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@ebullientworks

Metrics for the Win!

<https://jconf.dev>

[j] conf
.dev
online 2020

A little bit about me

- Developer of things at Red Hat
- IBMer for 21 years
- Java Champion
- Dungeon Master for 11 year olds
- Most importantly:

I build ridiculous things.



https://gameontext.org

Reactive Java? Let us count the ways!

Thank you to everyone that attended our session at Oracle CodeOne on Tuesday!

This repository contains exercises that demonstrate different ways to build reactive applications, from using common building blocks such as Reactive Streams and RxJava to employing holistic frameworks such as Lagom from Lightbend. In this up-to-your-elbows-in-code session, you can experiment with various approaches so you'll leave with a clear understanding of what reactive programming is and what tools you can use to build reactive applications with Java.

You will need a Java IDE of your choice: Eclipse, IntelliJ, VSCode, emacs or vi if you must, and an installation of maven that can pull dependencies from maven central.

Getting Started



<backstory>

Orchestration requires Observability

It's 3AM ... Can you figure out what happened?

Health Checks



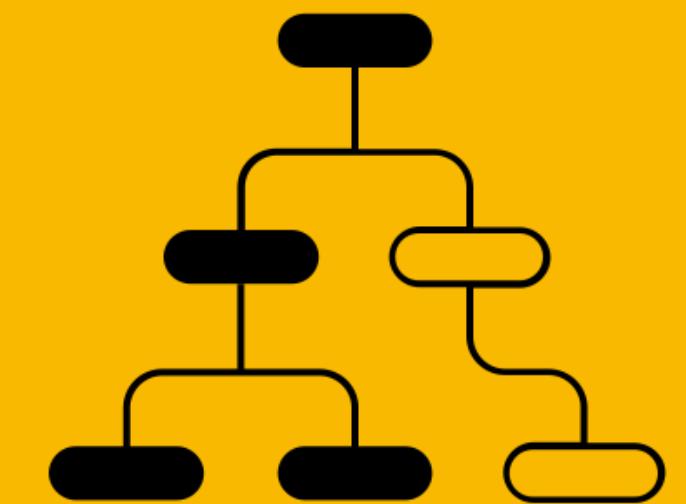
Metrics



Log Entries



Distributed Trace



Observability: Which for what?

Service is ready
Service is not a zombie

How many times was
method x called?

What happened when
method x was called

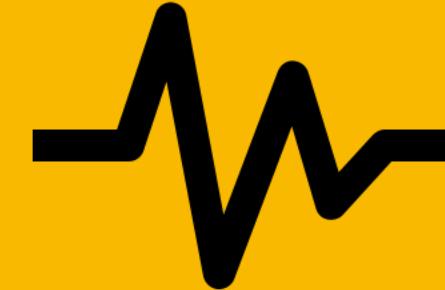
Method x was called

Health Checks



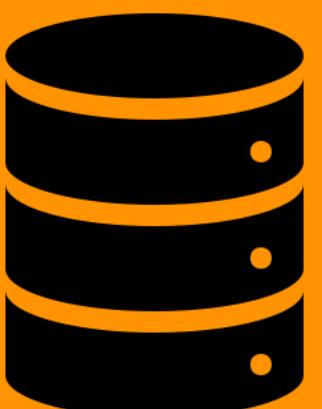
Workload routing
System health

Metrics



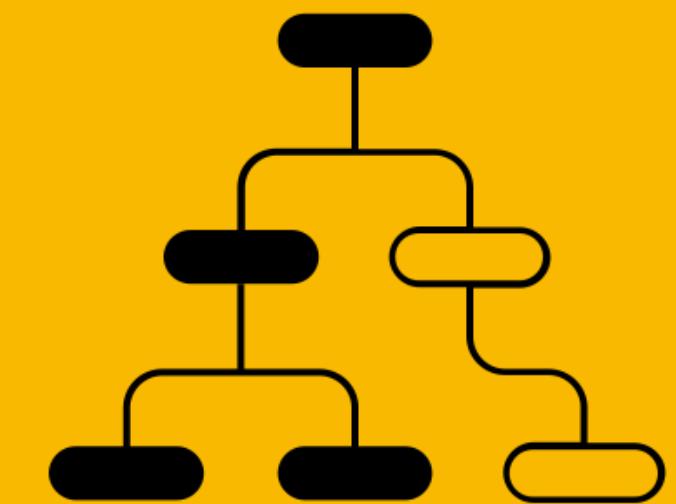
Statistics & trends
Analytics

Log Entries

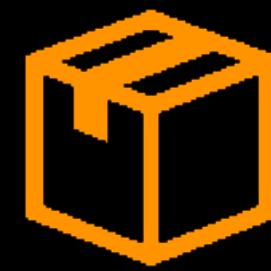


Service-centric
problem determination

Distributed Trace



Context + relationships
for end-to-end analysis



Infrastructure or ...

