

Schnelle und zuverlässige Builds mit Gradle und Maven

Marc Philipp, Gradle Inc.



Wer bin ich?

```
speaker {  
  name = "Marc Philipp"  
  home = "Karlsruhe, Germany"  
  company = "Gradle Inc."  
  title = "Senior Software Engineer"  
  openSourceRoles = [  
    "JUnit team lead"  
  ]  
  twitter = "@marcphilipp"  
  github = "marcphilipp"  
  web = uri("https://www.marcphilipp.de")  
}
```



A decorative vertical pattern on the left side of the slide, consisting of light blue lines forming a complex circuit or network of paths, with small circular nodes at various points.

Gradle Inc.

- ◆ Build Happiness
- ◆ Products
 - ◇ Gradle Build Tool
 - ◇ Gradle Enterprise





Wie beeinflusst der Build die Entwicklerproduktivität?

- ◆ 20% Buildfehlschläge
 - ◇ Fixen 5-10% Teamzeit
- ◆ Langsam
 - ◇ Pro Minute 4% Teamzeit
- ◆ Unzuverlässig: 5% Teamzeit



Schnelle Builds



Schnelle Builds

- ◆ Schneller = weniger machen
- ◆ Ergebnisse wiederverwenden!
 - ◇ Inkrementeller Build
 - ◇ Build Cache





Inkrementeller Build

- ◆ Gradle 👍
- ◆ Maven 👎





Inkrementeller Build

Gradle kann Ergebnisse
des **letzten Mals**
als **dieser Build**
auf **diesem Computer**
ausgeführt wurde wiederverwenden.



Das geht noch besser!





Wieso nicht...
von **irgendwann**
wenn **irgendein Build**
irgendwo ausgeführt wurde.





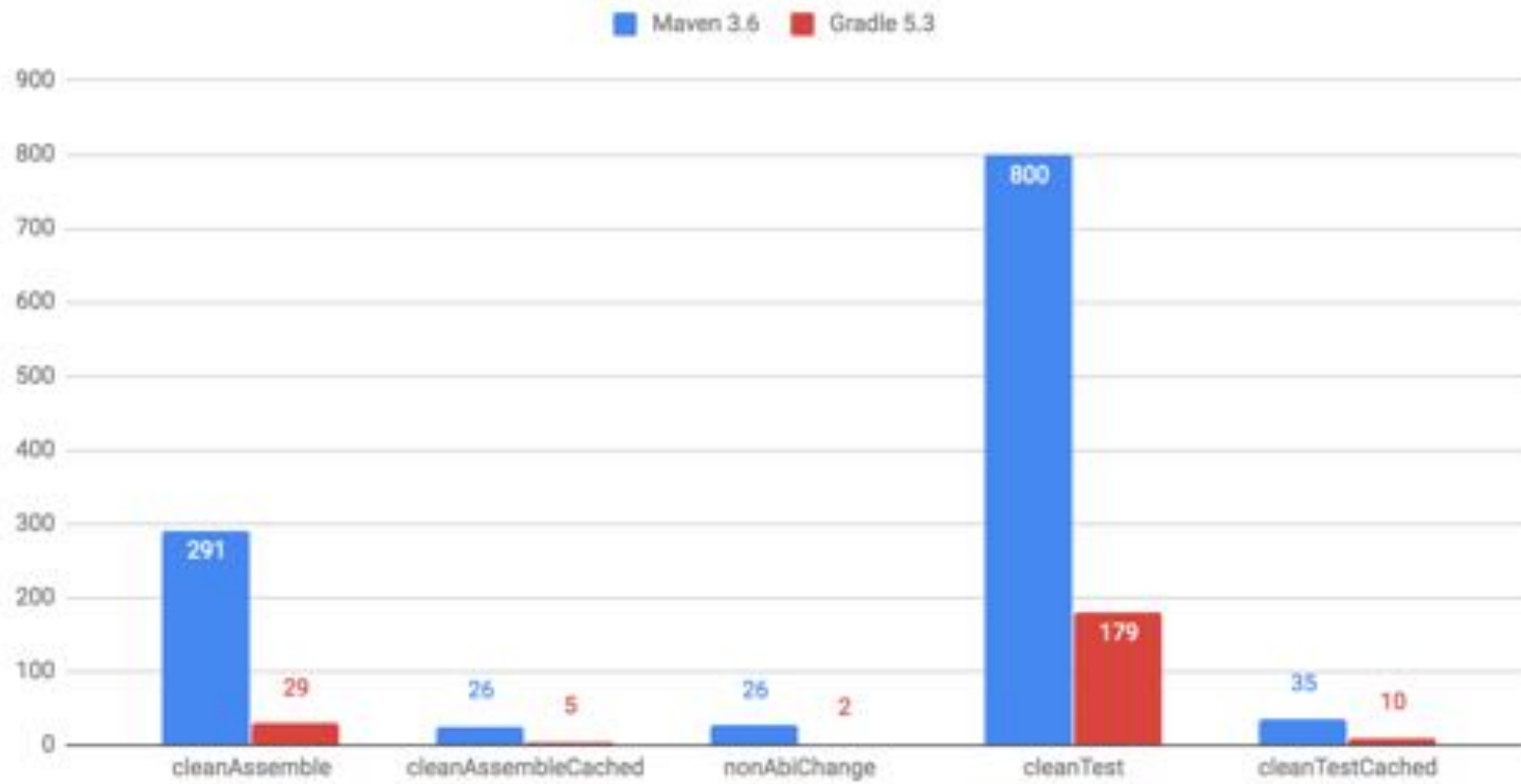
Noch besser...

