Automating Performance Tests:
Tips to Maximize Value and Minimize Effort

Created for:

Test Automation Day

Zeist, NE
23 June, 2011

Scott Barber
Chief Technologist
PerfTestPlus, Inc.

Scott Barber

CTO, PerfTestPlus, Inc.
sbarber@perftestplus.com
www.perftestplus.com

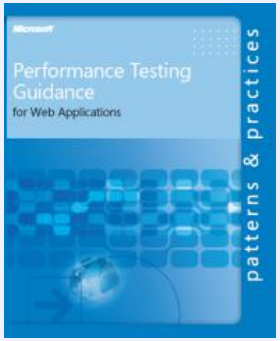
Co-Founder:
Workshop On Performance and Reliability
www.performance-workshop.org

Co-Author:

Beautiful Testing

oreilly.com/catalog/9780596159825

Performance Testing Guidance for Web Applications



www.codeplex.com/PerfTestingGuide
www.amazon.com/gp/product/0735625700

More than other test automation…

Bad performance test automation leads to:

- Undetectably incorrect results
- Good release decisions, based on bad data
- Surprising, catastrophic failures in production
- Incorrect hardware purchases
- Extended down-time
- Significant media coverage and brand erosion

More than other test automation…

Performance test automation demands:

- Clear objectives (not pass/fail requirements)
- Valid application usage models
- Detailed knowledge of the system and the business
- External test monitoring
- Cross-team collaboration

Avoid bad performance test automation

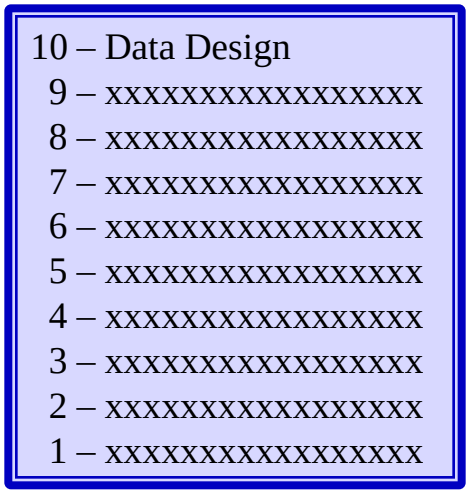
Unfortunately, bad performance test automation is:

- Very easy to create,
- Difficult to detect, and
- More difficult to correct.

The following 10 tips will help you avoid creating bad performance test automation in the first place.

Tip # 10: Data Design

- *Lots* of test data is essential
  (at least 3 sets per user to be simulated – 10 is not uncommon)
- Test Data to be unique and minimally overlapping
  (updating the same row in a database 1000 times has a different performance profile than 1000 different rows)
- Consider changed/consumed data
  (a search will provide different results, and a item to be purchased may be out of stock without careful planning)
- Don't share your data environment
  (see above)



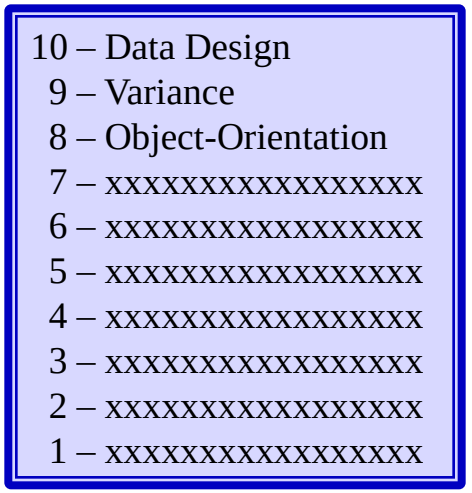
Tip # 9: Variance

- Static delays yield unrealistic results
  (a range of +/- 50% is typically adequate)
- Delays between each page should be different
  (users do not spend the same amount of time on every page)
- Script multiple paths to the same result
  (not every user will take a direct path to their desired result)
- Don’t let every path run to completion
  (not every user will finish what they started)

10 – Data Design
9 – Variance
8 – xxxxxxxxxxxxxxxx
7 – xxxxxxxxxxxxxxxx
6 – xxxxxxxxxxxxxxxx
5 – xxxxxxxxxxxxxxxx
4 – xxxxxxxxxxxxxxxx
3 – xxxxxxxxxxxxxxxx
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 8: Object-Orientation

- Separate scripts for every path is unrealistic
  (this can lead to a 1:1 ratio of scripts to simulated users)
- Many paths have overlapping activities
  (without OO, a change to single webpage can lead to dozens of script edits)
- Script maintenance is difficult enough
  (building OO scripts can make maintenance up to 10x simpler)
- Makes custom functions viable
  (code once, reuse over and over – even on future projects)



