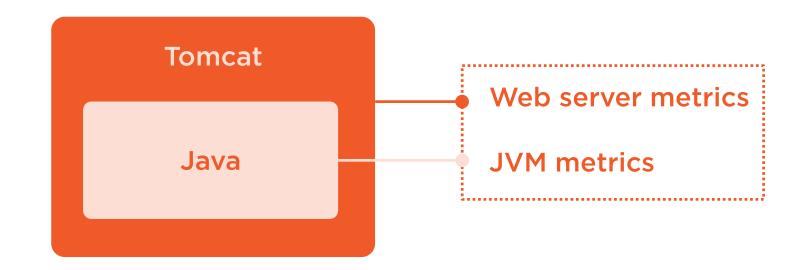
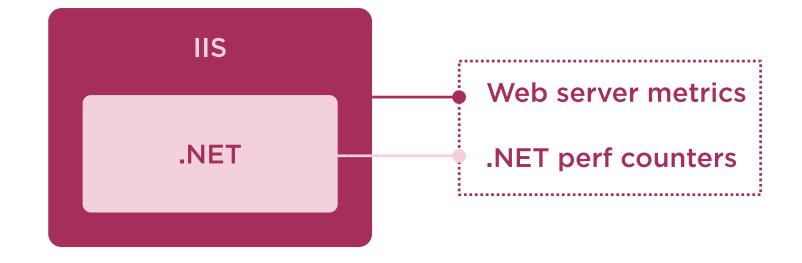
# Exposing Runtime Metrics to Prometheus



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DEVELOPER ADVOCATE

@EltonStoneman https://blog.sixeyed.com



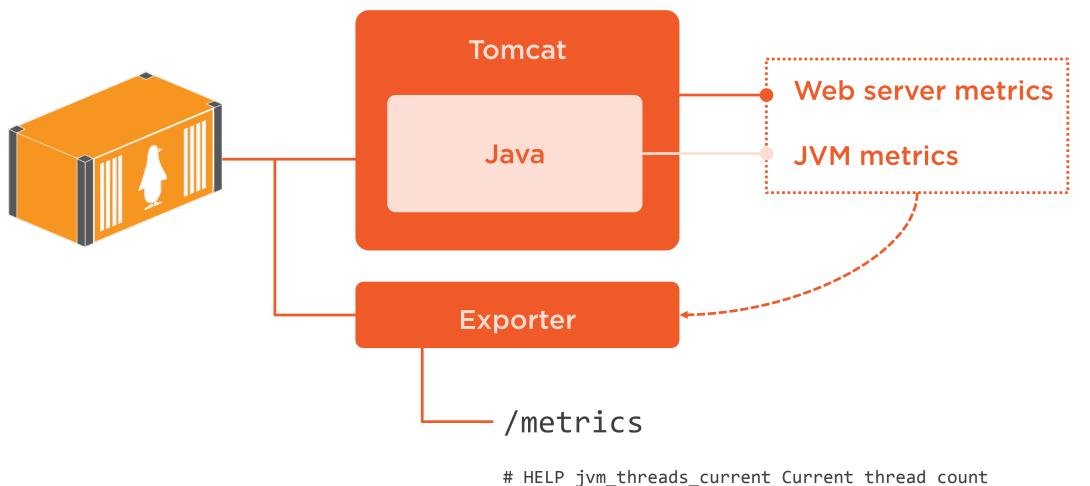


## Module Overview



#### **Exposing Runtime Metrics**

- Using an exporter utility
- Running in the app container
- Reading runtime metrics
- Exporting in Prometheus format



```
