

How we built Iaas in testing

Yulia Borisenko
Denis Bozhkov

Our great team



Today is about getting to know each other us and our work.

We hope that it will be useful for you



Yulia Borisenko

Team-lead Automation Team
Dell Technologies



Denis Bozhkov

Tech-lead In-Market Team
Dell Technologies

PowerStore Project

ver. 1.0 went GA 05.05.2020



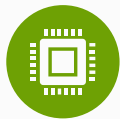
Resources in QA

From web to hardware, from application to OS testing there are a lot of tools required

Time
Efficiency



Hardware
Servers, storage, smartphones, VMs etc.



Team
Number of team-members, qualification



Software
Licenses, soft, OS, applications etc.



Resource management options

Informal

Slack, Skype or Teams chat, small-talk, any informal way



Shared environment

Single prepared environment shared between all team members



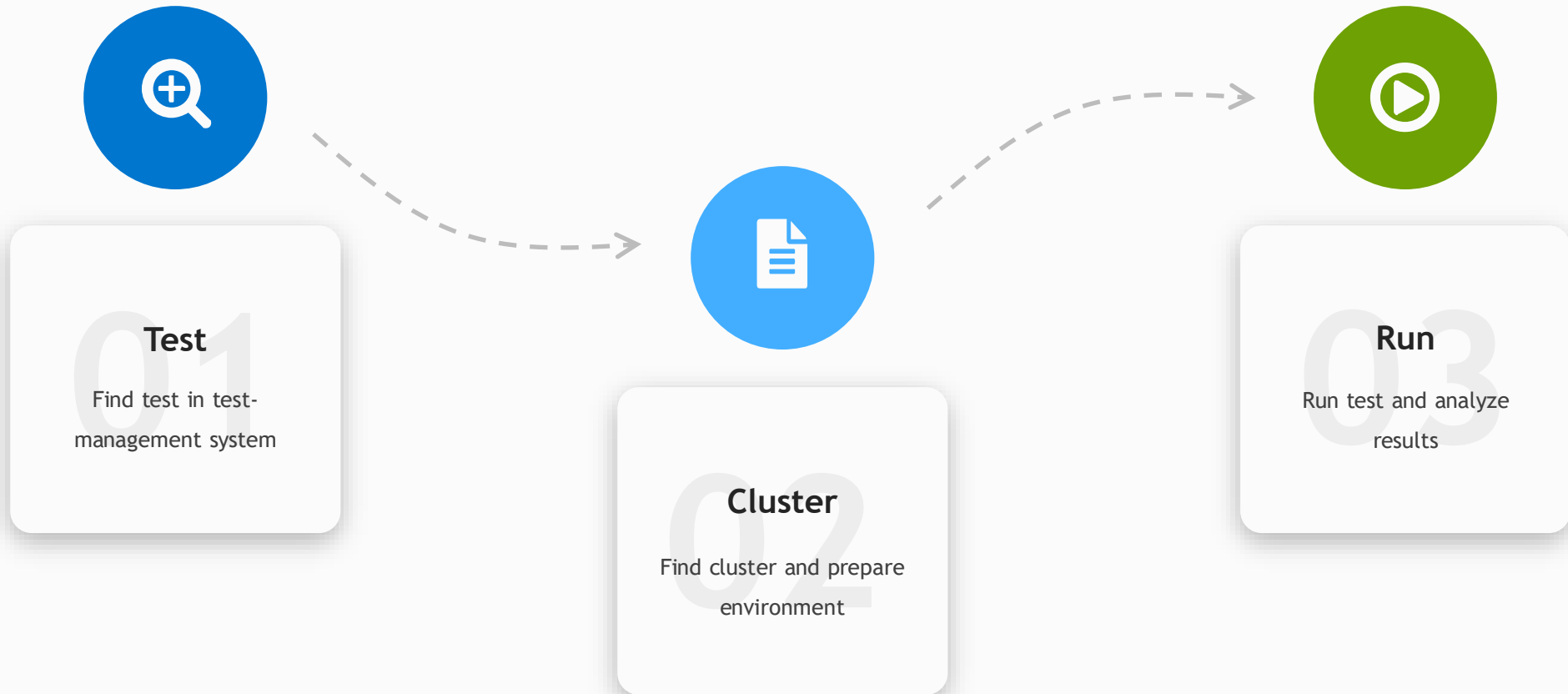
Confluence/Excel

Any document or resource with shared access for all team members



Process in the very beginning

Cycle duration: 3 months



History Timeline



CURRENT PHASE:

Confluence + autotests

Manual environment preparation

3m

Cycle duration

3 months



Process issues

Logging

Decentralized logging from all components

Manual

Manual mapping tests docs with autotests in Framework

Environment

A lot of manual intervention required like environment preparation

Monitoring

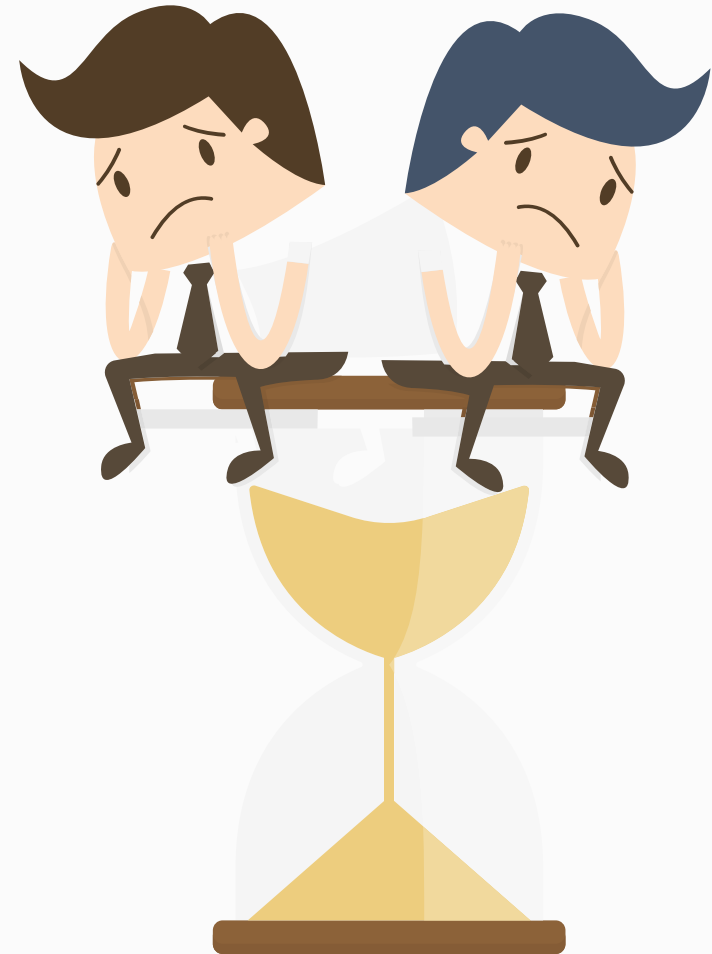
Requires close monitoring on every step during test run

Reporting

Difficult progress monitoring and reporting for managers

Human factor

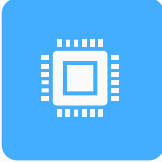


Strong influence of the human factor and golden resource problem



Storage Testing

It is a complicated process involving variety of factors, dependencies and different approaches



-  **Hardware-specific**
Clusters differ in a set of hardware like many disks vendors and sizes etc.
-  **Resource specific**
Necessary to have specific attributes of clusters for different test-scenarios
-  **Time-consuming**
The average test run time is about 8 hours. Some may take up to 1 week.

Project specific

It is a complicated project involving engineering teams across the world as well as extreme number of lab equipment

Engineers **200+**

From different cultures working in different teams in variety of offices

Labs **4+**

In different parts of the world to satisfy the requirements of engineers



10+ Time zones

From Pacific Standard Time to China Standard Time with 15 hours time difference

1 000+ Storages

And 3000+ more servers to generate traffic load and test interoperability

01

Cloud

Private cloud for servers/OS reservation

02

Shared

Shared infrastructure with fixed assignment

03

SaaS

Application reservation for specific time

Resource management options

ADVANCED

Additional options for resource management, when basic are not enough.


Dell Resource Management



LABJUNGLE

Hardware-specific


The LABJUNGLE card features a dark blue background with a white microchip icon. It includes four small Dell logos: one in the top-left, one in the top-right, one in the bottom-left, and one in the bottom-right. The card is divided into a blue top section and a white bottom section by a wavy line.



SWARM

Resource-specific

The SWARM card features a light blue background with two white interlocking gears. It includes four small Dell logos: one in the top-left, one in the top-right, one in the bottom-left, and one in the bottom-right. The card is divided into a light blue top section and a white bottom section by a wavy line.

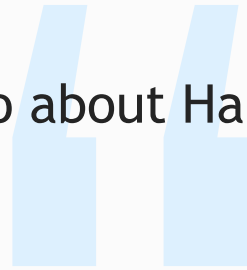


XPOOL

Time-consuming

The XPOOL card features a green background with a white clock face icon. It includes four small Dell logos: one in the top-left, one in the top-right, one in the bottom-left, and one in the bottom-right. The card is divided into a green top section and a white bottom section by a wavy line.

