Continuous Testing Report

2020

BROADCOM®

Continuous Testing Report 2020: Index

In association with: **BROADCOM**

Continuous Testing Report 2020: Key messages 1/2

Clear signs of alignment of CT efforts with business outcomes, but lack of skilled practitioners a challenge

- 40% respondents measuring CT effectiveness via a) user feedback, adoption of new functionalities, and b) business KPIs like ROI/ROE

- 49% use data from the pipeline and production to assist in designing their test strategy

- 62% cite challenges finding skilled professionals to build their continuous testing strategy

Artificial intelligence in continuous testing

- 42% cite advanced use cases in CT, including predictive test selection and optimization (as one of the top 3 types)

- 36% say skills in data analysis are a focus area in 2020, 33% seek skills in testing AI systems

- 41% optimizing test schedules, and 40% release risk prediction.

Organizations are struggling to make shift-left a reality

- 35% say that very little or no testing is done by non-dedicated testers

- More than half (56%) say in-sprint testing is a challenge

- Teams still struggle with fundamentals of CT with little to no year-on-year change with: clarity of requirements, test data, test environments, complex test configuration

Shift-right gains momentum but maturity levels still low

- 39% of respondents say they use crowd testing. Chaos testing: 32%. Testing in production: 45% (no change from 2019)

- Since production data is typically voluminous (impossible to process manually) testers now need to develop skills in data analytics, mining and ML

- 43% use production data to measure the effectiveness of CT processes

Test organization: Hybrid COEs pave the way to continuous testing

- 40% say testing is still mostly supported by a specialized quality engineering (QE) team

- To support the democratization of quality, many organizations are maintaining a hybrid model

- Hybrid approach: QA expertise at the heart of every dev team working alongside a central quality engineering office. We see teams adopting a hybrid approach in the transformation to continuous testing

High autonomy impacts standardization, collaboration and QA ownership

- Focus is on quality-at-speed, efficiency, but gaps in end-to-end automation, orchestration, visibility, coordination are challenges

- As core testing teams get replaced by embedded developer/feature teams, orchestration in agile and DevOps needs more attention

- QA expertise must be embedded in these integrated teams to avoid serious business risks (velocity, volume, costs)

- Constraints on right-skilling, provisioning of frameworks and tooling must be addressed through a centralized enablement/empowerment team

About the Continuous Testing Report 2020

Methodology

Online survey and some telephone interviews

Audience profile

Senior decision makers from large, enterprise organizations globally

Number of respondents

N = 500

Fieldwork dates

October 2019 to Jan 2020

Regions covered

- 12% Germany
- 12% UK
- 11% Benelux
- 11% Nordics
- 23% US
- 6% Canada
- 12% France
- 12% Italy

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About the Continuous Testing Report 2020

Job titles included

Job title	%
IT Director	14%
Developer	13%
CTO/Head of product	13%
QA/Testing Manager/Leader	13%
VP Apps	12%
Software Architect	10%
Scrum master	9%
CIO	9%
CDO	7%

Survey sample by employee strength

Employee strength	%
500 - 999 employees	31%
1000 - 4999 employees	27%
5000 - 10,000 employees	27%
More than 10,000 employees	16%

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Sector coverage

Percentage	Sector
15%	Financial Services industry
13%	Consumer goods and retail/ Distribution and Logistics
13%	High Tech
11%	Telecommunications, Media and Entertainment
10%	Manufacturing
9%	Energy, Utilities, and Chemicals
9%	Healthcare and Life Sciences
8%	Automotive
6%	Transportation
5%	Public Sector/ Government

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Section 1
Continuous testing strategy

Current state of continuous testing maturity

2020 Total

- 31% — Some teams have adopted continuous testing
- 27% — Many teams have adopted continuous testing
- 22% — Continuous testing is fully integrated into our software delivery lifecycle
- 12% — We are experienced in continuous testing and it is a part of many development projects
- 9% — We have not begun adopting the process

Q1. What is the current state of Continuous Testing maturity in your organization? Single coded question

Continuous testing practices used

2020 Total

Practice	2020 Total
Testing in production	45%
Monitoring our CT pipeline to improve release processes and make test cycles more efficient	42%
Using analytics from operations to determine or optimize test coverage	39%
Using a model-based approach to optimize our test coverage with the minimum number of test cases	38%
Using machine learning to optimize our CT strategy	37%
Delivering test data on demand	36%
Automating a higher ratio of functional testing	34%
Automated provisioning of test environments	34%
Incorporating non-functional testing in the CT process	30%

Q2. Please indicate the Continuous Testing (CT) practices currently being used or the ones you are planning to adopt in 2020?

