TURKCELL AKADEMİ

Performance Testing

presented by
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on **11.12.2017**
at **Istanbul Technical University**

Why Performance Testing?

Abstract;

Turkcell organizations are investing in performance testing in order to prevent Performance defects and increase testing effectiveness during software life cycle. This paper presents Performance testing details and benefits.

Agenda

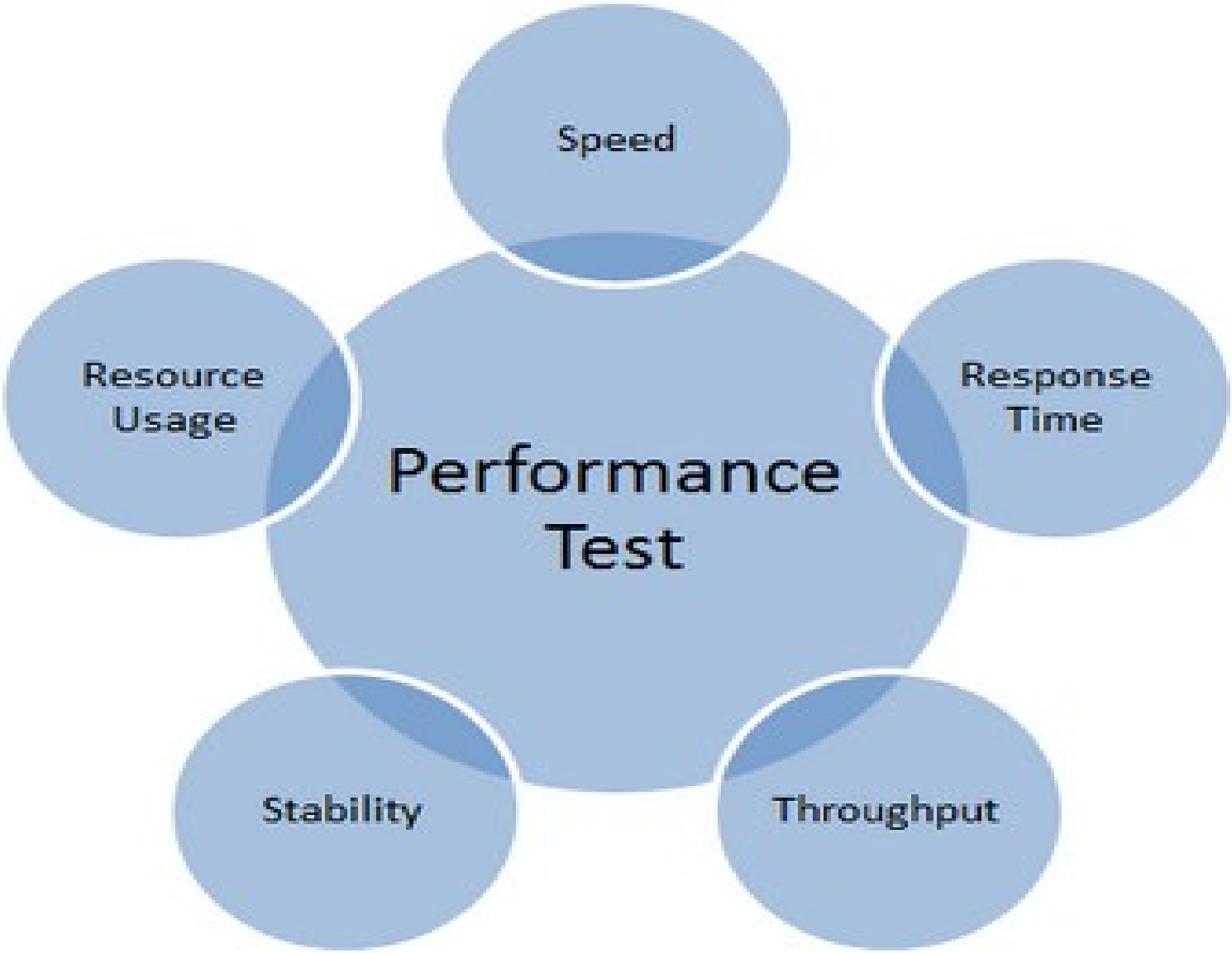
What is Performance Testing ?

Performance testing, a non-functional testing technique performed to determine the system parameters in terms of responsiveness and stability under various workload. Performance testing measures the quality attributes of the system, such as scalability, reliability and resource usage.

