_ Midpoint 2016.4.11

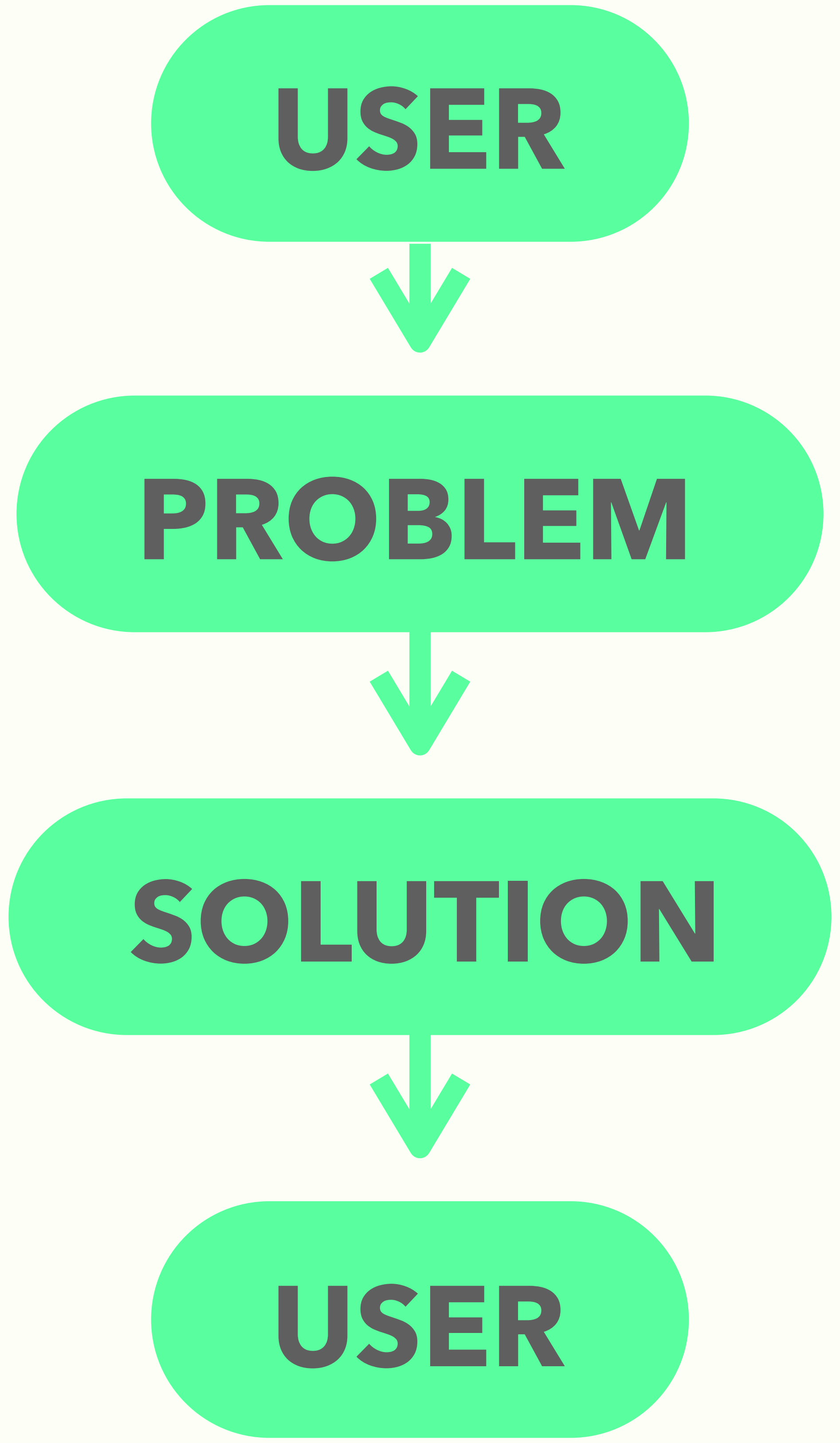
alphadoop

Doflamingo

An light-weight monitoring system for Apache Hadoop

TITLE	Kafka/ Zookeeper Monitoring Module built for Flamingo Ecosystem		
DURATION	March 13, 2016 ~ June 8, 2016		
CLIENT	EXEM	PRESENTER	ALPHADOOP

_ Midpoint



USER

PROBLEM

SOLUTION

USER

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OVERVIEW

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SOLUTIONS

NOVELTY

SCENARIO

SCHEDULE

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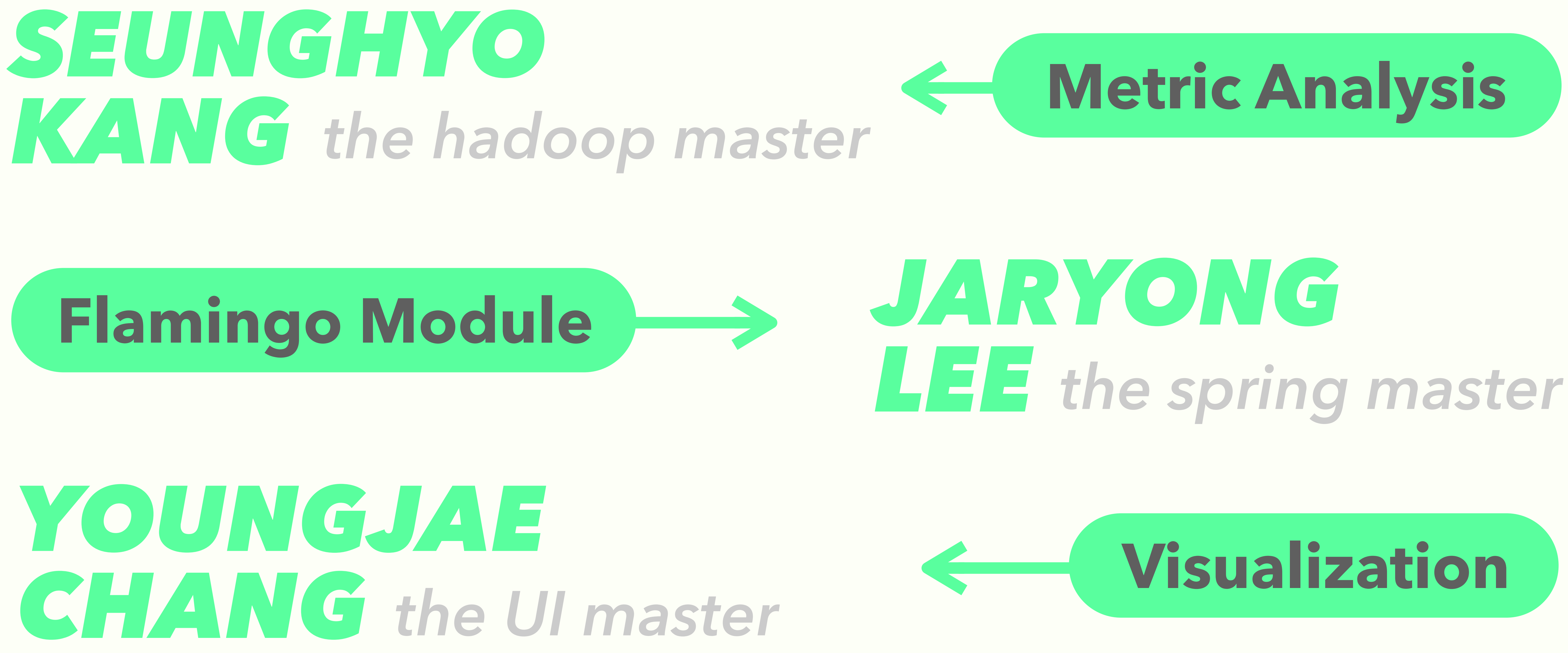
_ PROJECT GOAL