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How challenging each topic is when implementing CT - 2020

Legend: ■ 7 Extremely challenging ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 Not challenging at all

Topic	7	6	5	4	3	2	1
Assessing the performance of our apps/systems from an end-user standpoint	20%	21%	22%	19%	8%	7%	3%
Designing and maintaining meaningful test cases that align with end user expectations	18%	24%	26%	15%	10%	5%	3%
Automating functional testing, e.g. UI	17%	21%	23%	15%	11%	7%	7%
Finding skilled professionals to build our CT strategy	16%	20%	26%	15%	10%	7%	6%
Achieving in-sprint testing	15%	17%	24%	19%	12%	8%	6%
Getting visibility throughout the development lifecycle	14%	23%	26%	15%	11%	7%	4%
Embedding non-functional testing as part of our pipeline	13%	20%	24%	17%	10%	9%	6%
Accessing test environments and test data on-demand	12%	24%	24%	16%	11%	7%	5%

Q3. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to implementing Continuous Testing?

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How challenging each topic is when implementing CT - 2019

7 Point Rating Scale

■ 7 Extremely challenging ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 Not challenging at all

Topic	7	6	5	4	3	2	1
Assessing the performance of our apps/systems from an end user standpoint	19%	22%	21%	20%	8%	6%	3%
Embedding security testing as part of our pipeline	18%	21%	25%	19%	10%	6%	2%
Designing and optimizing meaningful test cases	17%	24%	25%	15%	11%	5%	3%
Automating functional testing	17%	21%	26%	17%	12%	5%	2%
Getting the right coverage of end user expectations and requirements in the test set	17%	23%	23%	21%	10%	5%	2%
Getting the right test data on time	15%	26%	26%	17%	8%	5%	3%
Getting visibility throughout the development lifecycle	15%	23%	27%	16%	10%	5%	3%
Accessing test environments on-demand	15%	24%	24%	18%	10%	6%	3%

Q3. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to implementing Continuous Testing?

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How challenging each topic is when implementing CT – 2020 and 2019 trend

Top 3 box – 7: Extremely challenging, 6 and 5

■ 2020 Total ■ 2019 Total

Topic	2020	2019
Designing and maintaining meaningful test cases that align with end user expectations	67%	66%
Getting visibility throughout the development lifecycle	63%	66%
Assessing the performance of our apps/systems from an end-user standpoint	63%	63%
Finding skilled professionals to build our CT strategy*	62%	
Accessing test environments and test data on-demand	61%	62%
Automating functional testing, e.g. UI	60%	64%
Embedding non-functional testing as part of our pipeline*	57%	
Achieving in-sprint testing*	56%	

*New option in 2020 survey

Q3. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to implementing Continuous Testing?

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Measuring the effectiveness of continuing testing processes

Average number of mentions: 3

■ 2020 Total

Metric	2020 Total
Production data	43%
User feedback and adoption of new functionality	40%
Business KPIs for the application: e.g. return on investment, return on equity	40%
Defects found at each phase of the pipeline	37%
Requirements coverage	34%
Level/percentage of automation	34%
Code coverage	30%
Defect leakage in production	29%

Q4. How do you measure the effectiveness of your Continuous Testing processes?Multi-coded question

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Current method for testing digital applications

Legend: 2020 Total, 2019 Total

Method	2020	2019
We use data from the pipeline and production to assist in designing our test strategy*	49%	
We manually collect feedback from end users (focus groups, work groups)	45%	44%
We assess production logs and crashes	44%	44%
We use crowd testing to expand our lab capacity (e.g. social media feeds)	39%	39%
We stick to delivering minimum viable product	37%	36%
We perform chaos testing*	32%	

*New option in 2020 survey

Q5. How do you currently test your digital applications to ensure they meet real-world requirements? Multi-coded question