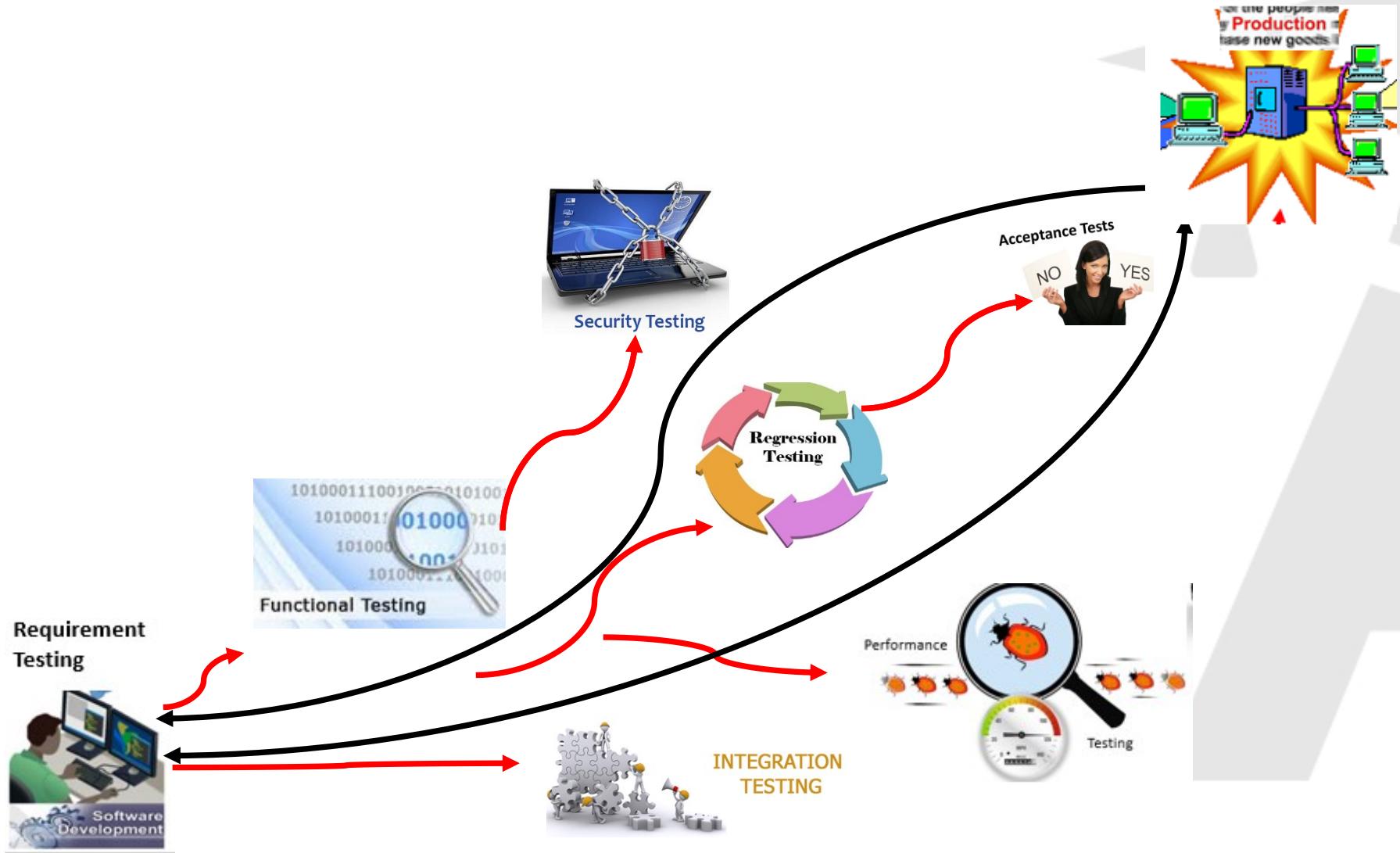
What ?

- ✓ Record the script
- ✓ Data selection via automation
