



Stream Processing at Betfair

with Storm & Kafka



About me:

- Miguel Veiga
- Backend Developer
- At Blip since 2013
- Feeds Platform teams

betfair

[carrinho eletrônico](#)
[palavra-passe](#)
[Iniciar sessão](#)
[Registar-se já](#)

[Recorrido-me](#)
[Esqueça-se nome de utilizador / palavra-passe ?](#)

Jogo responsável

Sportsbook | Intercâmbio | Casino | Casino Live | Poker | Jogos Exchange | Arcade | Vegas Slots | Macau | Bingo | Desportos Virtuais

Todos os Desportos (32) | Início | Em Jogo | Cash Out | Price Rush | Promoções | Futebol | Cartões de cartões | Ténis | Beisebol | Corridas | APOSTAS 0

LINKS RÁPIDOS

- Futebol de Hoje >

LINKS RÁPIDOS

- Ténis de Hoje >
- Voleibol >

Termos e condições

APOSTA GRÁTIS DE 10€
PARA NOVOS CLIENTES DA ARCADE

ARCADE [Joga agora >>](#)

EM JOGO

PRICE RUSH
Máximas lucros nas suas apostas de futebol

CASH OUT
Cash out durante o jogo

EM JOGO
[Apostar agora](#)

Desportos em Destaque

Futebol	Ténis	Futebol Am...	Snooker	Golfe
Em Jogo				
Tanta 1 - 0 Aston FC 89'				
Silvespor 2 - 0 Tire 1922 INT				
Airdrieonians U20 1 - 0 Merton U20 INT				
Al Shahaniya 0 - 0 Al Muallida 7'				
Al Khor 0 - 0 Al Saliya 8'				
Primeira Divisão espanhola				
Osasuna x Espanyol 19:00				
Deportivo v Leganes 19:00				

PRÓXIMA CORRIDA

Início da corrida **24**

16:00 Pontefract
1m2f Hcap, 9-Corredores

Premia ou EW (1/4 Probabilidades) >>

6	(F)	El Vig James Spencer	2/1
5	(F)	Shabubah Ted Durnah	10/3
3	(F)	Shabesh Dane O'Neill	4/1
2	(G)	Memorial Day James Doyle	5/1
4	(G)	Montecarlo Silvestre De Sousa	12/1

[Boletim Pontefract >](#)

APOSTE \$10 GANHE \$10

NO CASSINO AO VIVO

CASINO [Mais info >>](#)

FUTEBOL VIRTUAL

A Betfair usa cookies para te fornecer uma experiência melhor. Para saber mais sobre os cookies, por favor consulta a nossa [Política de Cookies](#).

[Compreendi](#)

SUSPENSO 7/11

26/1 60/1

6/10 13/5 15/4

15/8 21/10 6/5

7/5 2/1 17/10

23/18 21/10 28/28

5/4 21/10 5/2

APOSTE \$10 GANHE \$10

NO CASSINO AO VIVO

CASINO Mais info >>

FUTEBOL VIRTUAL

Mobile

comece eletrônico

palavra-passe

Iniciar sessão

Regista-te já

Recordar-me

Esqueceu nome de utilizador / palavra-passe?

Jogo responsável

Bingo Desportos Virtuais

Futebol Americano

Definições

Memorial Day

5.4 5.5

NEXT US PRESIDENT

2016 Presidential Election

Hillary Clinton	1.58	1.39
Donald Trump	3.1	3.15
Joe Biden	63	70

Jogar Jogos

ROULETTE

BLACK JACK

AGE & GODS

WILD ANTIMES

Mostrar mais

Por favor consulte a nossa Política de Cookies.

Compreendi

Ciclismo

Corridas de cavalos

Corridas de Cavalos - Hoje

Corridas de galgos

Corridas de Galgos - Cartão de hoje

Criquet

Dardos

Desportos Motorizados

E-Sports

Futebol

Futebol Americano

Futebol Australiano

Golfe

Hóquei no Gelo

Jogos Olímpicos

Mercados Financieiros

Mixed Martial Arts

Pólo

Riqueza

Rugby League

Rugby Union

Snooker

Ténis

Desporto v Legendes 19:00

Oaxaca x Espanha 19:00

Rayo Vallecano x Getafe 19:00

Feyenoord v FC Oss 19:45

Aberdeen x St Johnstone 19:45

Valladolid x Alavés 21:00

Fortaleza v Internacional 23:15

Real Pharma Odessa 0 - 2 Chelsea-Brevar 92'

Tsarsko Selo 0 - 2 Levski Sofia 92'

Oberlakte 0 - 0 Lokomotiv GO 38'

Chongqing Yung PC 2 - 2 Dnipro PC 59'

Airdrieonians U20 1 - 0 Morton U20 HT

Al Shababiya 0 - 0 Al Masdar 7'

Al Khor v Al Sailiya "em Direto"

USM El Harrach U21 v NA Hussein Dey U21 Começa em 1'

Ismaily v El Entag El Harby Começa em 1'

Tampereen Ilves (W) v TPS Vaasa (W) 18:30

KSDO Ostrovia v Arka Gdynia 18:30

Futebol Americano

Beisebol

1	X	2
2.3	2.32	3.25 3.3 3.8 3.85 H I
3.15	3.3	3.3 3.35 2.24 2.58 H I
3	2.04	3.45 3.5 4.6 4.7 H I
1.08	1.09	15 18 55 60 H I
1.85	1.87	3.75 3.85 5 5.2 H I
1.57	1.58	4.5 4.6 6.8 7 H I
2.7	2.9	3.4 3.8 2.72 2.88 H I
		Suspense
		Suspense
		Suspense
2.2	1000	1.82 6.4 2.6 1000 H I
1.72	1.8	3.65 4.3 5.3 6.8 H I
3.05	3.4	3.6 3.75 2.34 2.52 H I
2.46	2.9	3.25 4.2 2.72 3.05 H I
1.71	1.84	4 5.8 3.95 6.2 H I
3.06	2.14	3.2 3.4 4.4 4.7 H I
2.08	800	4.3 5 1.55 3.45 H I
5.7	8	3.9 4.9 1.52 1.61 H I

