

Applying ITIL To Application Performance Management

Net Forecasts – Peter J. Sevcik

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The IT Infrastructure Library (ITIL) is a widely accepted approach to IT service management. It describes the organization of IT resources to deliver business value, and documents processes, functions and roles in IT Service Management (ITSM). ITIL was first developed by the British government to improve IT acquisition practices. To their credit, they worked hard at leveraging existing best practices and gaining broad industry participation. Today, ITIL and the ITSM methodology are an international movement with thousands of participants.

ITSM is promulgated by an organization known as ITSM International with chapters in 42 countries. The U.S. chapter is known as itSMFusa (IT Service Management Forum USA) which in turn coordinates more than 40 local interest groups (LIGs) across the country and has about 450 companies as formal members. The message is that ITIL is coming to an office near you.

ITIL and ITSM are a huge step in getting the IT infrastructure and applications properly defined, designed, built and operated to meet customer needs. ITIL version 3 was just released in the spring of 2007 as a set of books that weigh 20 pounds! It describes a framework for managing IT from the top down driven by business and customer needs. The Service Operation book alone formally describes 14 activities. Enterprises are expected to adopt the activities as appropriate to their circumstance.

ITIL Service Operation works very well at managing every hardware and software element required to run an application in support of a business function. This classic silo view of IT has performed extremely well. And if one applies it to all of the silos, then one can say that they are running a service using ITIL on an end-to-end basis.

However there is at least one more way to interpret end-to-end: the flow of queries, commands, interactions, and data between a user device and the systems that are responding to each user task. I refer to this as following the bits (as in, follow

the money) as a way to understand what is going on.

In my last column I described the very complex world of technologies or columns and flows or rows that is a complete description of how an IT service works. ITIL has been applied to the columns (i.e., silos) and not the rows (i.e., flows). This is not an oversight as much as a lack of thinking ahead to the next stage of management evolution. This column is an attempt to apply ITIL to application flows.

APM Using ITIL

I have written extensively on the emerging art and science of application performance management (APM--see "Application Performance Management: Best Practices Do Work," BCR, May 2007, pp 22:27). APM is fundamentally the management of the flows or rows that cut through the technologies or columns in real-time as the users and systems adapt to each other.

For example, shifting traffic to more servers (with load balancing), in reaction to a growing user population, changes the nature and dynamics of the flows. Conversely, if application response time becomes intolerable, then users shift away from the service, reducing traffic; the dynamics of the remaining flows change as well.

Managing technologies is good, but it does not provide a complete picture. For example, the service may be operating on 100 servers that are all fully operational, thus providing 100 percent availability. But each user is on the other end of a flow only touching one of the servers along with about a dozen other columns to get a task completed. The key point is that the user experience is directly reflected in the behavior of the flow and only indirectly reflected in the availability of 100 servers.

Technologies are concrete and relatively easy to observe. At the most basic, you can look at the 100 servers and tell that smoke is not rising from any of them. But flows are by nature ephemeral, dynamic, hard to predict and impossible to see.

So it is not a trivial thing to apply the ITIL framework to flows.

To try and accomplish this, I propose that 4 of the 14 ITIL Service Operation activities, shown below, should be applied to user flows:

Incident Management--Loss of user access, loss of service within a geographic region, execution errors (e.g., HTTP 404), slow performance, software incompatibility (client and server versions failing to communicate), missing cookies, can't acquire address or credentials, etc. (Note: an incident is an event, alarm or group of events/alarms that adversely impact a specific business function.)

Availability Management--All authorized user access methods (wireline, cell service, WiFi) are working, client-server connections can be made, all devices on a flow path are operating, SSL keys are installed and certified, alternate routing, etc.

Capacity Management--Sufficient server process pools, load balancing, sufficient bandwidth for each flow, QOS and precedence handling to ensure bandwidth needs, traffic control, sufficient TCP connection pools, latency and loss is within application needs, application acceleration techniques are applied where needed, etc.