**Collect Performance Metrics,
Visualize it, and
Integrate it with Flamingo.**

- **Overview**
- Users
- Problems
- Solutions
- Novelty
- Scenario
- Schedule

_ TEAM

TEAM _ ALPHADOOP



SEUNGHYO KANG *the hadoop master* ← **Metric Analysis**

Flamingo Module → ***JARYONG LEE*** *the spring master*

YOUNGJAE CHANG *the UI master* ← **Visualization**

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_ REQUIREMENTS

1. Flamingo Ecosystem
2. Real-time Monitoring
3. JAVA, Spring, Sencha
4. Kafka, Zookeeper

_ SCOPE

Only Monitoring, No Management

We know nothing:

Concentrate on given metrics

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_ QUESTION

PHASE #1 **What is a monitoring?**

_ QUESTION

PHASE #1 **What is a monitoring?**

PHASE #2 **Why do we monitor?**

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_ TWO NEEDS

*To ensure the **normal operation** of the system*

*To find out the cause of **abnormal behavior***

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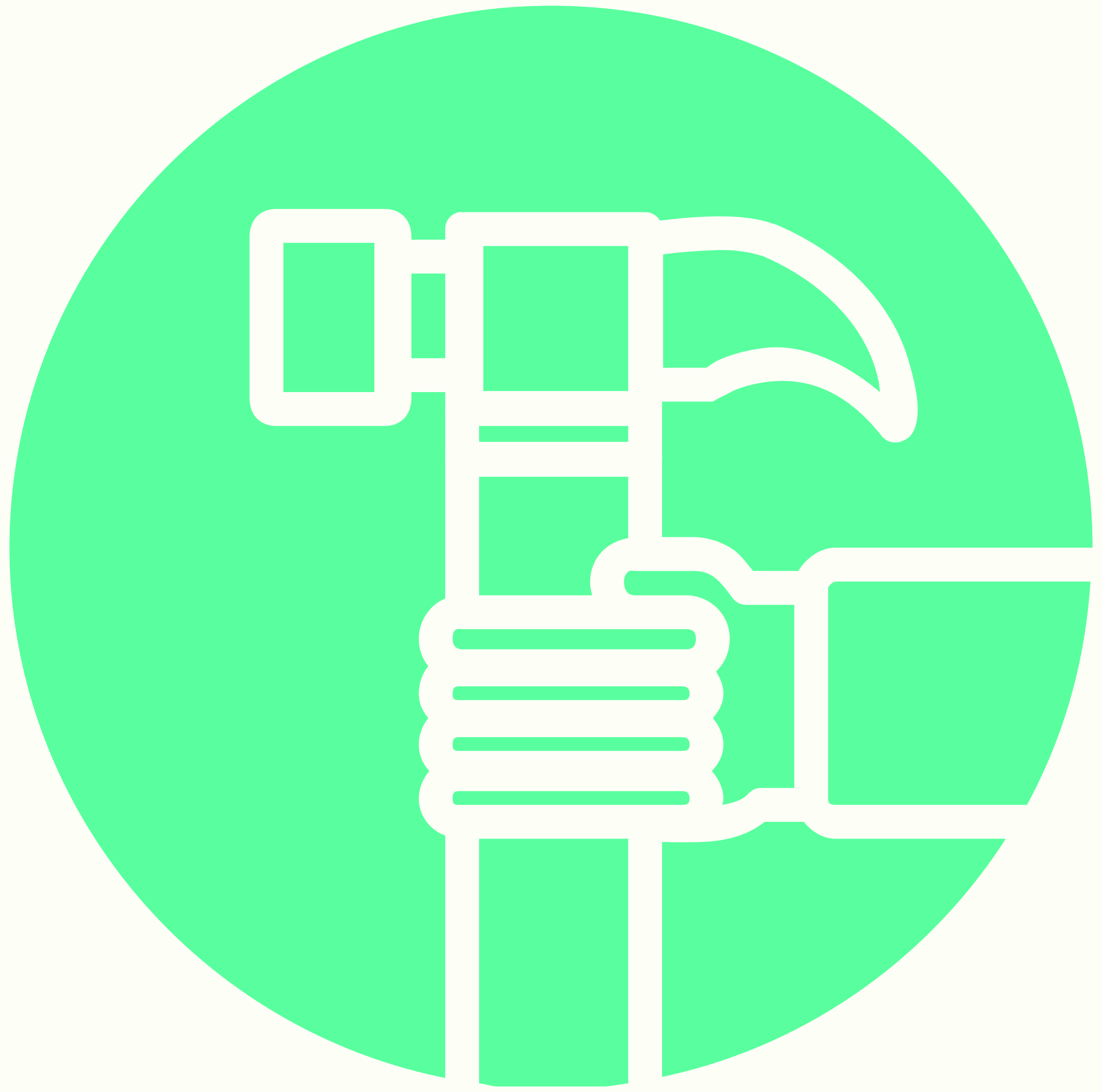
_ TWO USERS

USER #1

Maintainer



USER #2

Developer

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_ USERS

USER #1

Maintainer

A. Hope everything stays normal

B. Determine whether to put more resources or not

C. Usually maintains a volume of system

D. Focus on real-time data

USER #2

Developer

A. Fix the problem

B. Find out the cause of the problem by traveling the past data

C. Deeper understanding on whole system

D. Focus on specific events

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_ DIFFERENT REQUIREMENTS

USER #1

Maintainer

A. Visualize constantly changing statistics of sys.
B. At a glance view of metrics
C. Real-time update without user intervention

USER #2

Developer

A. Visualize abrupt events
B. Can travel back to the past to find the cause of event
C. Detailed analysis on changing variables during specific timeframe

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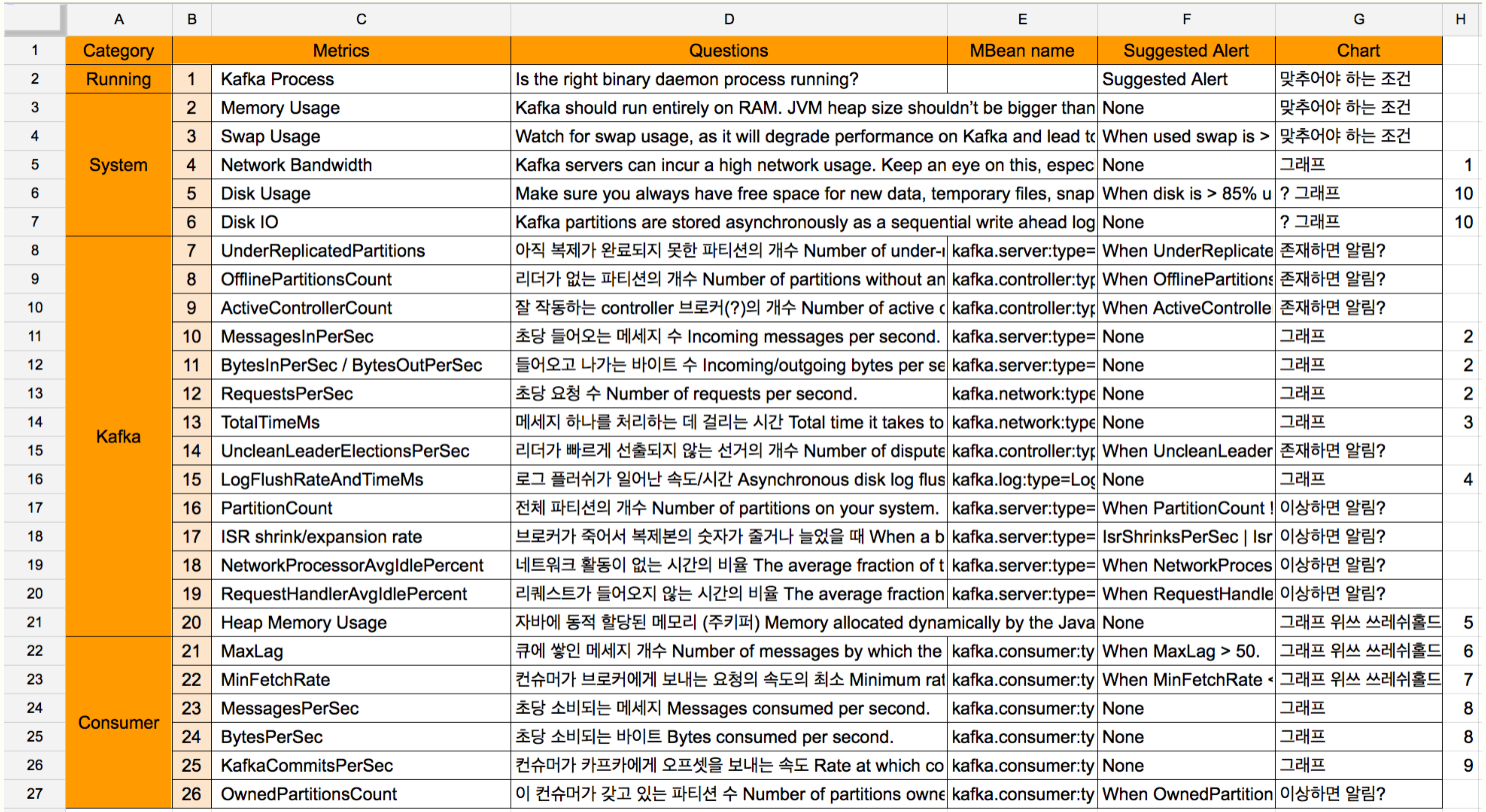
_ Metric Decision



