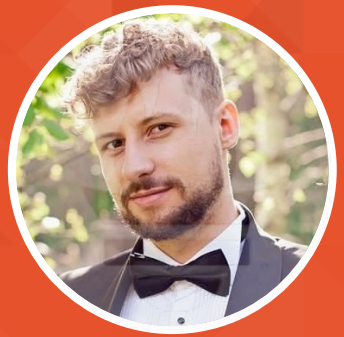
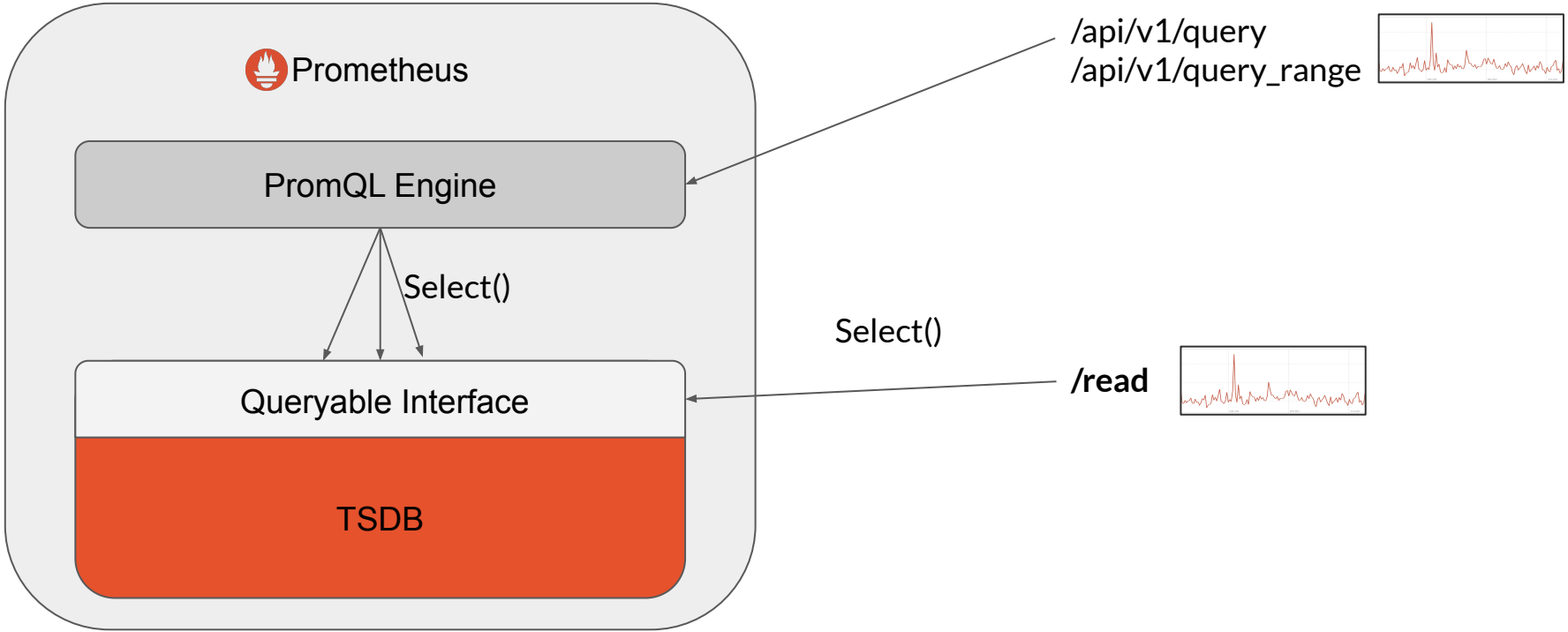
Reducing Remote Read Footprint