# TYPE jvm_threads_current current thread count

# TYPE jvm_threads_current gauge

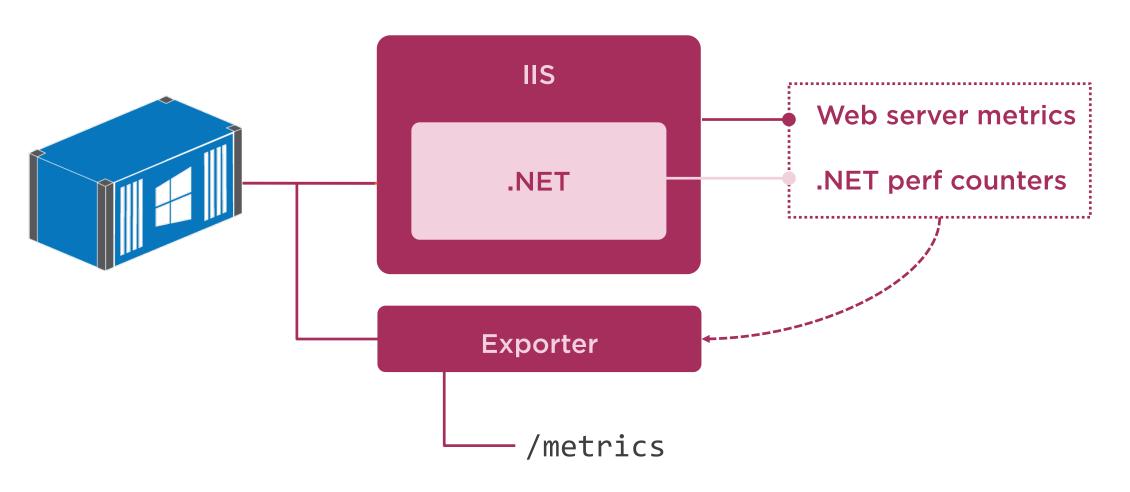
jvm_threads_current 37.0

# HELP jvm_memory_bytes_committed Committed bytes

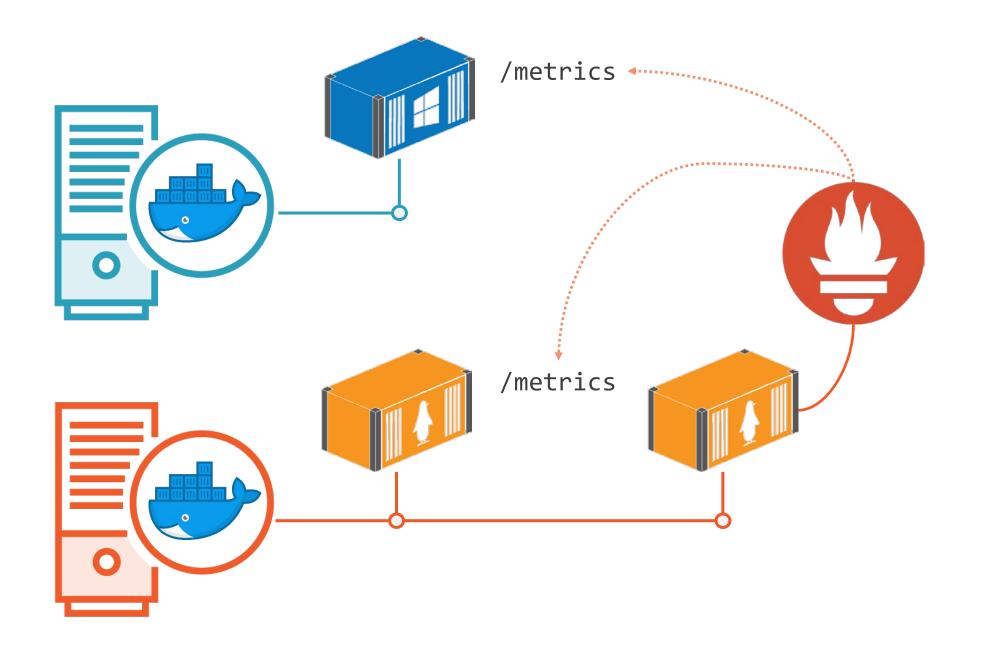
# TYPE jvm_memory_bytes_committed gauge

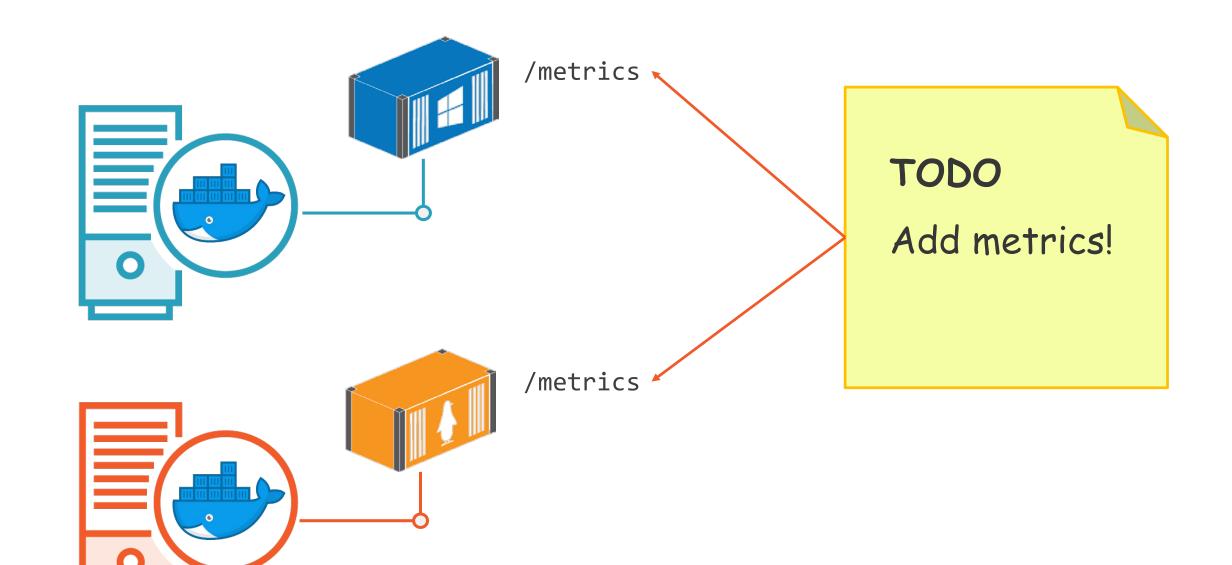
jvm_memory_bytes_committed{area="heap",} 2.47463936E8

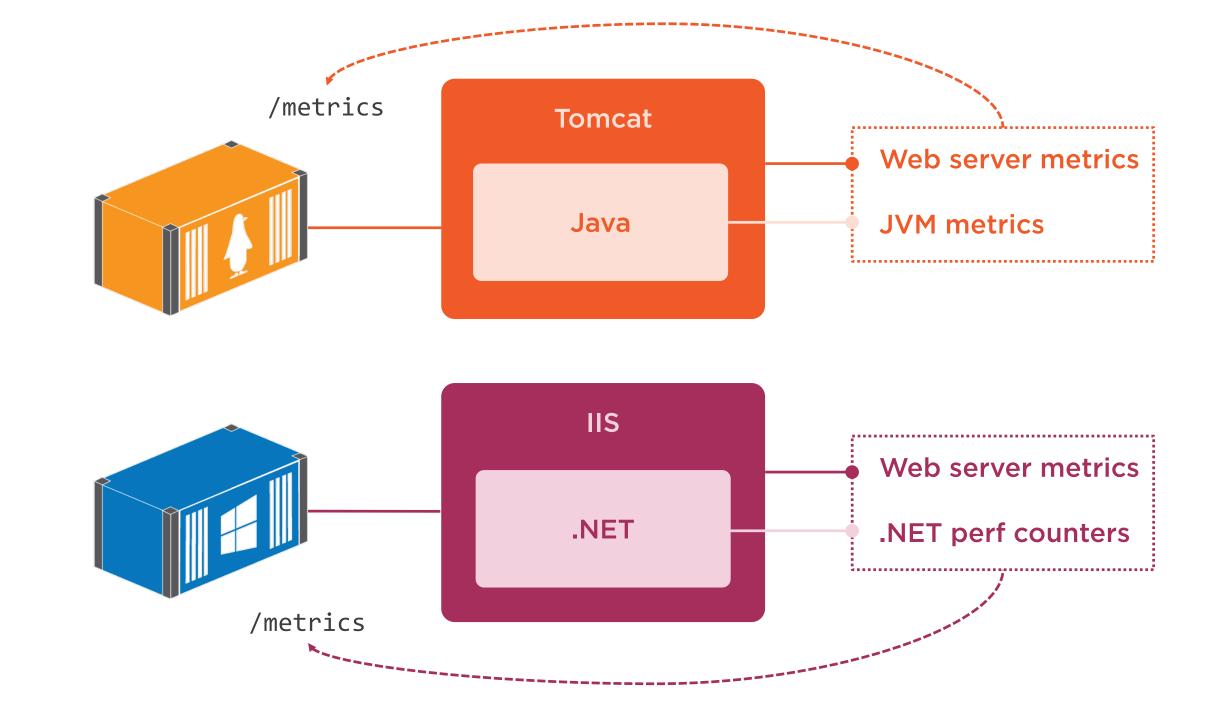
jvm_memory_bytes_committed{area="nonheap",} 3.8273024E7
```

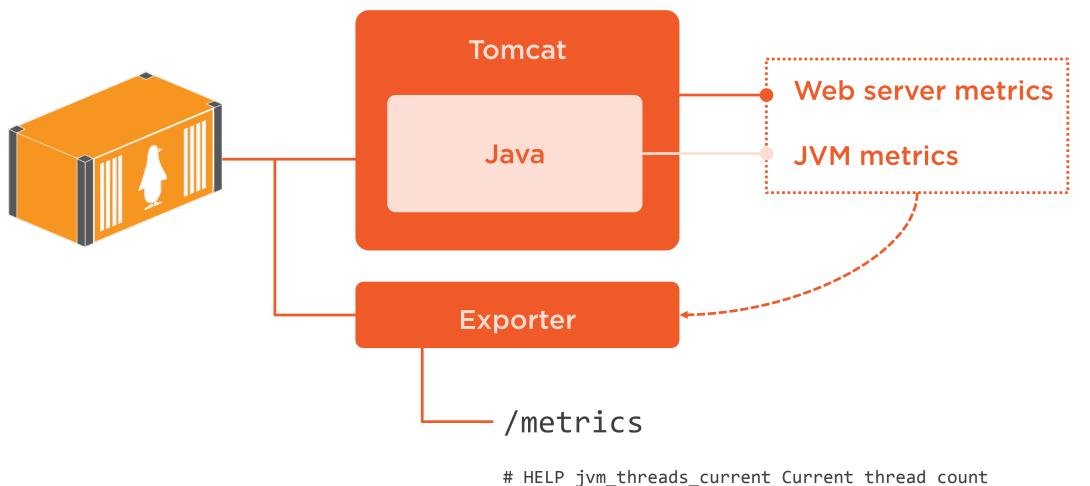


```