	A	B	C	D	E	F	G	H
1	Category	Metrics		Questions	MBean name	Suggested Alert	Chart	
2	Running	1	Kafka Process	Is the right binary daemon process running?		Suggested Alert	맞추어야 하는 조건	
3	System	2	Memory Usage	Kafka should run entirely on RAM. JVM heap size shouldn't be bigger than		None	맞추어야 하는 조건	
4		3	Swap Usage	Watch for swap usage, as it will degrade performance on Kafka and lead t		When used swap is >	맞추어야 하는 조건	
5		4	Network Bandwidth	Kafka servers can incur a high network usage. Keep an eye on this, espec		None	그래프	1
6		5	Disk Usage	Make sure you always have free space for new data, temporary files, snap		When disk is > 85% u	? 그래프	10
7		6	Disk IO	Kafka partitions are stored asynchronously as a sequential write ahead log		None	? 그래프	10
8	Kafka	7	UnderReplicatedPartitions	아직 복제가 완료되지 못한 파티션의 개수 Number of under-	kafka.server:type=	When UnderReplicate	존재하면 알림?	
9		8	OfflinePartitionsCount	리더가 없는 파티션의 개수 Number of partitions without an	kafka.controller:typ	When OfflinePartitions	존재하면 알림?	
10		9	ActiveControllerCount	잘 작동하는 controller 브로커(?)의 개수 Number of active c	kafka.controller:typ	When ActiveControlle	존재하면 알림?	
11		10	MessagesInPerSec	초당 들어오는 메세지 수 Incoming messages per second.	kafka.server:type=	None	그래프	2
12		11	BytesInPerSec / BytesOutPerSec	들어오고 나가는 바이트 수 Incoming/outgoing bytes per se	kafka.server:type=	None	그래프	2
13		12	RequestsPerSec	초당 요청 수 Number of requests per second.	kafka.network:type	None	그래프	2
14		13	TotalTimeMs	메세지 하나를 처리하는 데 걸리는 시간 Total time it takes to	kafka.network:type	None	그래프	3
15		14	UncleanLeaderElectionsPerSec	리더가 빠르게 선출되지 않는 선거의 개수 Number of dispute	kafka.controller:typ	When UncleanLeader	존재하면 알림?	
16		15	LogFlushRateAndTimeMs	로그 플러쉬가 일어난 속도/시간 Asynchronous disk log flus	kafka.log:type=Log	None	그래프	4
17		16	PartitionCount	전체 파티션의 개수 Number of partitions on your system.	kafka.server:type=	When PartitionCount !	이상하면 알림?	
18		17	ISR shrink/expansion rate	브로커가 죽어서 복제본의 숫자가 줄거나 늘었을 때 When a b	kafka.server:type=	IsrShrinksPerSec | Isr	이상하면 알림?	
19		18	NetworkProcessorAvgIdlePercent	네트워크 활동이 없는 시간의 비율 The average fraction of t	kafka.server:type=	When NetworkProces	이상하면 알림?	
20		19	RequestHandlerAvgIdlePercent	리퀘스트가 들어오지 않는 시간의 비율 The average fraction	kafka.server:type=	When RequestHandle	이상하면 알림?	
21		20	Heap Memory Usage	자바에 동적 할당된 메모리 (주키퍼) Memory allocated dynamically by the Java		None	그래프 위쓰 쓰레쉬홀드	5
22	Consumer	21	MaxLag	큐에 쌓인 메세지 개수 Number of messages by which the	kafka.consumer:ty	When MaxLag > 50.	그래프 위쓰 쓰레쉬홀드	6
23		22	MinFetchRate	컨슈머가 브로커에게 보내는 요청의 속도의 최소 Minimum rat	kafka.consumer:ty	When MinFetchRate <	그래프 위쓰 쓰레쉬홀드	7
24		23	MessagesPerSec	초당 소비되는 메세지 Messages consumed per second.	kafka.consumer:ty	None	그래프	8
25		24	BytesPerSec	초당 소비되는 바이트 Bytes consumed per second.	kafka.consumer:ty	None	그래프	8
26		25	KafkaCommitsPerSec	컨슈머가 카프카에게 오프셋을 보내는 속도 Rate at which co	kafka.consumer:ty	None	그래프	9
27		26	OwnedPartitionsCount	이 컨슈머가 갖고 있는 파티션 수 Number of partitions owne	kafka.consumer:ty	When OwnedPartition	이상하면 알림?	

