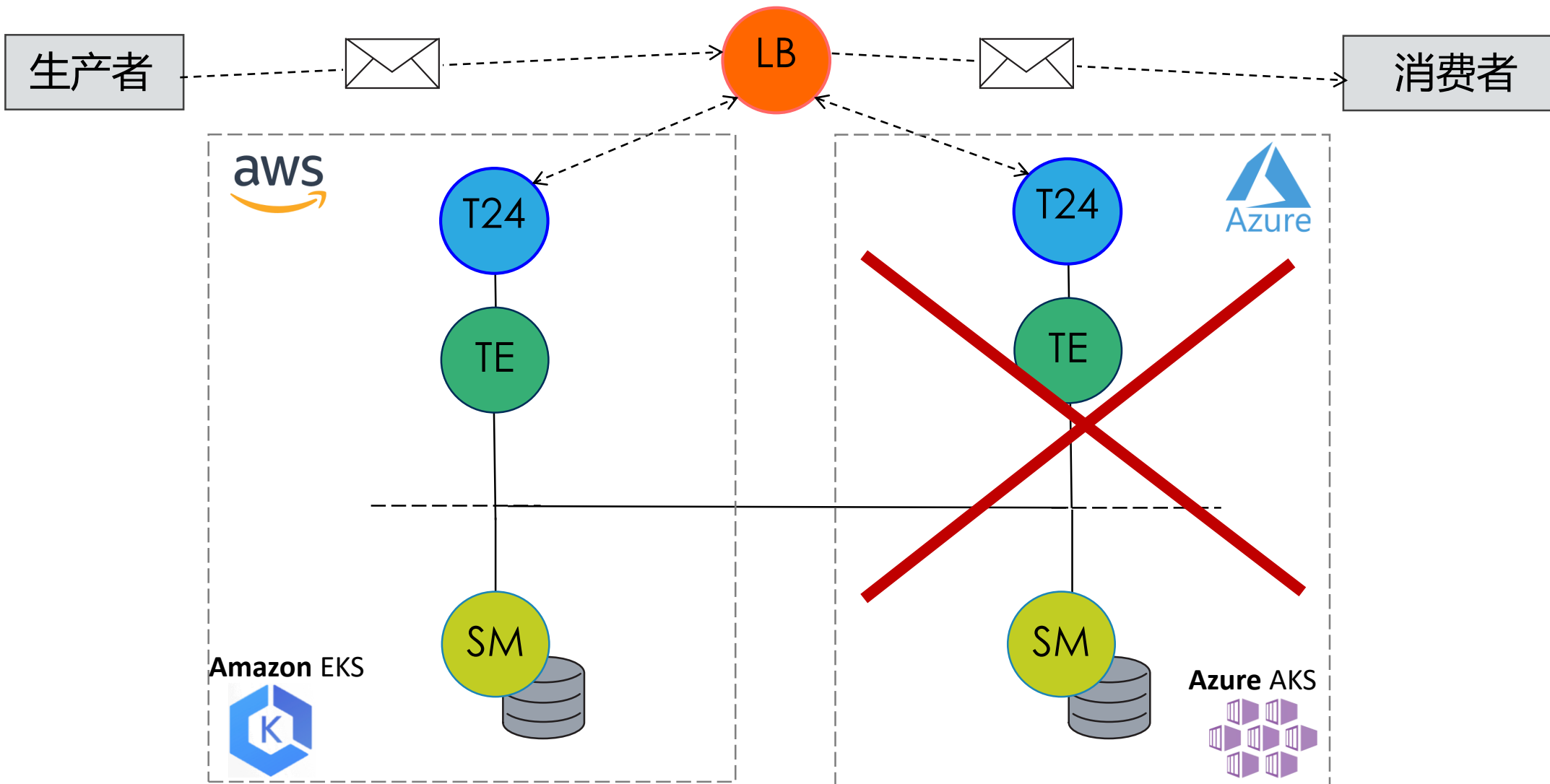


```
Applications Places System [Icons] [Terminal]
File Edit View Search Terminal Tabs Help

Terminal x Terminal

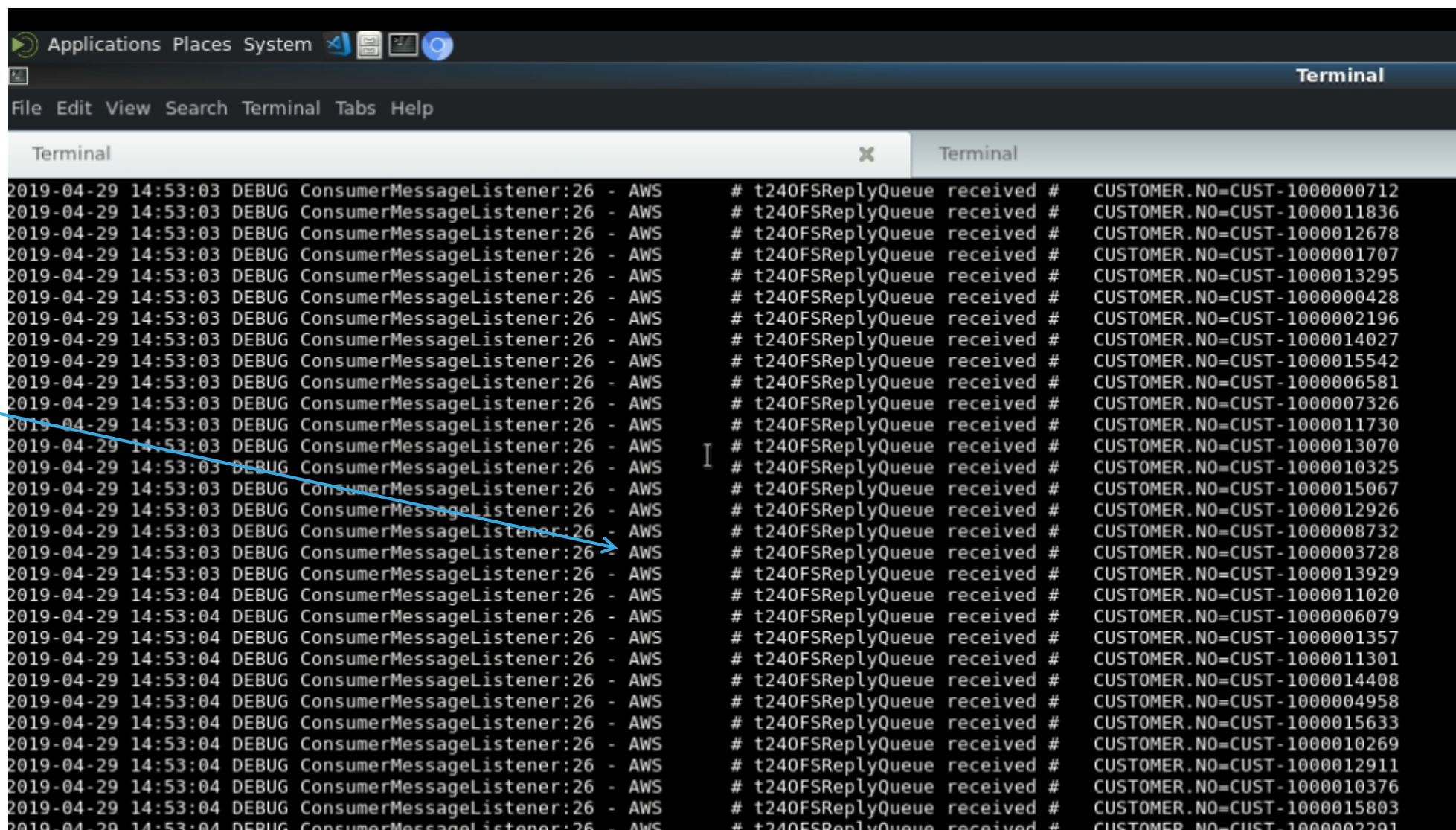
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015314
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000001110
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000002925
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000007370
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000000670
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014845
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000000128
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015298
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000008538
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014205
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000009061
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000013129
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000004155
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000009719
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000003926
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000000026
