Management and Application Delivery

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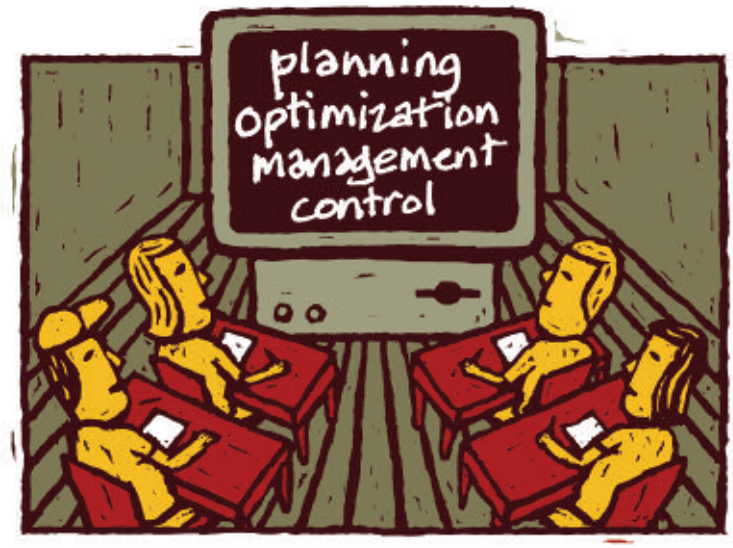

Introduction

In the last IT Impact Brief, I discussed some of the contents of a document that I recently authored entitled The Application Delivery Handbook. Included in that Impact Brief was a description of a number of the factors that complicate the task of application delivery. The brief also described a framework for application delivery that IT organizations can customize for use in their environment. The framework is comprised of four primary components: Planning, Network and Application Optimization, Management, and Control.

This Impact Brief will summarize some of the key components of the relationship between management and application delivery. A complete copy of The Application Delivery Handbook is available at www.netscout.com. I want to take this opportunity to thank the NetScout community for their strong support relative to the creation of the handbook. In particular, some of the information found in The Application Delivery Handbook comes from the surveys and interviews that I conducted with you.

The Role of Management

As identified in The Application Delivery Handbook, the primary management tasks associated with application delivery are to:

- Discover the applications running over the network and identify how they are being used.
- Gather the appropriate management data on the performance of the applications and the infrastructure that supports them.
- Provide end-to-end visibility into the ongoing performance of the applications and the infrastructure.
- Identify the sources of delay in the performance of the applications and the infrastructure.
- Automatically identify performance issues and resolve them.
- Gain visibility into the operational architecture and dynamic behavior of the network.

Sources of Application Degradation

I surveyed over 300 IT professionals and asked them to indicate the component of IT that is the biggest cause of application degradation. The survey respondents indicated that their company's network and their company's servers are the two leading causes of application degradation. However, the survey respondents indicated that the application, the middleware and even storage also cause application degradation. The obvious conclusion that can be drawn from their responses is that the process of managing application delivery is difficult in part because it crosses multiple technological and organizational boundaries.

One of the people that I interviewed is an architect for an Application Service Provider. He provided insight into the challenges of determining the source of an application-performance issue when he stated, "We used to have a real problem with identifying performance problems. We would have to run around with portable analyzers and other less friendly tools to trouble shoot problems. The finger pointing was often pretty bad." He went on to say that to do a better job of identifying performance problems the IT organization developed some of their own tools. The traditional IT infrastructure groups as well as some of the application teams are using the tools that his organization developed. He stated that the reports generated by those tools helped to develop credibility for the networking organization with the applications development organization. This leads me to conclude that in order to be successful with application delivery, IT organizations need tools and processes that can identify the root cause of application degradation and which are accepted as valid by the entire IT organization.

Top-Down Approach

Most IT organizations that I interact with currently take a bottoms-up approach to application delivery. By that I mean that these organizations manage each component of IT separately from each other and assume that if each component of IT is running well, then the application must be running well.

Organizations that use this approach to managing network and application performance implicitly make two assumptions:

- If the network is heavily utilized, the applications are performing poorly.
- If the network is lightly utilized, the applications are performing well.