_ EXTERNAL INTERFACE

FUNC #1

Overview

A. Dashboard

B. ~~Configuration~~

FUNC #2

Timeline

A. Event Timeline

B. Timemachine

_ Midpoint

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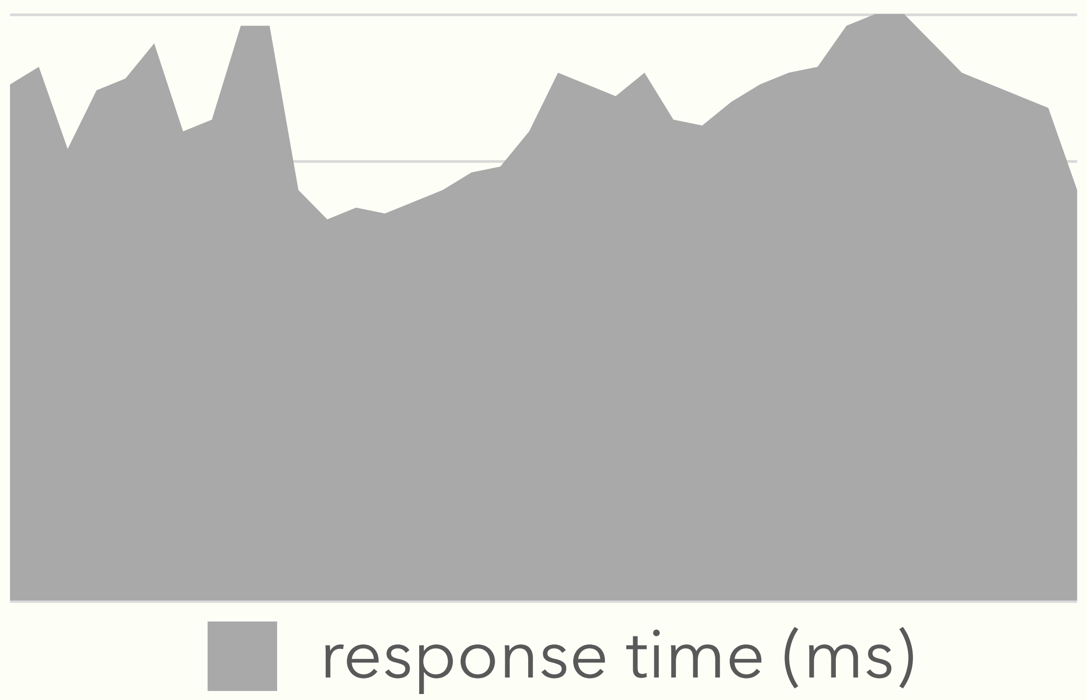
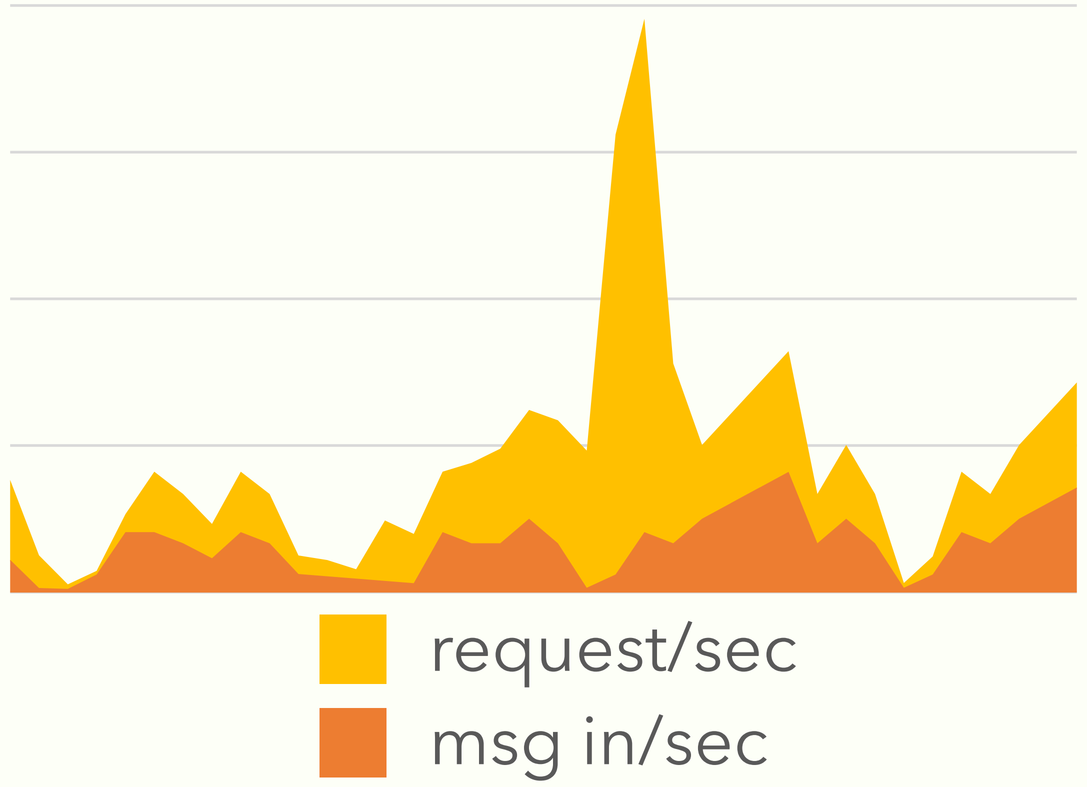
FUNC #1 Overview