Default probe behaviors

Health Checks

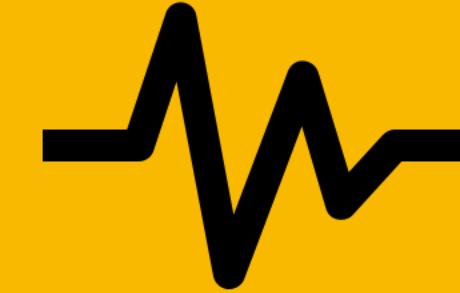


Specialized probes



Metrics collection
Resource utilization metrics

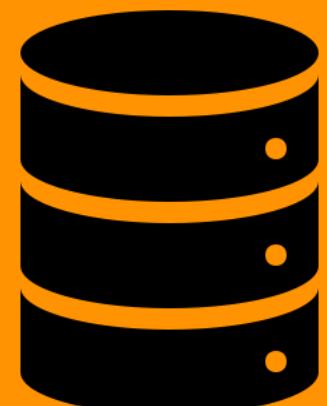
Metrics



Application-centric
statistical data

Log collection

Log Entries

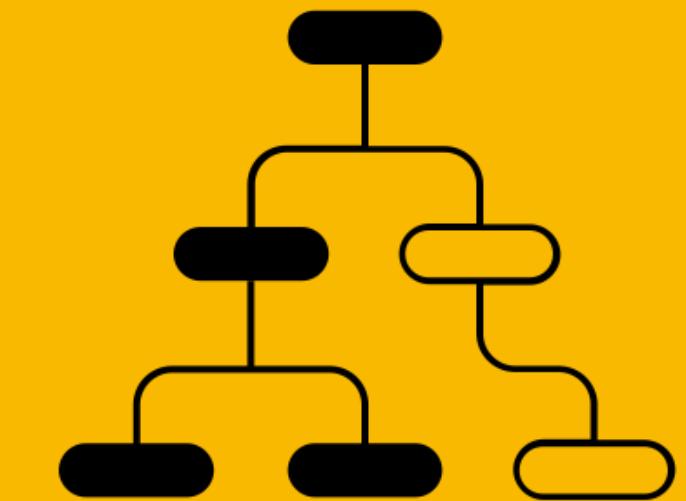


[Un-]Structured text capturing
discrete events

... Application

Span creation
Span collection

Distributed Trace



Context definition
and propagation

</backstory>

What we're focused on...

Metrics



Prometheus for time series data

Grafana for visualization

App-centric instrumentation

Time-series data for metrics

How does data change over time?

- Time is a primary axis (x)
- Data gathered or observed at a regular intervals
- String key with ONE* numeric value
 - Value is observed at collection time
 - Appended as new entry in the series



* “Univariate”. Multivariate data is a very different problem space.

Dimensions and cardinality

Labels add dimensions for analysis

```
app.memory.used {  
  "datacenter"="us1"  
  "instance_id"="pod1234"  
  "env"="prod"  
  "service"="serviceName"  
} 234.6
```

Filtered aggregation
of a **single** value

Cardinality

Each unique combination of labels
is a series:

datacenter (10 values),
instance_id (100 values),
env (3 values),
service (50 values)

150,000 unique time series
 $(10 * 100 * 3 * 50)$

Statistics: Working with aggregates

- Aggregate of single value across dimensions
 - “Rate” : increase over time interval (scale of 0..1)
 - “Increase”: re-applies the time interval to a calculated rate
- Make sure observed data can be aggregated sensibly!

Almost impossible to work backwards from dashboard to single entry

... Remember: that isn't what metrics are for

MONSTERS!