The first assumption is often, but not always true. For example, if the company is primarily supporting email or bulk file transfer applications, heavy network utilization is unlikely to cause unacceptable application performance.

The second assumption is often false. It is quite possible to have the network operating at relatively low utilization levels and still have the application perform poorly. An example of this is any application that uses a chatty protocol over the WAN. In this case, the application can perform badly because of the large number of application turns, even though the network is exhibiting low levels of delay, jitter and packet loss.

This leads me to the conclusion that application management should focus directly on the application and not just on factors that have the potential to influence application performance.

Discovery

A major component of managing application performance is the ability to identify the applications that are running on the network. This is important for many reasons, including the ability to perform traffic management as well as the ability to perform an assessment of the network prior to either modifying the network or deploying a new application. In addition, as was discussed in previous IT Impact Briefs (May 2005, August 2006) there are a lot of recreational applications that are running on most networks and these applications consume considerable bandwidth. A key aspect of application delivery is identifying these applications and then either eliminating them or controlling their usage so that they do not impact the performance of applications that are business relevant.

I surveyed IT professionals relative to a variety of aspects of identifying applications that run on their network (a.k.a., the discovery process) as well as their handling of applications that are not business relevant. The results of that survey were that:

- Just over half (55%) of IT organizations perform discovery.
- Only 42% of the IT organizations that perform discovery claim that they do it well
- Only 41% of companies regularly attempt to identify non-approved and inappropriate applications.
- Less than two-thirds of the companies (61%) that regularly attempt to identify non-approved and inappropriate applications claim that they do it well.

End-to-End Visibility

Our industry uses the phrase end-to-end visibility in various ways. Given my belief in the importance of a top-down approach to application delivery, I use the phrase end-to-end visibility to refer to the ability of the IT organization to examine every component of IT that impacts the communications once users hit ENTER or click the mouse to when they receive a response from an application.

End-to-end visibility is one of the cornerstones of assuring acceptable application performance. End-to-end visibility is important because it:

- Provides the information that allows IT organizations to notice application performance degradation before the end user does.
- Identifies the correct symptoms of the degradation and as a result enables the IT organization to reduce the amount of time it takes to remove the sources of the application degradation.
- Facilitates making intelligent decisions and getting buy-in from other impacted groups.
- Allows the IT organization to measure the performance of critical applications before, during and after it makes changes.
- Enables better cross-functional collaboration.

Providing detailed end-to-end visibility is difficult due to the complexity and heterogeneity of the typical enterprise network. The typical enterprise network, for example, is comprised of switches and routers, firewalls, application front ends, optimization appliances, intrusion detection and intrusion prevention appliances as well as a virtualized network. An end-to-end monitoring solution must profile traffic in a manner that reflects not only the physical network but also the logical flows of applications, and must be able to do this regardless of the vendors who supply the components or the physical topology of the network

Summary

For many reasons, application delivery is growing in difficulty. One of the factors that make application delivery difficult is highlighted in this brief. That factor being that the process of managing application delivery crosses multiple technological and organizational boundaries.

As discussed in this IT Impact Brief, effective network management is a critical component of application delivery. In order for network management to be effective, however, IT organizations need to migrate away from their current bottoms-up approach to management and replace it with an approach that focuses directly on the application. IT organizations must also implement tools and processes that can identify the root cause of application degradation and which are accepted as valid by the entire IT organization.

There is an old adage that you cannot manage what you cannot measure. Relative to application delivery, that adage should be modified to state that you cannot manage application performance if you do not know what applications are running over the network. As shown in this brief, less than a quarter of IT organizations claim that they do a good job of discovering the applications that are running on their network. However, discovery is only a component of effective application management. Once the applications have been identified, IT organizations need the ability to have end-to-end visibility into the performance of these applications. End-to-end visibility is made difficult in large part because of the complexity and heterogeneity of the typical enterprise network.

In addition to becoming every more difficult, application delivery is becoming more important, with virtually no IT organization stating that application delivery is loosing in importance. The good news is that given the importance of network management to successful application delivery, there is an opportunity here to demonstrate the business value of network management. The bad news is that effective application management is very difficult to do.