für Maven und Gradle Builds!





largeJavaMultiProject



Build Cache für Gradle

```
$> gradle --build-cache assemble
:compileJava FROM-CACHE
:processResources
:classes
:jar
:assemble

BUILD SUCCESSFUL
```





Build Cache für Gradle

- ◆ Standardmäßig für Java, Groovy, Scala, C++ und Swift
- ◆ Unterstützt Compile, Test und Verification Tasks
- ◆ High-Performance Remote Backend von Gradle
- ◆ Docker Hub: [gradle/build-cache-node](https://hub.docker.com/r/gradle/build-cache-node)



Build Cache für Maven

- ◆ Eigene Extension (Teil von Gradle Enterprise)
- ◆ Initiales Release: März 2019
- ◆ Unterstützte Plugins: Java Compiler, Surefire/Failsafe, Javadoc, JAXB, Checkstyle



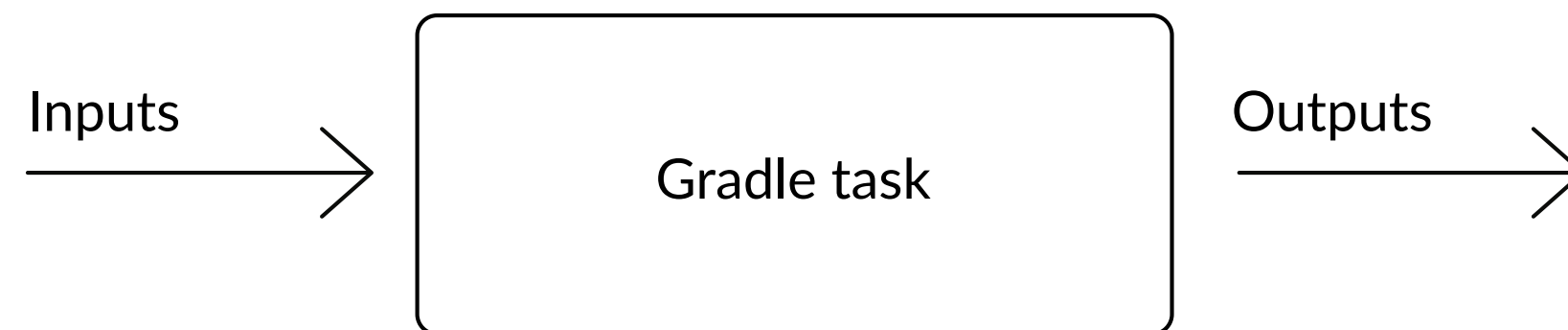


Build Cache – Demo

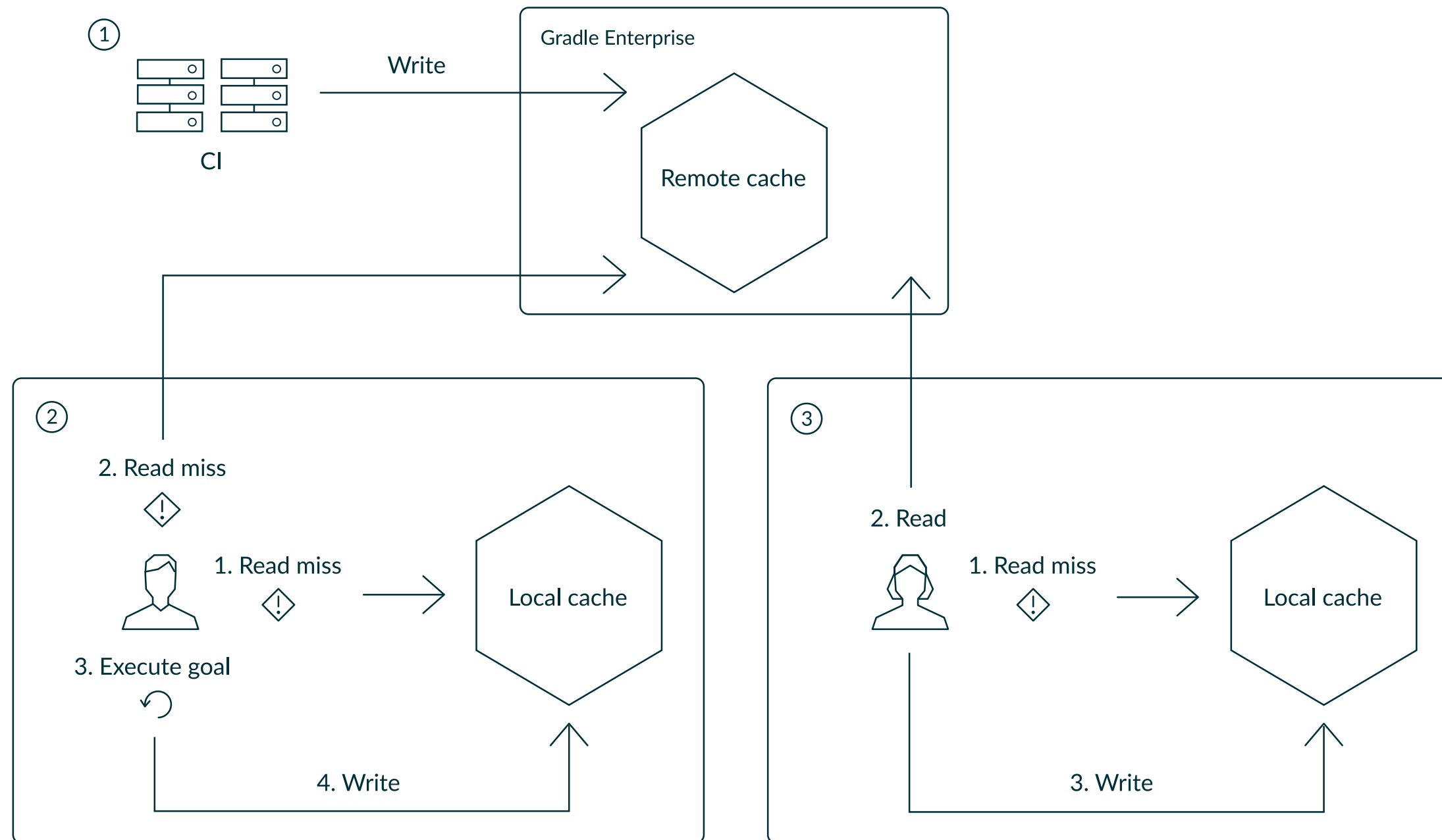


Wie funktioniert der Build Cache?

