

WHITEPAPER

Service Virtualisation to Drive Successful 21st Century Software Delivery



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Management summary

As much as any time in the past, market forces today drive the need to continually enhance the value propositions that organisations present to the market. Being able to deliver better, faster, cheaper and more reliably is critical to this. With the vast majority of market offerings having a core reliance on IT systems, this is a key target area for efficiency gains. In over 30 years of helping organisations to deliver high quality IT solutions, SQS has identified test environment access, cost and utilisation as a key challenge for many companies, and as such it represents a major opportunity for realising improvement driven competitive advantage.

Service Virtualisation is emerging as a crucial solution to these environment challenges, and the organisations that are adopting it are realising significant benefits. This paper will consider how best to support effective testing and solution delivery through the adoption of Service Virtualisation, and the traps to avoid if your organisation is to use this as a platform for achieving competitive advantage.

Introduction

This whitepaper will first consider the various attributes of Service Virtualisation – explaining the ways it can be used to deliver real benefit and competitive advantage. Then the paper will examine the various reasons why an increasing number of organisations are adopting Service Virtualisation. Subsequently the paper will set out how to successfully implement Service Virtualisation and the traps to avoid, and finally it will consider what the future might hold.

Service Virtualisation is sometimes confused with server virtualisation, but they are very different things. Think of Service Virtualisation as a very flexible and

reusable software simulator, a simulator that can act as a stand in, just like a traditional mock-up service, or stub, but with much more scale, flexibility, ease of use and flexibility to be replicated many times. Service Virtualisation removes the kind of constraints often found to hold back successful software change programmes in our increasingly integrated world.

The demand for Service Virtualisation arose as a result of an increasingly complex and integrated IT landscape, which meant traditional manual stubs were no longer sufficient. Instead, there has been a noticeable shift towards more sophisticated, environment-focused Service Virtualisation solutions.

Service Virtualisation is the strategic answer to delivering to time, budget and quality in highly integrated environments. This is particularly relevant when you consider that these days, applications under test often have to integrate with interfaces which:

- Are often incomplete
- Can have limited availability due to high demand
- May be expensive to use
- May not be available in the required timescale
- Could be developed separately at the same time

Service Virtualisation is a tool-based concept. Today's range of enterprise Service Virtualisation tools can apply the simulation concept on just about any IT asset, standard or proprietary technology. When using Service Virtualisation, one creates lightweight, portable, reusable and reconfigurable software assets (virtual services) which, when deployed in

an execution environment/container (called VSE, VIE, SOV (depending on product/vendor), act and behaves as if the real system were present and responding to specific requests in the desired way. This gives designers, developers, testers and even trainers much more flexibility than they had previously been offered.

Service Virtualisation delivers value across the development lifecycle. It unblocks a lot of the costly issues presented by traditional environment management solutions, and with prices dropping all the time is becoming an increasingly obvious choice for organisations looking to achieve competitive advantage through effective software delivery.

To quote Diego Io Guidice of Forrester [1], Service Virtualisation has “been gaining significant momentum in the past 12 months. Companies can easily realise financially quantifiable quick wins, shorter test times, increased productivity and better production quality”.

The environment services market – current status

SQS often undertakes reviews of customers testing maturity, and one of the principle opportunities for improvement is related to test environment access and the suitability of the available environments to meet demand. Environment access and suitability is regularly identified as one of the main bottlenecks to increased quality and quantity of throughput. Often environment use is not monitored, so weaknesses in this space are measured

qualitatively rather than quantitatively – but once a level of monitoring has been put in place it is often surprising how much environment downtime is experienced – resulting in failure of key resources, knock-on implications to progress and significant fix/rebuild costs. Figure 1 shows the kind of environment downtime which is often found upon investigation and the impacts that it can have.