DB with all info about Hardware resources



1 Appliances found										
Appliance Name	Group	Owner	Lessee	Profile	Gen	Disk Type	Pool Status	Service Status	Tags	Notes
WX-D1216 	QA-SRM			None	EX		InPool	InService	31TB_CAPACITY, 384GB, C12, ClearskyX, ColdspellX, CopperBlade, DPE:NVME:MTC_8GBMN, DPE:NVME:PB23F04T, DRM, EX2, FC, HCI_HW, NvmeScaleUp_M, PhysicalLG, PhysicalLG-2, RAID6, SAN_HW, WX-D1216, cp_power-8406, iSCSI, no_test_fe_connectivity, powerActionSupported	
<ul style="list-style-type: none">bricks<ul style="list-style-type: none">WX-D1216<ul style="list-style-type: none">WX-D1216WX-D1216-aWX-D1216-bDPE-WX-D1216LG<ul style="list-style-type: none">nc5199215nc5199217Switch<ul style="list-style-type: none">dur-l1d4k-32be-dur-l1d5k-32be-usd70-22-vf32av										

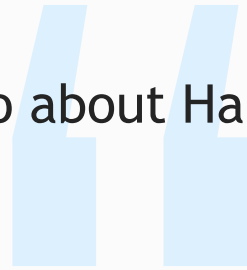
LABJUNGLE

hardware-specific

The tool shows what any cluster consists of. Tags contain all information about the hardware

[See more](#)

DB with all info about Hardware resources



1 Appliances found										
Appliance Name	Group	Owner	Lessee	Profile	Gen	Disk Type	Pool Status	Service Status	Tags	Notes
WX-D1216	QA-SRM			None	EX		InPool	InService	31TB_CAPACITY, 384GB, C12, ClearskyX, ColdspellX, CopperBlade, DPE:NVME:MTC_8GBMN, DPE:NVME:PB23F04T, DRM, EX2, FC, HCI_HW, NvmeScaleUp_M, PhysicalLG, PhysicalLG-2, RAID6, SAN_HW, WX-D1216, cp_power-8406, iSCSI, no_test_fe_connectivity, powerActionSupported	

WX-D1216

bricks

- WX-D1216
 - WX-D1216
 - WX-D1216-a
 - WX-D1216-b
 - DPE-WX-D1216

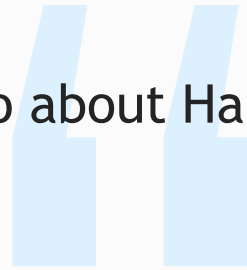
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DB with all info about Hardware resources



1 Appliances found										
Appliance Name	Group	Owner	Lessee	Profile	Gen	Disk Type	Pool Status	Service Status	Tags	Notes
WX-D1216 	QA-SRM			None	EX		InPool	InService	31TB_CAPACITY, 384GB, C12, ClearskyX, ColdspellIX, CopperBlade, DPE:NVME:MTC_8GBMN, DPE:NVME:PB23F04T, DBM_EX2	
bricks										
WX-D1216										
WX-D1216										
LG										
nc5199215 nc5199217										
Switch										
dur-11d4k-32be-										
dur-11d5k-32be-										
usd70-22-vf32av										
cp_power-8406, iSCSI, no_test_fe_connectivity, powerActionSupported										

LABJUNGLE

hardware-specific

The tool shows what any cluster consists of.
Tags contain all information about the hardware

[See more](#)

DB with all info about Hardware resources

1 Appliances found							
Appliance Name	Group	Owner	Lessee	Profile	Gen	Disk Type	Pool Status
WX-D1216 bricks └─ WX-D1216 ├─ WX-D1216 ├─ WX-D1216-a WX-D1216-b └─ DPE-WX-D1216 LG ├─ nc5199215 nc5199217 Switch ├─ dur-11d4k-32be- dur-11d5k-32be- usd70-22-vf32av	QA-SRM			None	EX		InPool

Tags	Notes
31TB_CAPACITY, 384GB, C12, ClearskyX, ColdspellX, CopperBlade, DPE:NVME:MTC_8GBMN, DPE:NVME:PB23F04T, DRM, EX2, FC, HCI_HW, NvmeScaleUp_M, PhysicalLG, PhysicalLG-2, RAID6, SAN_HW, WX-D1216, cp_power- 8406, iSCSI, no_test_fe_connectivity, powerActionSupported	

LABJUNGLE

hardware-specific

The tool shows what any cluster consists of.
Tags contain all information about the hardware

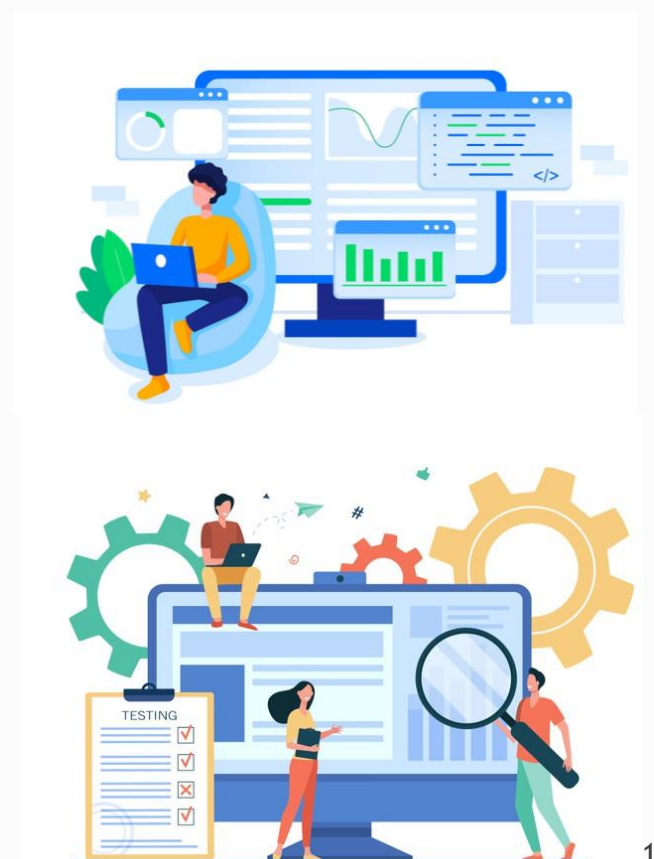
[See more](#)

SWARM

Tool for storing environment info as well as essential interchangeable cluster configuration parameters required for deployment



DATA SUMMARY SHEET		STORAGESYSTEM WX-D1216	
Asset Information		State IPs Hardware Firmware Software Pools Reservations TestBeds Notes Crawls	
Name	WX-D1216	SERVICE STATE	
SPE SN		State:	In service
PSNT		Details:	Enter service state details.
Location		Set By:	
Lab	Lab 1	Issue #:	
Title	32AW	Date:	Nov 12, 2019 1:04 AM
Ownership		EXEMPT STATUS	
Owner		State:	<input type="radio"/> Exempt from NDU
Responsible Manager		Details:	Enter exempt status details.
Reserved By	Available	Set By:	N/A
Hardware Configuration		Date:	N/A
Version			
Model	Warnado EX 2U2N		
Crawled Model	PowerStore 3000T		
Block/File State			
Memory Cfg			
Machine Type	Physical		
Connectivity			
CS0/Mgmt IPv4	192.168.0.50		
CS1/Mgmt IPv4	192.168.0.51		
Mgmt IPv6	2730:0:050:6ab2::22b		
SPA IP	192.168.0.52		
SPB IP	192.168.0.53		
Versions			
OE Version			
NAS Version			
BIOS	6287		
POST	4980		



SWARM

Tool for storing environment info as well as essential interchangeable cluster configuration parameters required for deployment



DATA SUMMARY SHEET	
▼ Asset Information ::	
Name	WX-D1216
SPE SN	
PSNT	
▼ Location ::	
Lab	Lab 1
Tile	32AW
▼ Ownership ::	
Owner	
Responsible Manager	
Reserved By	Available
▼ Hardware Configuration ::	
Version	
Model	Warnado EX 2U2N
Crawled Model	PowerStore 3000T
Block/File State	
Memory Cfg	
Machine Type	Physical
▼ Connectivity ::	
CS0/Mgmt IPv4	192.168.0.50
CS1/Mgmt IPv4	192.168.0.51
Mgmt IPv6	2730:0:050:6ab2::22b
SPA IP	192.168.0.52
SPB IP	192.168.0.53
▼ Versions ::	
OE Version	
NAS Version	
BIOS	6287
POST	4980

STORAGESYSTEM WX-D1216		
State	IPs	Hardware
Firmware	Software	Pools
Reservations	TestBeds	Notes
Crawls		
SERVICE STATE		
State:	Details:	Set By:
In service	Enter service state details.	
Issue #:		Date:
		Nov 12, 2019 1:04 AM
EXEMPT STATUS		
Status:	Details:	Set By:
<input type="radio"/> Exempt from NDU	Enter exempt status details.	N/A
<input checked="" type="radio"/> Not Exempt from NDU		Date:
		N/A

TESTBED QE_Testbed_395			
Storage Systems	Hosts	Switches	Reservations
Relationships			
SWITCHES			
<input type="checkbox"/>	Name	Swarm ID	Management IP ▲
<input type="checkbox"/>			
<input type="checkbox"/>	dur-11d5k-32be-sw10...	228	192.168.0.11
<input type="checkbox"/>	dur-11d4k-32be-sw12...	230	192.168.0.12
<input type="checkbox"/>	dur-11d5k-32be-sw16...	232	192.168.0.13
<input type="checkbox"/>	usd70-22-vf32av	233	10.0.0.22

TESTBED QE_Testbed_395				
Storage Systems	Hosts	Switches	Reservations	Rela
HOSTS				
<input type="checkbox"/>	Name	Management I...	Model	Type
<input type="checkbox"/>				
<input type="checkbox"/>	nc5199217	192.168.0.99	R640	Physical
<input type="checkbox"/>	nc5199215	192.168.0.100	R640	Physical

SWARM

Tool for storing environment info as well as essential interchangeable cluster configuration parameters required for deployment

DATA SUMMARY SHEET

▼ Asset Information

Name	QE_Testbed_395
ID	3378
State	✔ In Service

▼ Ownership

Reserved By	Available
-------------	-----------

▼ Components

# Storage Systems	1
# Hosts	2

▼ Update Records

Created By	Lab engineer
Created On	Nov 13, 2019 12:00 AM
Updated By	Lab engineer
Updated On	Nov 15, 2019 7:28 PM