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Section 2

The quality engineering organization

Development and testing models adopted

Average number of mentions: 2

■ 2020 Total

Model	2020 Total
Agile or Agile like	40%
Our own model or principle	36%
BDD (Behaviour Driven Development	36%
TDD (Test Driven Development)	35%
DevOps	34%
Context-driven development	33%
Waterfall or waterfall-like	31%
Don't follow any structured model	1%

Q6. What development and testing models have you adopted? Multi-coded question

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Development and testing models adopted

'Agile or Agile like'
■ Respondents selecting 'Agile or Agile like'

Model	Percentage
Agile or Agile like	100%
Our own model or principle	44%
BDD (Behaviour Driven Development	39%
TDD (Test Driven Development)	38%
DevOps	38%
Context-driven development	37%
Waterfall or waterfall-like	34%
Don't follow any structured model	0%

Q6. What development and testing models have you adopted? Multi-coded question

In association with: BROADCOM®

Development and testing models adopted

'Our own model or principle'
■ Respondents selecting 'Our own model or principle'

Model	Percentage
Our own model or principle	100%
Context-driven development	40%
Agile or Agile like	38%
BDD (Behaviour Driven Development	38%
Waterfall or waterfall like	38%
TDD (Test Driven Development)	35%
DevOps	34%
Don't follow any structured model	0%

Q6. What development and testing models have you adopted? Multi-coded question

In association with: BROADCOM®

Development and testing models adopted

Legend: 'BDD' ■ 2020 Total

Model	2020 Total
BDD (Behaviour Driven Development	100%
TDD (Test Driven Development)	44%
Agile or Agile like	41%
Context-driven development	40%
DevOps	39%
Our own model or principle	38%
Waterfall or waterfall like	37%
Don't follow any structured model	0%

Q6. What development and testing models have you adopted? Multi-coded question

In association with: BROADCOM®

Current test organization

Average number of mentions: 2   ■ 2020 Total

Testing is mostly supported by a specialized quality engineering team — **40%**

We have a centralized test environment management team — **37%**

Operational control over testing delivery and outcomes is handled by a specific team or person — **35%**

Testing is directly handled by autonomous Agile teams — **33%**

End-to-end testing is addressed by a team of end-to-end specialists — **33%**

Testing is delivered as a service — **30%**

Little or no testing is done — **19%**

Q7. How would you describe your current test organization? Multi-coded question

In association with: BROADCOM

Current test organization

Average number of mentions: 2

■ Respondents selecting 'Testing is mostly supported by a specialized quality engineering team'

Testing is mostly supported by a specialized quality engineering team	100%
We have a centralized test environment management team	39%
Testing is delivered as a service	36%
Operational control over testing delivery and outcomes is handled by a specific team or person	32%
Testing is directly handled by autonomous Agile teams	31%
End-to-end testing is addressed by a team of end-to-end specialists	31%
Little or no testing is done	20%

Q7. How would you describe your current test organization? Multi-coded question

In association with: BROADCOM®

Current test organization

Legend: ■ 'We have a centralized test environment management team'

Category	Percentage
We have a centralized test environment management team	100%
Testing is mostly supported by a specialized quality engineering team	41%
Operational control over testing delivery and outcomes is handled by a specific team or person	38%
Testing is delivered as a service	38%
Testing is directly handled by autonomous Agile teams	35%
End-to-end testing is addressed by a team of end-to-end specialists	32%
Little or no testing is done	17%

Q7. How would you describe your current test organization? Multi-coded question

In association with: BROADCOM

Current test organization

Legend: ■ Respondents selecting 'Operational control over testing delivery and outcomes is handled by a specific team or person'

Category	Percentage
Operational control over testing delivery and outcomes is handled by a specific team or person	100%
We have a centralized test environment management team	41%
End-to-end testing is addressed by a team of end-to-end specialists	41%
Testing is mostly supported by a specialized quality engineering team	36%
Testing is directly handled by autonomous Agile teams	35%
Testing is delivered as a service	35%
Little or no testing is done	26%