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000008723
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000001375
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014550
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000013097
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015295
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000005073
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014221
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AZURE # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000009173
2019-04-29 14:50:57 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000010401
```

集群故障 – 关掉Azure节点



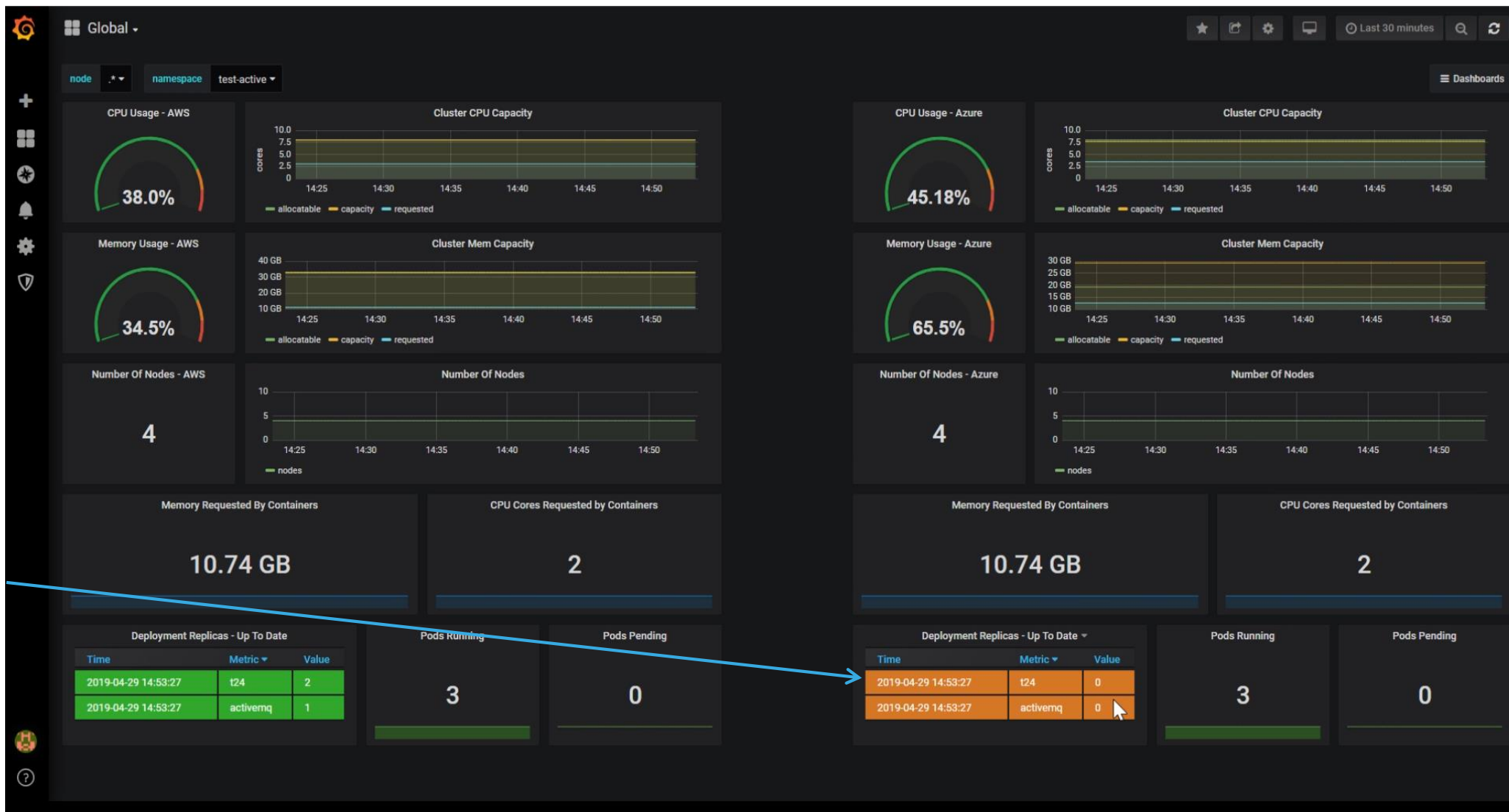
只有一个集群在运行

只有AWS
集群在运行



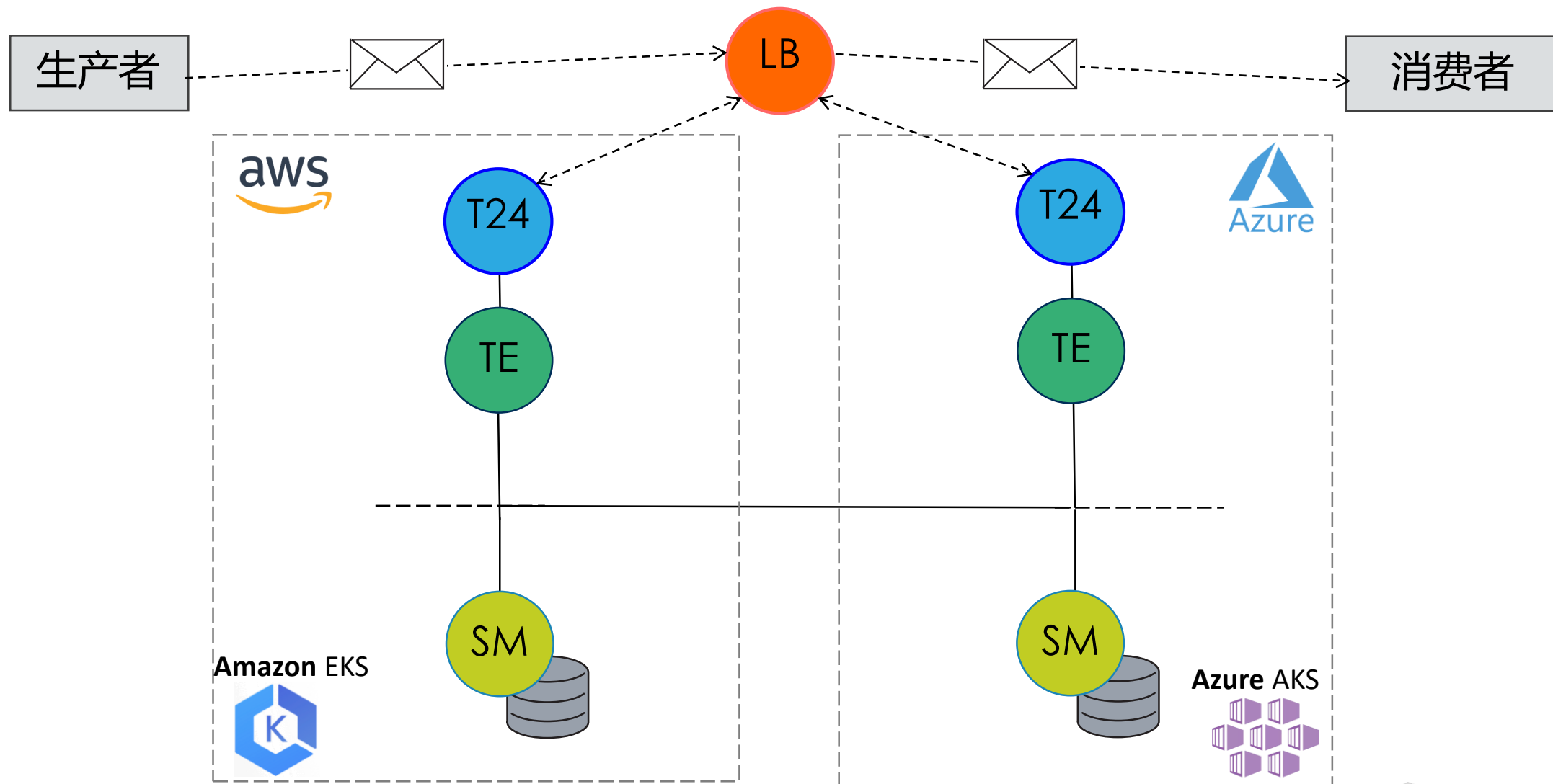
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2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000000712
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000011836
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000012678
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000001707
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000013295