DATA SUMMARY SHEET

▼ Asset Information

Name	WX-D1216
SPE SN	
PSNT	

▼ Location

Lab	Lab 1
Tile	32AW

▼ Ownership

Owner	
Responsible Manager	
Reserved By	Available

▼ Hardware Configuration

Version	
Model	Warnado EX 2U2N
Crawled Model	PowerStore 3000T
Block/File State	
Memory Cfg	
Machine Type	Physical

▼ Connectivity

CS0/Mgmt IPv4	192.168.0.50
CS1/Mgmt IPv4	192.168.0.51
Mgmt IPv6	2730:0:050:6ab2::22b
SPA IP	192.168.0.52
SPB IP	192.168.0.53

▼ Versions

OE Version	
NAS Version	
BIOS	6287
POST	4980

STORAGESYSTEM WX-D1216

State IPs Hardware Firmware Software Pools Reservations TestBeds Notes Crawls

SERVICE STATE

State:	In service	Details:	Enter service state details.	Set By:	
Issue #:				Date:	Nov 12, 2019 1:04 AM

EXEMPT STATUS

Status:	<input type="radio"/> Exempt from NDU <input checked="" type="radio"/> Not Exempt from NDU	Details:	Enter exempt status details.	Set By:	N/A
				Date:	N/A

TESTBED QE_Testbed_395

Storage Systems Hosts Switches Reservations Relationships

SWITCHES

<input type="checkbox"/>	Name	Swarm ID	Management IP
<input type="checkbox"/>	dur-l1d5k-32be-sw10...	228	192.168.0.11
<input type="checkbox"/>	dur-l1d4k-32be-sw12...	230	192.168.0.12
<input type="checkbox"/>	dur-l1d5k-32be-sw16...	232	192.168.0.13
<input type="checkbox"/>	usd70-22-vf32av	233	10.0.0.22

TESTBED QE_Testbed_395

Storage Systems Hosts Switches Reservations Relationships

HOSTS

<input type="checkbox"/>	Name	Management I...	Model	Type
<input type="checkbox"/>	nc5199217	192.168.0.99	R640	Physical
<input type="checkbox"/>	nc5199215	192.168.0.100	R640	Physical

XPOOL

Tool for resource distribution, reservation and automatic deployment of the clusters and loader servers

The screenshot shows the Xpool-GUI interface. On the left, there is a 'My Assets' section with two entries: WX-D0764 (EX1) and WX-D1216 (EX2). The main area is titled 'Appliances' and contains a table with columns for Name, Group, Lessee, Tags, and Message. The table lists appliance WX-D0550 (EX) under the group QA-Sustain-MSTP, with a lessee of FREE. The 'Tags' column contains a list of technical specifications for the appliance.

This dialog displays detailed information for appliance WX-D1216. Key fields include: last_known_version: 1.0.3.106, generation: "EX", fenced_nodes: "", site: [redacted], cp_power: 8406, lgs_under_investigation: Array[0] [], is_investigation: false, port_forwarding: false, is_official: true, capacity: 31, warnings: Array[0] [], and a list of tags. The interfaces section shows a network interface named 'bmc' with IP address '10.10.10.10'.

This dialog prompts the user to extend the lease for appliance WX-D1216. It shows a 'select date' field set to 04/05/2021 12:00 -- and a 'switch to hours' option. There is a checkbox for 'Assign To User' and a 'Message' field containing 'E2E test'. The dialog includes 'Cancel' and 'Extend' buttons.

```
(xpool) install -t 1 --deploy --deploy_type san --ibid 1033433 WX-
Running from: vd-borisy [redacted]
XPOOL log ID: ZjNkOWY5

Requesting WX-D0550 Appliance installation from Xpool server
PUT /resources/appliance/WX-D0550/install/ from vd-borisy. [redacted]
Waiting...
Completed successfully, "task:-6285043639561356195"
Request from vd-borisy [redacted]
Completed successfully
, "task:-6285043639561356195"
No matching task for downloading image-1.0.1.0.5.002.tgz.bin, from
Starting to download file from https://[redacted]1.0.1.0.5.
[redacted]Images/images, it may take a few minutes.
```

This dialog allows filtering the appliance list. It features checkboxes for 'Available only' and 'My groups only', both of which are checked. Below these are dropdown menus for 'Group' (set to QA-Sustain-MSTP), 'Generation' (set to Choose), and 'Tags' (set to Choose). At the bottom, there are 'save as default' and 'clear all' options.

XPOOL

Tool for resource distribution, reservation and automatic deployment of the clusters and loader servers

The screenshot displays the XPOOL web interface. At the top left, there is a navigation menu with 'Xpool-GUI' and 'Xpool Groups'. Below it, a 'My Assets' section lists two items: WX-D0764 (EX1, expires: 4/21, 2:26) and WX-D1216 (EX2, expires: 4/21, 4:20). The main content area is titled 'Appliances' with a dropdown arrow. A filter menu is open, showing two checked options: 'Available only' and 'My groups only'. Below these are three dropdown menus: 'Group' (selected: QA-Sustain-MSTP), 'Generation' (selected: Choose), and 'Tags' (selected: Choose). At the bottom of the filter menu are 'save as default' and 'clear all' buttons. To the right, a table is partially visible with a header 'Lessee' and a value 'FREE'. The table content includes 'single INT', 'EX 384G', 'Coldspel', 'DPE:N', 'DPE:NV', 'DRM EX1', 'NVMeOF', 'Physical', 'SasScaleU', 'cp_pow', 'no_t', and 'pow'. On the far right edge, a vertical list of technical specifications is visible, including 'DPE:NVME:SSDP', 'DRM EX1 FC HCI', 'RoCE Nv', 'G Physic', 'o_L_Taba', 'er-7205 f', 'ast_fe_cc', and 'erActionS'.

XPOOL

Tool for resource distribution, reservation and automatic deployment of the clusters and loader servers

Xpool-GUI Xpool Groups Yulia Borisenko Logout

My Assets

- WX-D0764**
EX1
expires: 4/2/21, 3:26 PM
- WX-D1216**
EX2
expires: 4/9/21, 4:30 PM

Appliances

Name	Group	Lessee	Tags	Message
WX-D0550 (EX)	QA-Sustain-MSTP	FREE	single INTEL_ EX 384GB 69TB_CAPACITY C8 ColdspellX DAE:SAS: DPE:NVME:MTC_8GBMN DPE:NVME:SSD DRM EX1 FC HCI_HW LightBlade NVMeOF-RoCE NvmeScaleUp_M PhysicalLG PhysicalLG-1 RAID6 SasScaleUp_L Tabasco1 WX-D0550 cp_power-7205 fc_only iSCSI no_test_fe_connectivity powerActionSupported	

switch to hours

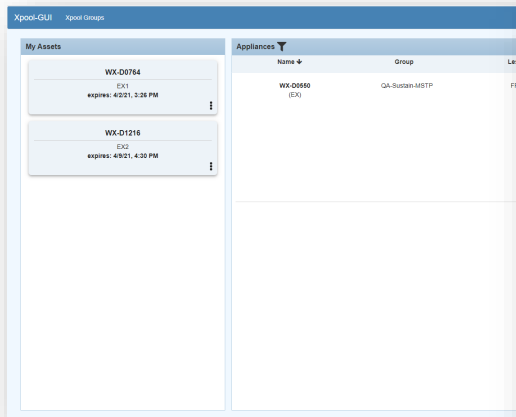
Extend

Lessee

FREE	single INT EX 384G Coldspell DPE:NV DPE:NV DRM EX1 NVMeOF- Physical SasScaleU cp_pow no_t pow
------	--

XPOOL

Tool for resource distribution, reservation and automatic deployment of the clusters and loader servers



```
(xpool) install -t 1 --d
Running from: vd-borisy
XPOOL log ID: ZjNk0WY5

Requesting WX-D0550 Appl
PUT /resources/appliance
Waiting...
Completed successfully,
Request from vd-borisy
Completed successfully
, "task:-6285043
No matching task for dow
Starting to download fil
Images/images, it
```