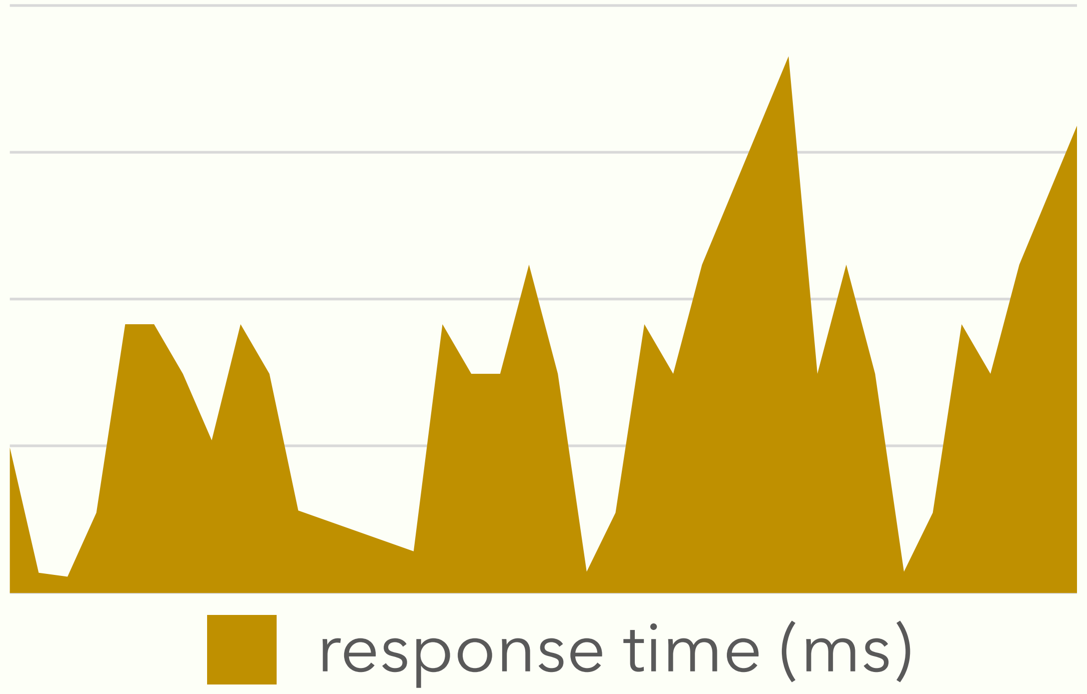
Heap memory usage



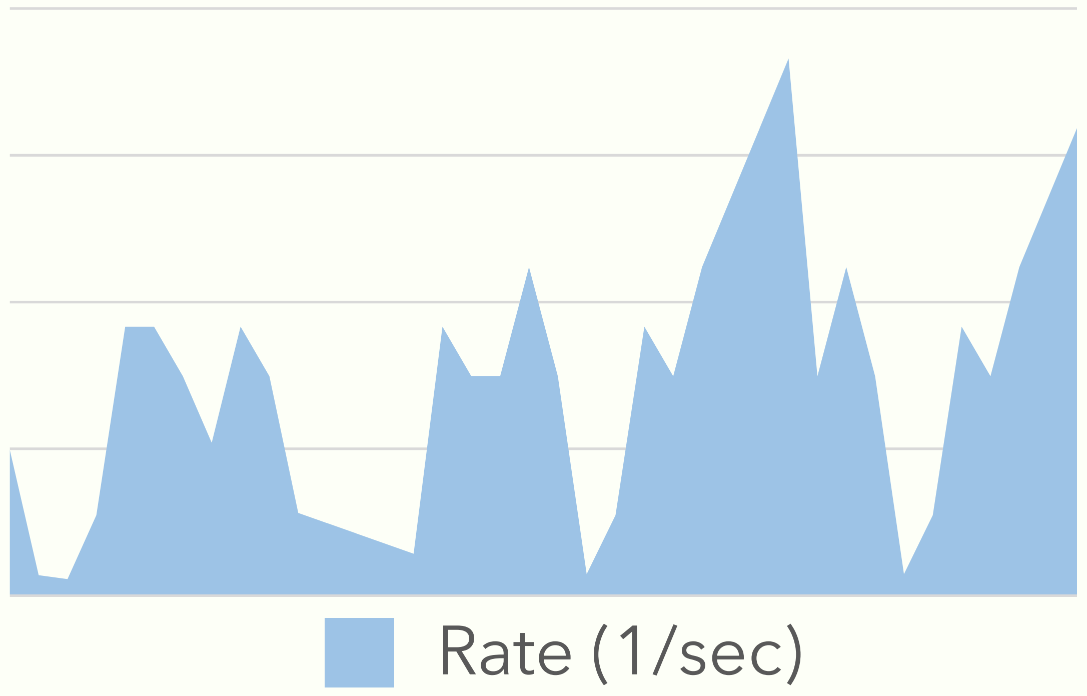
Message Condition



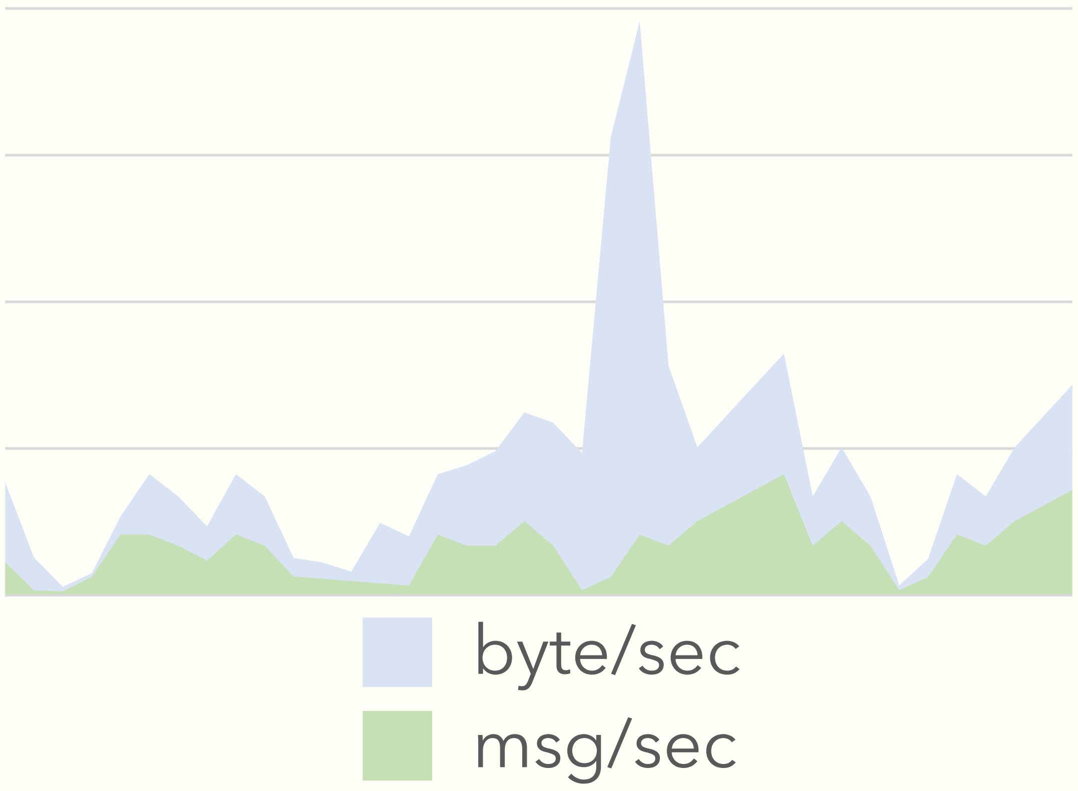
Response time



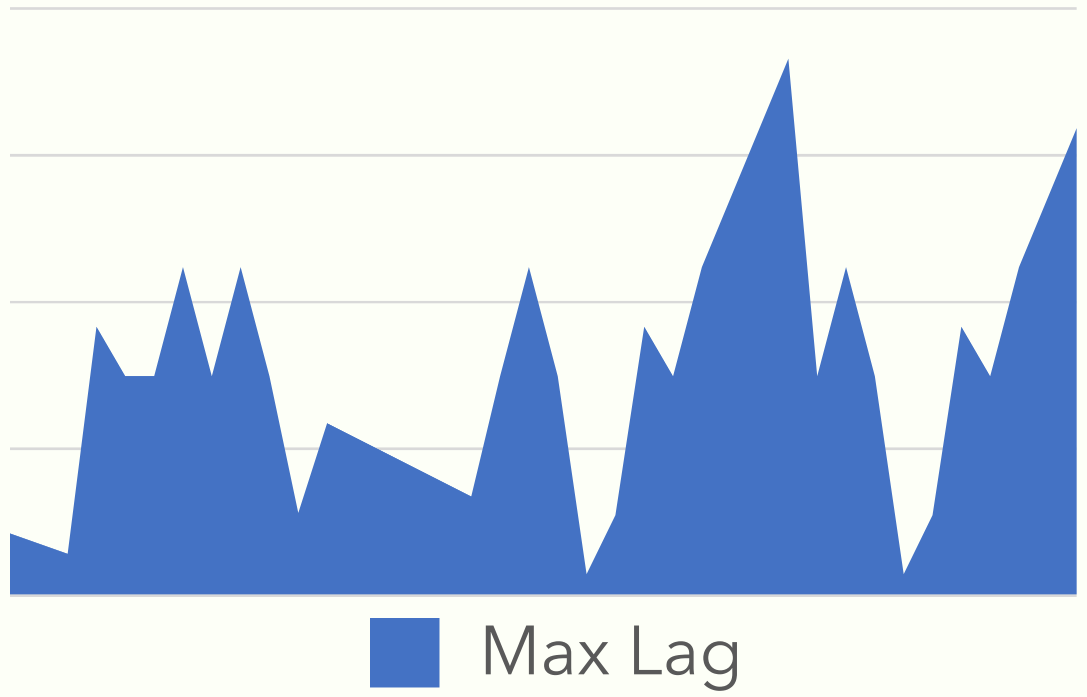
Minimum Fetch rate



Message Consumed



Max Lag



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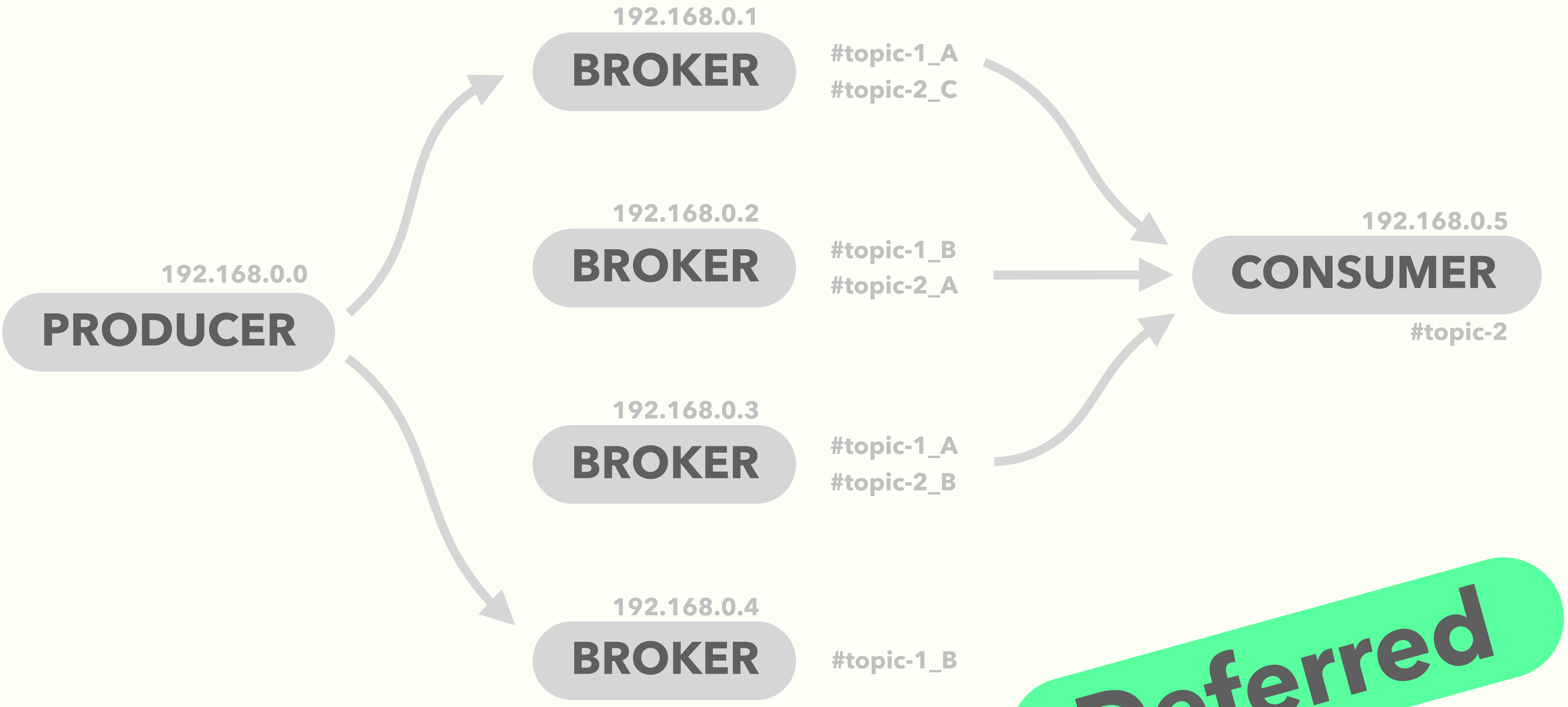
FUNC #1 Overview