Service Level Management--Flow characteristics are known and supported, user response time supports the business function, voice services meet quality standards, videoconferencing supports business function, etc.

Enterprises should interpret the ITIL framework as it applies to application flows appropriate for their situation. Some may choose to add more of the ITIL activities. For example, continuity management in flows is the ability to make connections and shift traffic to an alternative datacenter. The four activities described above are a minimal starting point.

Service Management Maturity

Enterprises cannot take on all aspects of a service management framework overnight--not even the four listed above. It is important that enterprises understand the level of service management they are providing along a scale of simple to comprehensive. There is no harm in starting small. In fact, this is an essential condition to

getting started on the path to good APM service management.

We describe four stages of APM maturity:

Reactive Diagnosis--Diagnostic tools, problem triage, fault identification.

Proactive Intervention--Ongoing measurement, trend analysis, resource planning.

Quality Warranty--Service objectives are stated.

Portfolio Management--Managing many business applications as a group.

The four APM activities and four levels of maturity can be combined into a simple 16-cell matrix that shows the management value being delivered to the enterprise as shown in Figure 1. Clearly, companies start in the lower-left corner of the matrix and then move towards the upper-right. True application service level agreements appear later in the journey, but one does not have to wait until reaching the top-right cell to implement an SLA.

The Stereoscopic View

There is an activities-versus-maturity matrix for managing the technologies that parallels the matrix for flows shown in Figure 1. The interesting thing is that the APM and ITSM value matrix are not very different. In fact, the lower left corner where management is defined as reactive incident management is almost the same.

For example, if a box has failed and there is no alternate path, then the flows that pass through it are down. The only difference is that the ITSM incident report lists the box while the APM incident report lists the flows. On the other hand, if the box is operating and flows still can't get through, then the ITSM shows no incident while the APM has an incident report listing the flows. Let us assume that the repair requires changing a parameter setting in the box in order to permit this type of flow to pass through--the APM incident is closed. The difference is subtle but important.

By the time you get to service level management, the difference between ITSM and APM is much more pronounced. The delivery organization is really assuring the quality of two different things, both of which are needed to operate a business effectively. The two views are analogous to the stereoscope--remember the View

Master? Each view is interesting in its own right. But when put together, the three-dimensional effect shows you things and provides insights that were not visible before.

Why This Matters

It would appear that given the maturity of ITIL and technology management tools, we are doing all that is required to support a business. Why go to the extra effort to implement APM on flows? There are many non-IT real world examples where managing the flows is important.

City managers make sure that the traffic lights work in order to avoid chaos and keep automobile traffic moving. If the roads department can report that all the lights are working and no roads need repair then all is well--or as well as it could be. But what if a system measured the flow of cars and synchronized the lights such that each car got through the city faster? That would add flow management on top of the technology management.

Just this week, the National Transportation Operations Coalition published a report that concludes too many drivers are forced to sit idle at traffic lights because the lights are not synchronized or designed to change based on traffic flow. The report said such improvements would mean a significant savings in congestion and fuel. It describes several cities that have achieved about 10 percent faster transit times associated with 10 percent less fuel consumption but 20 percent less pollution, since cars produce more harmful emissions while idling. The coal-

tion states that reducing traffic delays by 40 percent is an achievable goal!

There are many more examples. Would you feel safe on a commercial flight if the FAA were not tracking all the planes in the air? Have you noticed the value of being able to inquire FedEx's or UPS's tracking system to learn exactly where your critical package is? Have you ever been invited to dinner where the host has a great kitchen with all of the latest most expensive gadgets but they can't cook a good meal? Tracking, managing, manipulating the flows is what transforms a good service into a great service.

Summary

ITSM is an important step in helping your IT organization better support your business. But APM is the next step along that journey. Using ITIL as a common framework for both is very valuable. Once your organization masters the delivery of both technology and flows, then you are really delivering optimal business services.

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