Bartek Plotka

@bwplotka

Getting samples from TSDB



Remote Read: Response

/read

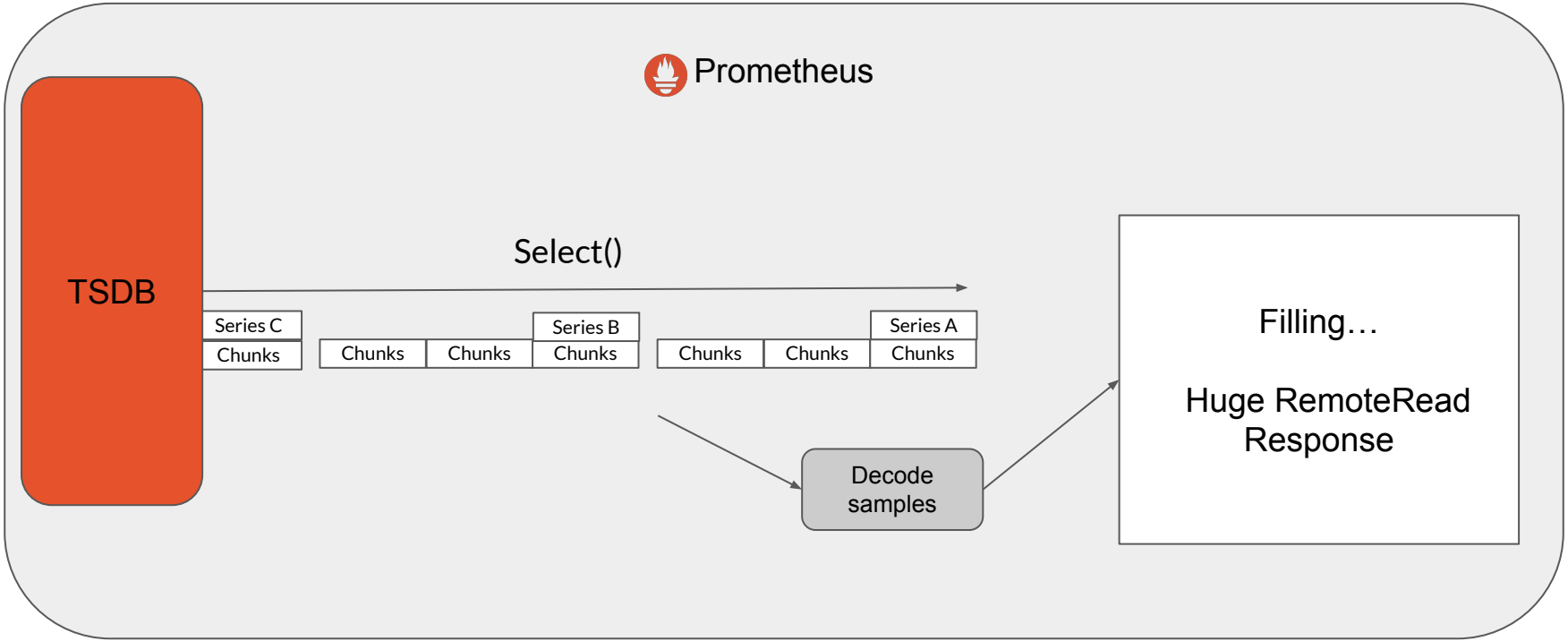
SAMPLES

```
<proto>
message QueryResult {
   repeated prometheus.TimeSeries timeseries = 1;
}

message TimeSeries {
  repeated Label labels   = 1;
  repeated Sample samples = 2;
}
```

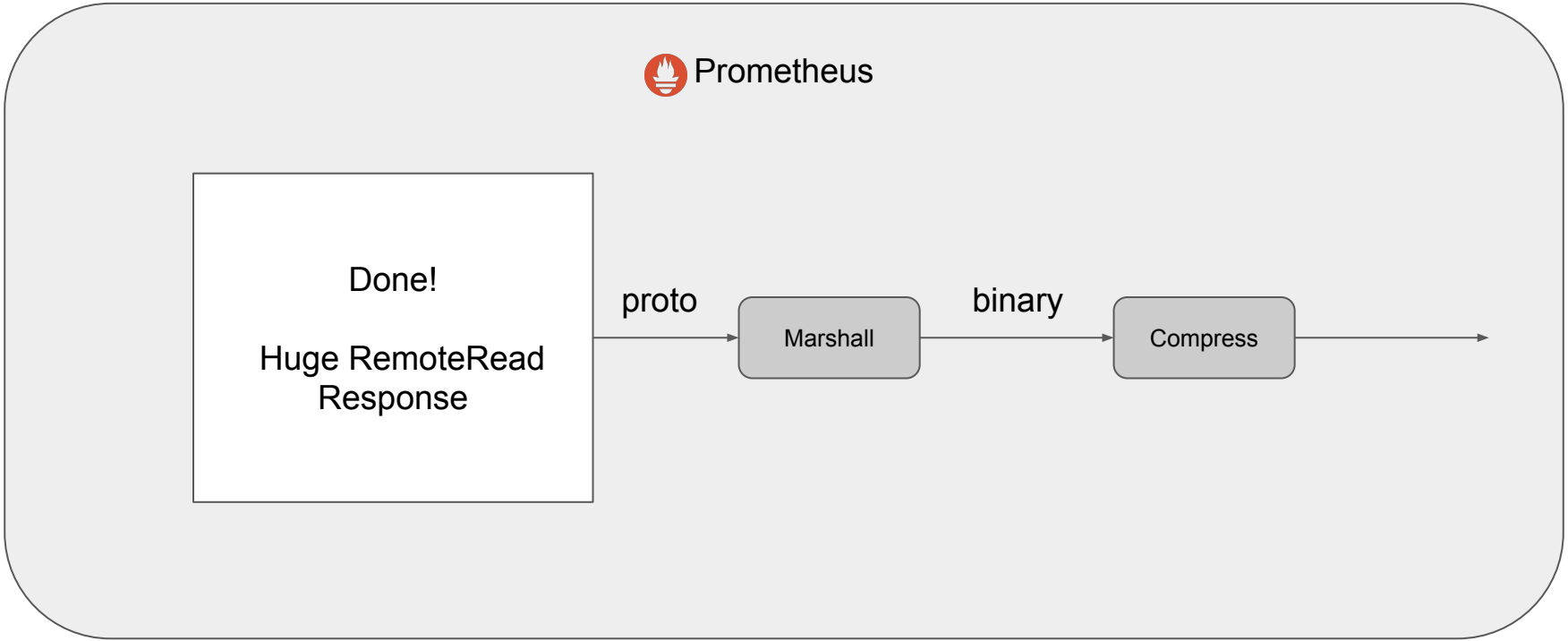
https://developers.google.com/protocol-buffers over HTTP