- ◆ Berechne *cacheKey* eines Tasks/Goals basierend auf seinen Inputs:
 $cacheKey(javaCompile) = hash(sourceFiles, ...)$
- ◆ Speichere die Outputs unter *cacheEntry*:
 $cacheEntry[cacheKey(javaCompile)] = fileTree(classFiles)$



Lokaler und Remote Cache



Zuverlässige Builds



Anforderungen

- ◆ Daten um Verbesserungen/Verschlechterungen festzustellen
 - ◇ Entwickler- und CI-Builds
 - ◇ Zuverlässigkeit
 - ◇ Geschwindigkeit



A decorative vertical pattern on the left side of the slide, consisting of light blue lines forming a complex circuit or network of nodes and connections.

Was sind Build Scans?

- ◆ Aufzeichnung darüber, was in einem Build passiert ist
- ◆ Permanente und teilbare URLs
- ◆ Für Entwickler und Build Engineers



Gradle

```
$> gradle build --scan
...
BUILD SUCCESSFUL in 5s
143 actionable tasks: 29 executed, 76 from cache, 38 up-to-date

Publishing build scan...
https://gradle.com/s/wnftgsuyjleyi
```



Maven

(mit in `.mvn/extensions.xml` registrierter Extension)

```
$> mvn clean verify
...
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 5.262 s
[INFO] Finished at: 2019-04-23T09:55:36+02:00
[INFO] -----
[INFO] 13 goals, 8 executed, 5 from cache, saving at least 16s
[INFO]
[INFO] Publishing build scan...
[INFO] https://gradle.com/s/ypgljbvelzxzs
[INFO]
```





Build Scans – Demo



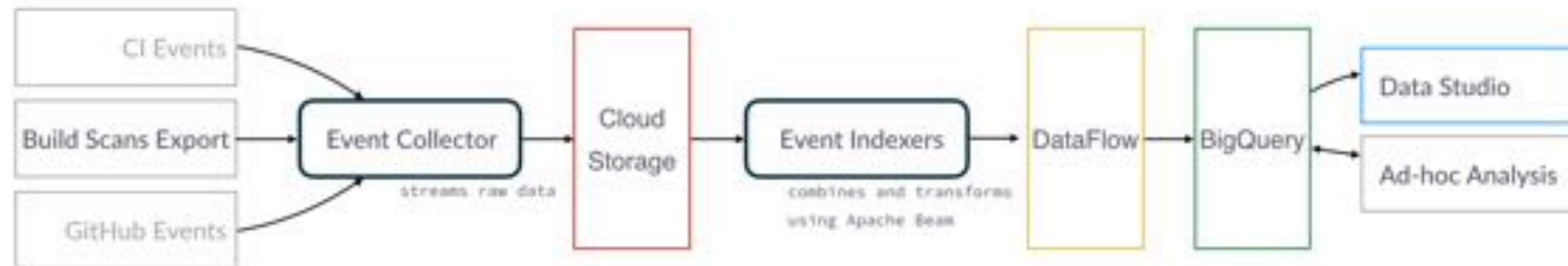
Build Scans

- ◆ Unterstützen **Gradle und Maven**
- ◆ **Öffentliche Scans kostenlos** auf scans.gradle.com
 - ◇ <https://gradle.com/s/wnftgsuyjleyi>
- ◆ **Gradle Enterprise** bietet zusätzliche Features und Hosting auf eigenem Server
 - ◇ Build Comparison
 - ◇ Performance Dashboard
 - ◇ Build Trends