Added: Ancient Silver Dragon(GARGANTUAN DRAGON){AC:22,HP:487(25d20+225),STR:30(+10),DEX:10(+0),CON:25(+5),INT:15(+3),WIS:12(+1),CHA:18(+4)}
Added: Pteranodon(MEDIUM BEAST){AC:13,HP:13(3d8),STR:12(+1),DEX:15(+2),CON:10(+0),INT:2(-4),WIS:9(-1),CHA:10(+0)}
Added: Adult Bronze Dragon(HUGE DRAGON){AC:19,HP:212(17d12+102),STR:25(+7),DEX:10(+0),CON:23(+6),INT:18(+4),WIS:14(+3),CHA:20(+5)}
Added: Ettercap(MEDIUM MONSTROSITY){AC:13,HP:44(8d8+8),STR:14(+2),DEX:15(+2),CON:13(+1),INT:7(-2),WIS:12(+1),CHA:10(+0)}
Added: Wolf(MEDIUM BEAST){AC:13,HP:11(2d8+2),STR:12(+1),DEX:15(+2),CON:12(+1),INT:3(-4),WIS:12(+1),CHA:10(+0)}
Added: Mummy Lord(MEDIUM UNDEAD){AC:17,HP:97(13d8+39),STR:18(+4),DEX:10(+0),CON:17(+3),INT:11(+0),WIS:10(+0),CHA:12(+3)}
Added: Otyugh(LARGE ABERRATION){AC:14,HP:114(12d10+48),STR:16(+3),DEX:11(+0),CON:19(+4),INT:6(-2),WIS:13(+3),CHA:14(+5)}
Added: Troll(LARGE GIANT){AC:15,HP:84(8d10+40),STR:18(+4),DEX:13(+1),CON:20(+5),INT:7(-2),WIS:9(-1),CHA:13(+4)}
Added: Oni(LARGE GIANT){AC:16,HP:110(13d10+39),STR:19(+4),DEX:11(+0),CON:16(+3),INT:14(+2),WIS:12(+1),CHA:15(+5)}
Added: Vampire Spawn(MEDIUM UNDEAD){AC:15,HP:82(11d8+33),STR:16(+3),DEX:16(+3),CON:16(+3),INT:11(+0),WIS:10(+0),CHA:12(+3)}
Added: Vrock(LARGE FIEND){AC:15,HP:104(11d10+44),STR:17(+3),DEX:15(+2),CON:18(+4),INT:8(-1),WIS:13(+3),CHA:14(+4)}
Added: Werebear(MEDIUM HUMANOID){AC:11,HP:135(18d8+54),STR:19(+4),DEX:10(+0),CON:17(+3),INT:11(+0),WIS:12(+1),CHA:13(+4)}
Added: Quasit(TINY FIEND){AC:13,HP:7(3d4),STR:5(-3),DEX:17(+3),CON:10(+0),INT:7(-2),WIS:10(+0),CHA:10(+0)}
Added: Wraith(MEDIUM UNDEAD){AC:13,HP:67(9d8+27),STR:6(-2),DEX:16(+3),CON:16(+3),INT:12(+1),WIS:14(+2),CHA:11(+3)}
Added: Young Brass Dragon(LARGE DRAGON){AC:17,HP:110(13d10+39),STR:19(+4),DEX:10(+0),CON:17(+3),INT:11(+0),WIS:13(+3),CHA:18(+5)}
Added: Iron Golem(LARGE CONSTRUCT){AC:20,HP:210(20d10+100),STR:24(+7),DEX:9(-1),CON:20(+5),INT:3(-4),WIS:14(+3),CHA:19(+6)}
Added: Adult Blue Dragon(HUGE DRAGON){AC:19,HP:225(18d12+108),STR:25(+7),DEX:10(+0),CON:23(+6),INT:12(+1),WIS:15(+4),CHA:21(+7)}
Added: Pit Fiend(LARGE FIEND){AC:19,HP:300(24d10+168),STR:26(+8),DEX:14(+2),CON:24(+7),INT:22(+6),WIS:16(+5),CHA:23(+8)}
Added: Unicorn(LARGE CELESTIAL){AC:12,HP:67(9d10+18),STR:18(+4),DEX:14(+2),CON:15(+2),INT:11(+0),WIS:13(+1),CHA:16(+3)}
Added: Black Dragon Wyrmling(MEDIUM DRAGON){AC:17,HP:33(6d8+6),STR:15(+2),DEX:14(+2),CON:13(+1),INT:10(+0),WIS:12(+1),CHA:14(+3)}
Added: Adult White Dragon(HUGE DRAGON){AC:18,HP:200(16d12+96),STR:22(+6),DEX:10(+0),CON:22(+6),INT:8(-1),WIS:17(+5),CHA:19(+6)}
Added: Ancient Copper Dragon(GARGANTUAN DRAGON){AC:21,HP:350(20d20+140),STR:27(+8),DEX:12(+1),CON:25(+7),INT:13(+6),WIS:18(+6),CHA:24(+9)}
Added: Treant(HUGE PLANT){AC:16,HP:138(12d12+60),STR:23(+6),DEX:8(-1),CON:21(+5),INT:12(+1),WIS:16(+4),CHA:17(+5)}
Added: Azer(MEDIUM ELEMENTAL){AC:17,HP:39(6d8+12),STR:17(+3),DEX:12(+1),CON:15(+2),INT:12(+1),WIS:13(+1),CHA:18(+2)}
Added: Young White Dragon(LARGE DRAGON){AC:17,HP:133(14d10+56),STR:18(+4),DEX:10(+0),CON:18(+4),INT:10(+0),WIS:14(+3),CHA:19(+4)}