Remote Read: Bottlenecks

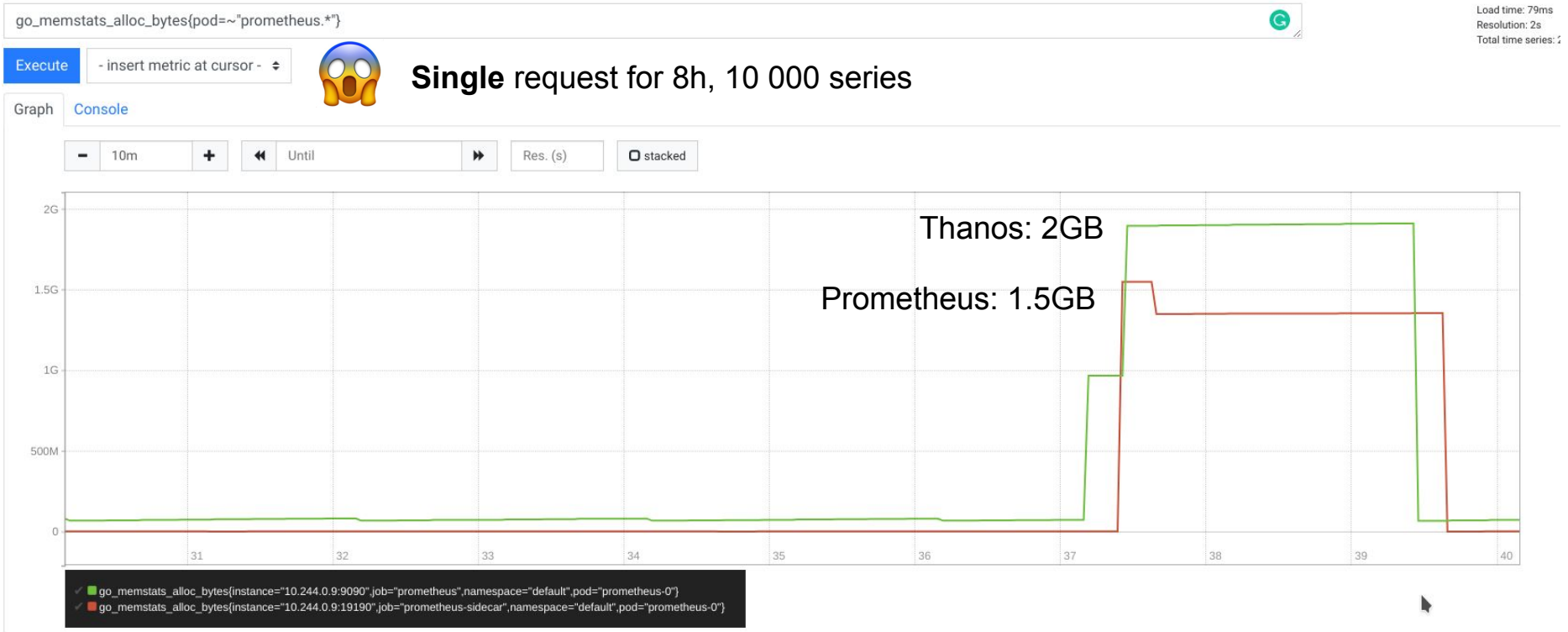


TWO HOURS LATER

Remote Read: Bottlenecks



Remote Read Request: Allocations on heap



@bwplotka

Remote Read: Response (Prometheus 2.13.0)