Tip # 7: Iterative/Agile

- Writing performance scripts is development
  (if you don't treat it as such, you'll regret it at execution time)
- Code some, test some
  (formal development practices are not generally necessary; applying sound principles is)
- The application will change, so will scripts
  (it's more efficient to keep up with changes build-to-build than all at once)
- Use configuration management
  (when scripts work against a build, check them into the CM system with the build – roll-backs happen)

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – xxxxxxxxxxxxxxxx
5 – xxxxxxxxxxxxxxxx
4 – xxxxxxxxxxxxxxxx
3 – xxxxxxxxxxxxxxxx
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 6: Error Detection

- Tools have weak error detection
  (particularly if your site has custom error pages/messages)
- Error pages tend to load *very* quickly
  (a test that has 50% undetected “page not found” errors will have fantastic performance results)
- Custom functions are often needed
  (yes, this means writing real code – get help if you need it)
- Don’t believe your performance results until you check the logs
  (see above)

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – xxxxxxxxxxxxxxxx
4 – xxxxxxxxxxxxxxxx
3 – xxxxxxxxxxxxxxxx
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 5: Human Validation

- Building scripts that *seem* to work is easy
  (building scripts that *do* work can be hard... Check logs & use the application manually while tests are running)
- Performance test results can be misleading
  (reported response times aren't always similar to what users see – get humans on the system while it's under load)
- Numbers don't tell the whole story
  (4 seconds may sound good, but users may experience 8 seconds outside your firewall)
- Users like consistent performance
  (get users on the system, then inject load – pay attention to their responses)

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – Human Validation
4 – xxxxxxxxxxxxxxxx
3 – xxxxxxxxxxxxxxxx
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 4: Model Production

- Results are only as accurate as your models
  (focus on how the system *will* be used, not how someone *hopes* it will be used)
- Use multiple profiles/models
  (usage patterns can vary dramatically over time – the same volume of traffic in an different pattern can change performance remarkably)
- Don't extrapolate results
  (when the environments don't match, don't guess what production will be)
- Limited beta releases are the best way to validate models before it's too late

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – Human Validation
4 – Model Production
3 – xxxxxxxxxxxxxxxx
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 3: Reverse Validate

- Released does not mean done
  (almost everyone pushes a patch shortly after release 1 – plan on it)
- Check your model against production usage
  (typically at the end of week 1 and month 1 are good)
- Re-run in test environment with revised models
  (you may be surprised at how much the performance results differ)
- Compare results from re-run against previous runs *and* production
  (this is the only way to validate your predictions and/or improve future predictions)

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – Human Validation
4 – Model Production
3 – Reverse Validate
2 – xxxxxxxxxxxxxxxx
1 – xxxxxxxxxxxxxxxx

Tip # 2: Tool-Driven Design

- The tool was not made to test your application
  (expect to need to accomplish some things that the tool doesn't make easy)
- Do not limit your tests to what is easy in the tool
  (it is frequently the things the tool doesn't handle that causes performance problems)
- Don't be afraid to use multiple tools
  (sometimes its simply easier to launch two tests from different tools than it is to get one tool to do everything)
- Tools are supposed to make your job easier (if it doesn't, get a new tool)

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – Human Validation
4 – Model Production
3 – Reverse Validate
2 – Tool-Driven Design
1 – xxxxxxxxxxxxxxxx

Tip # 1: Value First

- Sometimes the best automation is no automation
  (spending a week to script a difficult rare activity is not a good use of time – do that activity manually during test runs)
- Don't fall in love with your scripts
  (applications change, treat your scripts as disposable – it's often more efficient to re-record than to debug)
- Make custom code reusable
  (taking the time to make custom functions reusable will save time later)
- Before choosing to build a complicated script, ask ***"Is this the most valuable use of my time?"***

10 – Data Design
9 – Variance
8 – Object-Orientation
7 – Iterative/Agile
6 – Error Detection
5 – Human Validation
4 – Model Production
3 – Reverse Validate
2 – Tool-Driven Design
1 – Value First

Summary

10 – Design Data Carefully
9 – Build in Variance
8 – Employ Object-Orientation
7 – Apply Iterative/Agile Approaches
6 – Incorporate Error Detection
5 – Include Human Validation
4 – Model Production Usage Patterns
3 – Reverse Validate with Production
2 – Avoid Tool-Driven Test Design
1 – Value First; What *not* to Automate

Questions

Contact Info

Scott Barber

Chief Technologist

PerfTestPlus, Inc

E-mail:

sbarber@perftestplus.com

Web Site:

www.PerfTestPlus.com