You're about to **extend** WX-D1216

select date *
04/05/2021 12:00 -- switch to hours

Assign To User

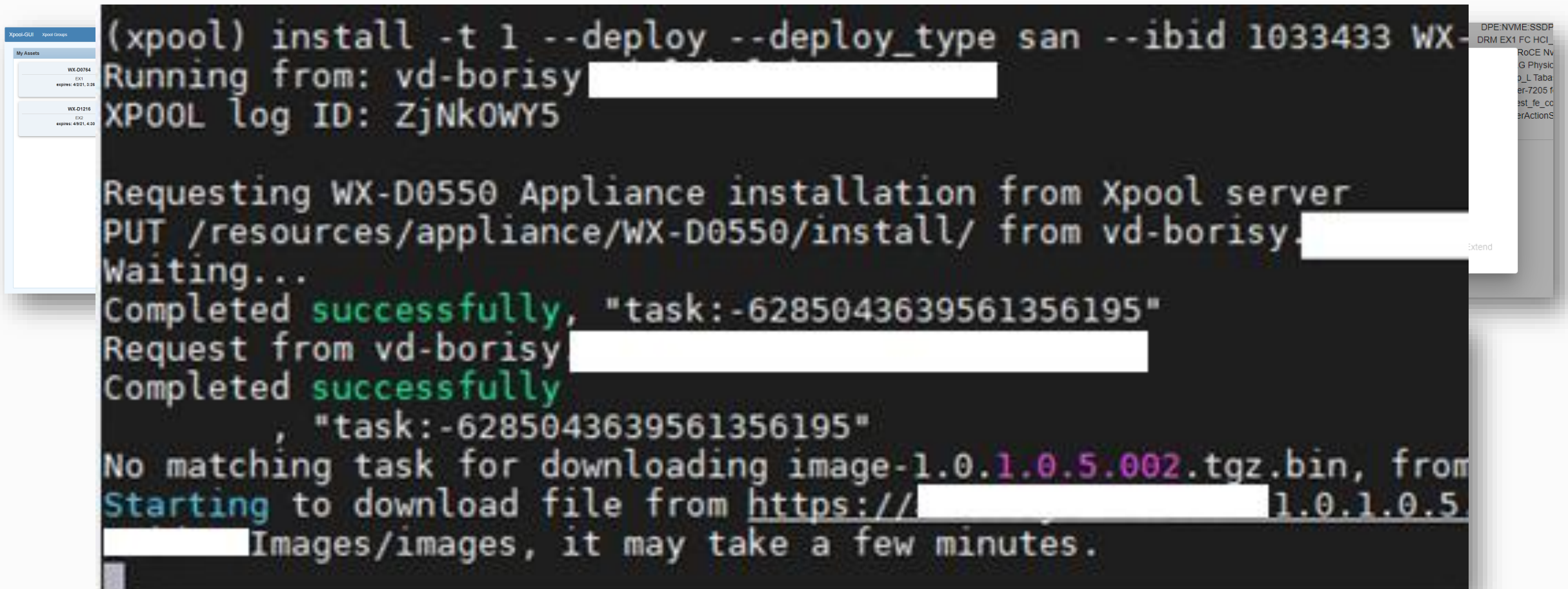
Message
E2E test

Cancel Extend

DPE:NVME:SSDP
DRM EX1 FC HCI_
RoCE Nv
G Physic
o_L Taba
er-7205 f
est_fe_co
erActionS

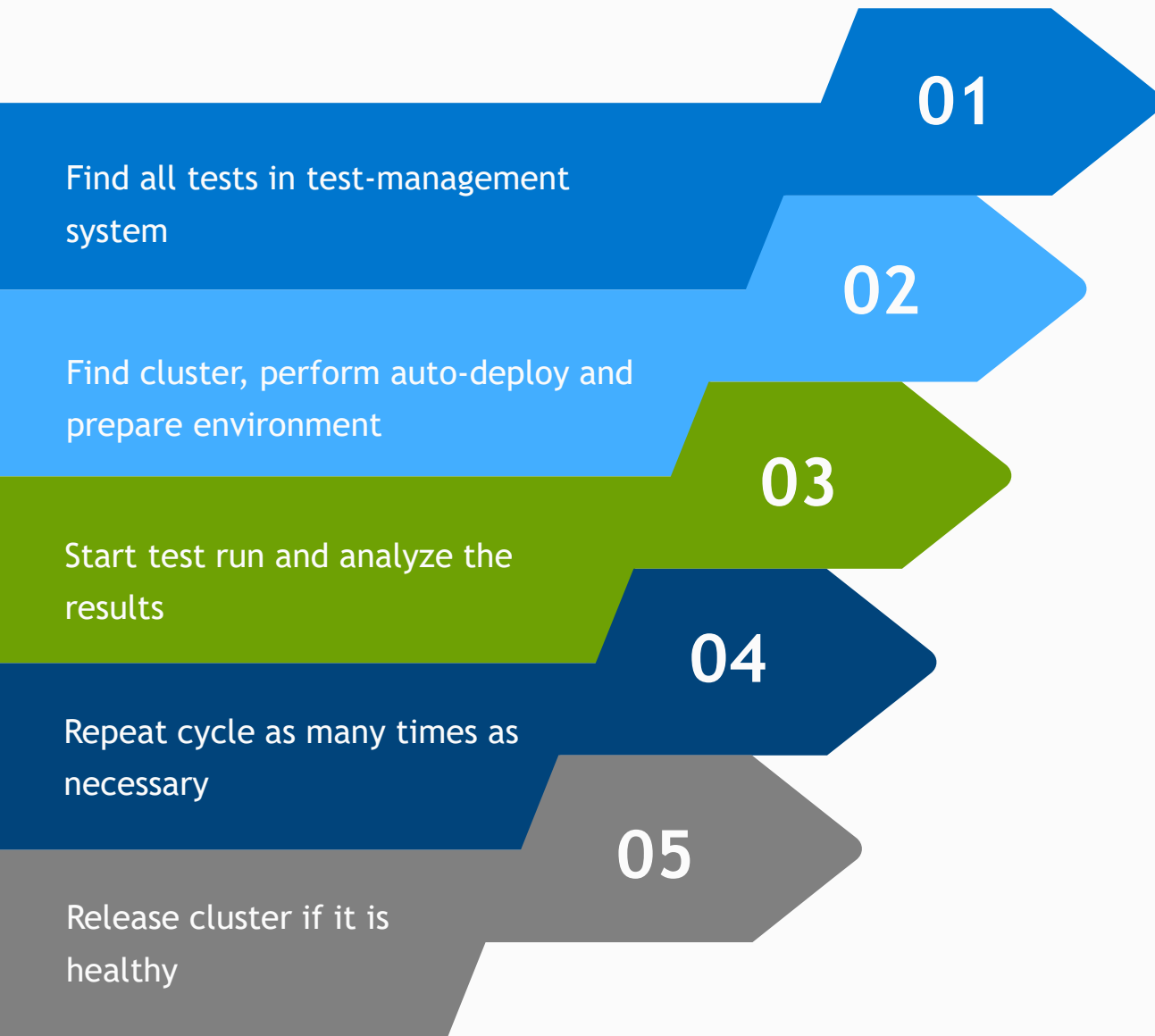
XPOOL

Tool for resource distribution, reservation and automatic deployment of the clusters and loader servers



The screenshot displays the Xpool-GUI interface on the left and a terminal window on the right. The terminal shows the execution of the 'install' command with various options, including a task ID and deployment type. The output indicates a successful request for an appliance installation and the start of a file download from a remote URL.

```
(xpool) install -t 1 --deploy --deploy_type san --ibid 1033433 WX-  
Running from: vd-borisy [REDACTED]  
XPOOL log ID: ZjNkOWY5  
  
Requesting WX-D0550 Appliance installation from Xpool server  
PUT /resources/appliance/WX-D0550/install/ from vd-borisy [REDACTED]  
Waiting...  
Completed successfully, "task:-6285043639561356195"  
Request from vd-borisy [REDACTED]  
Completed successfully  
, "task:-6285043639561356195"  
No matching task for downloading image-1.0.1.0.5.002.tgz.bin, from  
Starting to download file from https://[REDACTED]1.0.1.0.5.  
[REDACTED]Images/images, it may take a few minutes.
```

Process after first optimization

During test cycle run there are 3 resource managements tools LabJungle, SWARM and Xpool used for proper resource distribution as well as automatic cluster installation and environment preparation.



2 months
cycle duration

History Timeline



PHASE 1:

Confluence + autotests

Manual environment preparation



CURRENT PHASE:

Resource management tools + autotests

2m

Cycle duration

2 months



Process issues



Logging

Decentralized logging from all components



Monitoring

Requires close monitoring on every step during test run



Manual

Manual mapping tests docs with autotests in Framework



Reporting

Difficult progress monitoring and reporting for managers



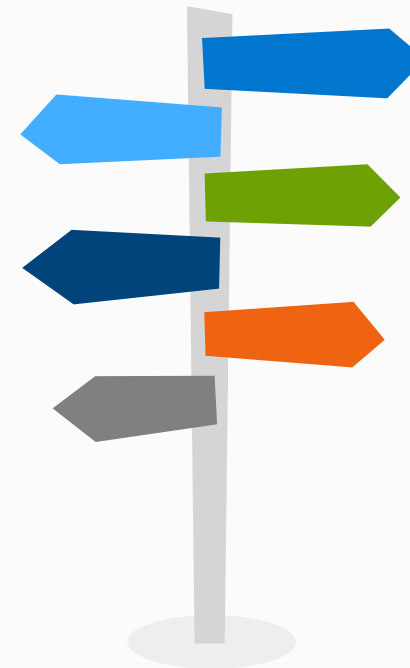
Environment

A lot of manual intervention required like environment preparation



Human factor

Strong influence of the human factor and golden resource problem



Optimization options



Jenkins

Jenkins integration with autotests and implementation of matrix plugin



Pipeline

Pipeline integration with autotests for further optimization



Else

Find another tools and options or build something different

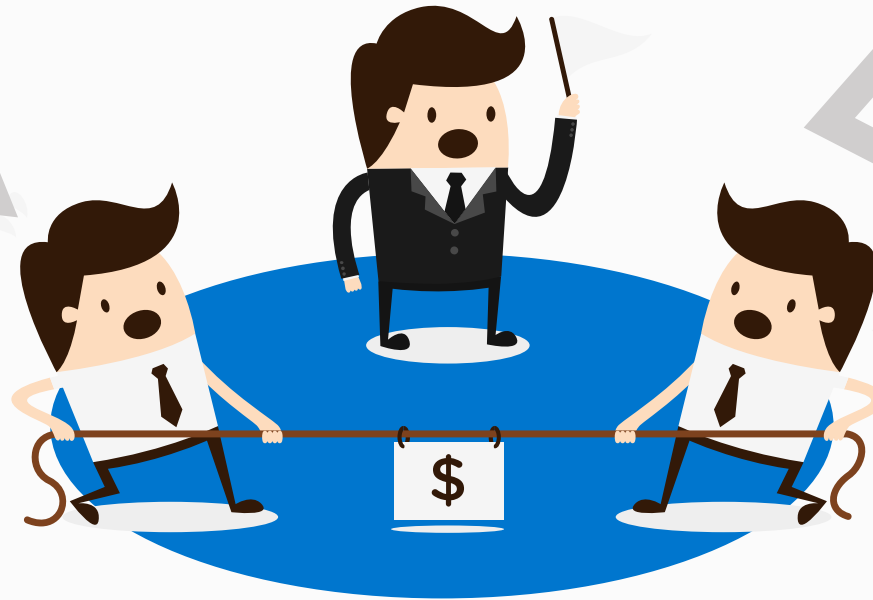


Jenkins with matrix plugin

A multi-configuration project is useful for instances where your builds will make many similar build steps, and you would otherwise be duplicating steps