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000000428
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000002196
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014027
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015542
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2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000007326
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2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000012926
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000008732
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000003728
2019-04-29 14:53:03 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000013929
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000011020
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000006079
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000001357
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000011301
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000014408
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000004958
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015633
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000010269
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000012911
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000010376
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000015803
2019-04-29 14:53:04 DEBUG ConsumerMessageListener:26 - AWS # t240FSReplyQueue received # CUSTOMER.NO=CUST-1000002201
```


检查仪表盘



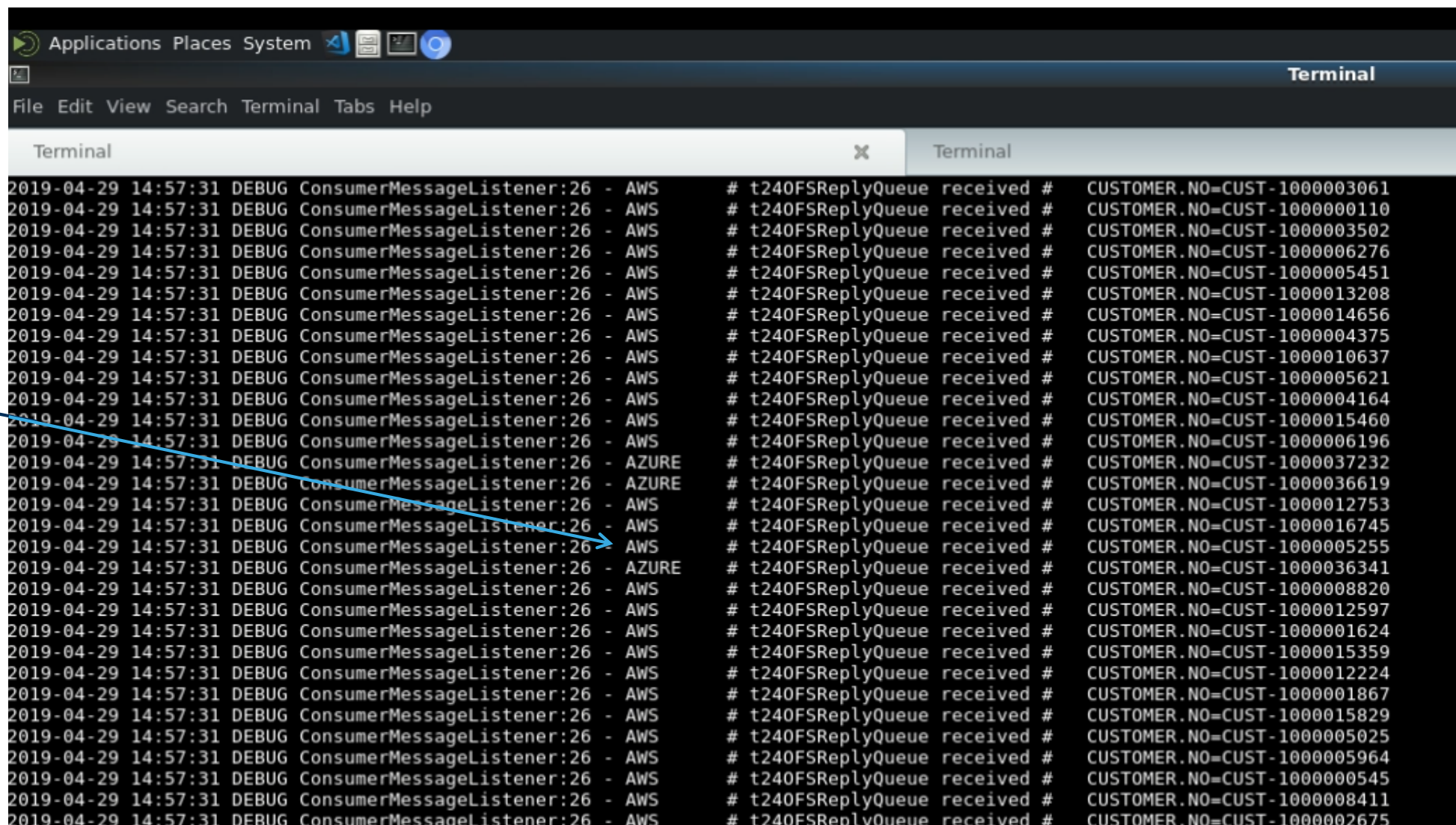
Azure
集群状态是
停机

恢复 - 重起Azure节点



集群完全恢复

所有的集群都在运行状态

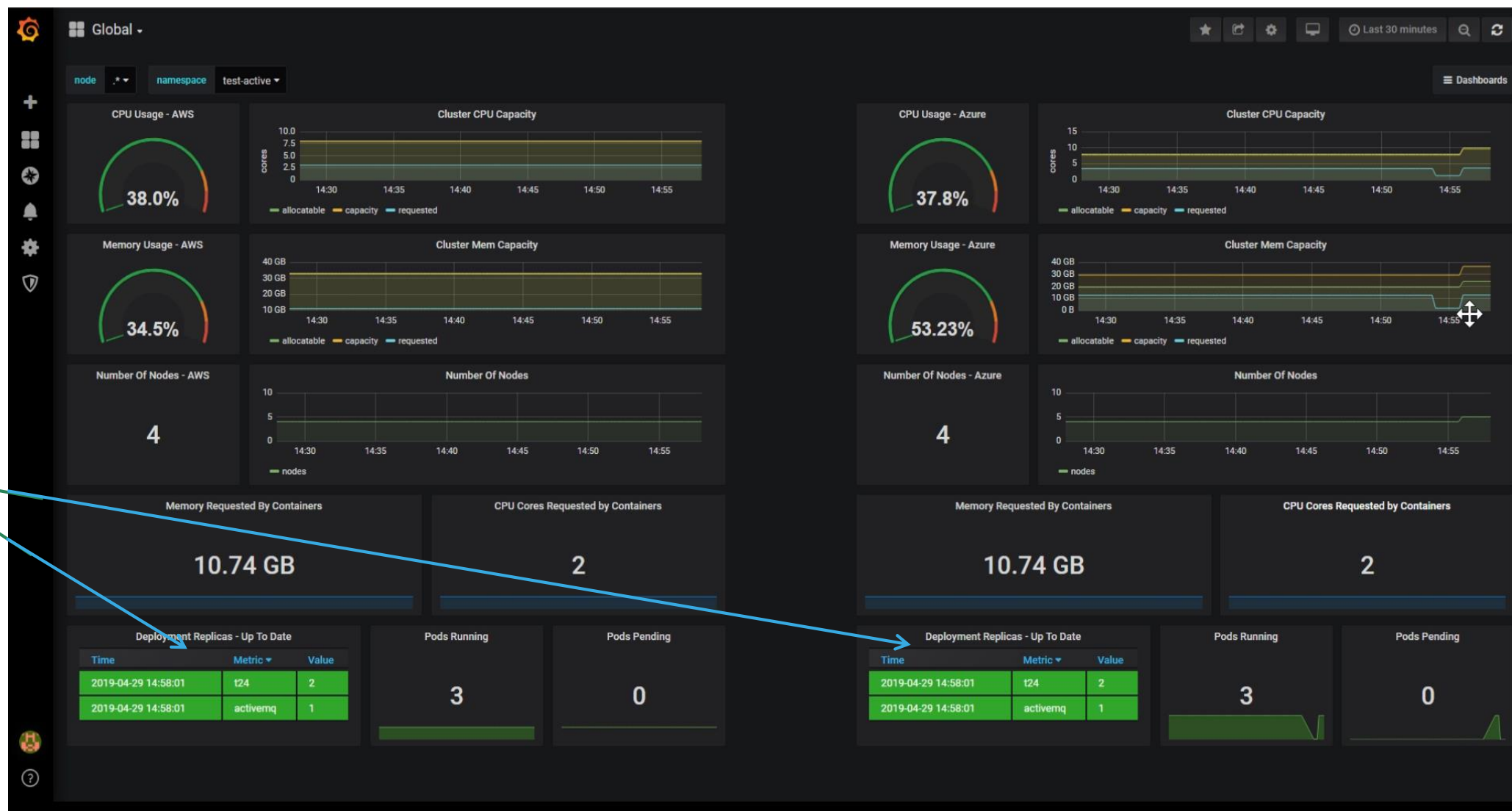


The screenshot shows a terminal window with a menu bar (Applications, Places, System) and a title bar (Terminal). The terminal displays a list of log entries. Each entry follows the format: `2019-04-29 14:57:31 DEBUG ConsumerMessageListener:26 - [Provider] # t240FSReplyQueue received # [CustomerID]`. The providers listed are AWS and AZURE. A blue arrow points from the text '所有的集群都在运行状态' to the log entry for the AZURE provider.

Timestamp	Log Level	Component	Provider	Message	Customer ID
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000003061
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000000110
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000003502