Added: Pegasus(LARGE CELESTIAL){AC:12,HP:59(7d10+21),STR:18(+4),DEX:15(+2),CON:16(+3),INT:10(+0),WIS:11(+1),CHA:13(+2)}
Added: Ancient Brass Dragon(GARGANTUAN DRAGON){AC:20,HP:297(17d20+119),STR:27(+8),DEX:10(+0),CON:25(+7),INT:14(+6),WIS:15(+7),CHA:22(+8)}
Added: Lich(MEDIUM UNDEAD){AC:17,HP:135(18d8+54),STR:11(+0),DEX:16(+3),CON:16(+3),INT:20(+5),WIS:14(-1),CHA:18(+4)}
Added: Skeleton(MEDIUM UNDEAD){AC:13,HP:13(2d8+4),STR:10(+0),DEX:14(+2),CON:15(+2),INT:6(-2),WIS:8(-1),CHA:9(+1)}
Added: Adult Red Dragon(HUGE DRAGON){AC:19,HP:256(19d12+133),STR:27(+8),DEX:10(+0),CON:25(+7),INT:16(+5),WIS:17(+6),CHA:23(+9)}
Added: Tyrannosaurus Rex(HUGE BEAST){AC:13,HP:136(13d12+52),STR:25(+7),DEX:10(+0),CON:19(+4),INT:2(-4),WIS:12(+1),CHA:17(+3)}
Added: Aarakocra(MEDIUM HUMANOID){AC:12,HP:13(3d8),STR:10(+0),DEX:14(+2),CON:10(+0),INT:11(+0),WIS:11(+0),CHA:12(+1)}
Added: Triceratops(HUGE BEAST){AC:13,HP:95(10d12+30),STR:22(+6),DEX:9(-1),CON:17(+3),INT:2(-4),WIS:11(+0),CHA:13(+2)}
Added: Gelatinous Cube(LARGE OOZE){AC:6,HP:84(8d10+40),STR:14(+2),DEX:3(-4),CON:20(+5),INT:1(-5),WIS:10(+0),CHA:11(+1)}
Added: Hell Hound(MEDIUM FIEND){AC:15,HP:45(7d8+14),STR:17(+3),DEX:12(+1),CON:14(+2),INT:6(-2),WIS:11(+0),CHA:12(+1)}
Added: Planetar(LARGE CELESTIAL){AC:19,HP:200(16d10+112),STR:24(+7),DEX:20(+5),CON:24(+7),INT:19(+4),WIS:18(+5),CHA:21(+6)}
Added: Homunculus(TINY CONSTRUCT){AC:13,HP:5(2d4),STR:4(-3),DEX:15(+2),CON:11(+0),INT:10(+0),WIS:10(+0),CHA:11(+0)}
Added: Ancient Black Dragon(GARGANTUAN DRAGON){AC:22,HP:367(21d20+147),STR:27(+8),DEX:14(+2),CON:25(+7),INT:15(+6),WIS:16(+7),CHA:24(+9)}
Added: Adult Brass Dragon(HUGE DRAGON){AC:18,HP:172(15d12+75),STR:23(+6),DEX:10(+0),CON:21(+5),INT:14(+4),WIS:15(+5),CHA:19(+5)}
Added: Ancient Bronze Dragon(GARGANTUAN DRAGON){AC:22,HP:444(24d20+192),STR:29(+9),DEX:10(+0),CON:27(+8),INT:16(+7),WIS:17(+8),CHA:25(+10)}
Added: Glabrezu(LARGE FIEND){AC:17,HP:157(15d10+75),STR:20(+5),DEX:15(+2),CON:21(+5),INT:19(+4),WIS:14(+3),CHA:18(+4)}
Added: Lamia(LARGE MONSTROSITY){AC:13,HP:97(13d10+26),STR:16(+3),DEX:13(+1),CON:15(+2),INT:14(+2),WIS:13(+2),CHA:15(+1)}
Added: Bulette(LARGE MONSTROSITY){AC:17,HP:94(9d10+45),STR:19(+4),DEX:11(+0),CON:21(+5),INT:2(-4),WIS:12(+1),CHA:14(+2)}
Added: Young Black Dragon(LARGE DRAGON){AC:18,HP:127(15d10+45),STR:19(+4),DEX:14(+2),CON:17(+3),INT:15(+5),WIS:14(+4),CHA:16(+3)}
Added: Dryad(MEDIUM FEY){AC:11,HP:22(5d8),STR:10(+0),DEX:12(+1),CON:11(+0),INT:14(+2),WIS:15(+2),CHA:13(+1)}
Added: Elephant(HUGE BEAST){AC:12,HP:76(8d12+24),STR:22(+6),DEX:9(-1),CON:17(+3),INT:3(-4),WIS:11(+0),CHA:12(+1)}
Added: Deva(MEDIUM CELESTIAL){AC:17,HP:136(16d8+64),STR:18(+4),DEX:18(+4),CON:18(+4),INT:17(+3),WIS:16(+3),CHA:19(+4)}
Added: Weretiger(MEDIUM HUMANOID){AC:12,HP:120(16d8+48),STR:17(+3),DEX:15(+2),CON:16(+3),INT:10(+0),WIS:13(+2),CHA:14(+3)}
Added: Pseudodragon(TINY DRAGON){AC:13,HP:7(2d4+2),STR:6(-2),DEX:15(+2),CON:13(+1),INT:10(+0),WIS:12(+1),CHA:11(+1)}