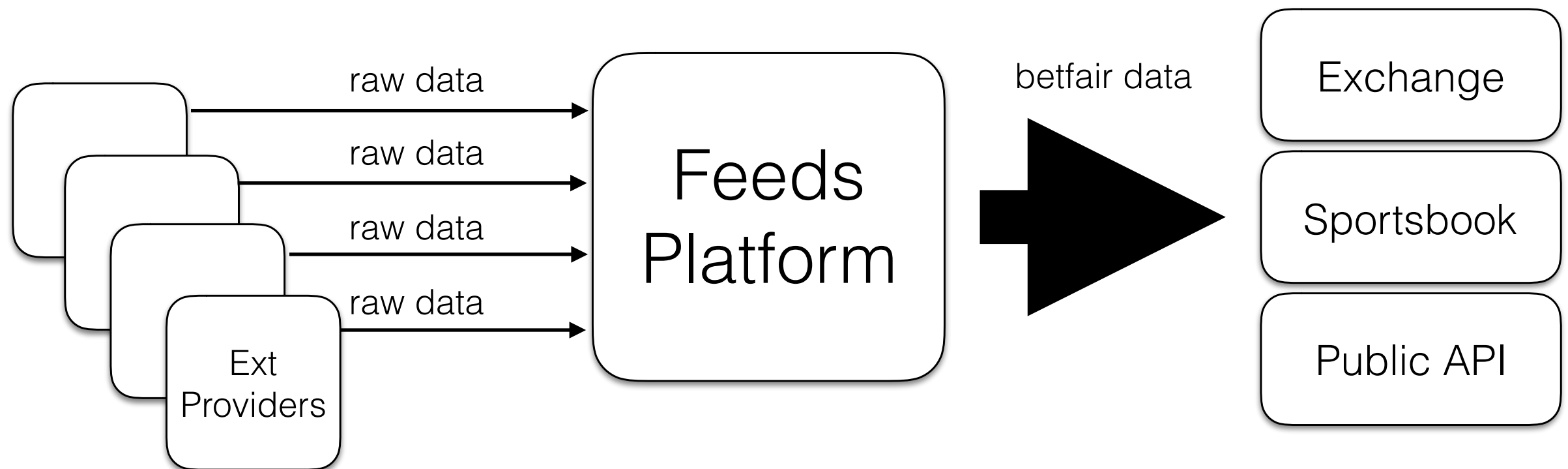
Política de Cookies

Compreendi



Numbers:

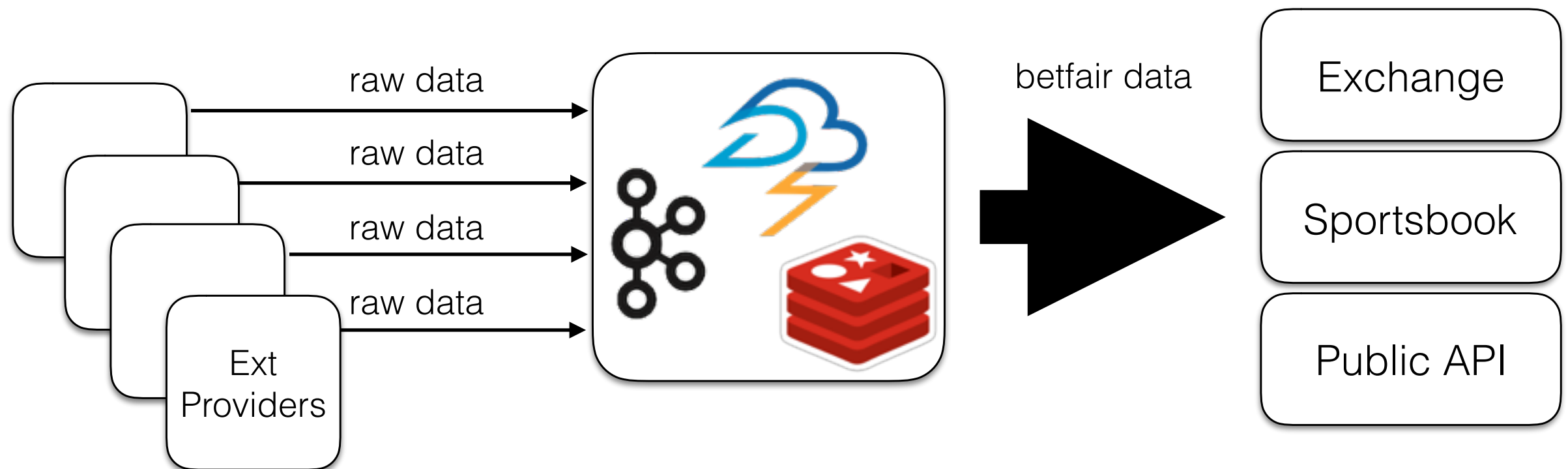
- More than **10** different external providers
- Providing data feeds for **20** different Sports
- Over **1 million** messages per day (and growing)





We wanted it to be:

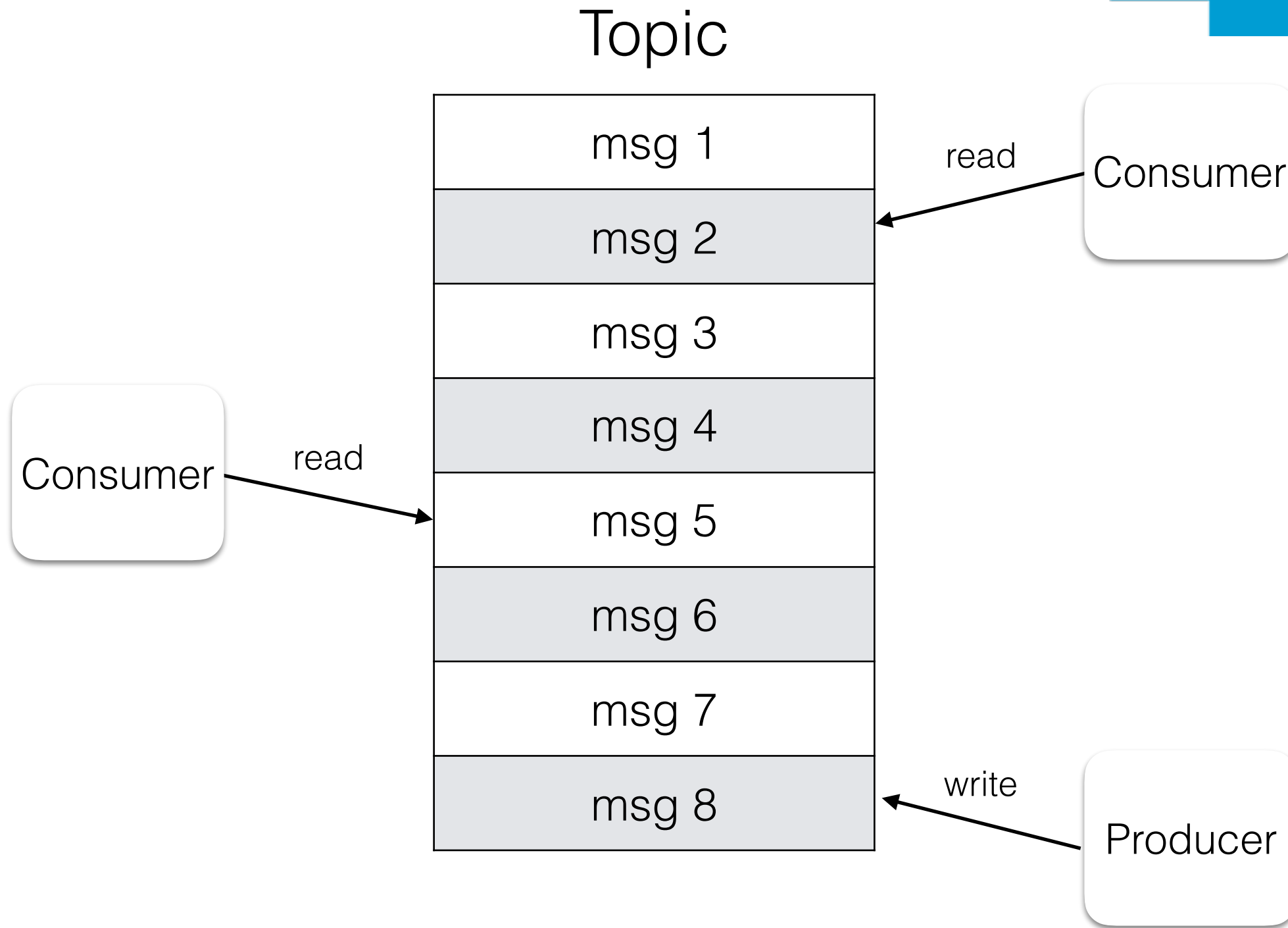
- Consistently Responsive
- Resilient
- Scalable
- Easy to Extend