/read

SAMPLES

```
<proto>
message QueryResult {
   repeated prometheus.TimeSeries timeseries = 1;
}

message TimeSeries {
  repeated Label labels   = 1;
  repeated Sample samples = 2;
}
```

STREAMED_XOR_CHUNKS [NEW]

```
<proto>
message ChunkedReadResponse {
  repeated prometheus.ChunkedSeries chunked_series = 1;
}

message ChunkedSeries {
  repeated Label labels = 1;
  repeated Chunk chunks = 2;
}
```

Remote read: Response (Prometheus 2.13.0)

/read

SAMPLES

```
<proto>
message QueryResult {
   repeated prometheus.TimeSeries timeseries = 1;
}

message TimeSeries {
  repeated Label labels   = 1;
  repeated Sample samples = 2;
}
```

sample{Value, Timestamp}

STREAMED_XOR_CHUNKS [NEW]

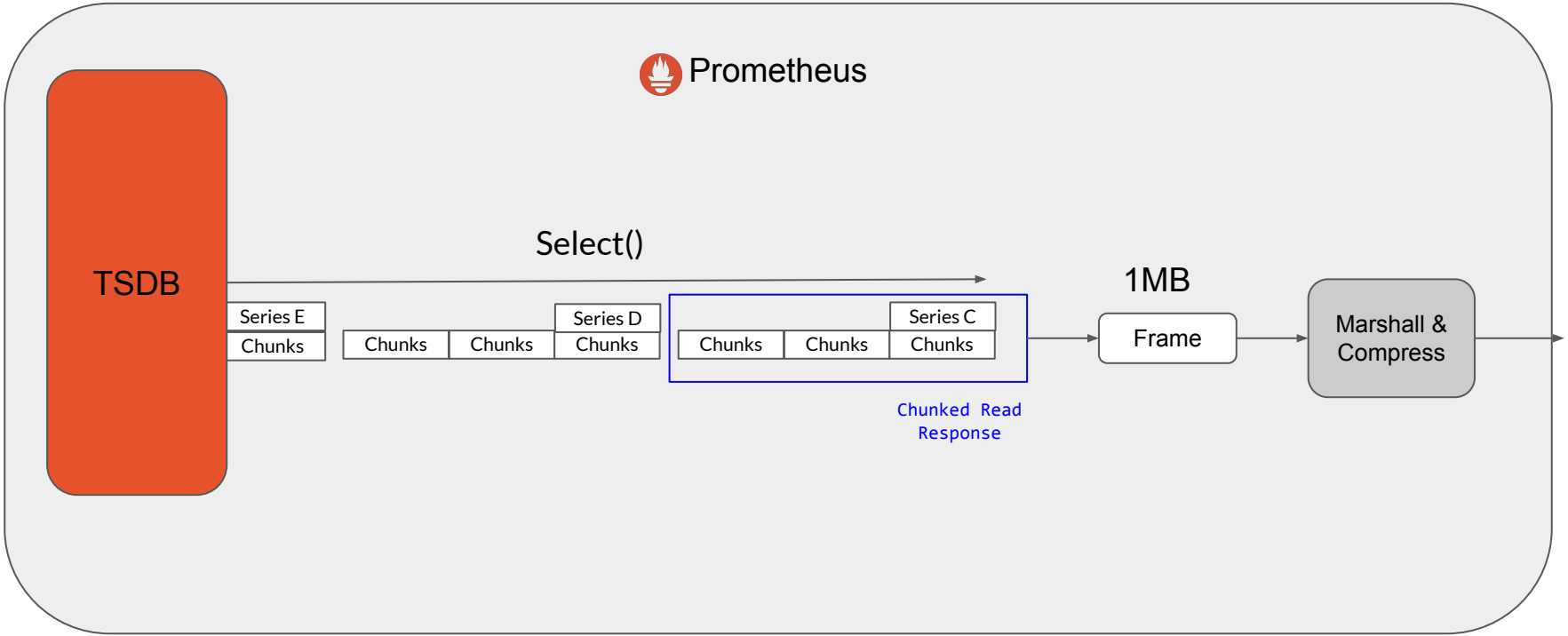
```
<proto>
message ChunkedReadResponse {
  repeated prometheus.ChunkedSeries chunked_series = 1;
}

message ChunkedSeries {
  repeated Label labels = 1;
  repeated Chunk chunks = 2;
}
```