- ✓ Run the scripts
- ✓ Report results

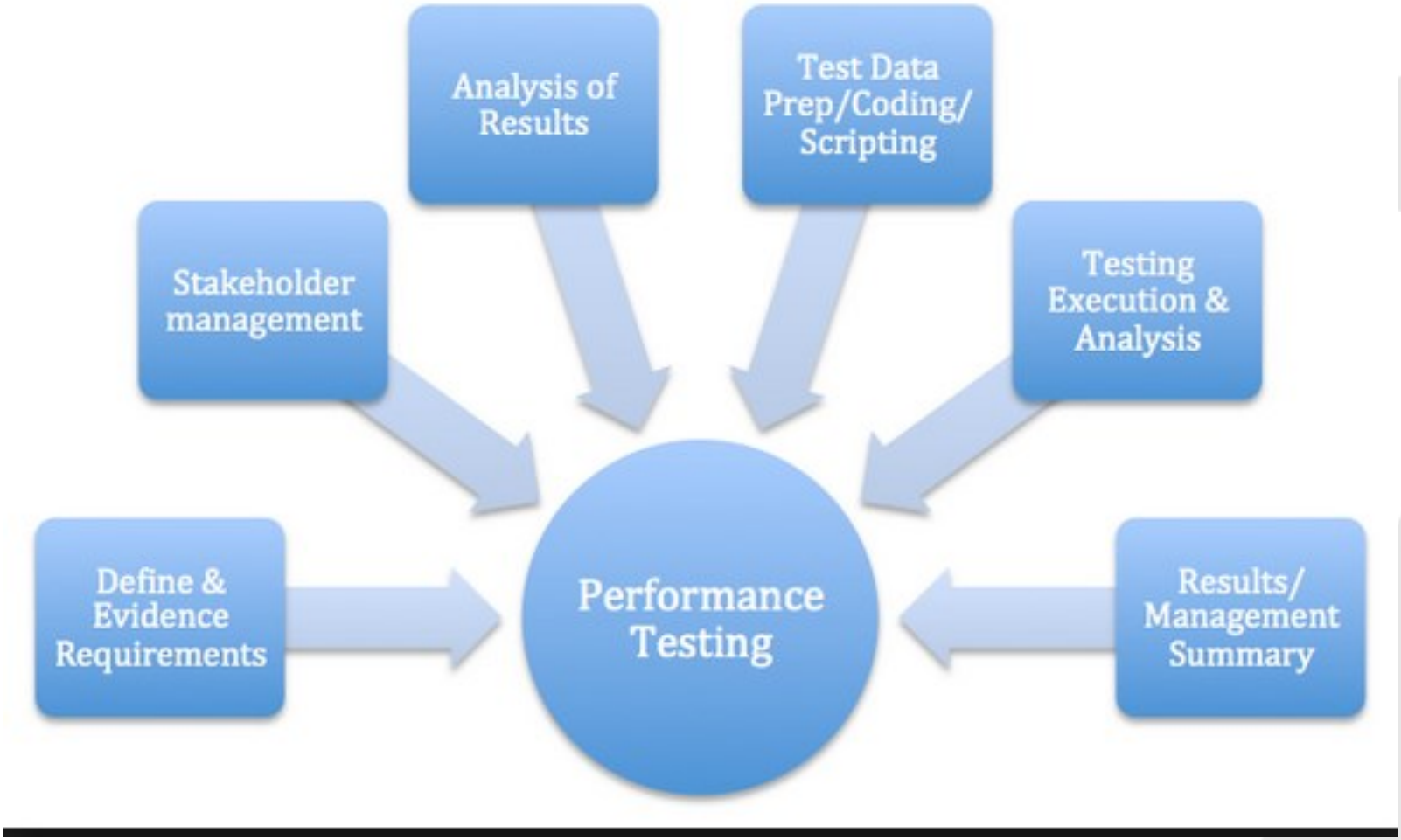
Why?