# HELP process_thread_count Thread Count Perf Counter
# TYPE process_thread_count GAUGE
process_thread_count{host="EC38E36F18DE"} 21
# HELP dotnet_clr_memory_gen_0_heap_size Gen 0 heap size
# TYPE dotnet_clr_memory_gen_0_heap_size GAUGE
dotnet_clr_memory_gen_0_heap_size{host="EC38E36F18DE"} 2097152
```









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# TYPE jvm_threads_current current thread count

# TYPE jvm_threads_current gauge

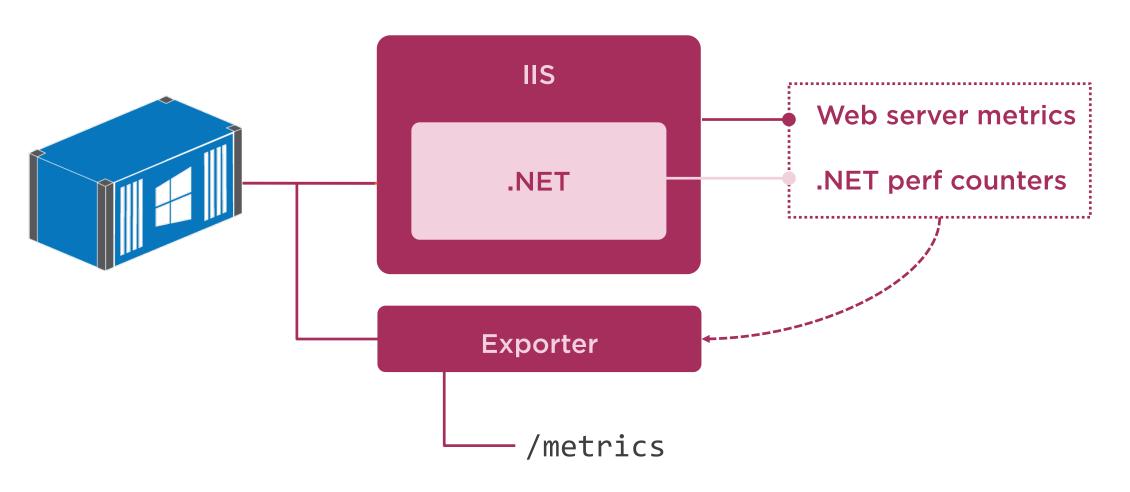