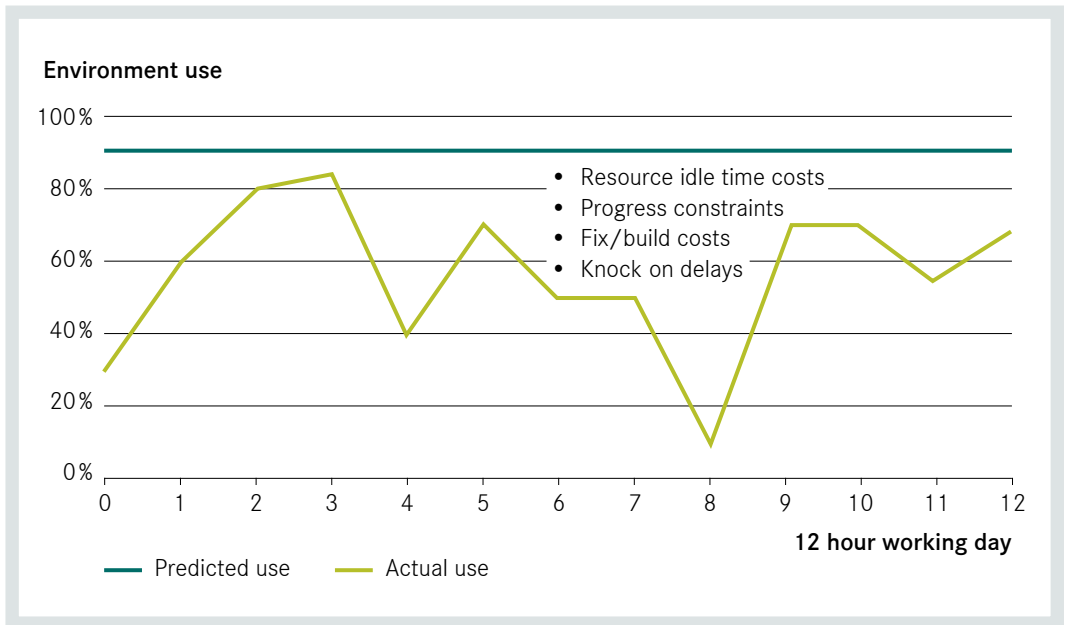


Figure 1: Example of environment availability monitoring

It is not only SQS who have observed this, for according to a Voke report on Service Virtualisation [2] more than half of all organisations expressed concern about the number of regular delays of testing cycles due to unavailable dependencies. On top of this they also reported lack of availability of back-end systems for end-to-end testing, lack of

environments for performance testing, data setup delays, lack of stable environments and test data issues, and lack of comprehensive environments. The majority of the participants (67%) reported access to only 50% of the systems they needed in order to do their job.

Service Virtualisation and test – why it is crucial

Testing is an introspective function, always seeking ways to become faster, better, easier and cheaper. Service Virtualisation is naturally very attractive to test teams as it provides a mechanism to achieve such improvements. In particular it supports:

- **Shift-left, early defect discovery** – enabling testers to test against incomplete or transitional interfaces earlier in the lifecycle, and enabling them to do more testing in the test window thanks to increased environment availability.
- **Agile testing** – providing flexible, local management of the test environments, giving agile teams much greater flexibility in their test efforts. As Service Virtualisation is lightweight and portable, it is ideally suited to execution from the cloud, where several globally distributed test and development teams can access and consume Service Virtualisation assets which would otherwise be very difficult to make available, such as a main-frame service or expensive legacy systems
- **Testing of third-party applications/interfaces** – with an increasing number of organisations opting to buy instead of build, the ability to integrate with third-party applications is key to successful software delivery. Service Virtualisation enables testers to test against third-party interfaces even though they are incomplete or have limited availability – enabling early visibility of integration defects and proving increased fix time.
- **Performance modelling/testing** – Service Virtualisation is designed to offer the scale and controllability required by performance modelling and performance testing. Being able to provision a number of performance relevant environments reduces the need for continual rebuilds and resets and supports performance testing above and beyond known tolerances.

The two areas in which the benefits of Service Virtualisation are most dramatically evident are time and cost. Traditional test environment provision and maintenance was a time-consuming and costly exercise for what appears now to be limited value. Service Virtualisation only needs the investment in a reference build and then any number of environment builds can be subsequently provisioned with minimal cost and effort.

Service Virtualisation's inherent challenges

Service Virtualisation technology has become very mature over the last few years as products in this space have quickly improved to become more technologically capable and enterprise-ready. Today's solutions can apply the concept to very complex integrated architectures, including proprietary, legacy based and mainframe systems.