Speed
Resource Usage
Response Time
Performance Test
Stability
Throughput

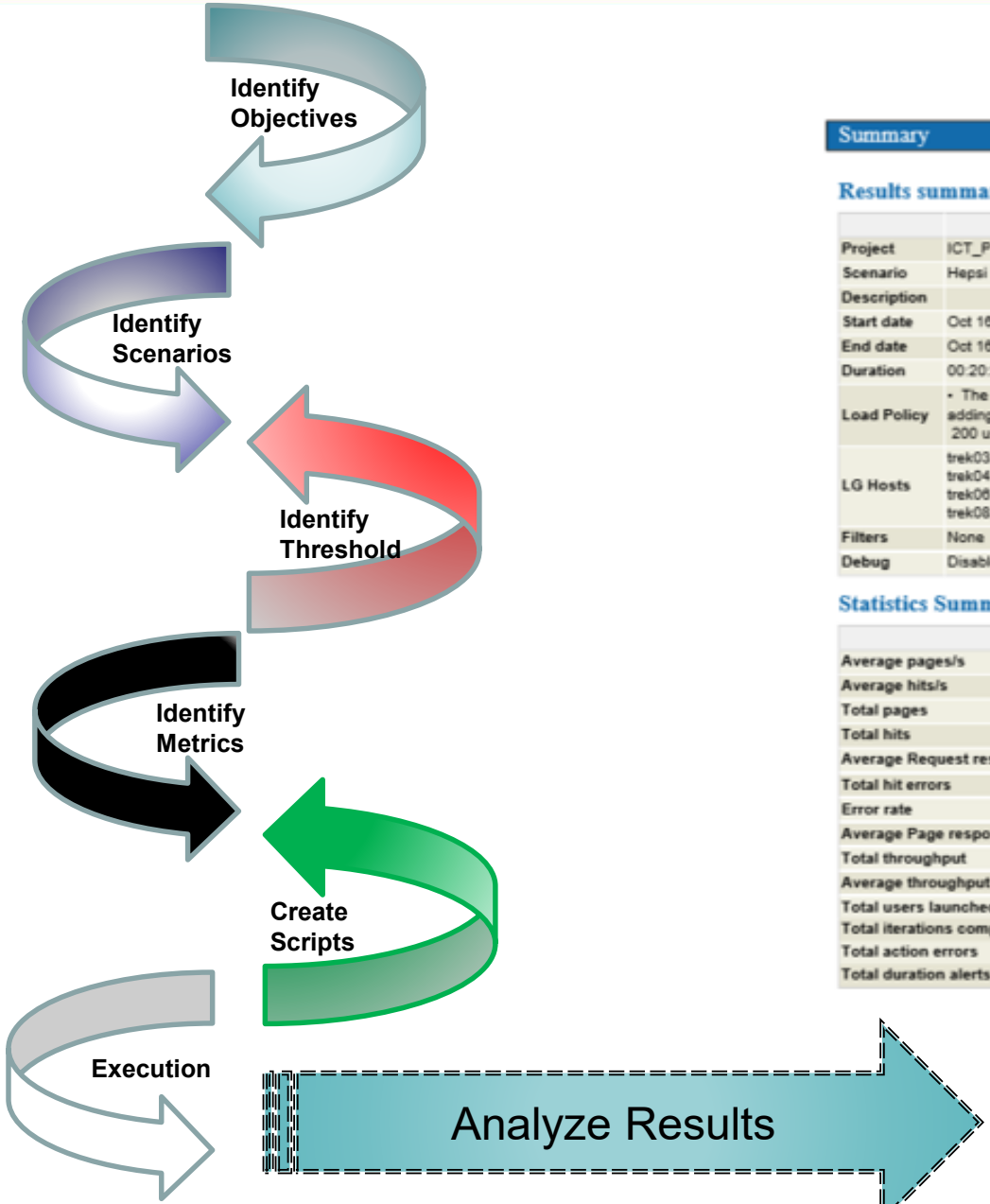
When


Production
Security Testing
Acceptance Tests
NO
YES
Regression Testing
Functional Testing
Requirement Testing
Performance
Testing
Software Development
INTEGRATION TESTING

What?


Analysis of Results
Test Data Prep/Coding/ Scripting
Stakeholder management
Testing Execution & Analysis
Define & Evidence Requirements
Performance Testing
Results/ Management Summary

Performance Testing Process



Summary

Results summary

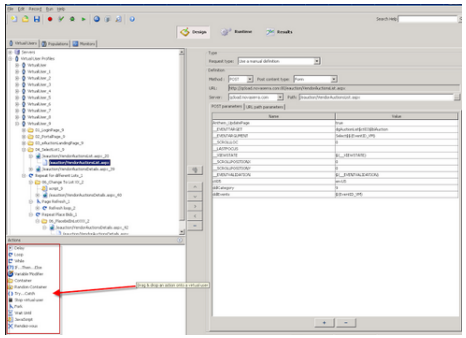
	A	B
Project	ICT_PRP_MAYA	ICT_PRP_MAYA
Scenario	Hepsi	Hepsi
Description		
Start date	Oct 16, 2015 10:38:12 PM	Nov 10, 2015 10:08:10 PM
End date	Oct 16, 2015 10:58:42 PM	Nov 10, 2015 10:28:40 PM
Duration	00:20:29	00:20:30
Load Policy	• The population Hepsi is ramp up from 2 users adding 2 users every 2.0 seconds, to a maximum of 200 users.	• The population Hepsi is ramp up from 2 users adding 2 users every 2.0 seconds, to a maximum of 200 users.
LG Hosts	trek03.turkcell.entp.tgc , trek02.turkcell.entp.tgc , trek04.turkcell.entp.tgc , trek05.turkcell.entp.tgc , trek06.turkcell.entp.tgc , trek07.turkcell.entp.tgc , trek08.turkcell.entp.tgc	localhost , trek03.turkcell.entp.tgc , trek02.turkcell.entp.tgc , trek04.turkcell.entp.tgc , trek05.turkcell.entp.tgc , trek06.turkcell.entp.tgc , trek07.turkcell.entp.tgc , trek08.turkcell.entp.tgc
Filters	None	None
Debug	Disabled	Disabled

Statistics Summary

	A	B	%
Average pages/s	39.1	42.0	+7.4%
Average hits/s	264.2	287.9	+9%
Total pages	48107	51685	+7.4%
Total hits	324929	354346	+9.1%
Average Request response time	0.4 s	0.368 s	-8%
Total hit errors	5604	4642	-17.2%
Error rate	1.7	1.3	-23.5%
Average Page response time	2.58 s	2.22 s	-14%
Total throughput	2431.84 MB	2694.05 MB	+10.8%
Average throughput	15.82 Mb/s	17.51 Mb/s	+10.7%
Total users launched	200	200	+0%
Total iterations completed	4475	4733	+5.8%
Total action errors	0	0	+0%
Total duration alerts	97%	0%	-100%

How…Turkcell

Scripting and Setting to threshold for performans scenarios



Running to scripts on preproduction
And Production system

Workstations

Recording the performans scenarios

Analyze its repors
Via APM (Dynatrace)