Deferred

_ Midpoint

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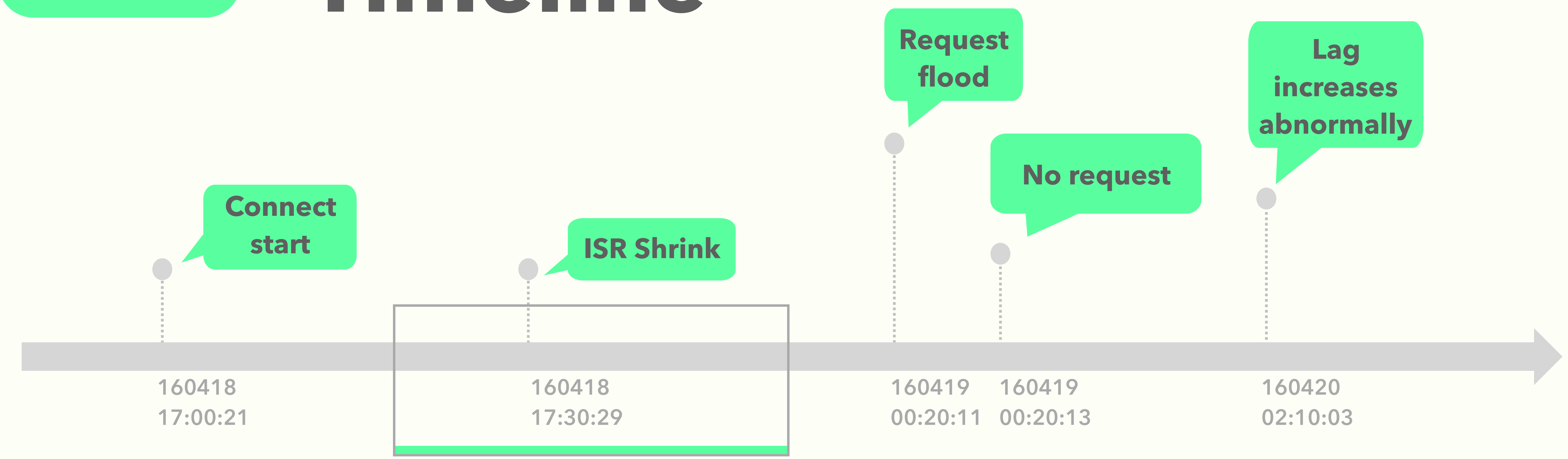
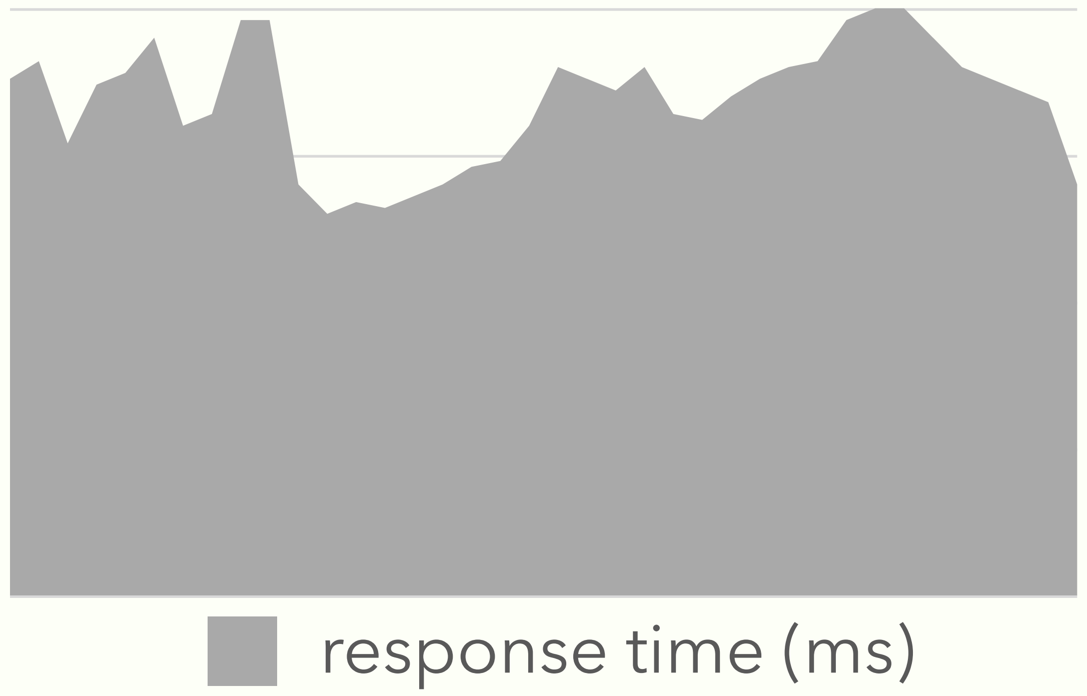
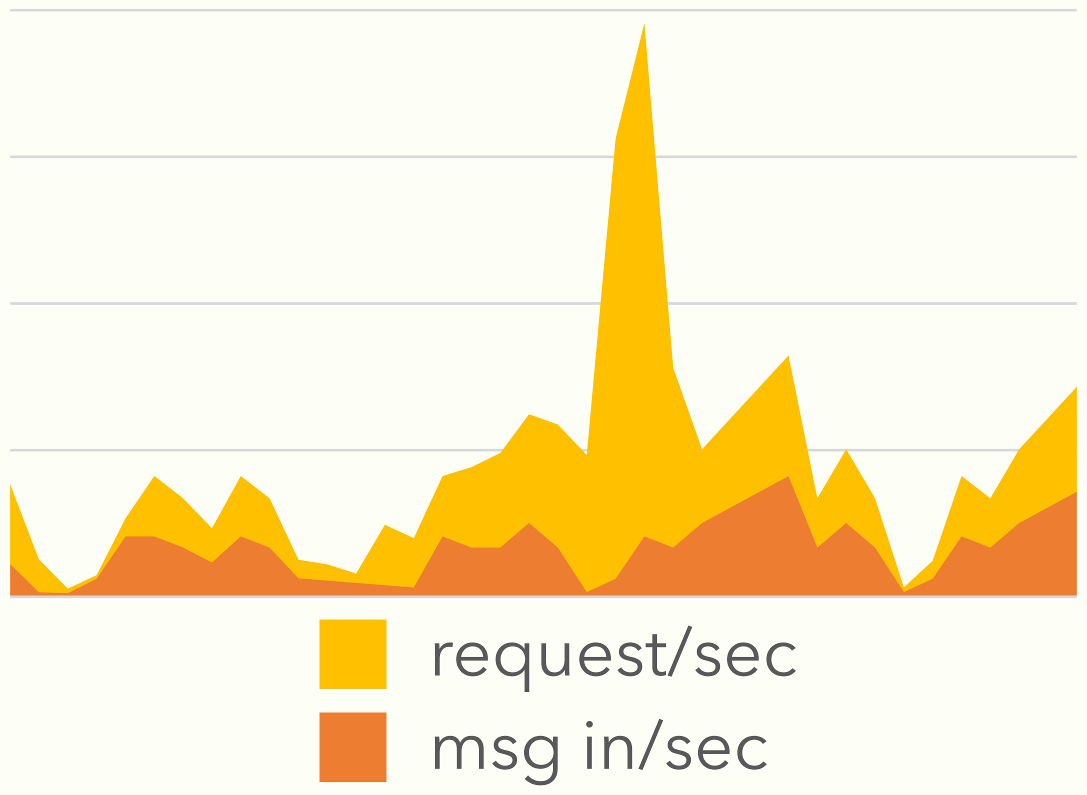
FUNC #2 Timeline