I have

- Run many tests in parallel
- Use many cluster in parallel
- Flexible parameters
- Integration with resource management



I have

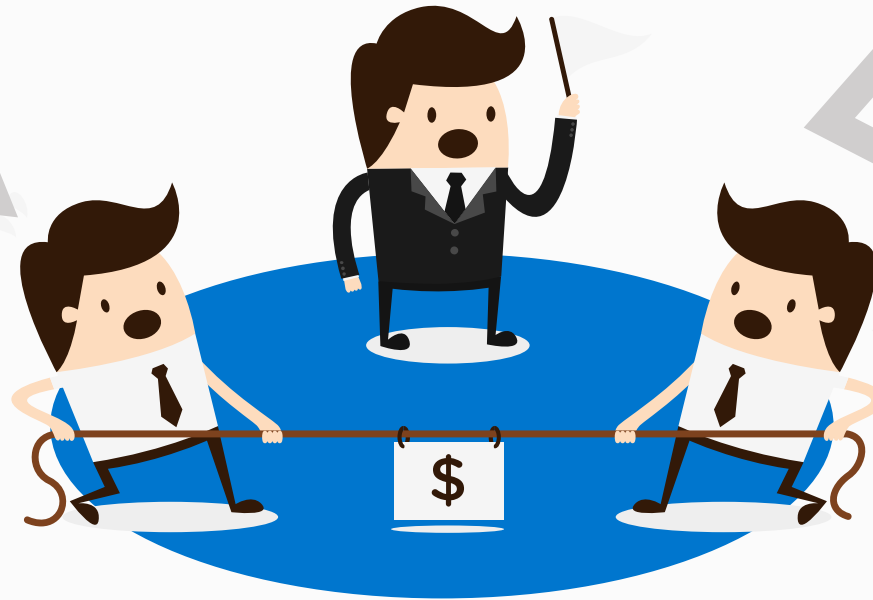
- Run many tests in parallel from single area only
- Cannot run multiple tests on single cluster sequentially
- Flexible parameters but not for complex run

Pipeline

Jenkins Pipeline is a suite of plugins that supports implementing and integrating continuous delivery pipelines into Jenkins. Pipeline provides an extensible set of tools for modeling simple-to-complex delivery pipelines "as code"

I have

- Run many tests on single cluster
- Easy full testing of a single area



I have

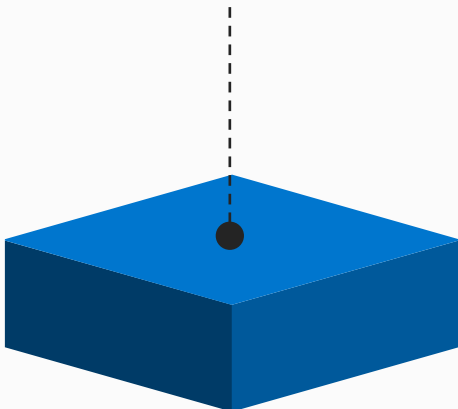
- Strict order
- Missing flexibility in tests run
- Flexible parameters impossible

Next optimization phase

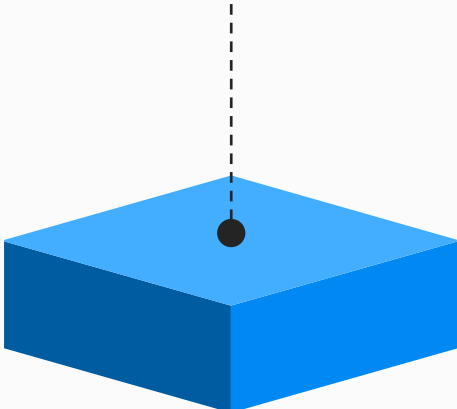
Jenkins with matrix plugin



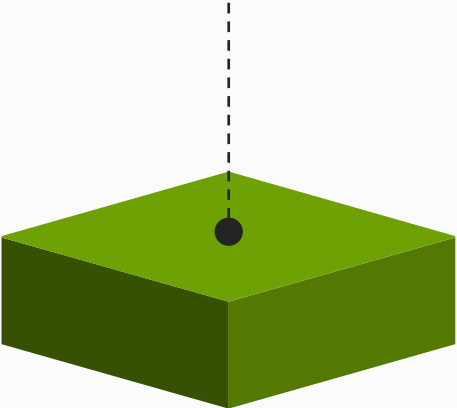
Jenkins with matrix plugin



Analyze testing areas and tests parameters



Standardize Jenkins job



Talent wins games, but teamwork and intelligence win championships

44

Jenkins job standard

document

Describing structure and parameters definition for any Jenkins Job in the project.





Cluster options

Hardware resource specifics



Deploy options

Parameters used for deploy and configuration



Pre-condition options

Pre-condition parameters for test run



Background options

Options describing background processes



Test options

Options describing tests specific

Jenkins job standard

The screenshot shows the Jenkins interface for a job named 'SAN_HA_Native'. The left sidebar contains navigation options like 'Up', 'Status', 'Changes', 'Workspace', 'Parameterized Builds Report', 'Multi-configuration project Support', 'Skip Builds', 'Open Blue Ocean', and 'Embeddable Build Status'. The main content area is titled 'Project SAN_HA_Native' and features a 'Configuration Matrix' table, 'Job Owners', and 'Permalinks'.

Configuration Matrix	1	2	3	4
QC49947_	●	●	●	●
QC47849_	●	●	●	●
QC47848_	●	●	●	●
QC47892_	●	●	●	●
QC47847_	●	●	●	●
QC47846_	●	●	●	●
QC47845_	●	●	●	●
QC90896_	●	●	●	●
QC53860_	●	●	●	●

Job Owners

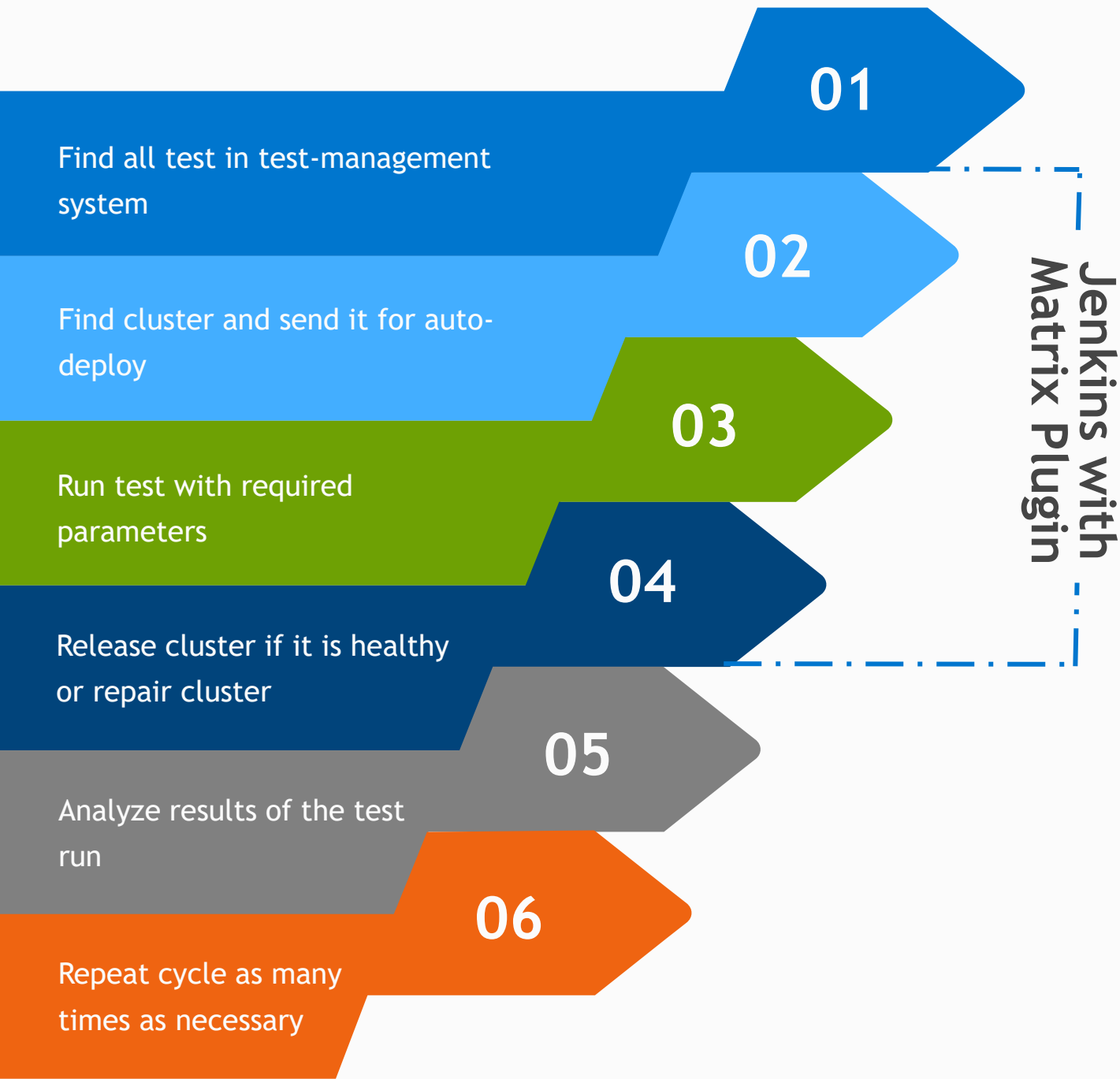
Permalinks

- Last build ((#219 WX-D0584 ...)), 22 hr ago
- Last stable build ((#219 WX-D0584 ...)), 22 hr ago
- Last successful build ((#219 WX-D0584 ...)), 22 hr ago
- Last failed build ((#218 WX-D0584 ...)), 1 day 1 hr ago
- Last unsuccessful build ((#218 WX-D0584 ...)), 1 day 1 hr ago
- Last completed build ((#219 WX-D0584 ...)), 22 hr ago