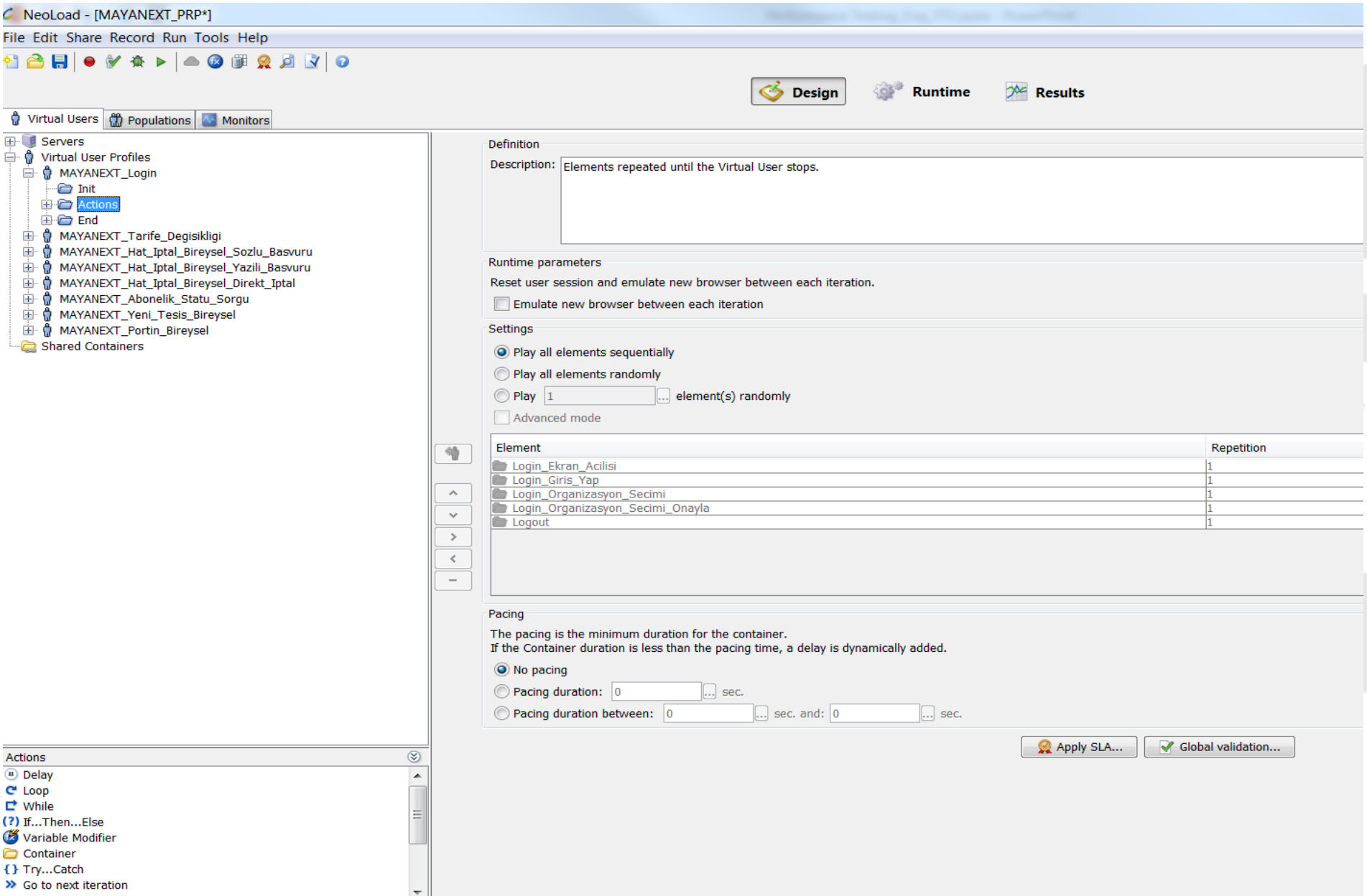
NOT OK

Check its reports and alarms

OK

Release Performans ok

Neoload


NeoLoad - [MAYANEXT_PRP*]
File Edit Share Record Run Tools Help
Design
Runtime
Results
Virtual Users
Populations
Monitors
Servers
Virtual User Profiles
MAYANEXT_Login
Init
Actions
End
MAYANEXT_Tarife_Degisikligi
MAYANEXT_Hat_Iptal_Bireysel_Sozlu_Basvuru
MAYANEXT_Hat_Iptal_Bireysel_Yazili_Basvuru
MAYANEXT_Hat_Iptal_Bireysel_Direkt_Iptal
MAYANEXT_Abonelik_Statu_Sorgu
MAYANEXT_Yeni_Tesis_Bireysel
MAYANEXT_Portin_Bireysel
Shared Containers
Definition
Description:
Elements repeated until the Virtual User stops.
Runtime parameters
Reset user session and emulate new browser between each iteration.
Emulate new browser between each iteration
Settings
Play all elements sequentially
Play all elements randomly
Play 1 element(s) randomly
Advanced mode
Element
Repetition
Login_Ekran_Acilisi 1
Login_Giris_Yap 1
Login_Organizasyon_Secimi 1
Login_Organizasyon_Secimi_Onayla 1
Logout 1
Pacing
The pacing is the minimum duration for the container.
If the Container duration is less than the pacing time, a delay is dynamically added.
No pacing
Pacing duration: 0 sec.
Pacing duration between: 0 sec. and: 0 sec.
Apply SLA...
Global validation...
Actions
Delay
Loop
While
If...Then...Else
Variable Modifier
Container
Try...Catch
Go to next iteration

Neoload

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NeoLoad - [MAYANEXT_PRP*]

File Edit Share Record Run Tools Help

Design | Runtime | Results

Virtual Users | Populations | Monitors

- Servers
- Virtual User Profiles
  - MAYANEXT_Login
    - Init
    - Actions
      - Login_Ekran_Acilisi
      - Login_Giris_Yap
        - /mayanext/loginui/login.xhtml;teasession=LgkcWl7ccyy1v
        - /mayanext/loginui/organization.xhtml
      - Login_Organizasyon_Secimi
        - /mayanext/loginui/organization.xhtml
          - /mayanext/loginui/organization.xhtml
        - /mayanext/loginui/organization.xhtml_1
        - /mayanext/loginui/organization.xhtml_2
          - /mayanext/loginui/organization.xhtml
      - Login_Organizasyon_Secimi_Onayla
      - Logout
    - End
  - MAYANEXT_Tarife_Degisikligi
  - MAYANEXT_Hat_Iptal_Bireysel_Sozlu_Basvuru
  - MAYANEXT_Hat_Iptal_Bireysel_Yazili_Basvuru
  - MAYANEXT_Hat_Iptal_Bireysel_Direkt_Iptal
  - MAYANEXT_Abonelik_Statu_Sorgu
  - MAYANEXT_Yeni_Tesis_Bireysel
  - MAYANEXT_Portin_Bireysel
- Shared Containers