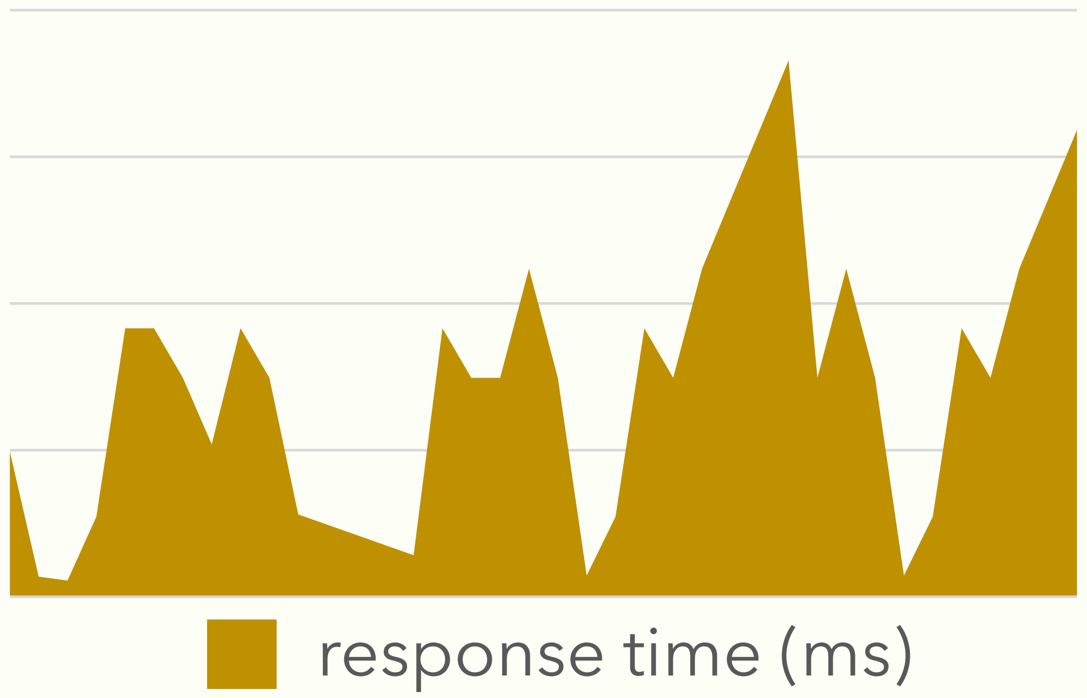
Heap memory usage



Message Condition



Response time



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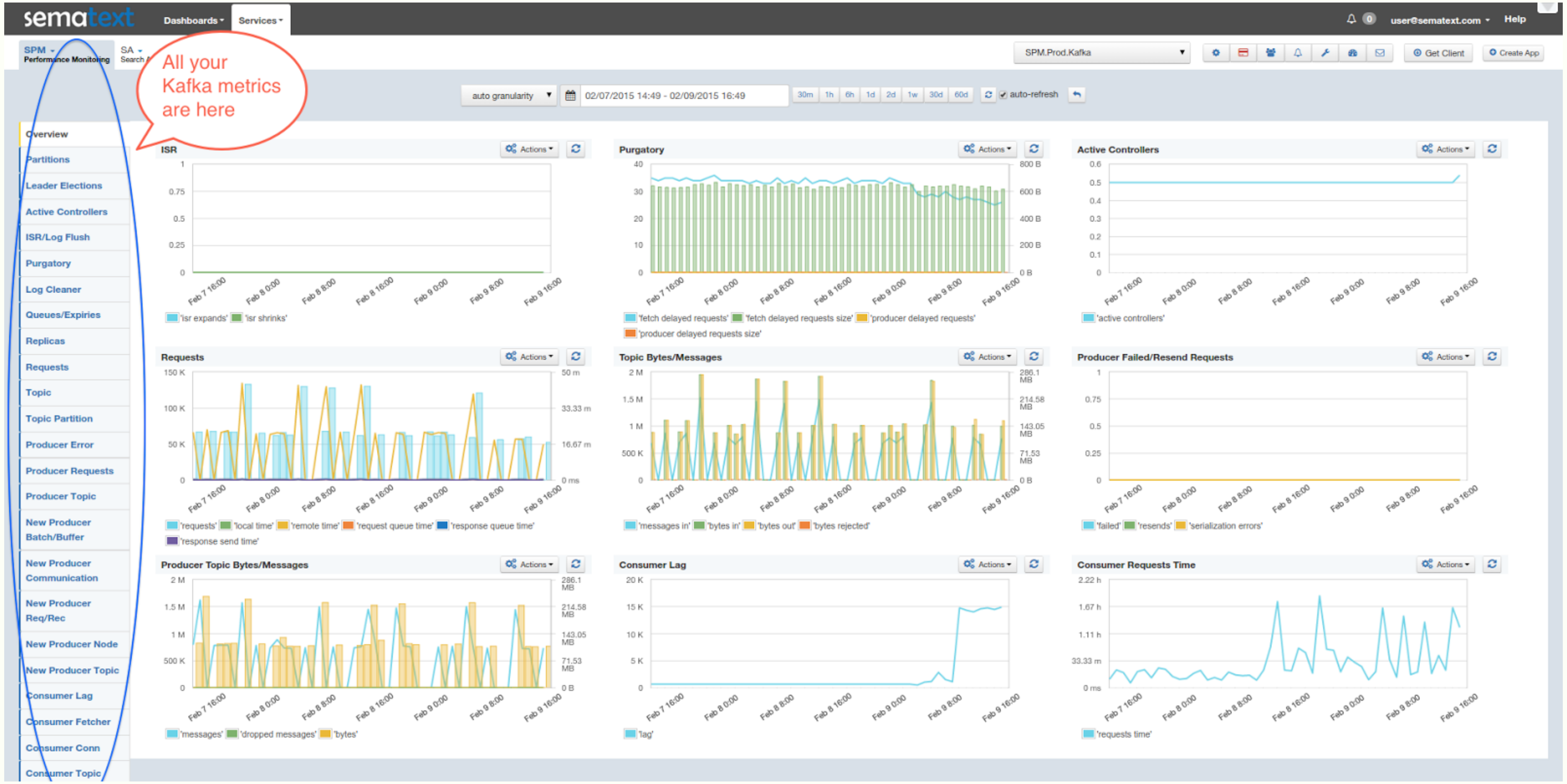
_ WHAT'S NEW?



All your Kafka metrics are here

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_ WHAT'S NEW?