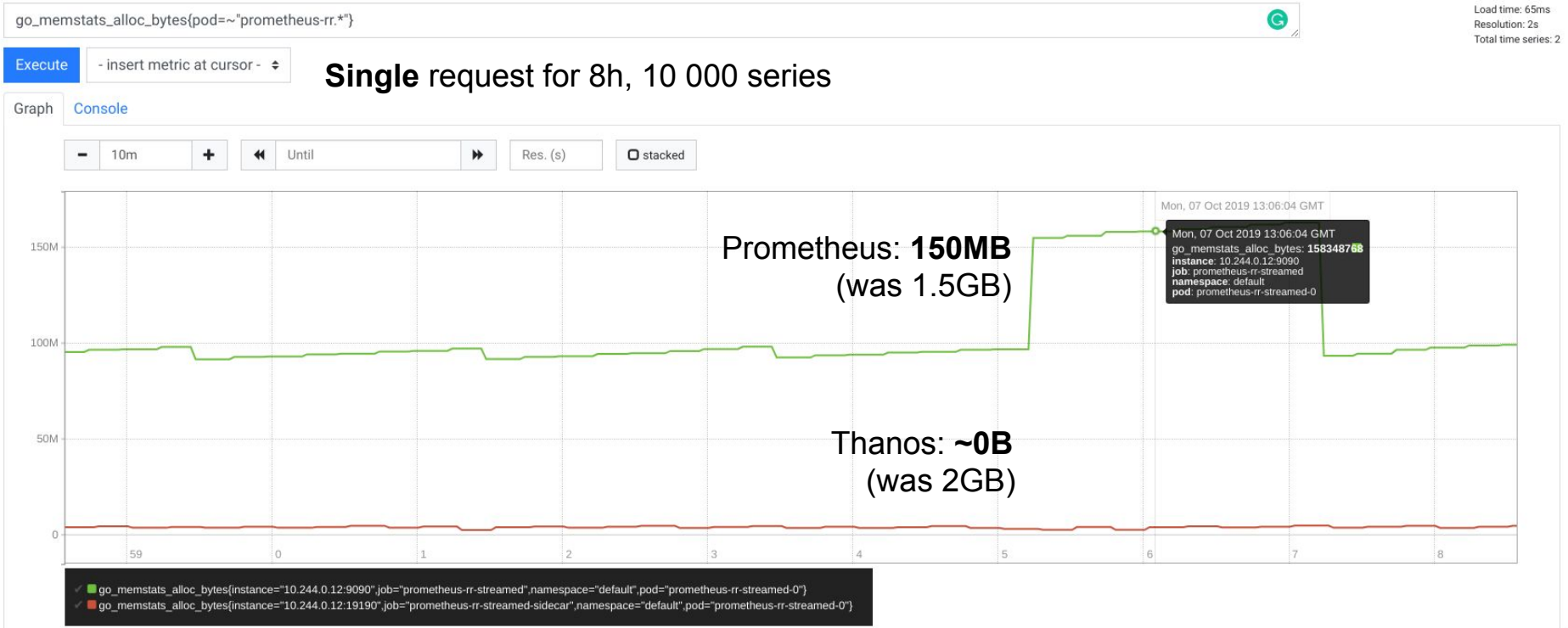
XOR chunk (~120 samples)

Chunked protocol (Prometheus v2.13.0)

Remote Read (Prometheus v2.13.0)



Remote Read Request: Heap Allocs



~2.5x reduced latency
~2x less CPU time

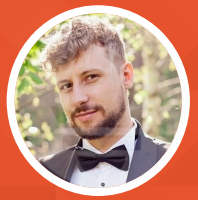
@bwplotka

Thanks!

Questions?

Links:

- **APIs:** https://prometheus.io/docs/prometheus/latest/querying/api/
- **Remote read:** https://github.com/prometheus/prometheus/blob/master/prompb/remote.proto#L27
- **Go stream client:** https://github.com/prometheus/prometheus/blob/master/storage/remote/chunked.go
- **Blog:** https://prometheus.io/blog/2019/10/10/remote-read-meets-streaming/



Bartek Plotka
@bwplotka