Actions

- Delay
- Loop
- While
- If...Then...Else
- Variable Modifier
- Container
- Try...Catch
- Go to next iteration

Definition

Name: /mayanext/loginui/organization.xhtml_2

URL: https://extprp1.turkcell.com.tr:443/mayanext/loginui/organization.xhtml

Edit URL

Description:

Thinktime

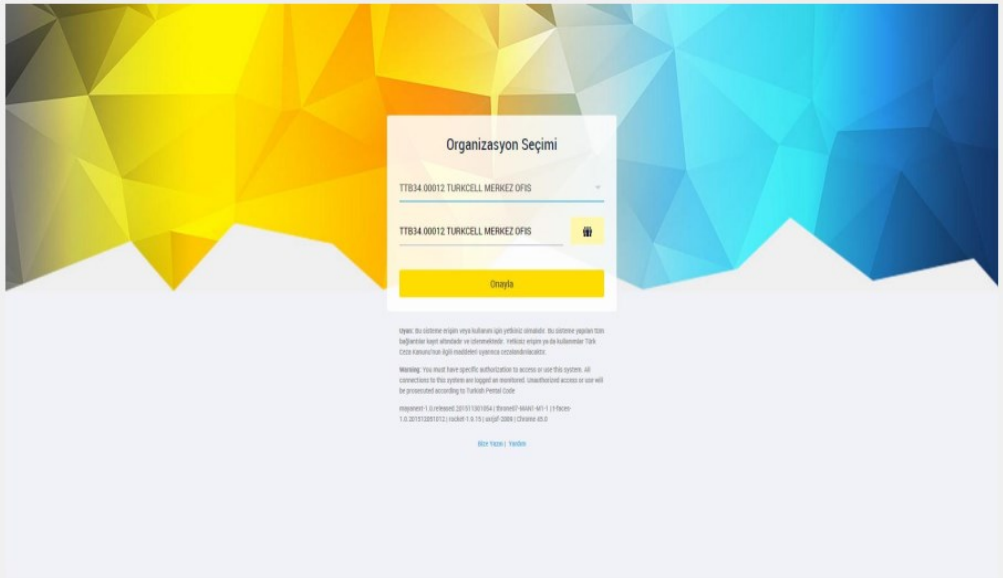
Delay before performing this page:

Delay: 1720 ms

Delay from: ms to: ms

Set global think time for all Virtual User pages

Page Screenshot



Apply SLA... | Advanced...

Analyze Results

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Analyze Results

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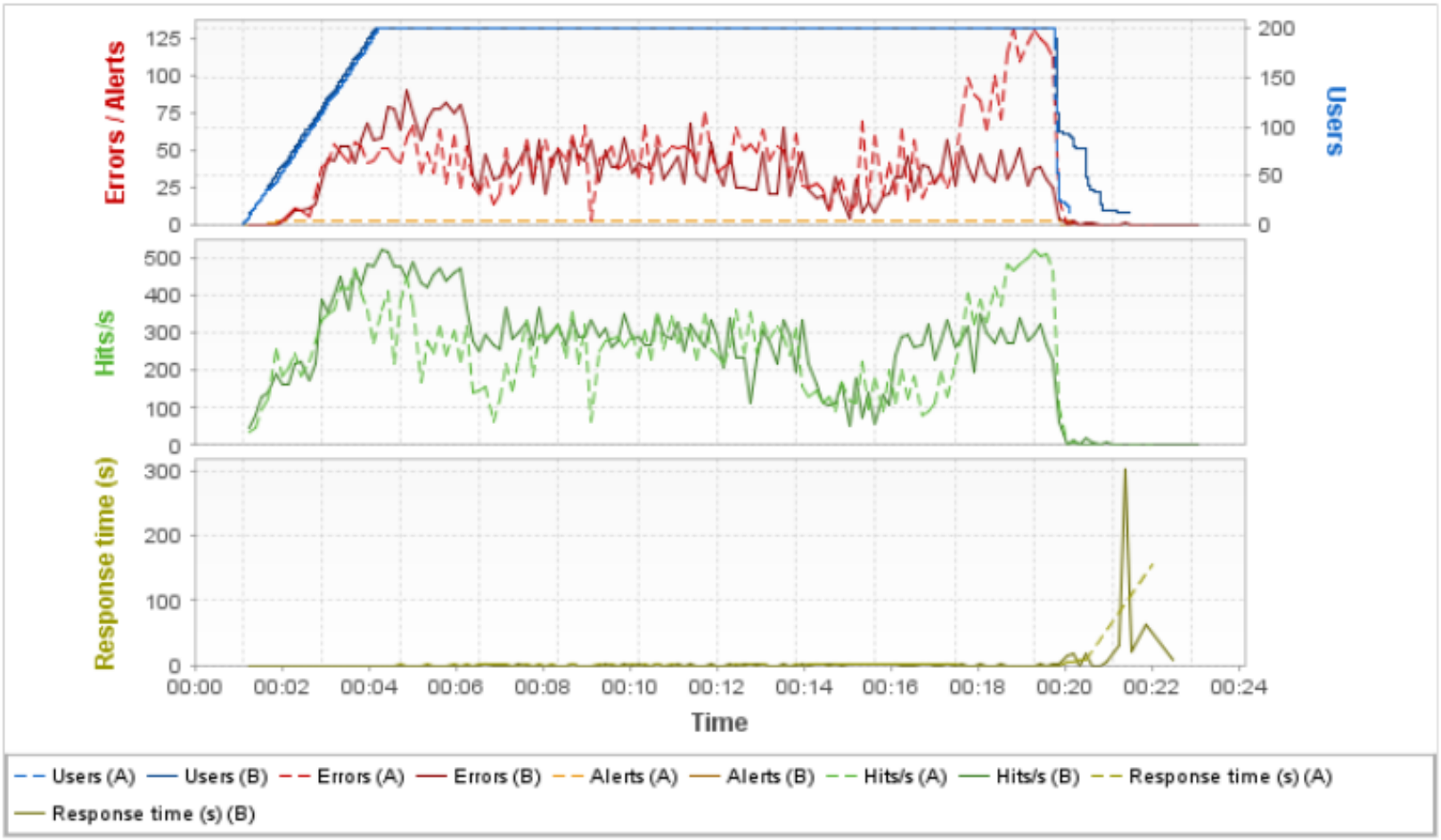
Top 5 average response time (Pages)