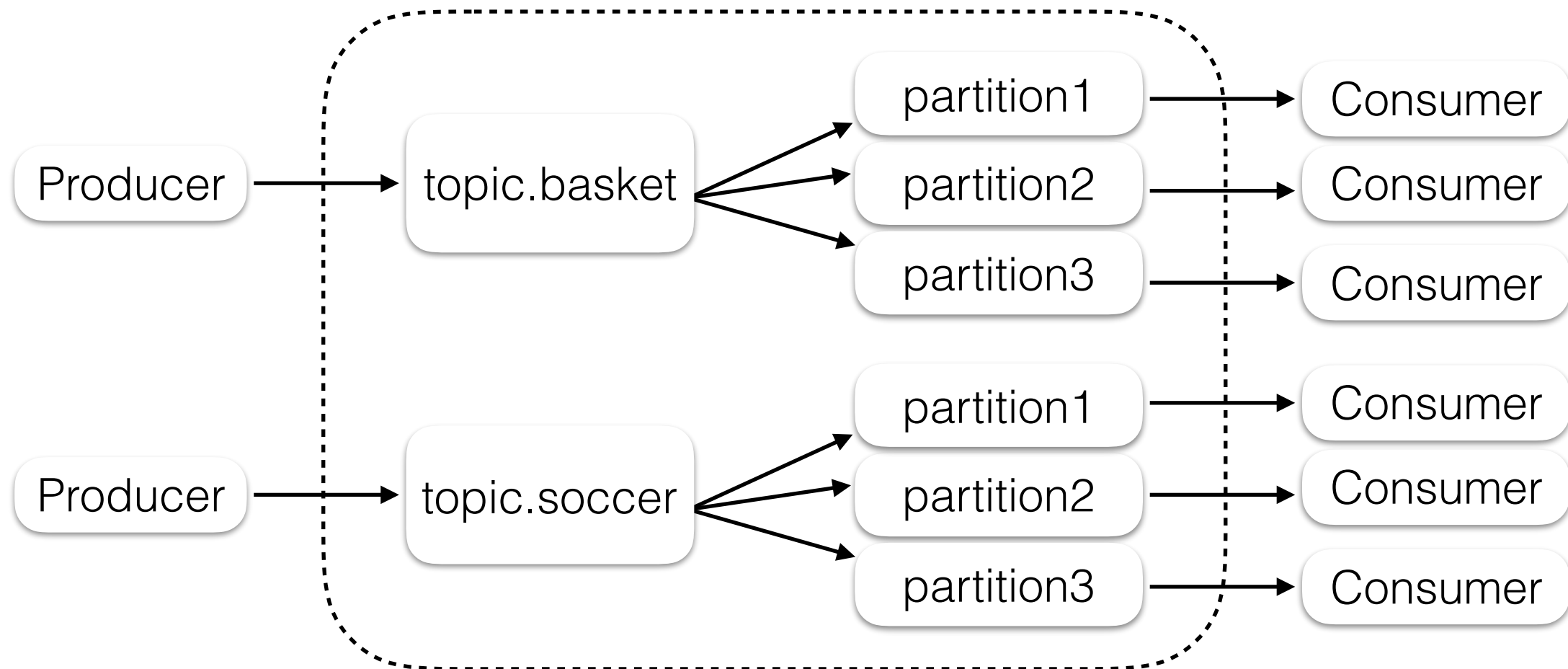
Kafka:

- Publish-subscribe messaging system
- Distributed as a Commit log
- Scalable, Resilient, High Throughput