Eigene Analysen

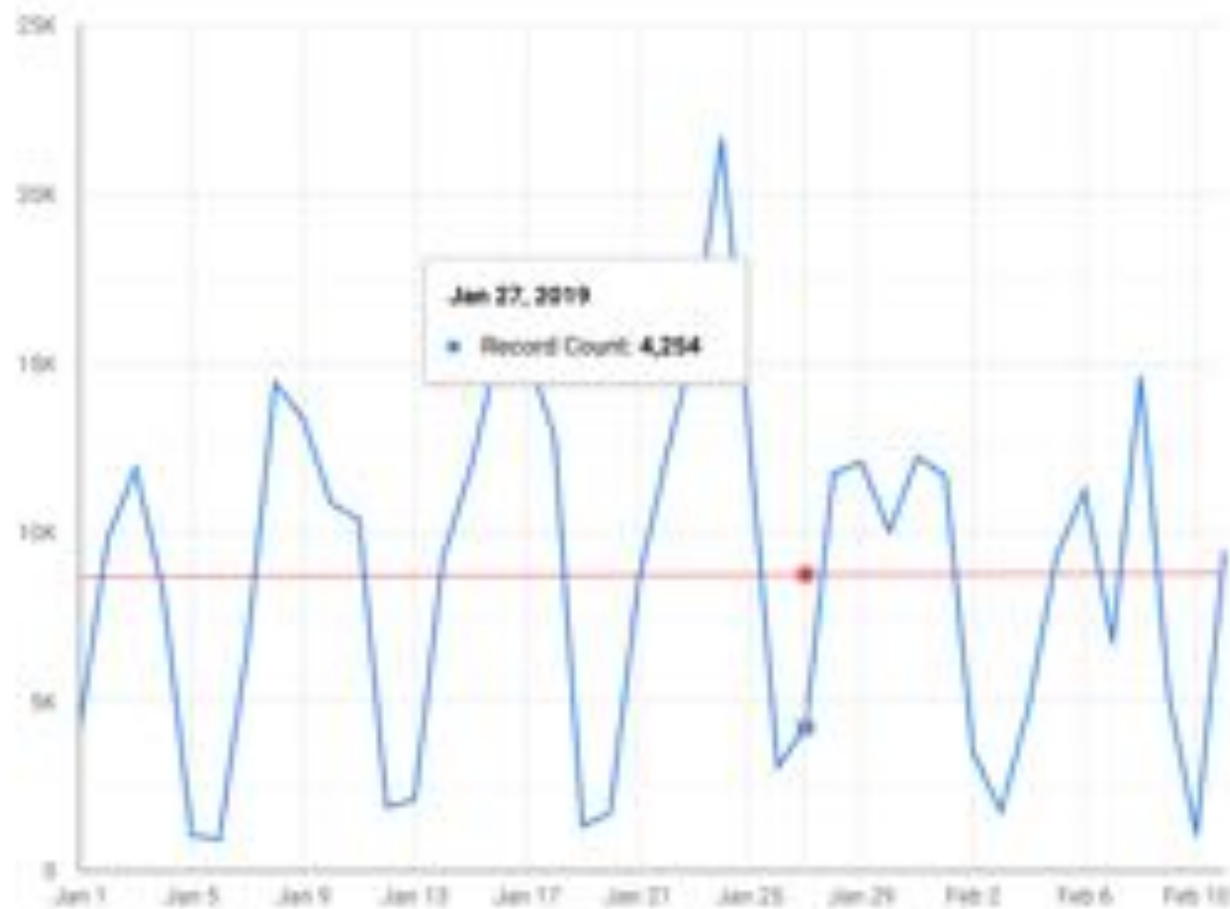
- ◆ Export API benutzen!
- ◆ <https://github.com/gradle/build-analysis-demo>





Builds

367,401



project	total_build_time
gradle	79,363,577,092
gradlehub	1,102,221,218
build-analysis	296,055,753
gradle-kotlin-dsl	205,759,312
dotcom-docs	76,785,278
dotcom	75,337,696
ci-health	64,038
gradle-profiler	21,847
gradle-site-plugin	19,164
Grand total	81,119,841,358