Virtual User	Parent	Page	Duration
ICT_KayitDisiTelefon	LogOut	/maya/mayalogout.jsp	123.7
ICT_HatIptalKurumsal	gsmsearch	/maya/search/search.jsf	102.4
ICT_HatIptalKurumsal	hat_iptal_kurumsal_ekran_a	/mayasubscription/deactivation/deactivationEntry.xhtml	99.2
ICT_PortInKurumsal	UrunListesineEkle	/mayasubscription/corporate/portin.xhtml	97.6
ICT_HLR_VLR_Sorgulama	Logout	/boas/hlrPrintout.do_1	96.9

Top 5 maximum response time (Pages)

Virtual User	Parent	Page	Duration
ICT_APNTanimlama	SearchGsmNo	/maya/search/search.jsf	308
ICT_KayitDisiTelefon	SearchGsmNo	/maya/search/search.jsf	304.3
ICT_YasalTakipFaturaEkra	ucretlendirme	/cusbilman/jsp/invoice/postpaidMain.jsf	304.2
ICT_KayitDisiTelefon	KayitDisiEkrani	/resordman/jsf/unregisteredHand...egisteredHandset.jsf	303.5
ICT_APNTanimlama	APNTanimlamaEkrani	/serdesass/jsf/apn/apnActivateDeactivate.jsf	302.3