Q7. How would you describe your current test organization? Multi-coded question

In association with: BROADCOM®

Testing done by non-dedicated testers

Legend: ■ 2020 Total

- None: 2%
- Very little: 33%
- Some: 40%
- Almost All: 20%
- All Testing: 4%

Q8. How much of your testing is done by non-dedicated-testers? Single coded question

In association with: BROADCOM®

Skills important in coming year

Rank 1/2/3 ■ 2020 Total

Skill	Percentage
Security testing	37%
Data analysis	36%
Testing AI systems	33%
Test design	31%
Performance and load testing	30%
Test automation patterns, principles, practices	25%
API testing	24%
Test environments	23%
Front-end technologies and testing	22%
Embedded systems and testing	20%
General testing methodologies	19%

Q9. In your test organization, which skills are you most focused on in the coming year? Please select the top 3. Ranking question

In association with: BROADCOM®

Skills important in coming year

Rank 1 only ■ 2020 Total

Skill	2020 Total
Security testing	15%
Data analysis	12%
Testing AI systems	12%
Test design	12%
Performance and load testing	9%
Test automation patterns, principles, practices	8%
API testing	8%
Test environments	7%
Front-end technologies and testing	6%
Embedded systems and testing	5%
General testing methodologies	5%

Q9. In your test organization, which skills are you most focused on in the coming year? Please select the top 3. Ranking question

In association with: BROADCOM®

Section 3

Requirements and design

Legend: 2020 Total, 2019 Total

Full dynamic modelling approach, with strong integration into other lifecycle tools: 31% (2020), 32% (2019)

Full dynamic requirements modelling, capturing dependencies, constraints, etc: 27% (2020), 26% (2019)

Via a tool (e.g. project management), but in a relatively static/standalone manner: 23% (2020), 21% (2019)

Mostly done via paper, whiteboards and/or Office documents: 19% (2020), 20% (2019)

Q10. How would you sum up your current approach to requirements gathering, analysis and engineering? Single-coded question

In association with: BROADCOM®

Frequency of requirements that need clarification

27% All of the time - we always have to go back for additional clarification

38% Most of the time - we spend a lot of time going back and forth

27% Some of the time - some are right, some are unclear

5% Rarely - we have great alignment in this area

3% Never - this isn't a problem in our organization

■ 2020 Total

Q11. How often do requirements need clarification to get alignment between the business and development? Single-coded question

In association with: ● BROADCOM®

How challenging each topic is when ensuring test case coverage - 2020

7 Point Rating Scale

■ 7 Extremely challenging ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 Not challenging at all

Topic	7	6	5	4	3	2	1
We generally end up with far more test cases than we need, with lots of overlap and redundancy	18%	16%	21%	20%	11%	7%	7%
Maintaining appropriate test coverage as business requirements change	17%	20%	28%	17%	9%	5%	4%
Despite best efforts, we frequently end up with gaps in our test-case coverage	12%	21%	23%	22%	11%	8%	3%

Q12. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to ensuring test case coverage? Single code per statement

How challenging each topic is when ensuring test case coverage - 2019

7 Point Rating Scale

■ 7 Extremely challenging ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 Not challenging at all

Statement	7	6	5	4	3	2	1
We generally end up with far more test cases than we need, with lots of overlap and redundancy	19%	16%	20%	20%	12%	7%	5%
Maintaining appropriate test coverage as requirements change is a big challenge	18%	20%	29%	18%	10%	3%	2%
'In-sprint' requirements changets make test coverage maintenance particularly hard	18%	20%	23%	24%	8%	5%	2%
Despite best efforts, we frequently end up with gaps in our test-case coverage	14%	22%	24%	22%	8%	8%	2%

Q12. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to ensuring test case coverage? Single code per statement

How challenging each topic is when ensuring test case coverage - 2019 and 2020 trend

Top 3 box –7: Extremely challenging, 6 and 5

■ 2020 Total ■ 2019 Total

Maintaining appropriate test coverage as business requirements change
- 2020: 65%
- 2019: 67%

Despite best efforts, we frequently end up with gaps in our test-case coverage
- 2020: 56%
- 2019: 60%

We generally end up with far more test cases than we need, with lots of overlap and redundancy
- 2020: 55%
- 2019: 56%

Q12. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to ensuring test case coverage? Single code per statement