Build History

find

- (#219 WX-D0584) Mar 31, 2021 1:18 PM
- (#218 WX-D0584) Mar 31, 2021 10:34 AM



Process after second optimization

During test cycle run there are 3 resource managements tools LabJungle, SWARM and Xpool used for proper resource distribution as well as automatic cluster installation and environment preparation, these tools as well as autotests are integrated into Jenkins Jobs with matrix plugin for ease of use and centralized logging



1 months
cycle duration

History Timeline



PHASE 1:

Confluence + autotests

Manual environment preparation



PHASE 2:

Resource management tools + autotests



Cycle duration

1 months



02. Timeline



CURRENT PHASE:

Resource management tools + autotests +
jenkins with matrix plugin



Cycle duration

1 months



Process issues



Logging

Decentralized logging from all components



Manual

Manual mapping tests docs with autotests in Framework



Environment

A lot of manual intervention required like environment preparation



Monitoring

Requires close monitoring on every step during test run



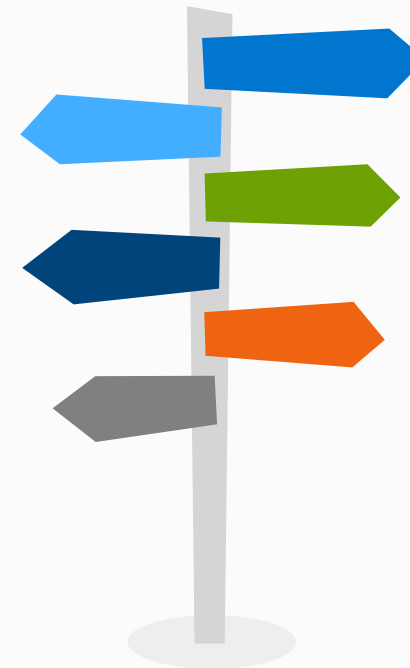
Reporting

Difficult progress monitoring and reporting и тут еще пару слов



Human factor

Strong influence of the human factor and golden resource problem



Process issues



Hardware downtime

Hardware downtime and lack of unique configurations



Manual

Manual mapping tests docs with autotests in Framework



Environment

A lot of manual intervention required like environment preparation



Monitoring

Requires close monitoring on every step during test run



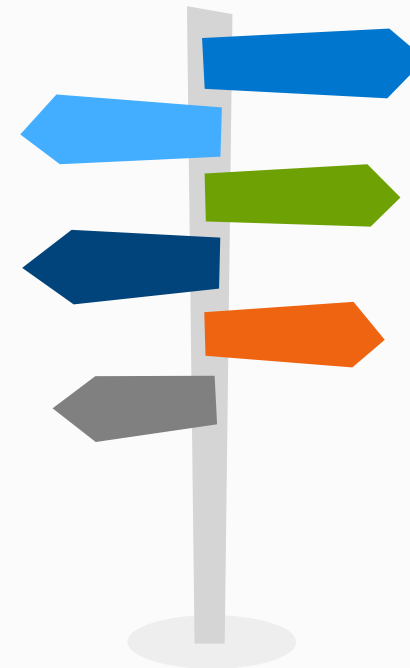
Reporting

Difficult progress monitoring and reporting и тут еще пару слов



Human factor

Strong influence of the human factor and golden resource problem



Zapuskator 1.0 prototype

Project Zapuskator

This build requires parameters:

CLUSTER_NAMES	None <small>WX-D1215,WX-D1217</small>
IBID	1.1.0.1.3.470
QC_TEST_SET_ID	3080
QC_STATUSES	blocked,failed,failed_not_analyzed,test_error,passed,pass_with_bug
NUMBER_OF_CLUSTERS	2 <small>it's impotant when CLUSTER_NAMES is None</small>
QAENV	/home/trqa
IBID_FOR_START_NDU	970834
ownerinQC	
DRYRUN	<input type="checkbox"/>

Build

Choose tests

Choose tests from test management system

Choose clusters

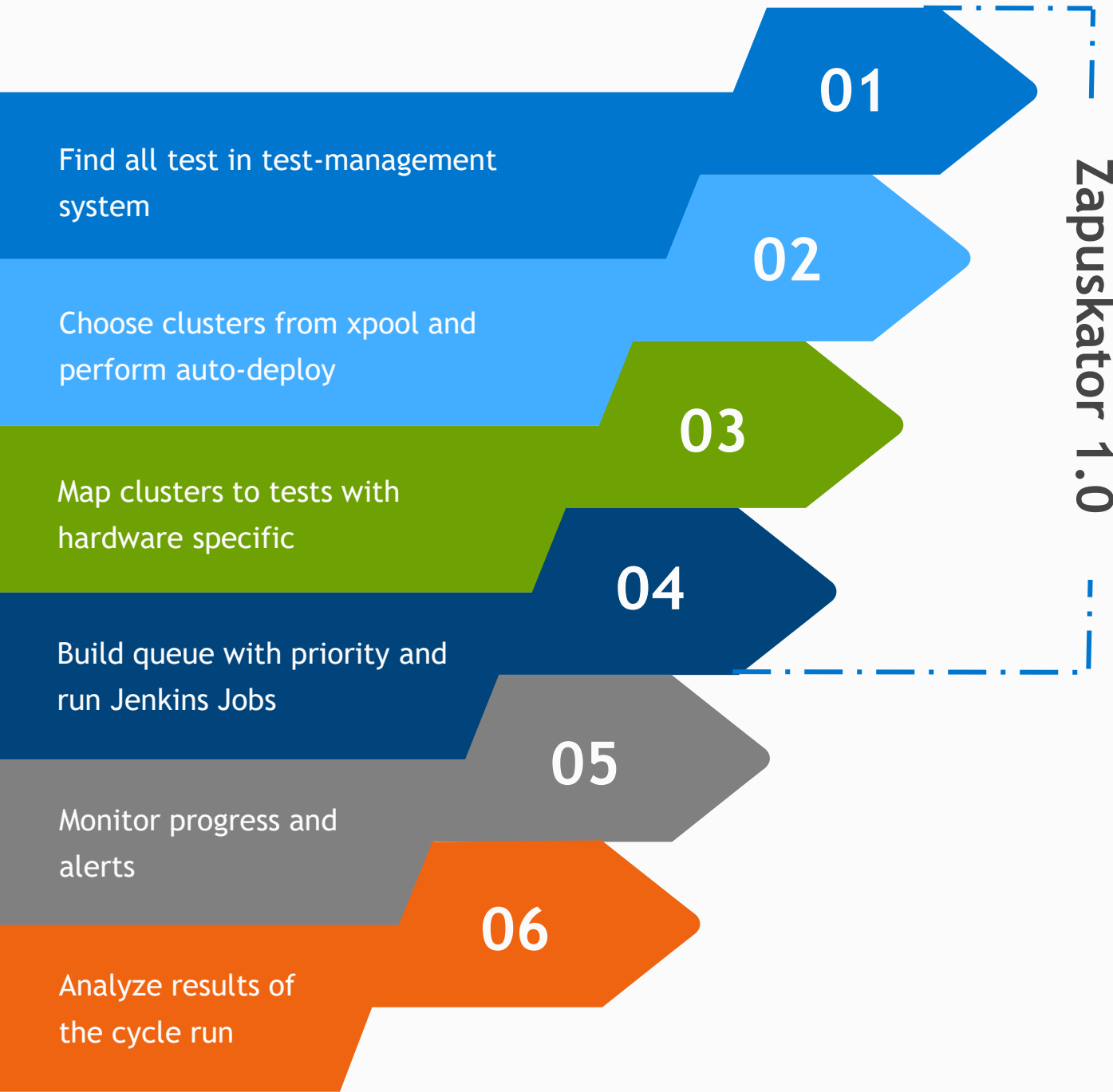
Choose clusters from xpool

Map clusters

Map clusters to tests

Build queue

Build queue and monitor execution



Process after third optimization

Zapuskator finds tests in test-management system per users request, automatically install clusters and prepares environments for chosen tests, then tests are assigned to cluster configurations and relevant Jenkins Jobs are started



2 weeks
cycle duration

History Timeline



PHASE 1:

Confluence + autotests
Manual environment preparation



PHASE 2:

Resource management tools + autotests



Cycle duration

2 week



02. Timeline



PHASE 3:

Resource management tools + autotests +
jenkins with matrix plugin



CURRENT PHASE:

Resource management tools + autotests +
jenkins with matrix plugin + zapuskator 1.0
tool



Cycle duration

2 week



Process issues



- +** **Hardware downtime**
Hardware downtime and lack of unique configurations
- **Manual**
Manual mapping tests docs with autotests in Framework
- +** **Environment**
A lot of manual intervention required like environment preparation

- +** **Monitoring**
Requires close monitoring on every step during test run
- +** **Reporting**
Difficult progress monitoring and reporting for managers
- +** **Human factor**
Strong influence of the human factor and golden resource problem