The technology itself is not what is limiting how fast and widespread Service Virtualisation can become within an organisation today. This has more to do with the resistance of each organisation, and perhaps each person, to adopt change. Table 1 shows a summarised list of some of the most common Service Virtualisation adoption failure patterns:

Failure pattern	Potential impact
Organisation's inherent internal inertia often stands in the way of the full benefits of SV	Actual time before benefits are achieved is longer than it needs to be.
Failure to anchor any Service Virtualisation initiative high up within the organisation	Without executive sponsorship, initiative is more likely to fade or not become as valuable and widespread across organisation. This is especially true as often significant initial investment is required to initially set up SV.
Failure to incentivise the use of Service Virtualisation within organisation	If testers and developers are not incentivised to use the technology it will not be used as much and risk of SV fading or failing is high.
Failure to establish proper baseline	Difficult to measure for gains in efficiency and cost savings without an established starting point.
Failure to show that predicted value measures up to actual value	Full value realisation is not achieved.
Failure to measure actual value created for the business often enough	Full value realisation is not accurate.
Failure to have documented 'scorecards' that show proof of value	Full value realisation is not accurate.
Not having a structured approach for SV initiative	Applying technology at random or in wrong place might cause more work and less value.
Applying the technology in the wrong way creating new bottlenecks	Causes new headaches on top of existing ones.

Table 1: SV Failure patterns

What it takes to overcome critical SV challenges and succeed

For a Service Virtualisation initiative to be successful, it is important to have the right approach from the outset and to have the right people on-board.

Things to consider to accomplish a successful Service Virtualisation initiative:

- It is vital to establish executive sponsorship for the initiative and to think of it as a transformation programme
- Prioritise project selection based on effort vs potential value, and use an assessment model to select the order of candidates
- Create a Service Virtualisation candidate-readiness ‘Heat map’ based on critical questions around:
 - Customer relevance
 - Application tiering
 - Current constraints
 - Protocols used to interface with application (complexity)
 - Performance commitment
 - Production stability today
 - Data constraints
 - Project timelines

SV candidate readiness scorecard	Risk factor	Business Value	Cost to implement	Total score
What is the level of change (complexity) of the application?	10	1	10	100
Is application customer facing?	5	10	5	250
Is performance testing possible prior to production release?	10	5	5	250
Are there existing SLAs for the application?	5	10	5	250
Is there risk of delays in the overall project delivery?	10	10	5	500
And many more questions
Total	Total score / number of questions			270

■ 50 points or less: Low candidate for Service Virtualisation

■ 51 – 100 points: Medium candidate for Service Virtualisation

■ 101+ points: High candidate for Service Virtualisation

This is a good candidate for Service Virtualisation

Table 2: Example of SV candidate-readiness assessment heat map

Table 2 is an example of such a Service Virtualisation candidate-readiness heat map. Using this kind of assessment model prevents money being invested in Service Virtualisation solutions at the wrong time and/or wrong place.

- Think BIG and act SMALL and with focus initially
- Appoint a Service Virtualisation ambassador/ champion within the organisation to liaise between teams/projects
- Establish baseline against which to measure value. Do this for efficiency gains, infrastructure avoidance, and quality improvement
- Introduce checkpoints along the way, measure early and often
- Break down initiative into manageable blocks
- Validate the value created by Service Virtualisation against an established baseline
- Adopt a structured approach from the beginning; start with something that will create a lot of value
- Use a project-based approach with multiple phases: ‘Initialise phase’, ‘Setup phase’ and ‘Operate phase’ (Figure 2). This is a proven process to ensure that a logical, structured approach to Service Virtualisation implementation is taken and any investment is protected. Service Virtualisation can be a big step in many organisations – so it is critical that the basics of environment management are baselined, a benefit plan is put in place and achieved benefit is communicated.

