Logging and Monitoring

Memi Lavi
www.memilavi.com

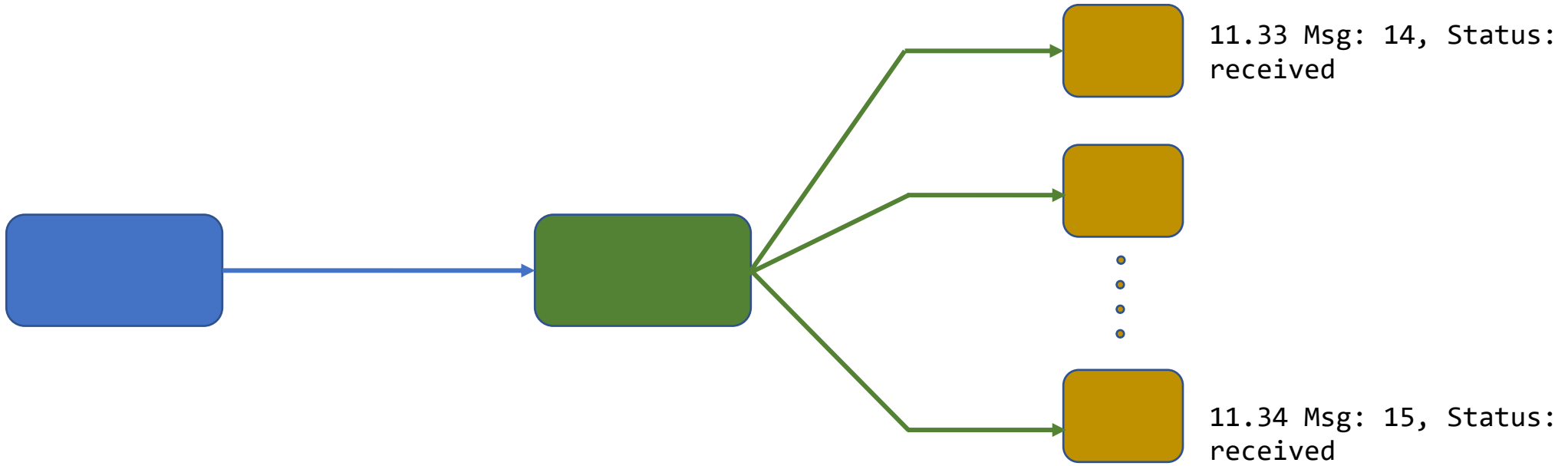
Logging and Monitoring

- Crucial for getting wholistic view of what's going on in the system
- Extremely important in every distributed system
- Especially challenging in Event Driven Architecture

Logging Challenges in EDA

- In EDA there are distributed, non-coupled components
- Getting unified, chronologically ordered log is difficult
  - Each component writes log to different destination
  - Log formats are different
  - Timestamps are not synchronized

Logging in EDA




```
11.28 Msg 14 was sent
11.30 Msg 15 was sent
```

```
11.26 Receiving msg 14...
11.26 Handling msg 14...
11.28 Sending msg 14
11.29 Receiving msg 15...
```

Different formats

Timestamps not synced

Different destinations

Many records, hard to trace

Correlation Id

- Handles the following problems:

Timestamps not synced

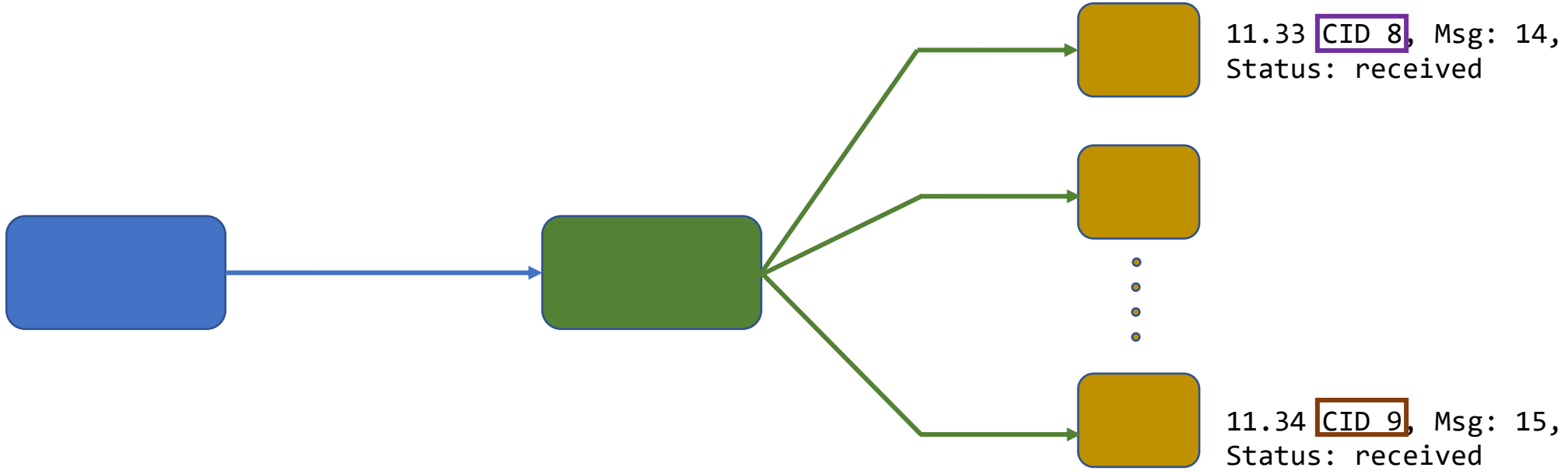
Different destinations

Many records, hard to trace

Correlation Id

- At the beginning of each transaction, a unique identifier is attached to the message
- This identifier is logged as part of the log record
- Allows tracing across components

Using Correlation Id in Logging




```
11.28 CID 8, Msg 14 was sent
11.30 CID 9, Msg 15 was sent
```

```
11.26 CID 8, Receiving msg 14...
11.26 CID 8, Handling msg 14...
11.28 CID 8, Sending msg 14
11.29 CID 9, Receiving msg 15...
```

Central Logging Engine

- Handles the following problems:

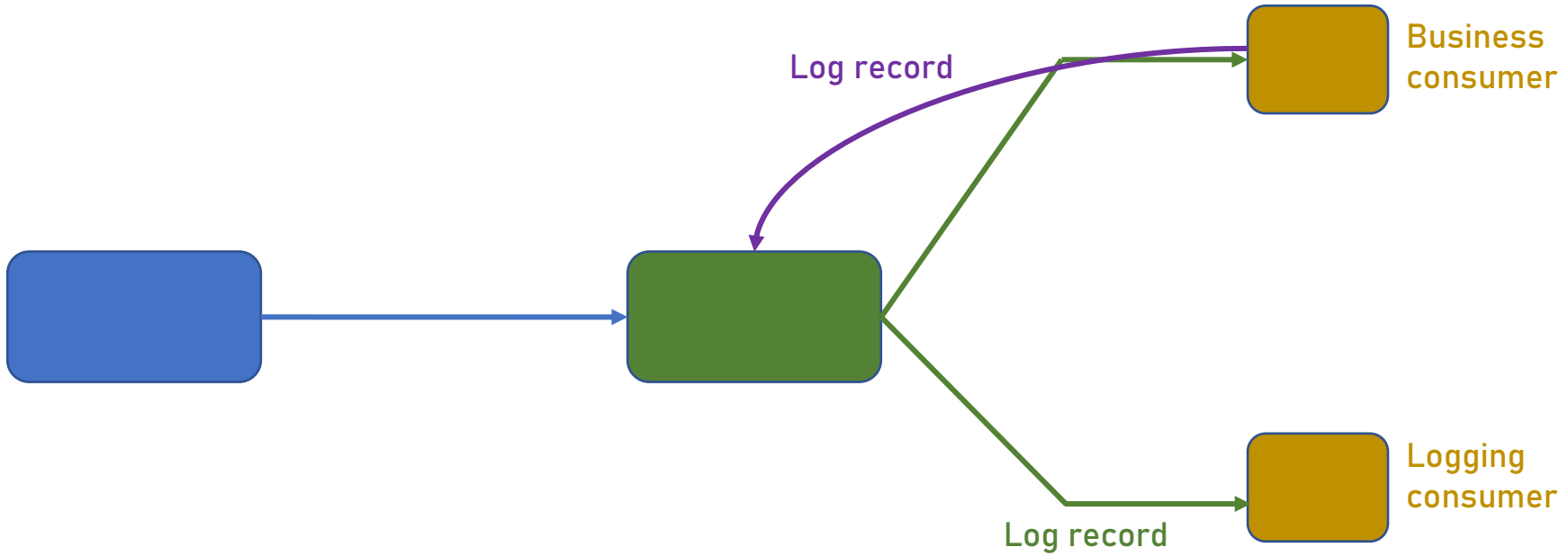
Different formats

Different destinations

Central Logging Engine

- Central engine used for aggregating all the log records
- Has converters that convert between log formats
- Great analytics and visualizations capabilities
- Can utilize the existing channel for log transport

Central Logging Engine



Implementing Central Logging Engine

- Do not develop your own
- There are a lot of great logging engines
- Most are free
- The most popular:

The Elastic Stack

What Should be Logged

- Logs should reflect the behavior of the system
- Not just errors!
- Should be able to replay a transaction using logs

What Should be Logged

- Log:
  - Event trigger
  - Event contents (incl. correlation Id)
  - Event receive
  - Event handling complete
  - Any errors…