Process issues



Hardware downtime

Hardware downtime and lack of unique configurations



Flexibility

Complexity of further development and growth



Environment

A lot of manual intervention required like environment preparation



Monitoring

Requires close monitoring on every step during test run



Reporting

Difficult progress monitoring and reporting for managers



Human factor

Strong influence of the human factor and golden resource problem

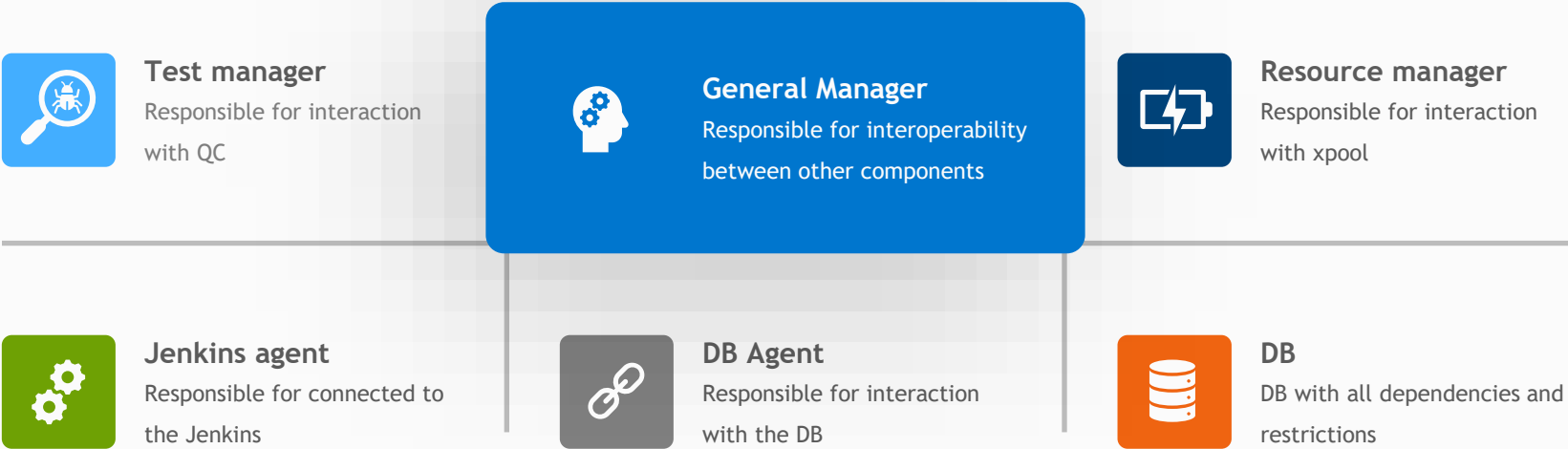
We wanted



- Any test**
Run any test on correct cluster
- Unlimited**
Choose tests by unlimited number of parameters
- Get info**
Get info what clusters are missing for successful finish
- Flexibility**
Flexibility on start and during cycle run
- Additional**
Additional logic for choosing hardware resources / tests

Zapuskator 2.0 architecture

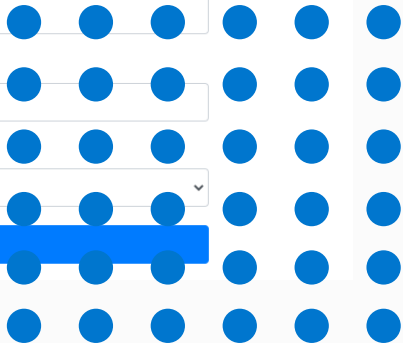
Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities



Zapuskator 2.0

ZAPUSKATOR 2.0 NEW TASK RUNNING TASK LIST MANAGMENT APPL MANAGMENT TEST CONTACT

NAME FOR TASK*: <input type="text"/>	QC TEST SET ID: <input type="text"/>
CLUSTER FILTER: Number of appliances (e.g CLUSTER PARAMS: 2) <input type="text"/>	QC TEST ID NAMES: ALL <input type="text"/>
CLUSTER PARAMS: <input type="text"/>	QC OWNER: ALL <input type="text"/>
USER: <input type="text"/>	QC STATUS: ALL <input type="text"/>
IBID: <input type="text"/>	QC LATEST STATUS: ALL <input type="text"/>
IBID FOR START NDU: <input type="text"/>	QC PRODUCT AREA: ALL <input type="text"/>
ADDITIONAL_PARAMS: <input type="text"/>	QC PLATFORM: ALL Test <input type="text"/>
<input type="button" value="Submit"/>	



Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities



NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

QC TEST SET ID:

CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

NAME FOR TASK*:

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CLUSTER FILTER:

QC TEST ID NAMES:

CLUSTER PARAMS:

QC OWNER:

USER:

QC STATUS:

IBID:

QC LATEST STATUS:

IBID FOR START NDU:

QC PRODUCT AREA:

ADDITIONAL_PARAMS:

QC PLATFORM:

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

7
Clusters

14
Tests

1
Cycle

ZAPUSKATOR 2.0 NEW TASK RUNNING TASK LIST MANAGMENT APPL MANAGMENT TEST CONTACT

HEISENBUG

IBID	IBID FOR START NDU	FOLDERS	USER
------	--------------------	---------	------

1289087		9079,9080	
---------	--	-----------	--

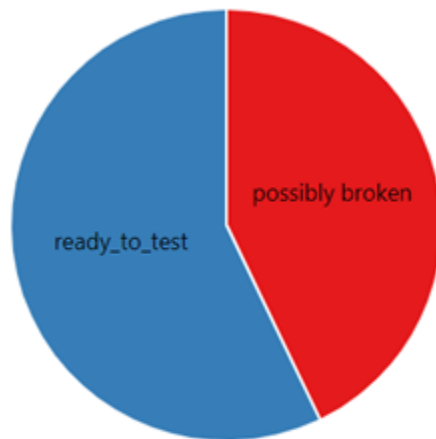
Additional params:

MGMT_PREFILL=0;MGMT_BG_COMMANDS=0;

Change IBID

IBID:

IBID FOR START NDU



APPL STATUS

TEST STATUS

Reload page

APPL STAUS	VALUE
------------	-------

ready_to_test	4
---------------	---

possibly broken	3
-----------------	---

TEST STAUS	VALUE
------------	-------

not_started	13
-------------	----

passed	1
--------	---

You can stop this task

For stop, you have 2 options: Graceful stop and Force stop.

If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished. "Force Stop" in develop.

Stop type

Graceful

Submit

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

7
Clusters

14
Tests

1
Cycle

ZAPUSKATOR 2.0 NEW TASK RUNNING TASK LIST MANAGMENT APPL

HEISENBUG

IBID	IBID FOR START NDU	FOLDERS	USER
1289087		9079,9080	

Additional params:

MGMT_PREFILL=0;MGMT_BG_COMMANDS=0;

APPL STAUS	VALUE
------------	-------

ready_to_test	4
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Graceful

Submit

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

7
Clusters

14
Tests

1
Cycle

ZAPUSKATOR 2.0 NEW TASK RUNNING TASK LIST MANAGMENT APPL MANAGMENT TEST CONTACT

HEISENBUG
IBID IBID FOR START NDU FOLDERS USER



APPL STAUS	VALUE
ready to test	4
	3
	13
	1

Change IBID

IBID:

IBID FOR START NDU

You can stop this task

For stop, you have 2 options: Graceful stop and Force stop.
If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished.
"Force Stop" in develop.

Stop type
Graceful

Submit

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

50
Cycles Performed

4
Major Releases Delivered

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3

TEST STAUS	VALUE
not_started	13
passed	1

You can stop this task
For stop, you have 2 options: Graceful stop and Force stop.
If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished. "Force Stop" in develop.

Stop type: Graceful
Submit

APPL STATUS TEST STATUS Reload page

APPL_NAME	DAE	Power	IBID	STATUS
WX-D0833	1	0	1289087	possibly broken
WX-D0843	1	0	1289087	ready_to_test
WX-D0584	0	1	1289087	ready_to_test
WX-D0669	0	0	null	possibly broken
WX-D0569	1	1	1289087	possibly broken
WX-D0770	1	1	1289087	ready_to_test
WX-D0539	1	0	1289087	ready_to_test

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3

TEST STAUS	VALUE
not_started	13
passed	1

Add appl
APPLS_STR (WX-D1,WX-D2):

Submit

APPL STATUS TEST STATUS Reload page

Zapuskator 2.0

Orchestrator tool for test cycle optimization with monitoring and reporting capabilities

50
Cycles Performed

4
Major Releases Delivered

The dashboard displays a pie chart with two segments: a blue segment labeled 'ready_to_test' and a red segment labeled 'possibly broken'. Below the chart are three buttons: 'APPL STATUS', 'TEST STATUS', and 'Reload page'.

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3

TEST STAUS	VALUE
not_started	13
passed	1

You can stop this task
For stop, you have 2 options: Graceful stop and Force stop.
If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished.
"Force Stop" in develop.

Stop type
Graceful
Submit

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3

TEST STAUS	VALUE
not_started	13
passed	1

APPL ID	APPL STR	TEST STR	TEST ID	TEST STAUS
WX-D0843	1	0	1289087	ready_to_test
WX-D0584	0	1	1289087	ready_to_test
WX-D0669	0	0	null	possibly broken
WX-D0569	1	1	1289087	possibly broken
WX-D0770	1	1	1289087	ready_to_test
WX-D0539	1	0	1289087	ready_to_test

Add appl
APPLS_STR (WX-D1,WX-D2):
Submit

not_started

APPL STATUS TEST STATUS Reload page

Zapuskator 2.0

Orchestrator tool for test cycle optimization with monitoring and reporting capabilities

50
Cycles Performed

4
Major

APPL_NAME	DAE	Power	IBID	STATUS
WX-D0833	1	0	1289087	possibly broken
WX-D0843	1	0	1289087	ready_to_test
WX-D0584	0	1	1289087	ready_to_test
WX-D0669	0	0	null	possibly broken
WX-D0569	1	1	1289087	possibly broken
WX-D0770	1	1	1289087	ready_to_test
WX-D0539	1	0	1289087	ready_to_test

Add appl

APPLS_STR (WX-D1,WX-D2):

Submit

APPL STAUS

VALUE

4

3

VALUE

13

1

You can stop this task

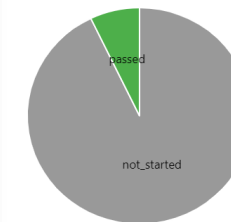
For stop, you have 2 options: Graceful stop and Force stop.