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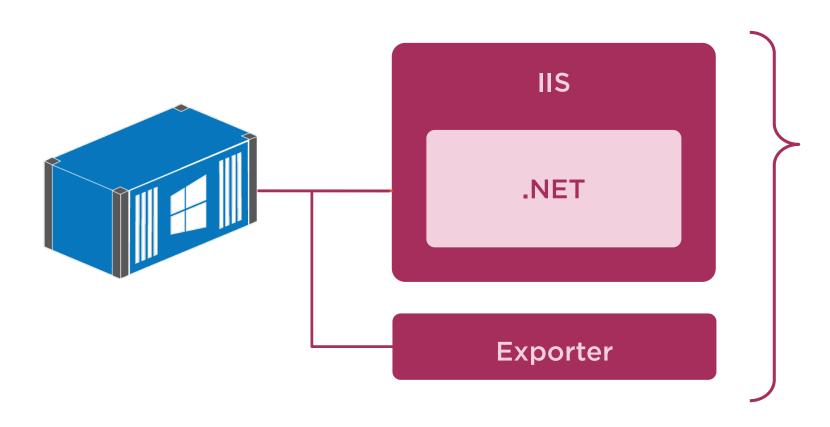
# TYPE jvm_memory_bytes_committed gauge

jvm_memory_bytes_committed{area="heap",} 2.47463936E8

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dotnet_clr_memory_gen_0_heap_size{host="EC38E36F18DE"} 2097152
```



#### **Multiple Components**

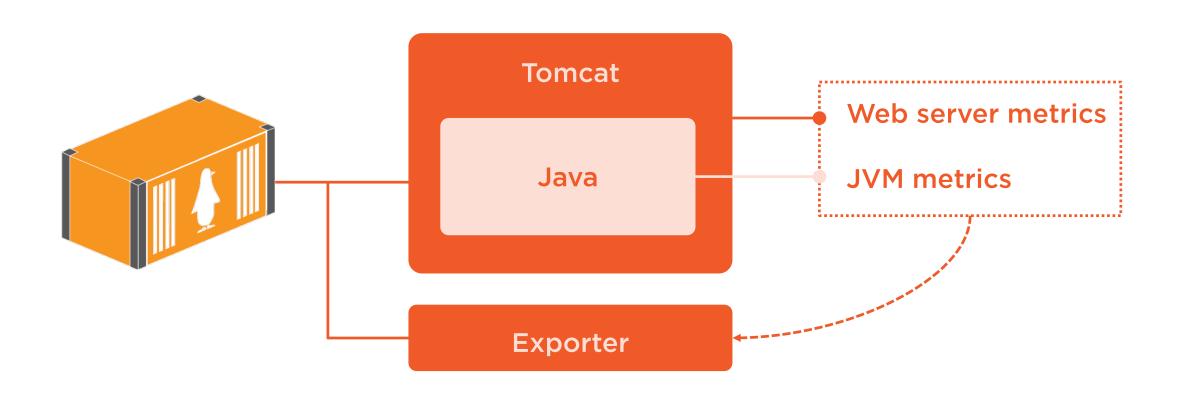
Tightly coupled
Deployment dependency
Runtime reliability

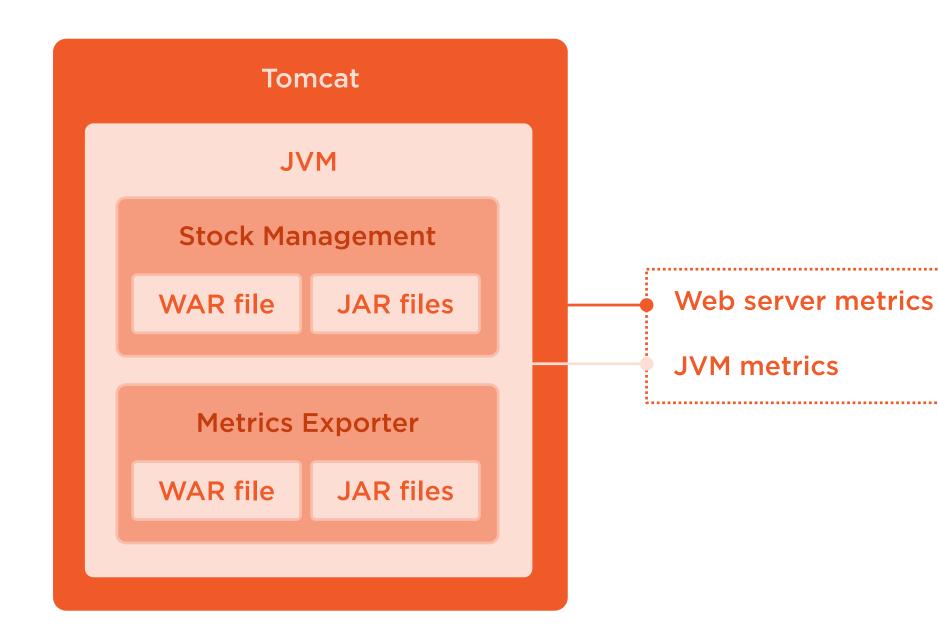
## Demo



#### **Exporting Java Runtime Metrics**

- Tomcat Prometheus exporter