D&D 5e Combat Rules

From zero to DM lickety split

- ~215 monsters from OpenSRD
- 2-5 monsters per encounter
 - Roll for initiative
 - Take turns within rounds (in order)
 - Repeat until only one remains

SO. MANY. QUESTIONS.

New DM:
How does this work?

Game developer:
Does this change impact game play?

Developer:
Does it work the way it should?

Monster syntax

Size, Type, Armor Class, Hit Points:

Dryad (**MEDIUM FEY**)
AC: 11, HP: 22(5d8)

Deva (**MEDIUM CELESTIAL**)
AC: 17, HP: 136(16d8+64)

Weretiger (**MEDIUM HUMANOID**)
AC: 12, HP: 120(16d8+48)

Pseudodragon (**TINY DRAGON**)
AC: 13, HP: 7(2d4+2)

weapons inflicts a type of **damage**

Ancient Green Dragon:

bite:	piercing, 19(2d10+8)
claw:	slashing, 19(2d10+8)
tail:	bludgeoning, 17(2d8+8)
poison breath:	poison, 77(22d6)

multiattack used if present
(e.g. 2 claws and 1 bite)

Attacks : Hits and Misses

How many attacks are successful?

Roll a d20...

20 – critical hit (HIT) (double damage)

1 – critical miss (MISS)

Otherwise, EITHER

Attack modifier vs. Armor Class

OR

Saving Throw against Spell DC

```
: oneRound:  
    Troll(LARGE GIANT)  
{AC:15,HP:84(8d10+40),STR:18(+4),DEX:13(+1),CON:20(+5),INT:7(-2),WIS:9(-1),  
CHA:7(-2),CR:5,PP:12}(31/86.0)  
  
    Pit Fiend(LARGE FIEND)  
{AC:19,HP:300(24d10+168),STR:26(+8),DEX:14(+2),CON:24(+7),INT:22(+6),WIS:18  
(+4),CHA:24(+7),SAVE:[DEX(+8),CON(+13),WIS(+10)],CR:20,PP:14}(313/313.0)  
  
: attack: miss: Troll(36) -> Pit Fiend(100)  
: attack: miss: Troll(36) -> Pit Fiend(100)  
: attack: hit> Troll(36) -> Pit Fiend(97) for 9 damage using  
Claws[7hit,11(2d6+4)|slashing]  
: attack: hit> Pit Fiend(97) -> Troll(10) for 22 damage using  
Bite[14hit,22(4d6+8)|piercing]  
: attack: MISS: Pit Fiend(97) -> Troll(10)  
: attack: HIT> Pit Fiend(97) -> Troll(0) for 34 damage using  
Mace[14hit,15(2d6+8)|bludgeoning]  
  
: oneRound: survivors  
    Pit Fiend(LARGE FIEND)  
{AC:19,HP:300(24d10+168),STR:26(+8),DEX:14(+2),CON:24(+7),INT:22(+6),WIS:18  
(+4),CHA:24(+7),SAVE:[DEX(+8),CON(+13),WIS(+10)],CR:20,PP:14}(304/313.0)
```

Application overview

<https://github.com/ebullient/monster-combat>

Application provides a few endpoints:

/combat/any Run an encounter with 2-6 monsters

/combat/faceoff Run an encounter with 2 monsters

/combat/melee Run an encounter with 3-6 monsters

Heavy use of labels to capture information about encounter results.