If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished. "Force Stop" in develop.

Stop type

Graceful

Submit



APPL STAUS

VALUE

ready_to_test

4

possibly broken

3

TEST STAUS

VALUE

not_started

13

passed

1

APPL STATUS

TEST STATUS

Reload page

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

50
Cycles Performed

4
Major Releases Done

The screenshot displays the Zapuskator 2.0 dashboard with the following components:

- Top Left:** A semi-circular gauge chart with a blue segment and a red segment labeled "possibly broken".
- Top Right:** A table titled "APPL STAUS" with the following data:

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3
- Center:** A large pie chart showing the distribution of application statuses:
 - not_started: 13 (grey)
 - passed: 1 (green)
 - possibly broken: 3 (red)
 - ready_to_test: 4 (blue)
- Right Side:** Two summary tables:
 - APPL STAUS:**

APPL STAUS	VALUE
ready_to_test	4
possibly broken	3
 - TEST STAUS:**

TEST STAUS	VALUE
not_started	13
passed	1
- Bottom:** A table of application details and an "Add appl" form.

WX-D0770	1	1	1289087	ready_to_test
WX-D0539	1	0	1289087	ready_to_test

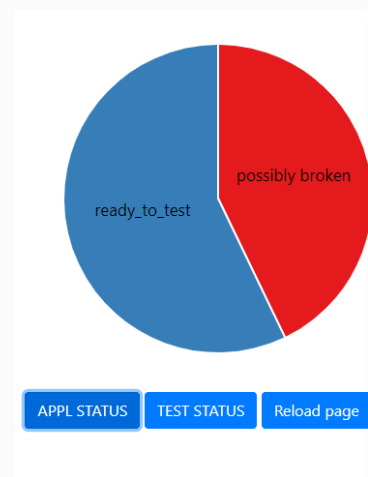
Add appl
APPLS_STR (WX-D1,WX-D2):

Zapuskator 2.0

Orchestrator tool for test cycle optimization with additional flexibility, monitoring and reporting capabilities

50
Cycles Performed

4
Major Releases Delivered



APPL_NAME	DAE	Power	IBID
WX-D0833	1	0	1289087
WX-D0843	1	0	1289087
WX-D0584	0	1	1289087
WX-D0669	0	0	null
WX-D0569	1	1	1289087
WX-D0770	1	1	1289087
WX-D0539	1	0	1289087

Add appl

APPLS_STR (WX-D1,WX-D2):

Submit

You can stop this task

For stop, you have 2 options: Graceful stop and Force stop.

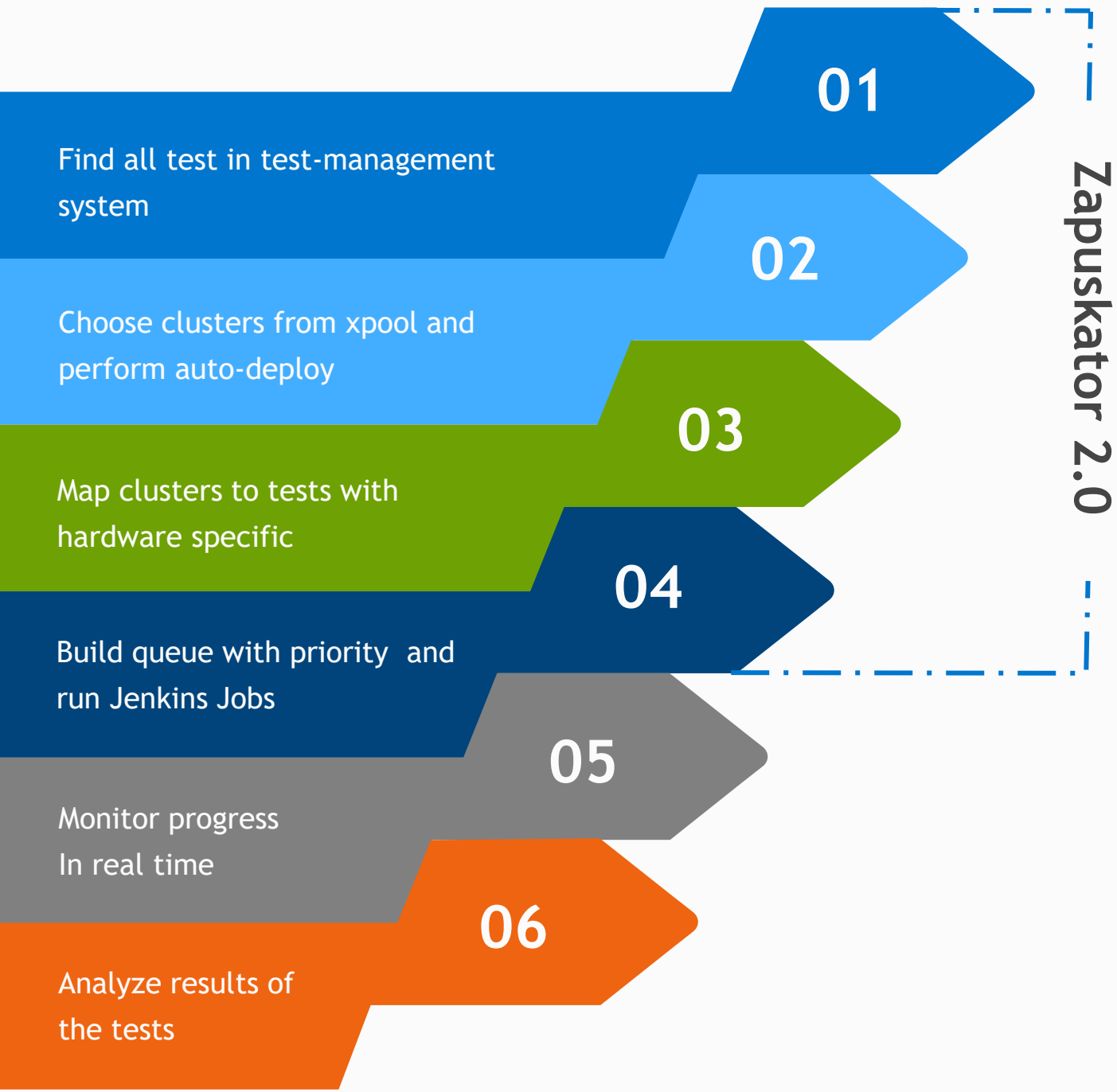
If you choose "Graceful stop", the task finish run all running test and not start new tests. All not_starting test will mark as canceled. The task will finish after all running test is finished.

"Force Stop" in develop.

Stop type

Graceful

Submit



Process after fourth optimization

Zapuskator finds tests in test-management system per users request, automatically install clusters and prepares environments for chosen tests, then tests are assigned to cluster configurations and relevant Jenkins Jobs are started. The whole process is precisely monitored and alerts are sent at the very moment of issue occurrence so user can react promptly.



1 week
cycle duration

History Timeline



PHASE 1:

Confluence + autotests

Manual environment preparation



PHASE 2:

Resource management tools + autotests

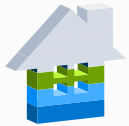


Cycle duration

1 week or less



02. Timeline



PHASE 3:

Resource management tools + autotests +
jenkins with matrix plugin



PHASE 4:

Resource management tools + autotests +
jenkins with matrix plugin + zapuskator 1.0
tool



Cycle duration

1 week or less



03. Timeline



CURRENT PHASE:

Resource management tools + autotests +
jenkins with matrix plugin + zapuskator 2.0
tool

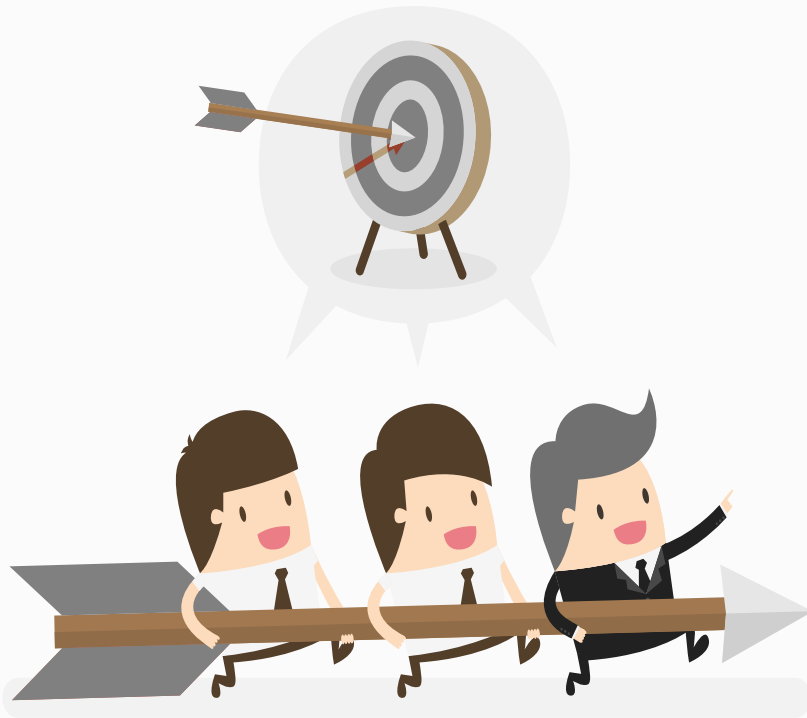


Cycle duration

1 week or less



Process issues



Hardware downtime

Hardware downtime and lack of unique configurations



Flexibility

Complexity of further development and growth



Environment

A lot of manual intervention required like environment preparation



Monitoring

Requires close monitoring on every step during test run



Reporting

Difficult progress monitoring and reporting



Human factor

Strong influence of the human factor and golden resource problem

Further plans



SCALE TO OTHER PROJECT



AI LEARNING



INTEGRATION WITH BUILD SYSTEM

**Thank for
your time**