- Packaging in the Dockerfile
- Running the container with metrics





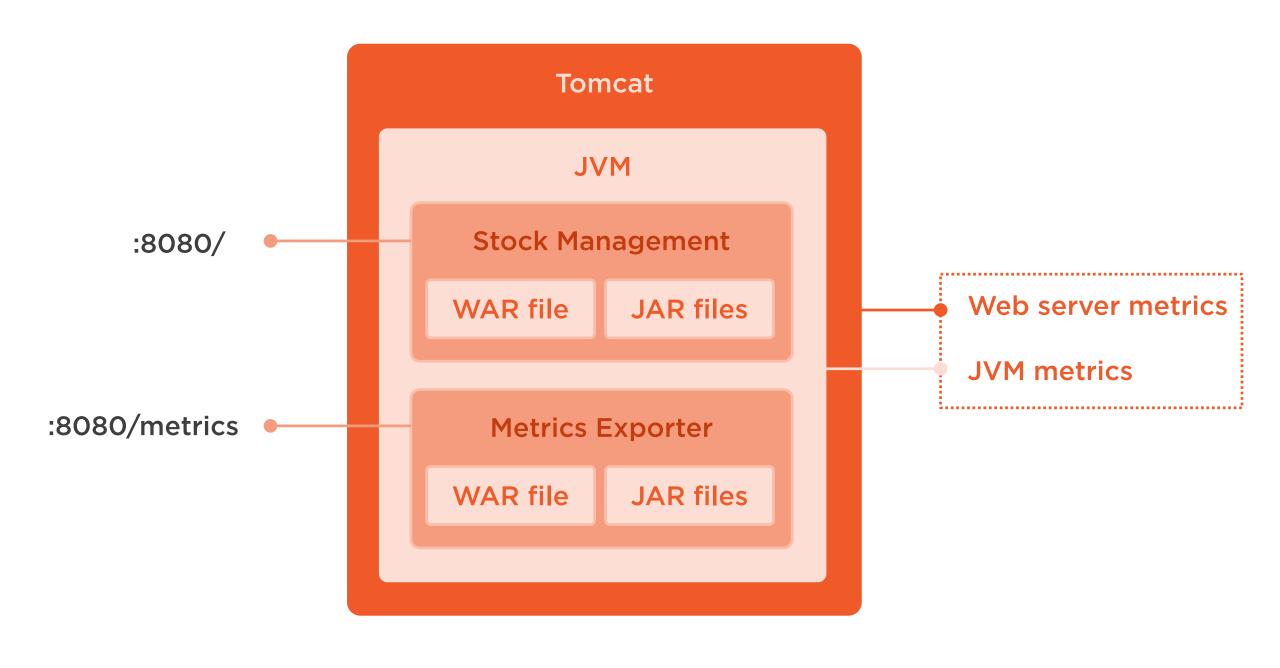
## Tomcat Exporter Metrics

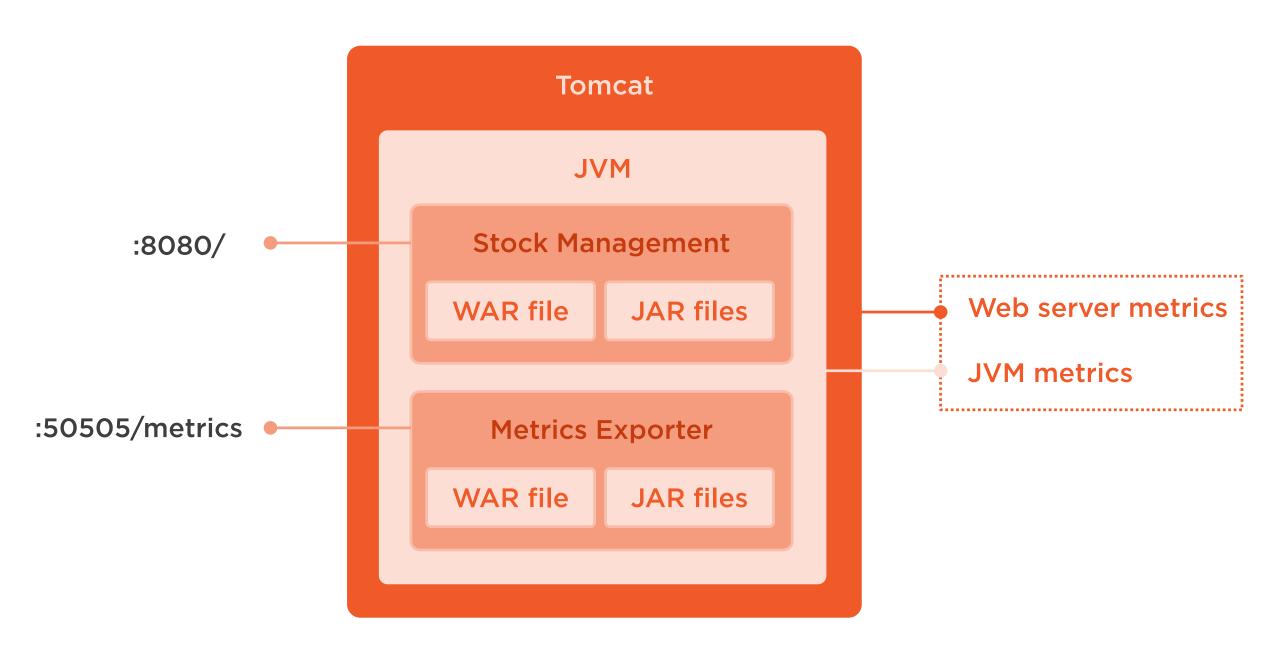
#### JVM

Age of process - seconds
Java classes loaded - count
Java classes unloaded - count
Java version details - text
Threads active - count
Threads deadlocked - count

#### **Tomcat**

Active sessions - count
Rejected sessions - count
Expired sessions - count
Session time - seconds
Active connections - count