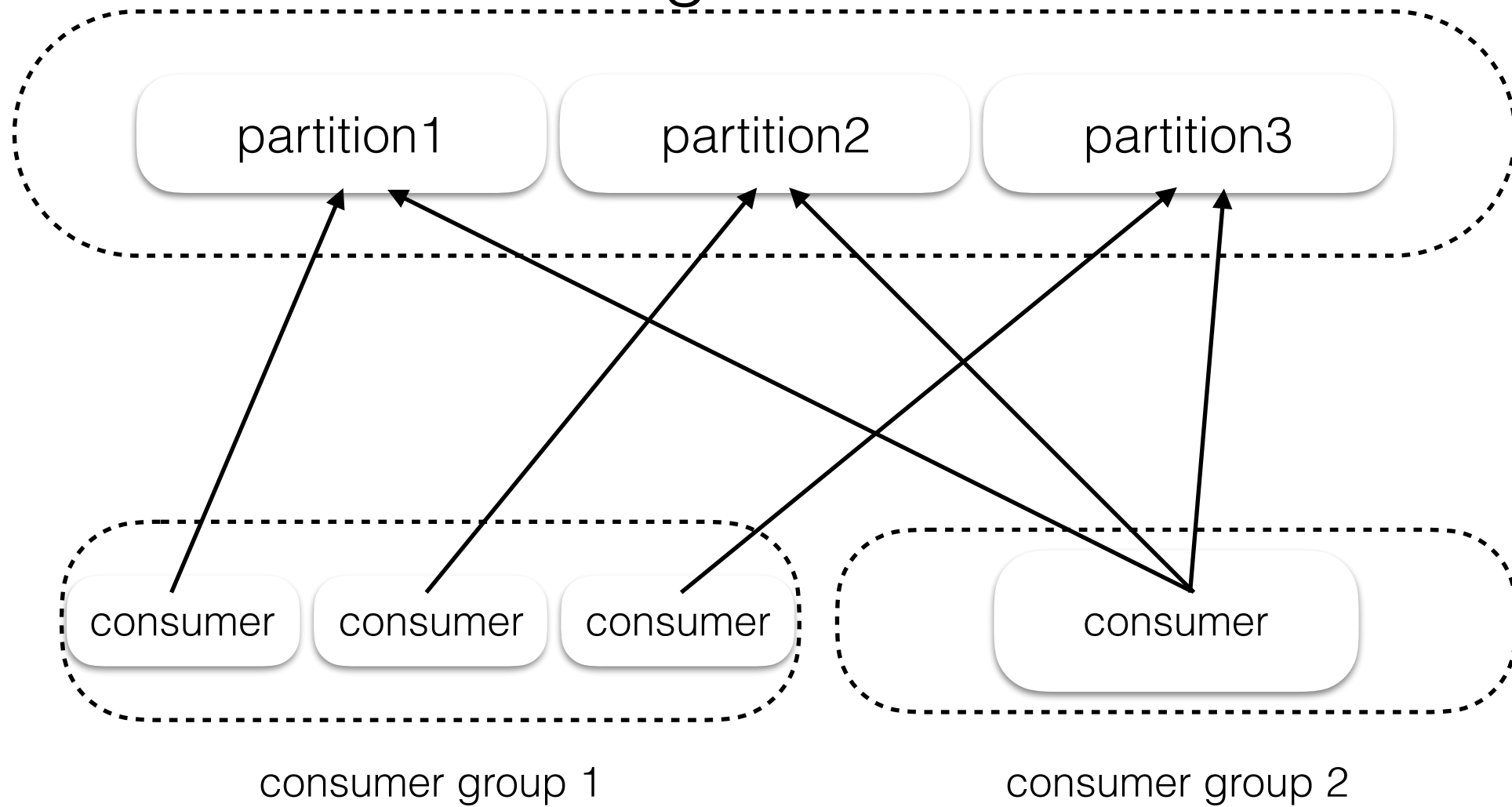




Partitioning



Queuing vs Pub-sub

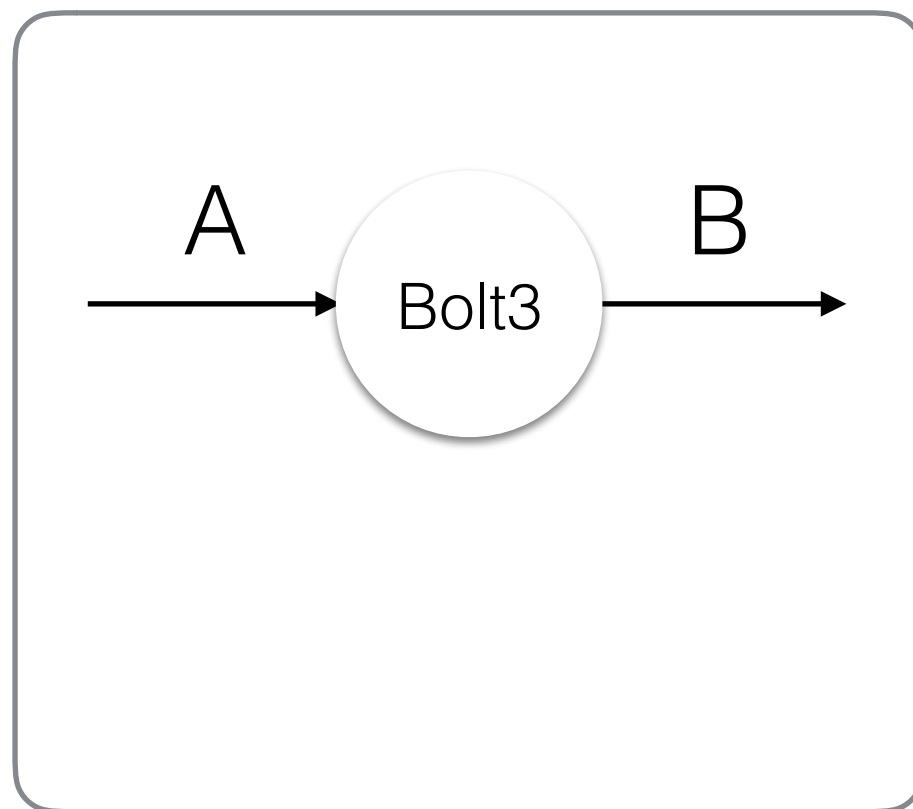


Storm:

- Highly distributed realtime stream processing system
- Scalable & fault-tolerant
- Data processing guaranties