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Breakdown by Test

test_name	task_path	avg_d...	total_d...
org.gradle.performance.regression.android.full.AndroidFull...	performance.fullPerformanceTest	389.2K	
org.gradle.performance.regression.java.JavaNonABIChangePerfo...	performance.fullPerformanceTest	8.2K	
org.gradle.performance.regression.java.JavaABIChangePerforma...	performance.fullPerformanceTest	7.6K	
org.gradle.performance.regression.bulkcache.TestOutputCachin...	performance.fullPerformanceTest	224.0K	
org.gradle.performance.regression.bulkcache.TestOutputCachin...	performance.fullPerformanceTest	7.2K	
org.gradle.performance.regression.bulkcache.TestOutputCachin...	performance.fullPerformanceTest	7.1K	
Grand total		2.1K	118

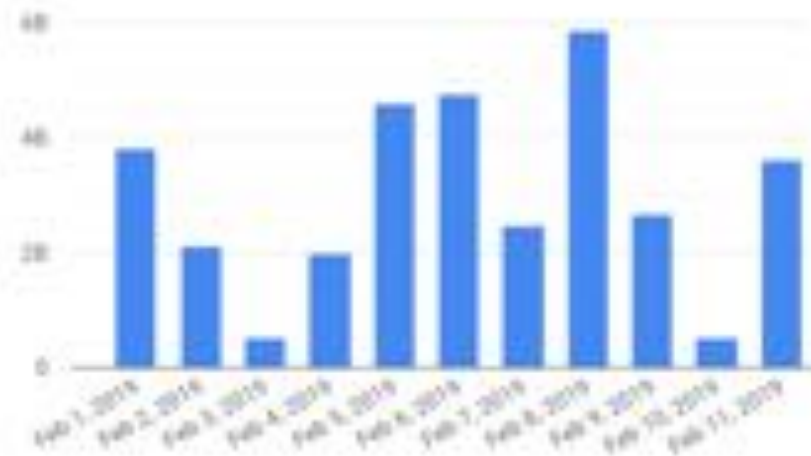
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Test Failure Frequency

test_name	Passed	Failu...	%Passed
org.gradle.integre... resolve alignment ForcingPlatformAlign...	28.9K	97	99.94%
org.gradle.integre... resolve alignment ForcingPlatformAlign...	28.9K	97	99.94%
org.gradle.integre... resolve alignment ForcingPlatformAlign...	29K	97	99.92%
org.gradle.integre... WrapperIntegrationTest does not w...	1.4K	11	99.94%
com.gradle.doc... infrastructure.ServicesVersionInfrastruct...	870	89	98.72%
com.gradle.doc... infrastructure.ServicesVersionInfrastruct...	870	89	98.72%
Grand total	72M	22.9K	99.96%

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Aggregate Test Execution Time



Average Execution Time



Test Execution History

timestamp	buildId	test_name	outcome
Feb 11, 2019	nh6f4azvhuq	org.gradle.inte...	SUCCEEDED
Feb 11, 2019	fo679umwifk	org.gradle.ap...	SUCCEEDED
Feb 11, 2019	ymq4yhqphk	org.gradle.inte...	SUCCEEDED
Feb 11, 2019	03pp64rcvmm	org.gradle.inte...	SUCCEEDED
Feb 11, 2019	3m92pk72bm	org.gradle.plu...	SKIPPED
Feb 11, 2019	xx29kewmqs	org.gradle.pn...	SUCCEEDED
Feb 11, 2019	plowwz7fjyr	org.gradle.ap...	SUCCEEDED

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Materialien

- ◆ **Kostenlose Trainings** auf gradle.com/training, z.B.:
 - ◇ Build Cache Deep Dive
 - ◇ Maven + Gradle Enterprise
- ◆ **YouTube-Kanal**
- ◆ **Gradle Build Tool:** <https://gradle.org>
- ◆ **Gradle Enterprise:** <https://gradle.com>



Vielen Dank!