Gathering/labeling metrics consolidated into a single class

Insert code here. ;)

NUMBERS!

```
encounter_rounds_max{crDelta="17",numCombatants="05",sizeDelta="03",targetSelector="Random",} 0.0
encounter_rounds_max{crDelta="20",numCombatants="06",sizeDelta="03",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="08",numCombatants="05",sizeDelta="01",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="01",numCombatants="02",sizeDelta="01",targetSelector="FaceOff",} 0.0
encounter_rounds_max{crDelta="05",numCombatants="05",sizeDelta="02",targetSelector="LowestHealth",} 0.0
encounter_rounds_max{crDelta="10",numCombatants="03",sizeDelta="00",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="11",numCombatants="06",sizeDelta="03",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="19",numCombatants="06",sizeDelta="04",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="08",numCombatants="05",sizeDelta="04",targetSelector="BiggestFirst",} 0.0
encounter_rounds_max{crDelta="21",numCombatants="05",sizeDelta="02",targetSelector="BiggestFirst",} 0.0
encounter_rounds_max{crDelta="18",numCombatants="03",sizeDelta="01",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="09",numCombatants="03",sizeDelta="02",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="21",numCombatants="04",sizeDelta="03",targetSelector="HighestHealth",} 9.0
encounter_rounds_max{crDelta="16",numCombatants="06",sizeDelta="03",targetSelector="LowestHealth",} 0.0
encounter_rounds_max{crDelta="15",numCombatants="03",sizeDelta="00",targetSelector="LowestHealth",} 0.0
encounter_rounds_max{crDelta="08",numCombatants="05",sizeDelta="02",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="20",numCombatants="06",sizeDelta="04",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="01",numCombatants="02",sizeDelta="00",targetSelector="FaceOff",} 0.0
encounter_rounds_max{crDelta="17",numCombatants="05",sizeDelta="02",targetSelector="Random",} 0.0
encounter_rounds_max{crDelta="27",numCombatants="03",sizeDelta="03",targetSelector="Random",} 0.0
encounter_rounds_max{crDelta="18",numCombatants="03",sizeDelta="04",targetSelector="BiggestFirst",} 0.0
encounter_rounds_max{crDelta="26",numCombatants="04",sizeDelta="03",targetSelector="LowestHealth",} 0.0
encounter_rounds_max{crDelta="11",numCombatants="06",sizeDelta="04",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="05",numCombatants="05",sizeDelta="01",targetSelector="LowestHealth",} 0.0
encounter_rounds_max{crDelta="10",numCombatants="03",sizeDelta="01",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="06",numCombatants="04",sizeDelta="00",targetSelector="Random",} 0.0
encounter_rounds_max{crDelta="09",numCombatants="04",sizeDelta="00",targetSelector="BiggestFirst",} 0.0
encounter_rounds_max{crDelta="30",numCombatants="04",sizeDelta="03",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="21",numCombatants="05",sizeDelta="01",targetSelector="BiggestFirst",} 0.0
encounter_rounds_max{crDelta="09",numCombatants="03",sizeDelta="03",targetSelector="HighestHealth",} 0.0
encounter_rounds_max{crDelta="18",numCombatants="03",sizeDelta="02",targetSelector="SmallestFirst",} 0.0
encounter_rounds_max{crDelta="19",numCombatants="06",sizeDelta="05",targetSelector="SmallestFirst",} 0.0
dice_rolls_max{die="d10",face="08",} 8.0
dice_rolls_max{die="d10",face="09",} 9.0
dice_rolls_max{die="d10",face="06",} 6.0
dice_rolls_max{die="d10",face="07",} 7.0
dice_rolls_max{die="d10",face="04",} 4.0
dice_rolls_max{die="d10",face="05",} 5.0
dice_rolls_max{die="d10",face="02",} 2.0
round_attacks_max{attackName="Bite",attackType="piercing",attacker="Sahuagin",hitOrMiss="hit",targetSe}
round_attacks_max{attackName="Bite",attackType="piercing",attacker="Red Dragon Wyrmling",hitOrMiss="hi}
round_attacks_max{attackName="Crush",attackType="bludgeoning",attacker="Darkmantle",hitOrMiss="hit",ta}
round_attacks_max{attackName="Bite",attackType="piercing",attacker="Adult Silver Dragon",hitOrMiss="mi}
round_attacks_max{attackName="Bite",attackType="piercing",attacker="Xorn",hitOrMiss="miss",targetSelect}
round_attacks_max{attackName="Pseudopod",attackType="acid",attacker="Gelatinous Cube",hitOrMiss="critic}
round_attacks_max{attackName="Greatsword",attackType="slashing",attacker="Planetar",hitOrMiss="hit",ta}
round_attacks_max{attackName="Claw",attackType="slashing",attacker="Ancient White Dragon",hitOrMiss="m}
round_attacks_max{attackName="Beak",attackType="piercing",attacker="Owlbear",hitOrMiss="critical hit",t}
round_attacks_max{attackName="Pike",attackType="piercing",attacker="Centaur",hitOrMiss="miss",targetSel}
round_attacks_max{attackName="Longsword",attackType="slashing",attacker="Hobgoblin",hitOrMiss="critical
```