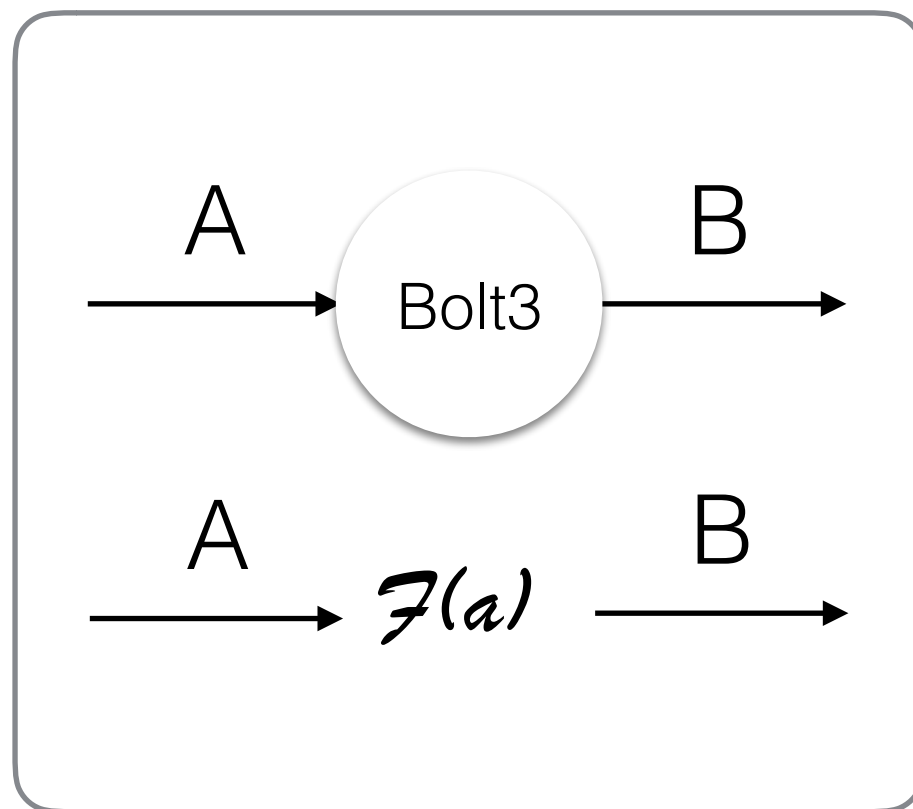
Bolt



- Single Responsibility
- Loose Coupling
- Preserve Referential Transparency



Bolt



- Single Responsibility
- Loose Coupling
- Preserve Referential Transparency





```
public class SampleBolt extends BaseRichBolt {

    private static final Logger LOGGER = LoggerFactory.getLogger(SampleBolt.class);

    private OutputCollector outputCollector;

    @Override
    public void prepare(Map map, TopologyContext topologyContext, OutputCollector outputCollector) {
        LOGGER.info("Bolt dependencies initialisation goes here!");
        this.outputCollector = outputCollector;
    }

    @Override
    public void execute(Tuple tuple) {

        LOGGER.info("Some business logic execution goes here!");
        String message = tuple.getString(0);

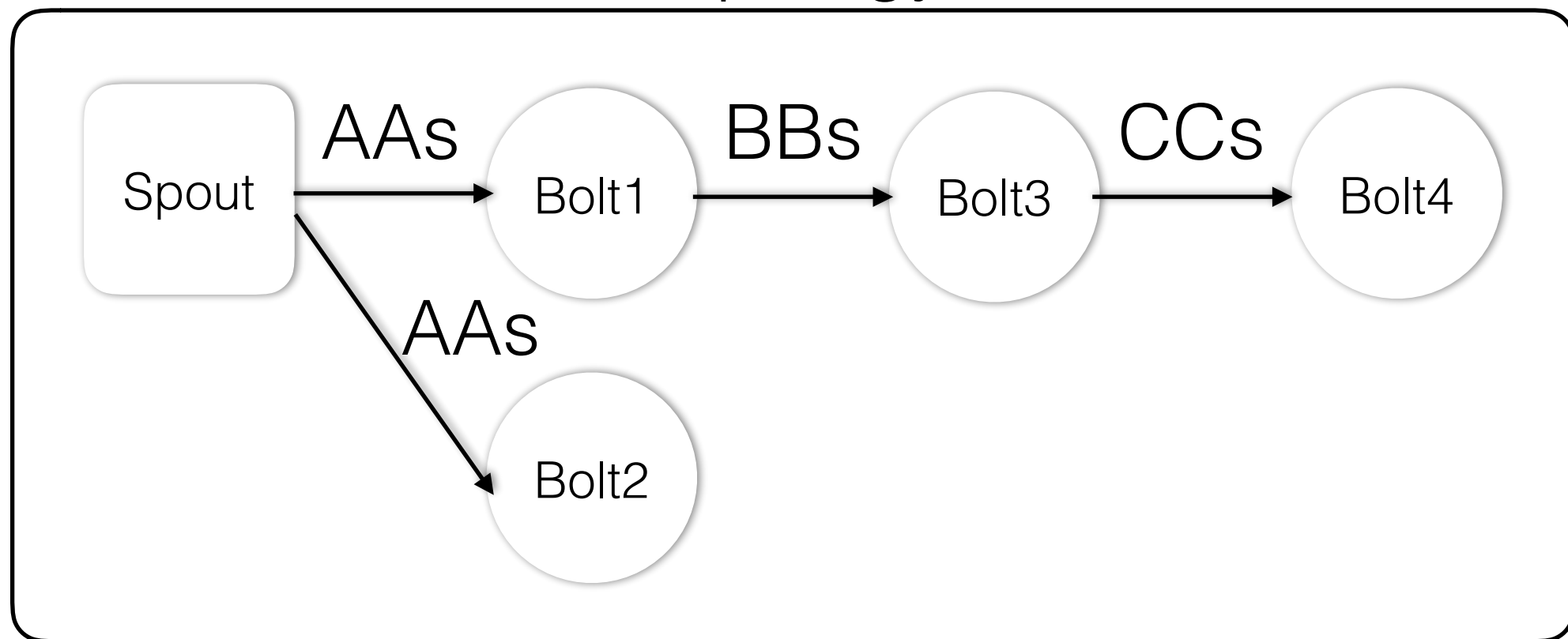
        getOutputCollector().emit(tuple, new Values(message + " : message consumed"));
        getOutputCollector().ack(tuple);
    }

    @Override
    public void declareOutputFields(OutputFieldsDeclarer outputFieldsDeclarer) {
        outputFieldsDeclarer.declare(new Fields(Keys.FEED.getKey()));
    }

    @Override
    public void cleanup() {
        LOGGER.info("Bolt dependencies cleanup goes here!");
    }

    public OutputCollector getOutputCollector() {
        return outputCollector;
    }
}
```