Bytes sent/received - count
Requests/errors - count



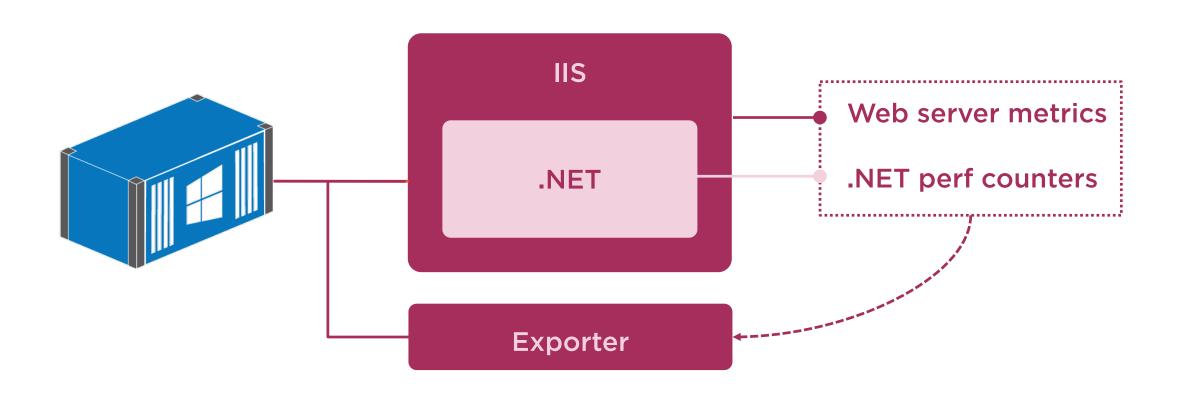


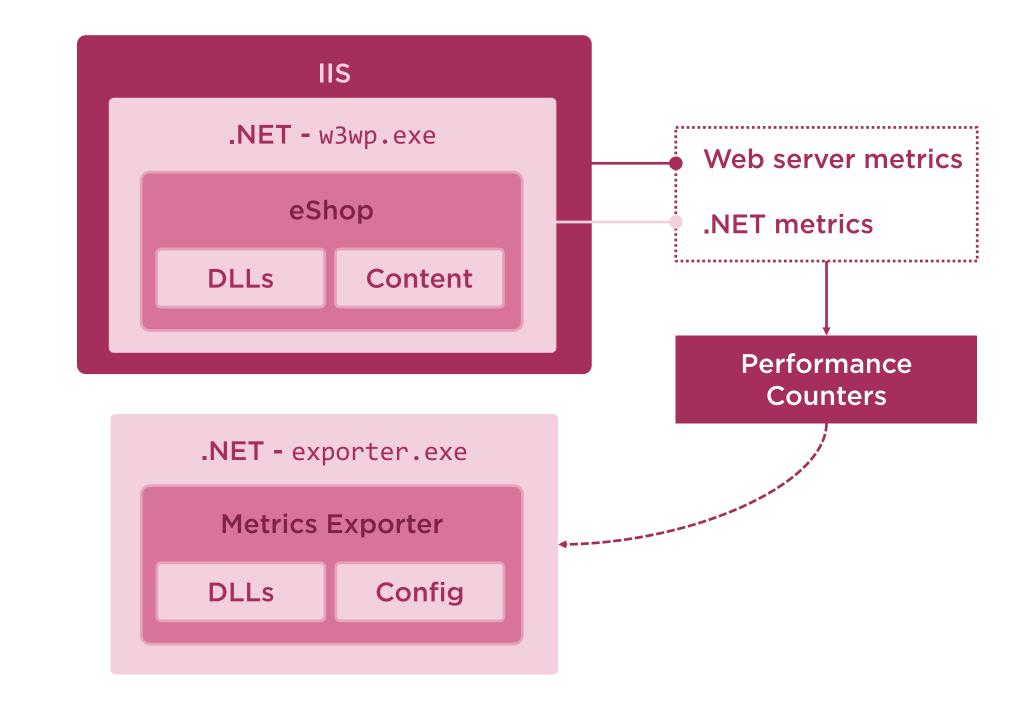
## Demo

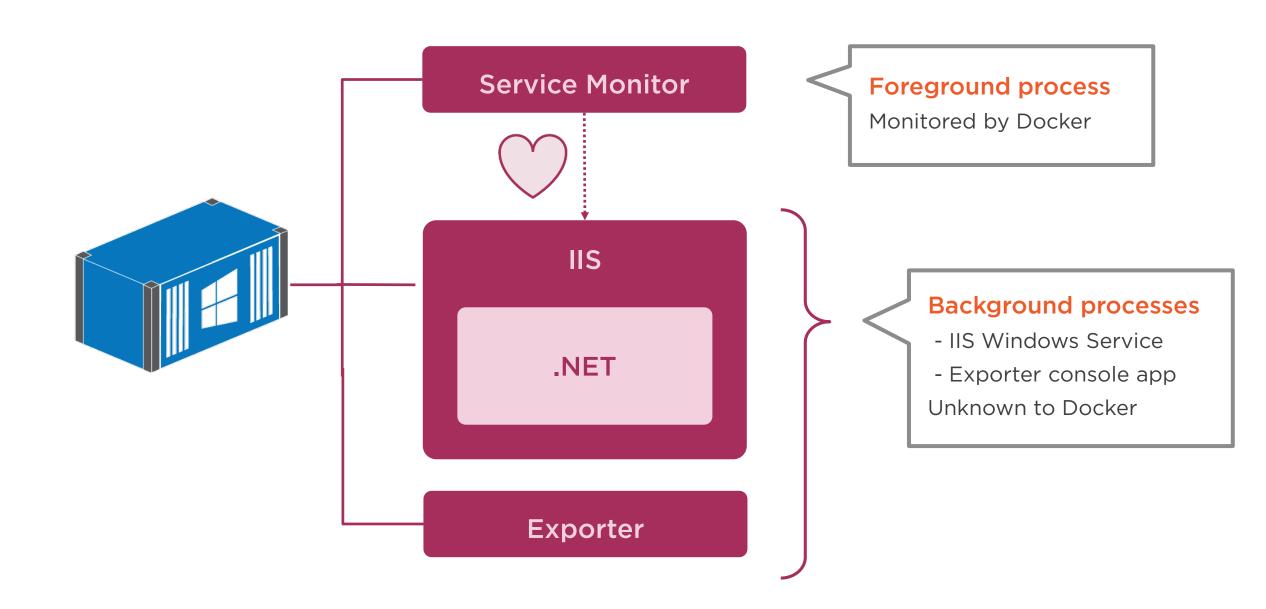


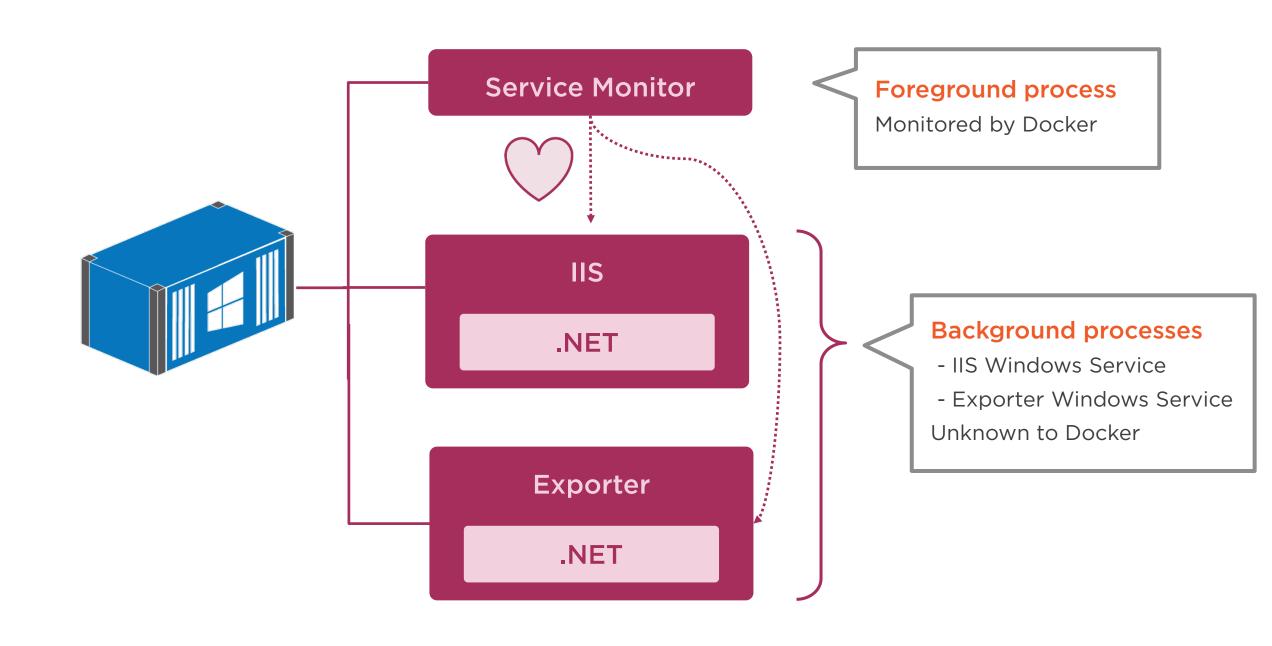
#### **Exporting .NET Runtime Metrics**

- ASP.NET Prometheus exporter
- Exporter runs in background
- Running the container with metrics









## ASP.NET Exporter Metrics

.NET

**ASP.NET** 

IIS

Gen O heap size

Gen 1 heap size

Gen 2 heap size

Large object heap