Section 4
Test orchestration

Most important test orchestration capabilities

Average number of mentions: 3

■ 2020 Total   ■ 2019 Total

Capability	2020	2019
Automated testing cycles/automated toolchain	36%	35%
Complete audit trail of testing activities from development through production	36%	35%
Increasing test cycle accuracy and efficiency*	36%	
Consolidated test and release pipeline (CI/CT/CD)	36%	35%
Application quality insights at all stages	35%	33%
Fast feedback loops on test results supporting in-sprint testing	33%	33%
Continuous delivery pipeline visibility	32%	32%
Single place for cross-team collaboration	31%	32%
Release health reports	26%	27%

*New option in 2020 survey

Q13. What test orchestration capabilities are most important to you? Multi-coded question

In association with: BROADCOM®

Frequency of deployment of a new build

Legend: ■ 2020 Total ■ 2019 Total

Category	2020	2019
Several times per hour	14%	13%
Hourly	12%	13%
Daily	31%	32%
Weekly	30%	29%
Monthly	10%	11%
Less often than monthly	3%	2%

Q14. How often does your team typically deploy a new build? Single-coded question

In association with: BROADCOM

Challenges to test orchestration

7 Point Rating Scale

■ 7 Extremely challenging ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 Not challenging at all

Topic	7	6	5	4	3	2	1
Release complexity: releases often involving multiple applications with dependencies and different technology with potentially conflicting resources.	15%	18%	25%	19%	10%	8%	5%
Standardizing and automating the release processes (e.g. configuration of applications)	12%	20%	24%	20%	10%	8%	6%
Understanding what needs to be tested	12%	19%	24%	17%	10%	10%	8%
Identify the bottlenecks by gathering data across the entire release pipeline	12%	18%	29%	17%	11%	7%	5%
Coordinating and sharing knowledge across the Continuous Delivery/Continuous Testing toolchain	11%	22%	25%	14%	15%	8%	6%

Q15. On a scale of 1 – 7 (where 1 = not challenging at all and 7 = extremely challenging), how challenging is each topic when it comes to test orchestration? Single-code per option

In association with: ● BROADCOM®

Addressing advanced use cases

Rank 1/2/3 ■ 2020 Total

Use case	2020 Total
Use predictive test selection and optimization	42%
Optimize test schedule and effort in a risk-free manner	41%
Automatic defect remediation	41%
Correlate user behaviour with requirements to define test strategy	40%
Release risk prediction	40%
Automated code coverage	36%
Self-healing test scripts	31%
Rate an app's trustworthiness	29%

Q16. Which advanced use cases are you able to address or planning to address in 2020? Please select the top 3. Ranking question

In association with: BROADCOM®

Addressing advanced use cases

Rank 1 only   ■ 2020 Total

Use case	2020 Total
Use predictive test selection and optimization	16%
Correlate user behaviour with requirements to define test strategy	15%
Optimize test schedule and effort in a risk-free manner	15%
Release risk prediction	14%
Automatic defect remediation	12%
Automated code coverage	12%
Self-healing test scripts	9%
Rate an app's trustworthiness	7%

Q16. Which advanced use cases are you able to address or planning to address in 2020? Please select the top 3. Ranking question

In association with: ● BROADCOM®

Section 5
Lifecycle

Current level of automation

Q17. What is the current level of automation for each of the following: Single code per option

Section 6
Test data

Test data practices adopted and planned

Rank 1/2/3 ■ 2020 Total

Practice	2020 Total
Test data coverage is optimized (what to test, how much to test, when to stop testing)	46%
Compliant test data to address GDPR and other regulations	41%
Dynamic test data generation from production	38%
Test data is fully integrated within our CT pipeline	38%
The delivery of test data is expedited through virtualization	36%
Test data can easily be found, refreshed and reserved	36%
Test data can be aged to support time-based testing	35%
Synthetic test data is generated automatically	30%

Q18. Which test data practices have you adopted or planning to adopt as a top priority in 2020? Please select the top 3. Ranking question