Rolling the dice

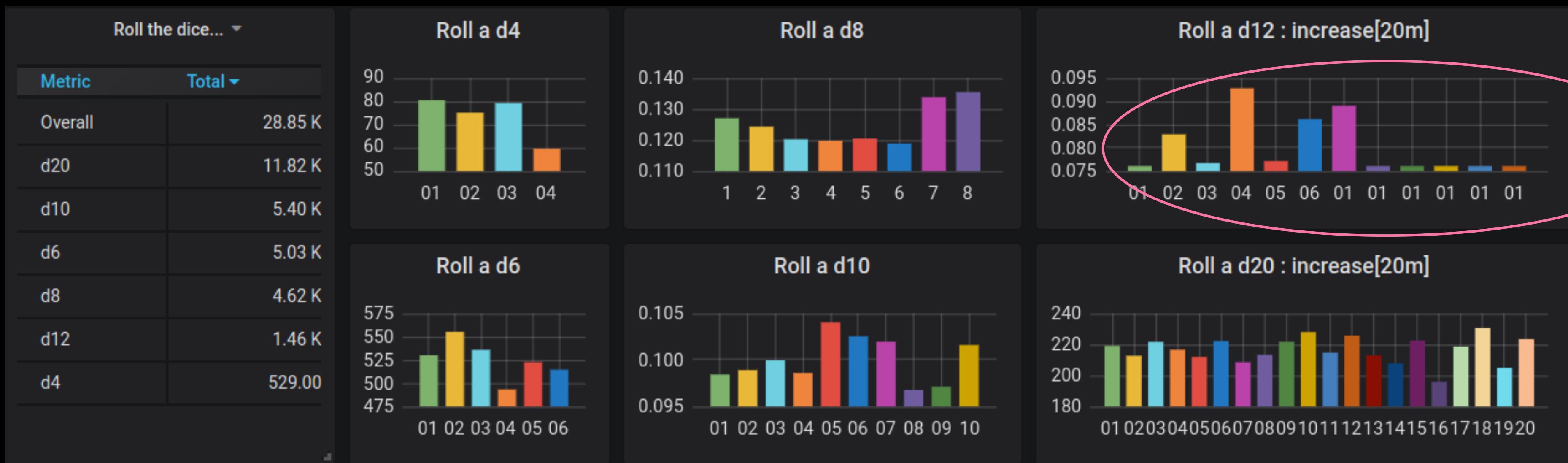
```
Dice.setMonitor((k, v) ->  
    registry.counter("dice.rolls", "die", k, "face", label(v)).increment());
```

How often was a 9 rolled on a d10? ---

```
# HELP dice_rolls_total  
# TYPE dice_rolls_total counter  
dice_rolls_total{die="d10",face="08",} 16750.0  
dice_rolls_total{die="d10",face="09",} 16724.0 ,instance="quarkus:8080", job="quarkus_micrometer"  
dice_rolls_total{die="d10",face="06",} 16804.0  
dice_rolls_total{die="d10",face="07",} 16883.0  
dice_rolls_total{die="d10",face="04",} 16944.0  
dice_rolls_total{die="d10",face="05",} 16695.0  
dice_rolls_total{die="d10",face="02",} 16960.0  
dice_rolls_total{die="d10",face="03",} 16843.0  
dice_rolls_total{die="d10",face="10",} 17034.0  
dice_rolls_total{die="d20",face="18",} 24008.0  
dice_rolls_total{die="d20",face="19",} 24120.0  
dice_rolls_total{die="d20",face="16",} 24106.0  
dice_rolls_total{die="d20",face="17",} 23922.0
```

Roll the dice

Early version. Can you spot what is wrong?