Clear division of monitoring task

Further implication to BM

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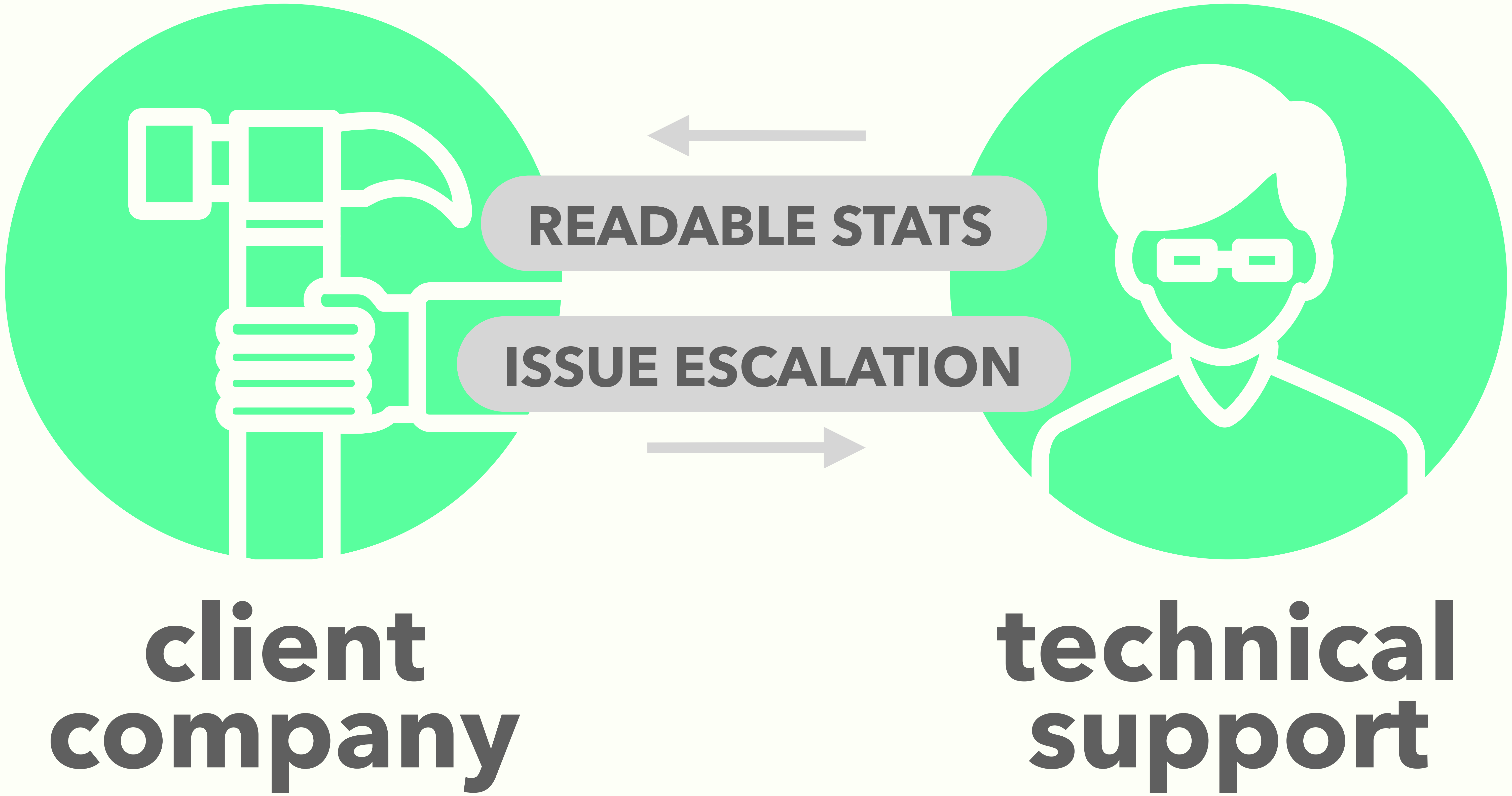
_ USER SCENARIO



READABLE STATS

ISSUE ESCALATION

client company

technical support

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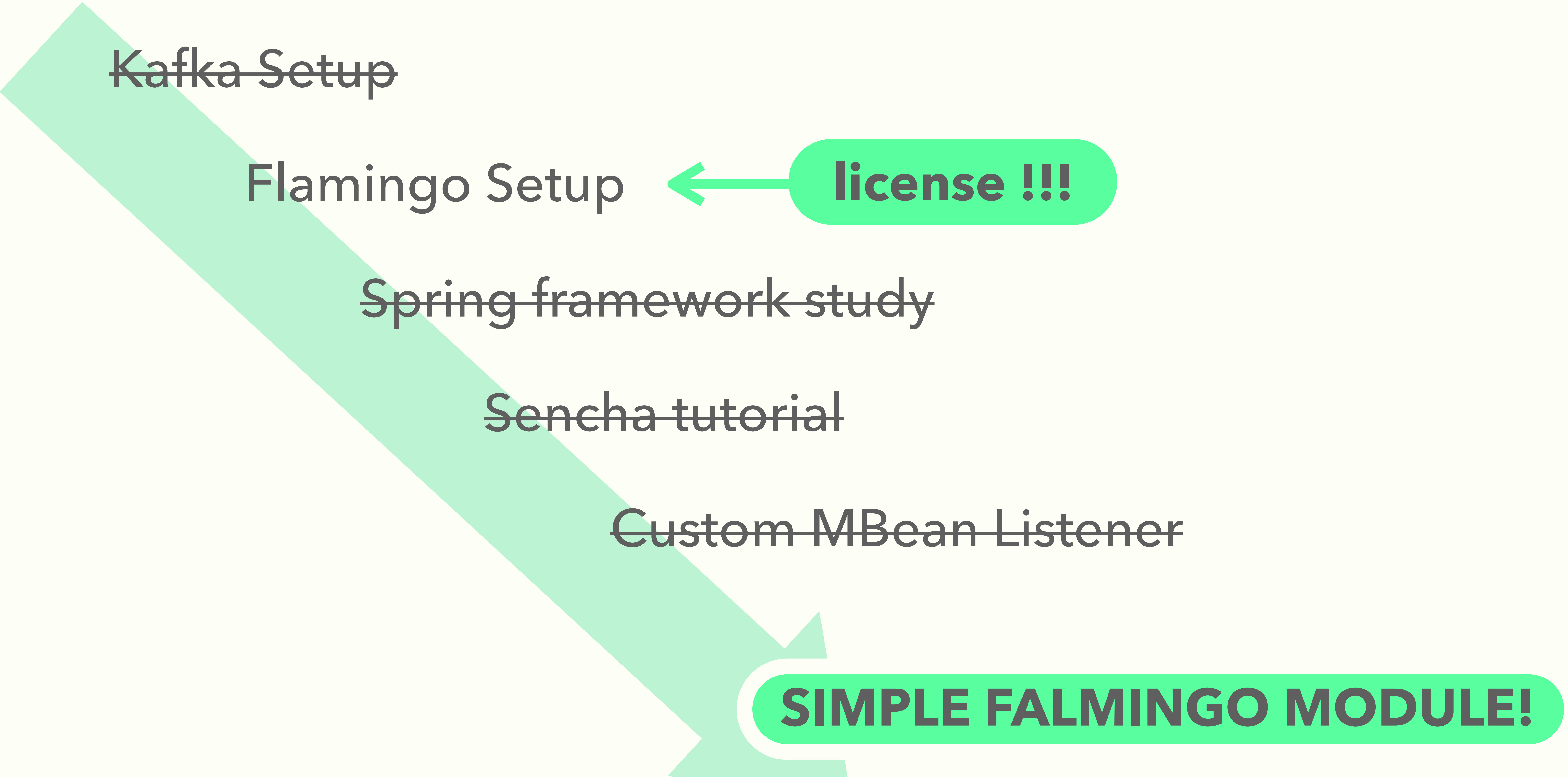
_ ON THE WAY



~~Kafka Setup~~

Flamingo Setup ← **license !!!**

~~Spring framework study~~

~~Sencha tutorial~~

~~Custom MBean Listener~~

SIMPLE FALMINGO MODULE!

END