In association with: BROADCOM®

Test data practices adopted and planned

Rank 1 only ■ 2020 Total

Practice	Percentage
Dynamic test data generation from production	17%
Compliant test data to address GDPR and other regulations	16%
Test data is fully integrated within our CT pipeline	13%
Test data coverage is optimized (what to test, how much to test, when to stop testing)	12%
Test data can easily be found, refreshed and reserved	12%
The delivery of test data is expedited through virtualization	11%
Test data can be aged to support time-based testing	11%
Synthetic test data is generated automatically	9%

Q18. Which test data practices have you adopted or planning to adopt as a top priority in 2020? Please select the top 3. Ranking question

In association with: BROADCOM®

Time spent searching, managing and generating test data

Average time spent: 44%

■ 2020 Total

		51%		
			26%	
	13%			9%
0%				
0%	1 - 25% of their time	26 - 50% of their time	51 - 75% of their time	more than 25% of their time

Q19. How much time does your team allocate to searching, managing, maintaining, and generating test data? Single-coded question

In association with: **BROADCOM®**

Core test data issues

Rank 1/2/3 ■ 2020 Total

Issue	
Testing teams are dependent on database administrators to get the data they needt	52%
Data is typically spread across multiple databases	49%
Having to maintain the right test data set versions with different test versions	47%
Finding the relevant test data in large test data sets	45%
Lack of integrated test data across systems and teams	40%
Compliant test data	37%
Data is not available on-demand	31%

Q20. Which core test data issues are you still facing? Please select the top 3. Ranking question

In association with: BROADCOM®

Core test data issues

Rank 1 only — ■ 2020 Total

Issue	2020 Total
Finding the relevant test data in large test data sets	17%
Having to maintain the right test data set versions with different test versions	16%
Testing teams are dependent on database administrators to get the data they needt	15%
Data is typically spread across multiple databases	15%
Lack of integrated test data across systems and teams	14%
Compliant test data	12%
Data is not available on-demand	11%

Q20. Which core test data issues are you still facing? Please select the top 3. Ranking question

In association with: BROADCOM

Section 7
Test environments

State of test environment management

2020 Total

- 7% — We have no ad hoc or formal process
- 25% — Some teams follow a formal process for TEM
- 35% — Many teams follow a formal process for TEM
- 19% — Most teams follow a formal process for TEM
- 14% — A formal process for TEM is followed throughout the organization

Q21. What is the state of your Test Environment Management (TEM)? Single coded question

In association with: BROADCOM

Test environment practices adopted or planned

Average number of mentions: 2

■ 2020 Total

53%

46%

45%

37%

Focus on cloud-based provisioning to improve speed of provisioning and optimize costs

Establish a scalable shared services team to support test environment needs

Explore and implement service virtualization where possible

Implement self-provisioning solutions based on containerization

Q22. Which test environment practices have you adopted or planning to adopt as a top priority in 2020? Multi-coded question

In association with: ◆ BROADCOM®

Time spent on test environments

Average number spent: 42%

■ 2020 Total

0%	23%	41%	24%	12%
0%	1 - 25% of their time	26 - 50% of their time	51 - 75% of their time	more than 25% of their time

Q23. How much time does your team spend building, managing, maintaining, and decommissioning test environments? Single-coded question

In association with: ● BROADCOM®

Test environment issues impeding improvement in CT effort

Rank 1/2/3   ■ 2020 Total

Issue	2020 Total
Misalignment between the test and production environments	41%
Complex test configuration	40%
Complex test configuration while migrating scripts to the cloud	40%
Inability to instantiate test environments in an automated way	39%
Cost of environment provisioning	37%
Wait time for test environments	36%
Shared usage by teams	34%
Incomplete test environments	33%

Q24. Which of the following testing environment related issues impede your efforts to improve Continuous Testing? Please select the top 3. Ranking question

In association with: BROADCOM®

Test environment issues impeding improvement in CT effort

Rank 1 only   ■ 2020 Total

Issue	2020 Total
Misalignment between the test and production environments	15%
Complex test configuration	15%
Complex test configuration while migrating scripts to the cloud	14%
Inability to instantiate test environments in an automated way	12%
Shared usage by teams	12%
Wait time for test environments	12%
Cost of environment provisioning	11%
Incomplete test environments	9%

Q24. Which of the following testing environment related issues impede your efforts to improve Continuous Testing? Please select the top 3. Ranking question

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About Capgemini and Sogeti

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