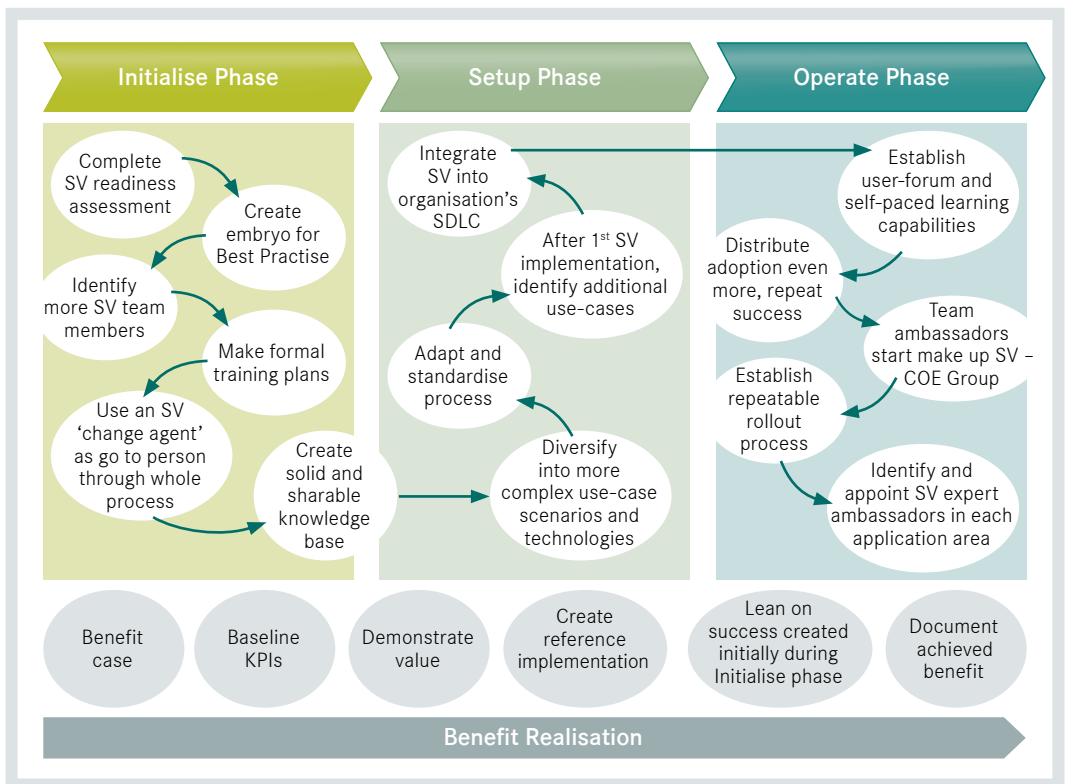


Figure 2: Service Virtualisation implementation roadmap

The future of Service Virtualisation

Service Virtualisation has already progressed a fair way along the hype cycle. Early adopters have started to realise its benefits and tool vendors have realised that they need to drop their initial prices to entice more organisations to embark on the journey of Service Virtualisation. So what is the next step? The answer is straightforward: Service Virtualisation will become a business-as-usual operation. An increasing number of organisations will progress down this path. In particular the continued expansion and adoption of agile delivery methods and cloud-based services will make Service Virtualisation more and more attractive.

It is possible to foresee a time when environment generation will be an entirely self-service operation, and environment customisation and configuration will be an easy, controlled process resulting in the right environment being available at the right time to anyone who needs it. The days of environments being used or available for 30% of the time are numbered. Service Virtualisation is here to stay.

Conclusion

About twenty years ago there was a lot of controversy in load and performance testing circles about the concept of a 'virtual user'. Today it is a standard concept and no one thinks twice about it. In five to seven years' time the concept of Service Virtualisation will be equally accepted. Even though organisations and people sometimes take a while to accept new ideas, it is a matter of time before every organisation that wants to stay competitive and cost-effective will adopt and use Service Virtualisation in one form or another. As their IT delivery maturity grows, organisations will increasingly accept and rely on cloud-based services, and will depend much less on on-site 'hard' solutions. Service Virtualisation is a perfect technology to use in combination with cloud-based delivery to provision complete end-to-end labs in combination with other cloud-based lab services. Service Virtualisation fills the gaps to make full end-to-end complex IT

systems available on an 'on-demand' basis in the cloud. Add to this the specialist service organisations that can assist with full service development and testing as a managed service on site, either near-shore or off-shore, depending on your need, preference and budget. The combination of a properly managed high-tech solution such as Service Virtualisation packaged with the right knowledge and delivery method makes for a powerful concept that allows you to deliver your software solutions to the business at the speed it demands, within budget and with the quality required.

Service Virtualisation will get absorbed into mainstream operation as costs continue to fall. It is a key enabler for cloud operation – allowing you to use the cloud without having to worry about the cost and effort of building the surrounding systems.

References

- [1] D. Lo Giudice (2014). The Forrester Wave™: Service Virtualization And Testing Solutions, Q1 2014
- [2] T. Lanowitz and L. Dronzek (2012). Voke Market Snapshot™ Report: Service Virtualization

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