GC time spent

% processor time

Thread count

Working set

Private bytes

Virtual bytes

Requests /second

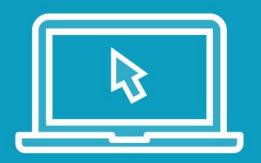
403 count

404 count

500 count

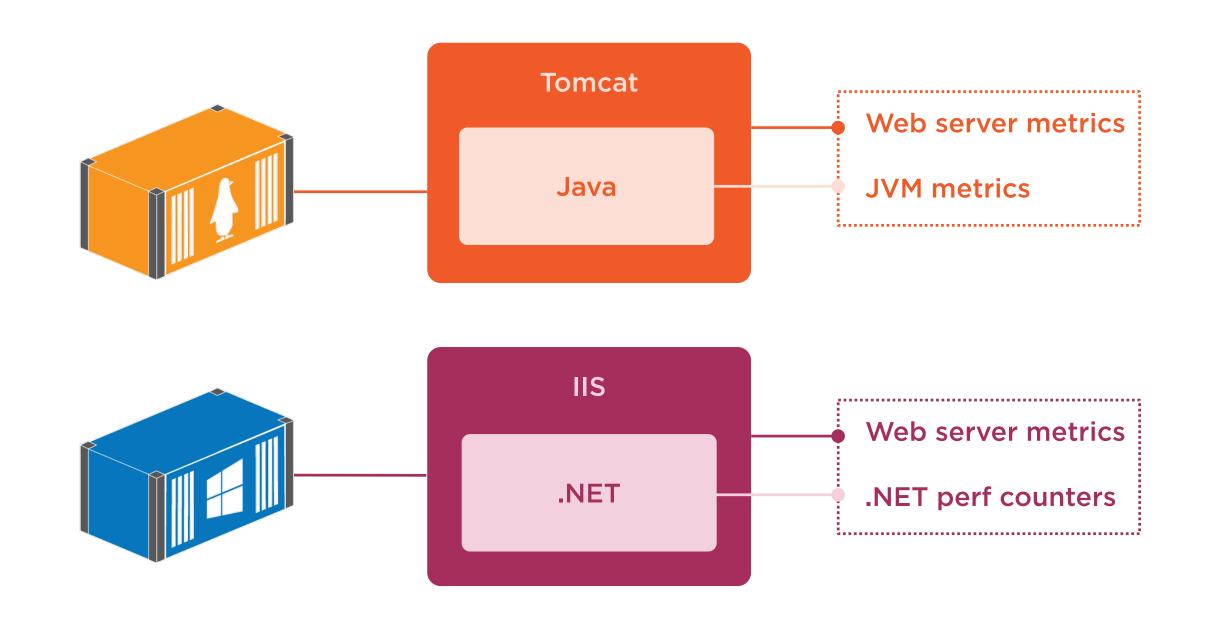
File cache size

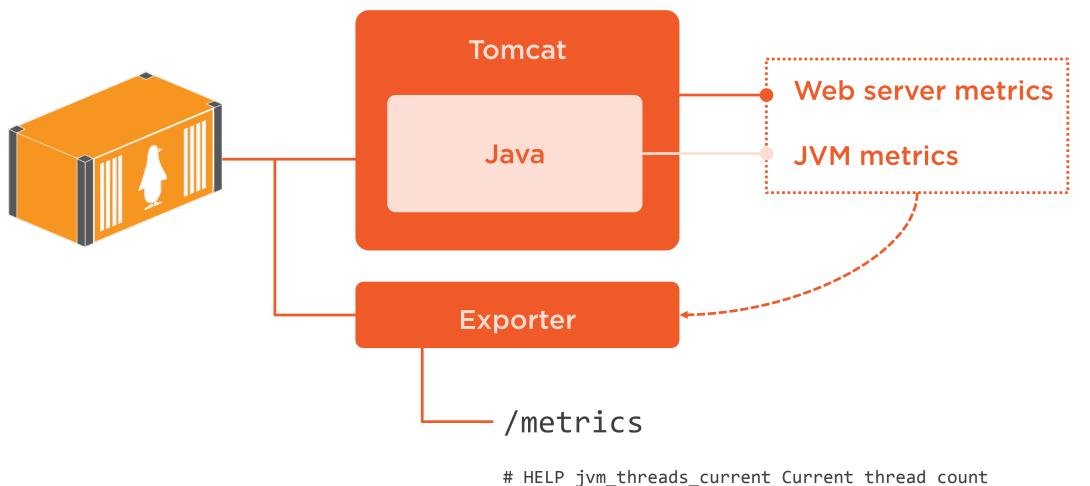
## Demo



#### **Dynamically Scraping Runtime Metrics**

- Hybrid Docker Swarm
- Deploying a Docker Stack
- Querying runtime metrics with PromQL





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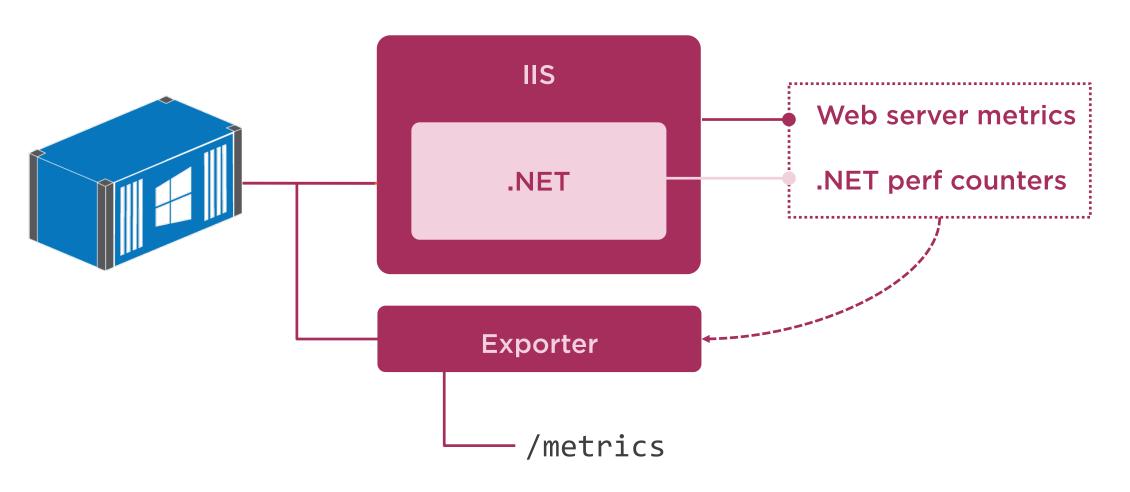
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```

## Module Summary



#### **Exposing Runtime Metrics**

- Tomcat exporter
- ASP.NET exporter

#### **Querying metrics in Prometheus**

- Consistent information
- Abstracted implementation

# Coming Next



#### **Exposing Application Metrics to Prometheus**

- Recording custom business metrics
- Prometheus client libraries
  - Java & .NET
  - Recording metrics
  - Exposing metrics endpoint
- Querying application metrics