Analyze Results



Analyze Results

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Top operations

BSCSPRP/BSCSPRP/Top SQL Statements/CPU	
A	• SELECT EVENTNUM, NPRD, MSISDN, EVENTDATE, NEWMSISDN, NEWNPRD, NCST, NEWNCST, EVENTPRM, EVENTCODE, EVENTDESC, EVENTTOPIC, EVENTSTATUS, SYSCODE, DETPARAMS, MAPPED_EVENT_CODE, SYSDESC, RET_CNT, LAST_TRY_DATE, DATE_CREATED FROM (SELECT /*+ use_hash(sysrel sysdef f ack_det e) full(e) full(sysrel) full(sysdef) full(f) full(ack_det) */ E.EVENTNUM, NPRD, MSISDN, EVENTDATE, NEWMSISDN, NEWNPRD, NCST, NEWNCST, CASE E.EVENTCODE WHEN 1107 THEN SUBSTR(UDB.PKG_STRING_FUNC.SF_AYIR(EVENTPRM,5,'$$'),4)\|\|';'\|\|SUBSTR(UDB.PKG_STRING_FUNC.SF_AYIR(EVENTPRM,6,'$$'),4) ELSE EVENTPRM END AS EVENTPRM, DECODE(E.EVENTCODE,1107,7,1101,1,E.EVENTCODE) EVENTCODE, EVENTDESC, EVENTTOPIC, EVENTSTATUS, ACK_DET.SYSCODE, DECODE(E.EVENTCODE,1107, REPLACE(ACK_DET.DETPARAMS,'#', ';'), ACK_DET.DETPARAMS) DETPARAMS , DECODE(SYSREL.MAPPEDEVENTCODE,-1,NULL,SYSREL.MAPPEDEVENTCODE) MAPPED_EVENT_CODE, SYSDEF.SYSDESC SYSDESC, ACK_DET.RETRYCOUNT RET_CNT, ACK_DET.TRANDATE LAST_TRY_DATE, E.DATECREATED DATE_CREATED FROM ENTUSR.TEVENTACKMST E, ENTUSR.TEVENTDEF F, ENTUSR.TEVENTACKDET ACK_DET, ENTUSR.TSYSDEF SYSDEF, TEVENTSYSREL SYSREL WHERE (CASE WHEN MOD(NPRD,:B2)<0 THEN MOD(NPRD,:B2)+:B2 ELSE MOD(NPRD,:B2) END) = :B1 AND E.EVENTCODE = F.EVENTCODE AND EVENTDATE < (SYSDATE - 90 / 86400) AND E.EVENTNUM = ACK_DET.EVENTNUM AND ACK_DET.SYSCODE = SYSDEF.SYSCODE AND ACK_DET.STATUS = 0 AND SYSREL.EVENTCODE = F.EVENTCODE AND SYSREL.SYSCODE = SYSDEF.SYSCODE AND SYSDEF.INFTYPE IN ('GEN', 'SER', 'VAS') ORDER BY EVENTNUM) X WHERE ROWNUM < :B3 [CPU_TIME=1.45846245E8] • DECLARE job BINARY_INTEGER := :job; next_date TIMESTAMP WITH TIME ZONE := :mydate; broken BOOLEAN := FALSE; job_name VARCHAR2(30) := :job_name; job_subname VARCHAR2(30) := :job_subname; job_owner VARCHAR2(30) := :job_owner; job_start TIMESTAMP WITH TIME ZONE := :job_start; job_scheduled_start TIMESTAMP WITH TIME ZONE := :job_scheduled_start; window_start TIMESTAMP WITH TIME ZONE := :window_start; window_end TIMESTAMP WITH TIME ZONE := :window_end; chain_id VARCHAR2(14) := :chainid; credential_owner varchar2(30) := :credown; credential_name varchar2(30) := :crednam; destination_owner varchar2(30) := :destown; destination_name varchar2(30) := :destnam; job_dest_id varchar2(14) := :jdestid; log_id number := :log_id; BEGIN BEGIN execute immediate ('alter index FORSMS.IDX_MODMSGID_PRIORITY_STATE SHRINK SPACE COMPACT'); execute immediate ('alter index ESCALATION_SMS.IDX_MODMSGID_PRIORITY_STATE SHRINK SPACE COMPACT'); execute immediate ('alter index BILLING_SMS.IDX_MODMSGID_PRIORITY_STATE SHRINK SPACE COMPACT'); END; :mydate := next_date; IF broken THEN :b := 1; ELSE :b := 0; END IF; END; [CPU_TIME=9.6935401E7] • select congets.value, dbgets.value, physreads.value from v$sysstat congets, v$sysstat dbgets, v $sysstat physreads where congets.name='consistent gets' and dbgets.name='db block gets' and physreads.name='physical reads' [CPU_TIME=7.9970919E7] • select cont.value,scn.value,rid.value from v$sysstat cont, v$sysstat scn, v$sysstat rid where cont.name= 'table fetch continued row' and scn.name= 'table scan rows gotten' and rid.name= 'table fetch by rowid' [CPU_TIME=7.8268651E7]

Analyze Results

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ICT_RMC_BakiyeSorgulama

Avg A	Avg B	Avg %	Max A	Max B	Max %	Err A	Err B	Err %
ICT_RMC_BakiyeSorgulama								
603.8	370.4	-38.7%	603.8	370.4	-38.7%	0	0	+0%
Init								
4.32	10.02	+132%	4.32	10.02	+132%	0	0	+0%
HomePage								
0.583	0.581	-0.3%	0.583	0.581	-0.3%	0	0	+0%
Login								
3.74	9.44	+153%	3.74	9.44	+153%	0	0	+0%
Actions								
85.4	27.5	-67.8%	142.2	85	-40.2%	0	0	+0%
maya_search								
8.66	4.16	-51.9%	56.8	19.3	-66.1%	0	0	+0%
ucretlendirme								
57	21.5	-62.3%	93.7	55.9	-40.4%	0	0	+0%
bakiye_sorgulama								
18.7	1.62	-91.3%	46.9	9.89	-78.9%	0	0	+0%
End								
0.298	0.352	+18.1%	0.298	0.352	+18.1%	0	0	+0%
maya_logoff								
0.298	0.352	+18.1%	0.298	0.352	+18.1%	0	0	+0%

Why ?

Benefits for Performance Testing

- ✓ Software configuration issues
- ✓ Eliminate avoidable system rework due to performance issues
- ✓ Eliminate avoidable system tuning efforts;
- ✓ Increased productivity
- ✓ Eliminate problem effort
- ✓ Eliminite release rollback risk

Needs of Performance Testing

- ✓ Dedicated work developer for scripting
- ✓ The support from directors
- ✓ The dedicated budget and project schedule
- ✓ A well-defined plan and strategy
- ✓ Maintenance of scripting developer and tools

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Performance Testing at Turkcell

Performance Test Tool at Turkcell

- Integration to APM application
- Fast scripting and update
- Analyze an reporting as details
- Mobile Performance testing
- Monitoring to CPU and Memory as online
- Can execution from outside
- Scheduling
- Analzye based method

https://www.youtube.com/watch?v=rRiUS7mumxk


THANK YOU