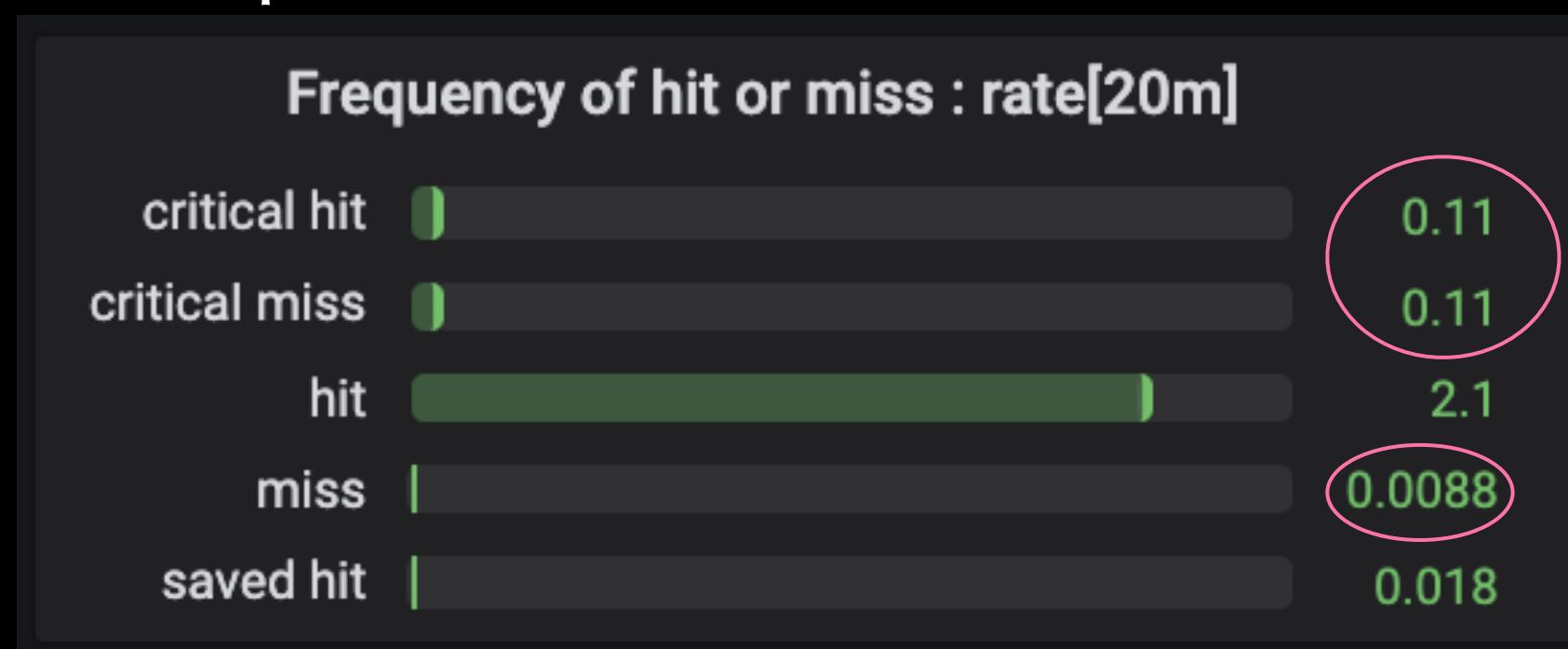
Attacks: Hits and Misses

Comedy of errors

Attempt 1

	max	avg
critical saved hit	26.00	23.13
critical hit	25.88	25.68
hit	12.92	12.85
saved hit	11.49	11.07
miss	0	0
critical miss	0	0

Attempt 2



```
# HELP attack_success
# TYPE attack_success summary
attack_success_count{attackType="attack-ac",hitOrMiss="miss",} 65.0
attack_success_sum{attackType="attack-ac",hitOrMiss="miss",} 1124.0
attack_success_count{attackType="attack-ac",hitOrMiss="critical hit",}
attack_success_sum{attackType="attack-ac",hitOrMiss="critical hit",}
attack_success_count{attackType="attack-ac",hitOrMiss="critical miss",}
attack_success_sum{attackType="attack-ac",hitOrMiss="critical miss",}
attack_success_count{attackType="attack-dc",hitOrMiss="hit",} 6.0
attack_success_sum{attackType="attack-dc",hitOrMiss="hit",} 92.0
attack_success_count{attackType="attack-dc",hitOrMiss="saved hit",}
attack_success_sum{attackType="attack-dc",hitOrMiss="saved hit",} 134.0
attack_success_count{attackType="attack-ac",hitOrMiss="hit",} 133.0
attack_success_sum{attackType="attack-ac",hitOrMiss="hit",} 2050.0
# HELP attack_success_max
# TYPE attack_success_max gauge
attack_success_max{attackType="attack-ac",hitOrMiss="miss",} 22.0
attack_success_max{attackType="attack-ac",hitOrMiss="critical hit",}
attack_success_max{attackType="attack-ac",hitOrMiss="critical miss",}
attack_success_max{attackType="attack-dc",hitOrMiss="hit",} 22.0
attack_success_max{attackType="attack-dc",hitOrMiss="saved hit",} 19.0
attack_success_max{attackType="attack-ac",hitOrMiss="hit",} 20.0
```

More dashboards, please!

What metrics matter for your
application?

<https://github.com/ebullient/monster-combat>

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Metrics for the Win!

Thank you!

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