Trend Wars

Service Management: An Interview with Alan Ganek

My name is Dejan Milojicic. I am a research manager at Hewlett-Packard as well as an editorial board member of IEEE Internet Computing and IEEE Distributed Systems Online. This is another installment of the Trend Wars interview series. DSO will host the long version and a podcast of the interview, while Internet Computing will publish an excerpt from the interview.

Our topic this time around is service management, the dawn of a new software era. The time when applications ran on a small computer somewhere in the corner is long gone. Today we have services running around the whole Internet. They introduce a lot of opportunities but also a lot of problems in management.

Today I am interviewing Alan Ganek, the chief technology officer of IBM Tivoli Software.

—Dejan Milojicic

Alan Ganek: Well, it’s absolutely the case that management is becoming a key factor. Independent studies have shown that maintenance and operations are growing at an immense rate in reaction to the scale-up and complexity of services that are deployed and the amount of equipment that they span.

IBM service management strategy focuses specifically on reducing management complexity. It’s about delivering information technology to the business as a service rather than as stacks of independent components. At IBM we’re focused on helping our customers tightly integrate people, processes, information, and technology to provide the business service.

We reduce complexity by integrating processes and automating tasks. But even more importantly, we’re building closed-loop autonomic processes. Making the systems observe what is going on, understand what it means to the service, make adjustments, and continue. That happens down in the technological components as well as closed-loop processes for the role that people have in interacting with the system.

There are many products in the market that perform specific information technology tasks. Our ISM [IBM Service Management] strategy ties those tasks together while also taking into account the business aspects such as service-level agreements and workload management.

And because no IT shop is sourced from a single vendor, our endorsement and implementation of open standards helps customers reduce complexity by enabling them to tie together disparate systems.

From the perspective of customers, what are the three key customer problems that service management needs to address, especially in the near future? And where do you see services evolving?
Our customers certainly share many of the same tactical and immediate problems. One of the foremost is aligning information technology and business objectives. Traditionally the IT shop was almost independent of the business goals in many companies, providing some back-office operation.

But now IT managers are increasingly under pressure to demonstrate how they’re delivering value to the business. They need to improve the communications and coordination internally within their shop and externally to their customers.

The sets of activities that could deliver a linkage between the business service offered and the technology is one of the key challenges that we hear customers ask for.

Secondly, in just the past couple of years there’s an enormous focus on governance and compliance and the need to have a foolproof system to track the change to the environment. It’s not enough to react to a situation in today’s world. You have to also be able to prove what the decision making was that led to it in order not only to meet internal requirements but to meet the increasingly stringent regulatory requirements like Sarbanes Oxley, Basel 2, and other kinds of requirements.

And the third one is the age-old problem that never goes away, the challenge of having to do all this at reduced cost. The good news is that I think the focus at the service management level helps align technology with our customers’ problems.

A lot of technologies mentioned recently are used more or less effectively—for example, virtualization, service-oriented architectures, and Web services, but also automation, grid, autonomic computing, Web 2.0. Can you distinguish which of them are technology enablers for service management and which are only fashionable, temporary topics?

I really believe that all the technologies you just mentioned are important today and for the future. The mistake is to think of them as completely independent. I see them as technological elements that are critical to a larger goal: implementing an intelligent, robust, highly automated infrastructure.

What we’re seeing across the board is an abstraction of services to enable greater technology integration and efficiency.

For example, virtualization provides an abstraction layer from the actual hardware that simplifies dynamic workload movement across servers and data replication and storage virtualization as well. With this kind of capability, hardware changes to the infrastructure can be made without interrupting the services, and you separate the relationship of a given service to a given piece of hardware.

Service-oriented architecture, Web services, are a vehicle to provide a very similar abstraction higher up at the software level and at the application level so that you can separate the service implementation from the environment that it’s running on and make changes in terms of linking components in a transparent way.

Grid is simply another form of abstraction for a distributed environment, but it leverages the same tools.

At the top of the stack, I think of autonomic computing. All the abstractions we talked about provide the basis for adding a highly intelligent algorithm to allow for much more self-managing behavior. But in order to work and be effective, it has to have a well-instrumented, virtualized environment that’s built upon standard interfaces so that you can easily apply those kinds of intelligent algorithms and that’s what autonomic brings.

So all in all, I think all these areas are important.

If you look at the layer below, Web services, is there anything that infrastructure providers—companies like IBM, HP, CA, and others--can do to make service management better and simpler?
There’s no question that infrastructure component providers can help greatly. And there’s a number of ways they can do that to facilitate service management. A key aspect of it is simply adhering to the key standards. If we get the components that are delivered from infrastructure providers to adhere to the emerging management standards, they then can plug seamlessly into the management environment, and then the services can take advantage of them and treat them in a very seamless and transparent way.

But there’s a number of things that the field of IT is expanding on that are related to this. One example of this is asset management, which used to be thought of as completely independent of IT, but the fact is that, from a customer standpoint, the issues of absorbing new technology start when something is ordered and hits the loading dock.

Other examples closely related to that are dynamic discovery and registration. Infrastructure providers can make that easier by providing interfaces that meet the standards so that they fit into that process.

As the standards evolve, customers will require that they be supported by infrastructure technology providers so that they can continue to enjoy vendor choice and ensure manageability of their infrastructure.

**Do you think that there is a new way for software to be developed beyond Web services-based that can dramatically help improve productivity in software management?**

Productivity in software management is really about making our customers’ administrators and operations people more productive; that’s what service management is all about. And this happens at multiple layers to enable it. Standards are key aspects of it.