Topology





```
public class SampleTopology {

    public static StormTopology createTopology() {

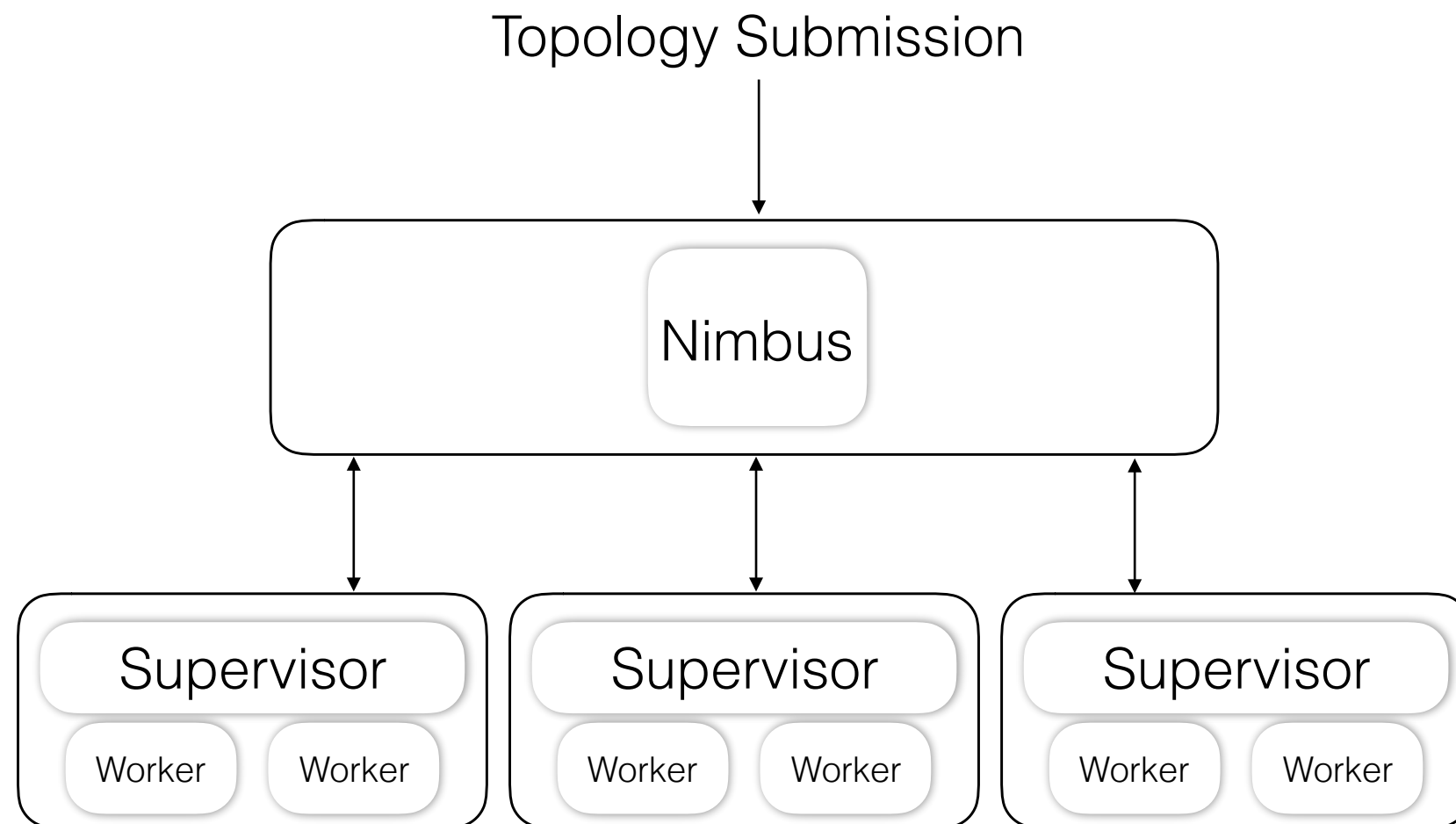
        Injector injector = createInjector(new TopologyModule());
        BaseRichSpout Kafka = injector.getInstance(BaseRichSpout.class);
        BaseRichBolt sample = injector.getInstance(SampleBolt.class);
        BaseRichBolt publisher = injector.getInstance(PublisherBolt.class);

        TopologyBuilder builder = new TopologyBuilder();
        builder.setSpout("Kafka", Kafka, 3);
        builder.setBolt("sample", sample, 3).shuffleGrouping("Kafka");
        builder.setBolt("publisher", publisher, 3).shuffleGrouping("sample");

        return builder.createTopology();
    }

    public static void main(String[] args) throws Exception {

        Config conf = new Config();
        conf.setDebug(false);
        conf.setNumWorkers(1);
        StormSubmitter.submitTopologyWithProgressBar(args[0], conf, createTopology());
    }
}
```



Worker Process (JVM)



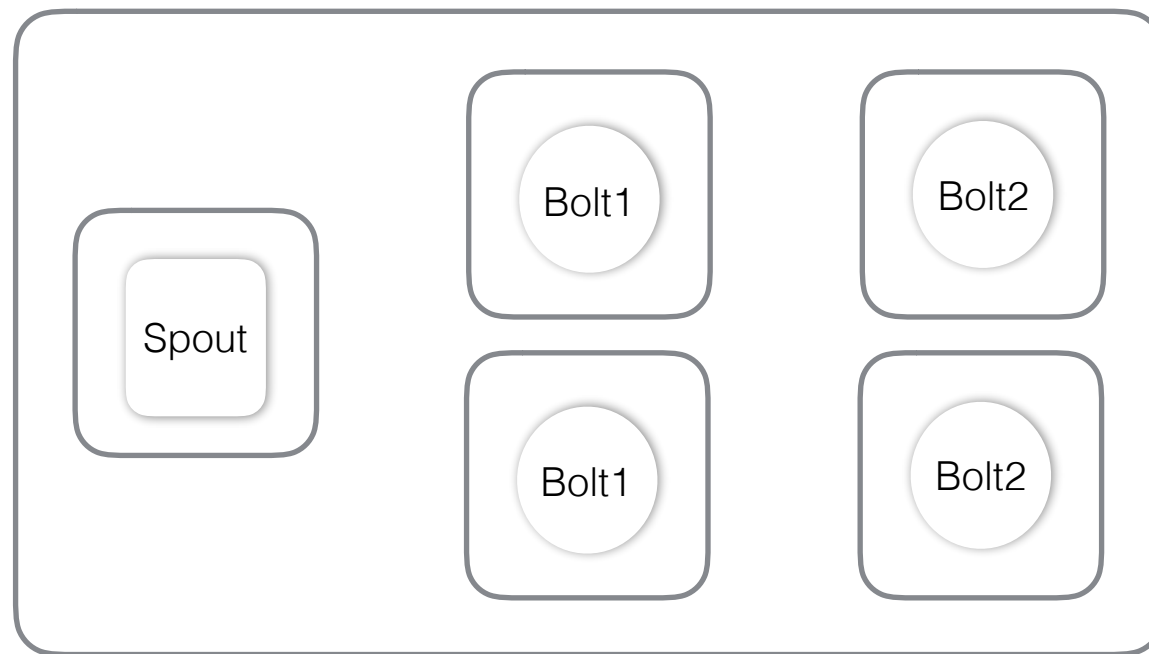
parallelism hint ==
number of executors

```
builder.setSpout("Spout", spout, 1)  
builder.setBolt("Bolt1", bolt1, 1)  
builder.setBolt("Bolt2", bolt2, 1)  
...  
conf.setNumWorkers(1);
```

number of worker
processes



Worker Process (JVM)



