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Software Architecture in Practice

QAS Puzzle Solution

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Two Availability

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Quality attribute	Availability
Source	Internal to the system
Stimuli	A crash
Artifact	Realm server
Environment	Normal operation
	Detects events, record it in log, continues in normal operation
Response	
Response Measure	Within one hour

Quality attribute	Availability
Source	Internal to the system
Stimuli	A failure occurs
Artifact	Non-player character AI process
Environment	Normal operation
	Detects event, record it in log, continues in normal operation
Response	
Response Measure	Within 5 seconds



Two Performance

Quality attribute **Performance**

- Source 100.000 independent clients
- Stimuli Generate on average 2 character events per second
- Artifact Game world server(s)
- Environment Normal operation
- Response Events are processed, game world state updated
- Response
- Measure With maximal 50 ms latency

Quality attribute	Quality attribute	Performance
Source	Source	100.000 independent clients
Stimuli	Stimuli	Request 76 GB expansion set download
Artifact	Artifact	Patch server(s)
Environment	Environment	Normal operation
Response	Response	Requests are processed, downloads are completed without data loss
Response Measure	Response Measure	Within 5 hours



Modifiability + Security

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Quality attribute **Modifiability**

Source	Developer
Stimuli	Change landscape feature in game world
Artifact	Game world component
Environment	At design time
Response	Makes modification without side effects
Response	
Measure	Within 10 minutes

Quality attribute

Security

Source	System of unknown identity
Stimuli	Attempts to change data
Artifact	Character database
Environment	Online
Response	Records access attempt, protects from data change
Response Measure	Immediately



Testability

Quality attribute

Source

Stimuli

Artifact

Environment

Response

Response Measure

Testability

System tester

Expansion development finished

Character database

Deployment time

Test environment setup and tests executed without failures

Within 15 minutes, covering all use cases