At the data layer, we’re working on standards for configuration management database federation, which will enable much easier data sharing and transfer between systems. Pulling data from various sources will give end users a much more complete view of the enterprise and the ability to manage it more effectively.

Automation of course is a key ingredient. You see more out-of-the-box automation and integration between products to help eliminate the need to jump between different products to complete a process. This leads to a newer aspect, which is really process management: the ability not only to federate the data and automate tasks but to coordinate the interaction among users in the IT process.

Finally, I think the next wave of user interface technologies that enable end users to display data from various sources in a dashboard type of format will provide the ability to automate interactions between the underlying systems and to access that information in context. These are key aspects of implementing service management.

**If you go back to service management and software in general, where do you think this industry is going in the next few years?**

There is a profound shift going on in the marketplace all around business process integration and service-oriented architecture. Customers are looking to integrate silos of information and applications that will serve their business processes rather than define them. Making companies more innovative and responsive are key benefits of business integration—the integration of the business with IT, not just internally but with customers and partners as well.

We’ll find that industry software solutions that can be abstracted and reused in new, innovative ways are going to continue to happen.
There also appears to be consolidation in the standards base. Are there any other remaining standards that are still required to make better products?

Yeah. I think it’s safe to say that the management arena has been slow to get its act together on overall standards, and they are very critical. Without them, enterprises are dotted with islands of interoperability, causing complexity and stagnation of value.

Just like the IT infrastructure itself, standards are essential elements of the IT management system allowing all the building blocks and components that make up and/or operate service management. I think a key thing initially is to get some consolidation over some that are overlapping, and I’m happy to report good progress is being made.

The Web services distributed management standards, so-called “wisdom,” are making good progress in reconciliation. These are supported by IBM, HP, CA, and others in the Web services management standards arena that is supported by Microsoft and others.

The Service Modeling Language, which is backed by IBM, HP, Microsoft, and seven other top vendors, defines a consistent way to express how computer networks, applications, servers, and other IT resources are described.

And finally, and I think one of the ones that may be the toughest conceptually are policy definitions that will help in the translation of business goals to IT events. There are quite a few standards. But the good news is, I think, that we have a much better handle on the set of them. We have good progress on the key enabling ones, and I think that we will have over the next two or three years a set of standards that really provide the blueprint for making systems far more manageable.

Can you offer any advice regarding the open source community? Do you think that it can play a significant contributing factor in this area?

I am an ardent supporter of open source. I think it has been a tremendous contributor and will continue to be a very important factor. Today many commercial products ship with open source components. There are many significant open source efforts; one example is Aperi, an open source vehicle for storage management enablement, to which IBM contributes.

One thing you have to recognize is that standards often fail because multiple teams can interpret the same specification differently, so having a reference implementation released as open source can speed up interoperability. So, increasingly in the areas that we’re working on standards, we’re building reference implementations and in many cases making that available in open source.

Where do you think and what do you think we can expect from academia? Which are the hard research questions that industry expects academia to explore in the next decade? And what do you think are the experiences that we can offer to them?

Well, I like the way you phrased the question because I think it’s important for academia to focus on the really hard questions.

Where academia has helped us make significant progress is in the areas with large quantities of unknowns. Artificial intelligence algorithms, developing relational models, and taking better advantage of queuing strategies are all examples. The emerging focus on power management, I think, offers exciting opportunities where the kinds of skills in academia can contribute.

There are a number of very difficult issues in terms of how all the competing resources in complex IT environments can work with each other. How you optimize, provide security, and provide robustness in that kind of an environment is very, very important. And that relates to an intelligent-agent
technology, how they can improve their behavior over time by learning from the environment. So that gets into topics like machine learning and artificial intelligence.

I could go on with a long list. The last one I’ll highlight, though, is in user interface technologies. I think many of the major changes and transformations in our industry have had at the forefront a user interface paradigm change. And I think academia is the place where this kind of experimentation can go on to see what is the next wave of user interface that we then in industry can adapt to commercial applications.

**Alan, what is the role of people and processes in deploying these new management technologies in the enterprise? How will management solutions from different vendors coexist?**

There’s a lot of interest in the industry around the standardization of process and the role interactions in order to control IT costs and realize efficiencies. The majority of IT outages are due to configuration changes; the role of processes and people are often focused on change configuration management that formalize the analysis, scheduling, and implementation of changes on key IT infrastructure.

The configuration management database is a store that federates data from multiple sources including management tools. Service management should be implemented in an open architecture that enables and federates management solutions for multiple vendors.

In addition, the level of process and task automation should be configurable so that administrators can delegate tasks to automation as well as to other people as they feel appropriate. The function of the human in the automation control loop should be configurable based on the complexity of the change, the criticality of the affected line of business to the company, and the responsibility structure in that company.

Our service management federates management technology from multiple vendors. It uses a portal-based technology to allow for controlled workflows so that humans can be inserted in critical decision-making points along the discussion. So humans are right in the middle of the control loop and in a control point that’s defined by that installation, and automation of the technology is really something delegated by humans in that structure.

And we look for introducing as much automation into the underlying technology under the control of a semiautomated control loop that involves escapes for human control.

**Alan Ganek** is the chief technology officer of IBM Tivoli Software and a vice president of IBM Autonomic Computing. He received the Albert Einstein Innovation Award from Global Capital Associates for his leadership in establishing the field of autonomic computing. He received his MSc in computer science from Rutgers University. Contact him at ganek@us.ibm.com.

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**Cite this article:**

Dejan Milojicic, "Service Management: An Interview with Alan Ganek", *IEEE Distributed Systems Online*, vol. 8, no. 5, 2007, art. no. 0705-o5005.