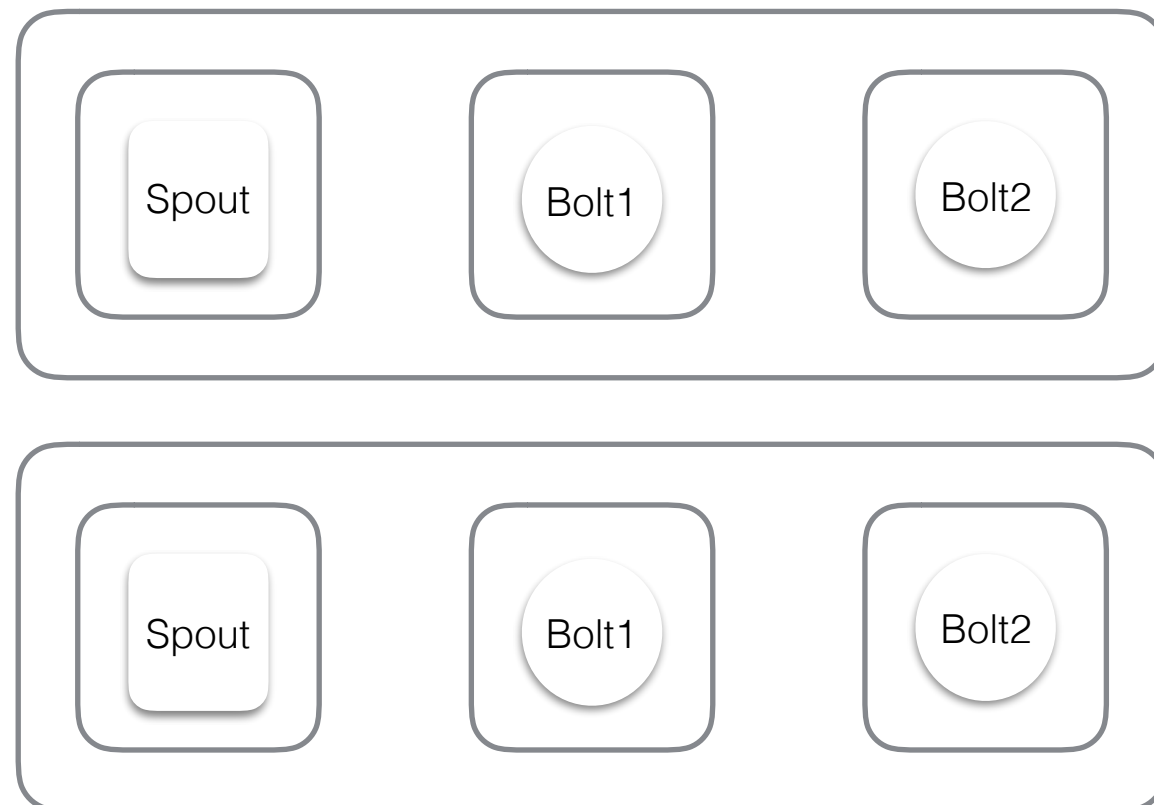
parallelism hint ==
number of executors

```
builder.setSpout("Spout", spout, 1)  
builder.setBolt("Bolt1", bolt1, 2)  
builder.setBolt("Bolt2", bolt2, 2)  
...  
conf.setNumWorkers(1);
```

number of worker
processes



Worker Process (JVM)



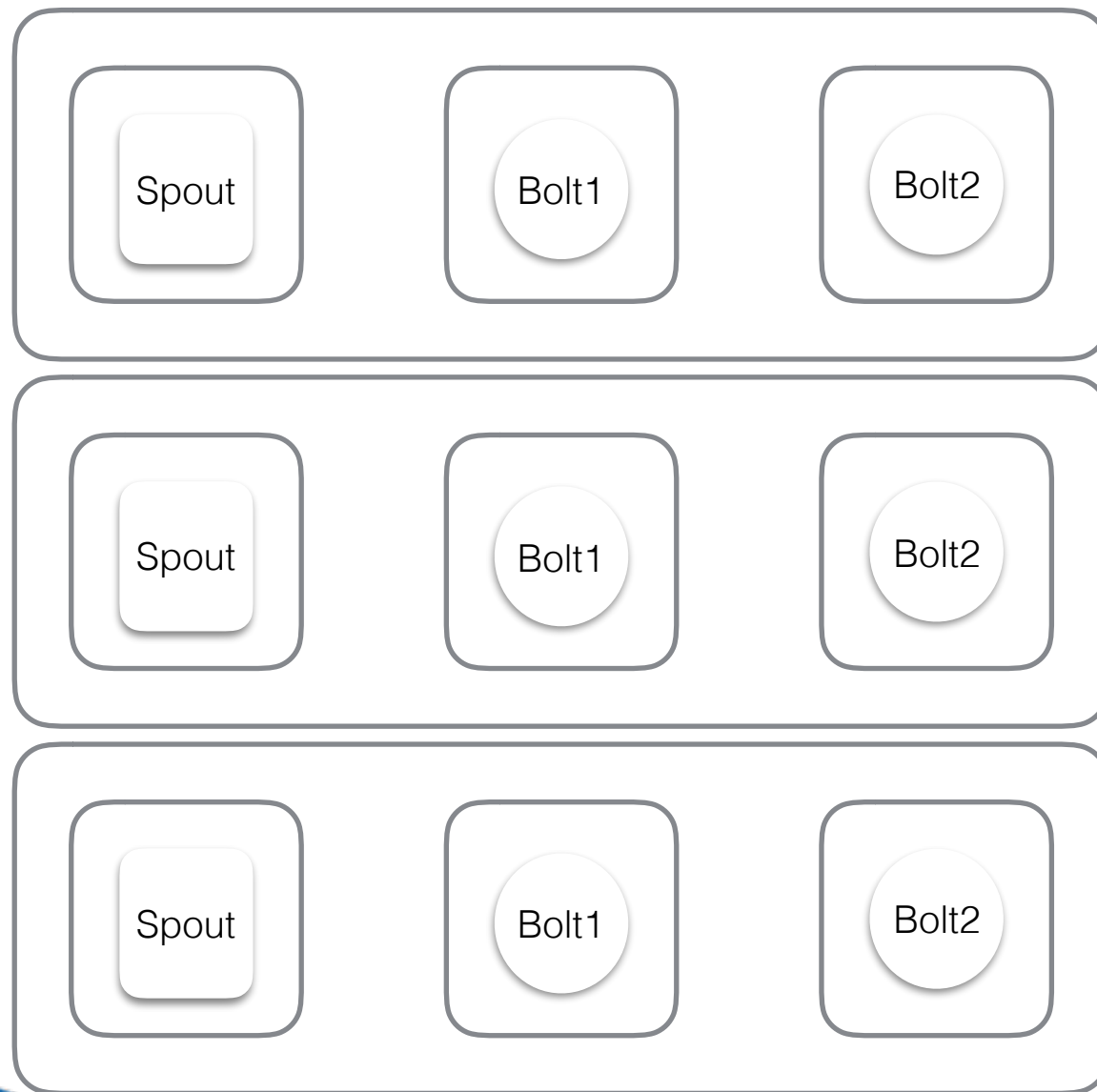
parallelism hint ==
number of executors

```
builder.setSpout("Spout", spout, 2)  
builder.setBolt("Bolt1", bolt1, 2)  
builder.setBolt("Bolt2", bolt2, 2)  
...  
conf.setNumWorkers(2);
```

number of worker
processes



Worker Process (JVM)