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000006276
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000005451
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000013208
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000014656
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000004375
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000010637
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000005621
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000004164
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000015460
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000006196
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AZURE	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000037232
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AZURE	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000036619
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000012753
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000016745
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000005255
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AZURE	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000036341
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000008820
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000012597
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000001624
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000015359
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000012224
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000001867
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000015829
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000005025
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000005964
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000000545
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000008411
2019-04-29 14:57:31	DEBUG	ConsumerMessageListener:26	AWS	# t240FSReplyQueue received #	CUSTOMER.NO=CUST-1000002675

系统恢复

所有集群都在运行



如何实现需求



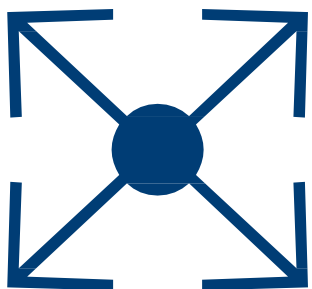
Active-Active
双活

Distributed database
分布式数据库



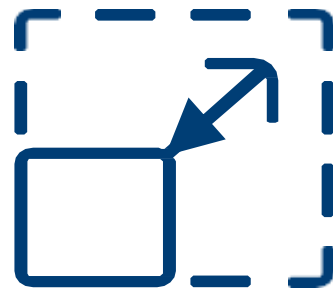
Resilience 高可用性

Automated recovery
自动恢复



Diversified risk
分散风险

Multi-clouds
同时使用多个云厂商



Scale on-demand
按需扩展

Optimized utilization
高效的利用率

Thank You

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