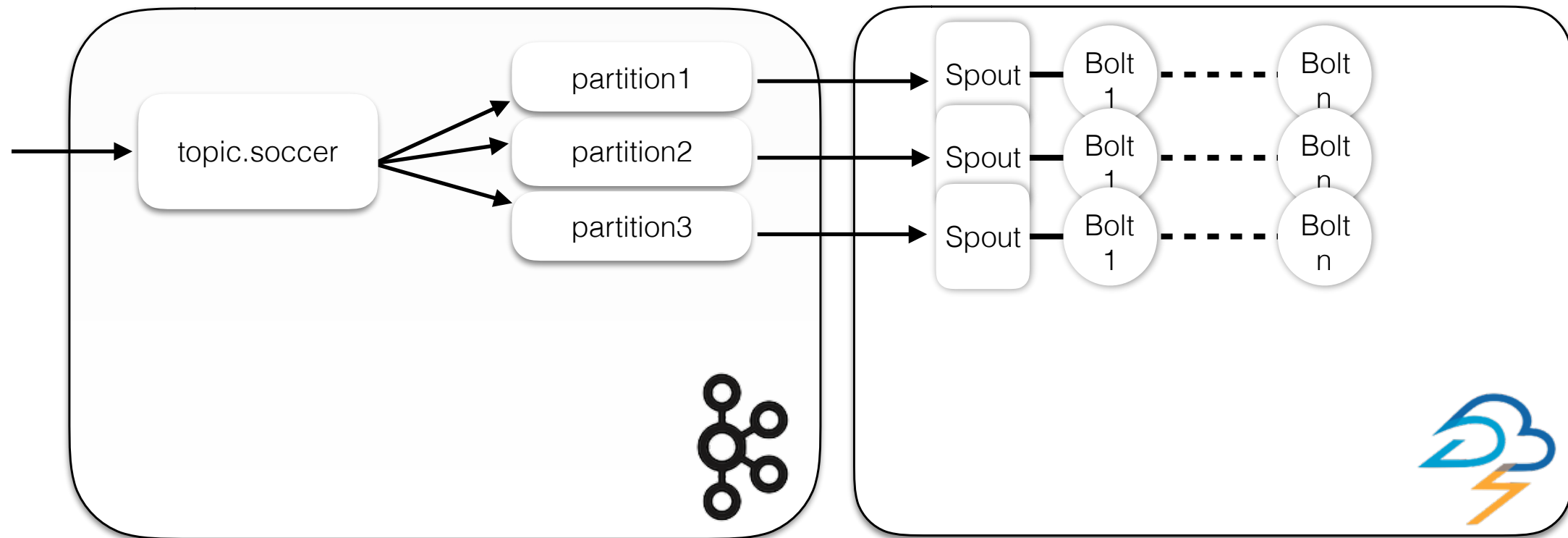


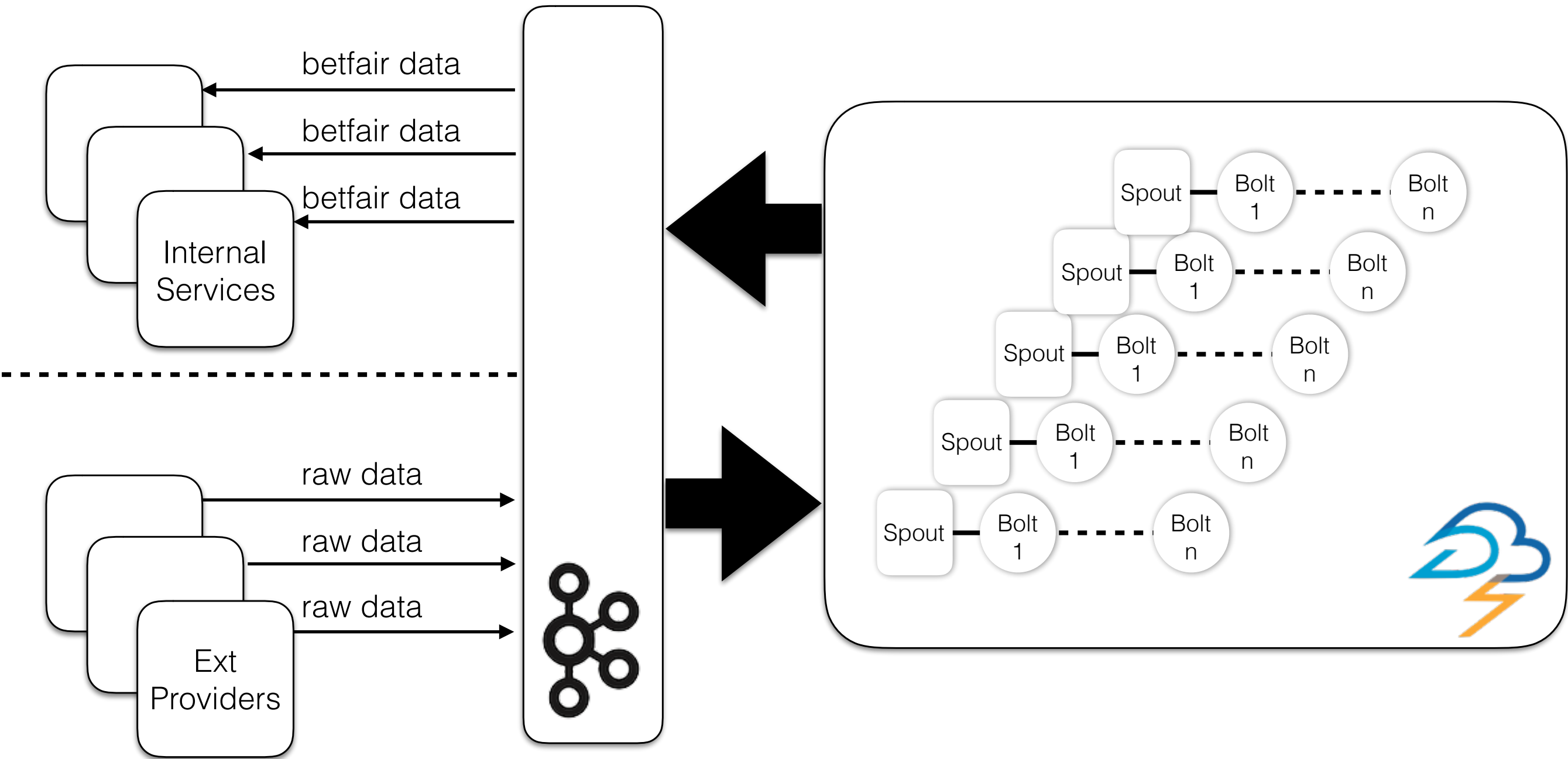
parallelism hint ==
number of executors

```
builder.setSpout("Spout", spout, 3)  
builder.setBolt("Bolt1", bolt1, 3)  
builder.setBolt("Bolt2", bolt2, 3)  
...  
conf.setNumWorkers(3);
```

number of worker
processes









Feeds Platform:

- 3 nodes Kafka Cluster
- 52 Topics
- 53 nodes Storm Cluster
- 26 Topologies
- Event/Market Management & Live-scores.

