

IPCS Group

OPTIMIZING IT PERFORMANCE

Application & Network Monitoring pro-active enabler of IT service excellence

Give Me More Bandwidth!

(Sounds familiar?)

It's logical enough: To accommodate more traffic, just add more bandwidth. Yet all too often network managers expend much of their budget on bandwidth upgrades without getting the expected return on their investment.

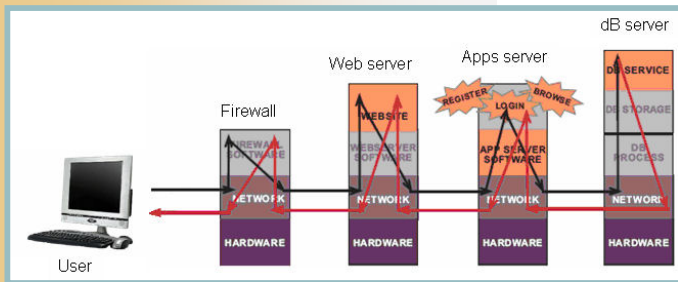
My Router Can Do That!

(Sounds familiar, too?)

Routers perform a critical function in the network. However, their queue-based architecture is inherently flawed for delivering application Quality of Service (QoS) because they cannot detect network congestion until after it has occurred.

The complexity of Internet (WAN) and Intranet (LAN) services has grown drastically. Many new business models, new customer-focused services, and efficient on-line collaboration services have emerged that improve the overall operational efficiency of business. To support these new services, IT infrastructures have growing complexity.

Rather than supporting simple client-server applications, IT infrastructures are now designed to comprise of multiple inter-operating tiers. The front-end includes firewalls to safeguard malicious attacks, web servers to handle user traffic, and load balancers to distribute traffic amongst all the web servers. The back-end has grown to be even more complex. While the web servers mainly act as HTML gateways that forward user requests, it is the middleware application servers hosting the business logic components that communicate with database servers, payment gateways, order processing systems, etc., to accomplish the business functions.



While the use of multi-tier architecture helps with respect to infrastructure scalability, it poses challenges for monitoring and management. For example, consider a user logging into a multi-tier web site. The user request is received by a web server, forwarded to the login application running on the middleware application server, which in turn accesses a backend database. If there is a problem with the database service (say, the database access is 50 % slower than normal), it is likely that both, the login application and the web server will be affected. In this example, a single problem has rippled and affected multiple infrastructure tiers resulting in a number of alarms – e.g. from the database server, application server, web server, etc. Since the end-to-end service involves multiple dependent application and network elements, a failure in one of the tiers most likely affect the other tiers as well. Consequently, problem identification and diagnosis in multi-tier infrastructures is a huge challenge.

The need to know will become increasingly important as Web-based applications increase, making it necessary to distinguish between each application type and performance characteristics, as well as manage the high bandwidth needed by business applications.

Gain Insight into Your Application Performance

Before you can take steps toward application performance optimization, you must understand application traffic running across the WAN and how network resources are affected. Visibility into your network is a crucial component to gaining this invaluable insight. Yet do you really know, for a fact, about everything that is running on your network? Most IT managers do not, due to the complexities of network traffic.

What You Don't k!Know Can Hurt You

What you don't know about your WAN bandwidth can hurt you. When true application-level classification and monitoring capabilities are deployed on WAN links, many IT organizations discover for the first time that a significant chunk of their total WAN bandwidth, often more than 50 %, is being consumed by non-business, recreational traffic (peer-to-peer, Internet videos, etc.).

To further compound matters, as IT infrastructures have grown in complexity, it has also become impossible for a single operator / administrator to be responsible for the entire infrastructure. Application developers, network administrator, database administrator, etc., and service managers (those who are responsible for the 24x7 operation and performance of the end-to-end network service are the norm today. Since a service involves multiple heterogeneous applications and network devices, it is not reasonable to expect that a service manager has the expertise in all domains (the web, network, database, application, etc.). While there are a variety of tools available for managing specific applications and network devices in-depth, these tools are mainly appropriate for the domain experts and application developers, who are interested in optimizing the performance of the infrastructure components under their control.

REAL-TIME MONITORING

Service managers are primarily interested in keeping the service running with good QoS. Their interest is mainly in determining when a problem happens, which domain is the cause of the problem - is it the network? Is it the server? Is it the database? By knowing this, a service manager can quickly determine which domain expert / application developer to hold responsible for solving the problem.

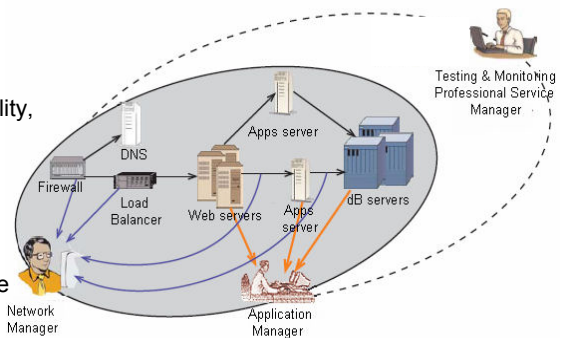
What Do You Know About Your LAN / WAN? In order to effectively maintain and manage IT infrastructures, IT managers require monitoring and management solutions that can enable them to determine the following in real-time:

- Do applications meet your users' expectations? Do they meet committed service levels?
- Which applications are running on your LAN / WAN? Which use the most resources?
- How much of your bandwidth budget is consumed by critical versus recreational traffic?
- Which users and which branch offices are the top consumers of a particular application?
- How is the service performing? Does performance match the internal SLA and cost?
- If there is a problem, which domain is the cause of the problem – is it the network? server? database? application?
- Where are the potential bottlenecks in service delivery and how can the service performance be optimized?
- Do remote locations get all the bandwidth they pay for? Do they need all of it? Are they using it efficiently?

Get Up to the Application Level To address these challenges, monitoring must be granular, especially at the application level. Rich traffic classification provides deep packet inspection of inbound and outbound traffic, detects dynamic and migrating port assignments, differentiates applications using the same port and uses Layer 7 application indicators to identify applications. The result is a better understanding of bandwidth use and application performance by specific applications, servers, office locations and users.

Monitoring lets you:

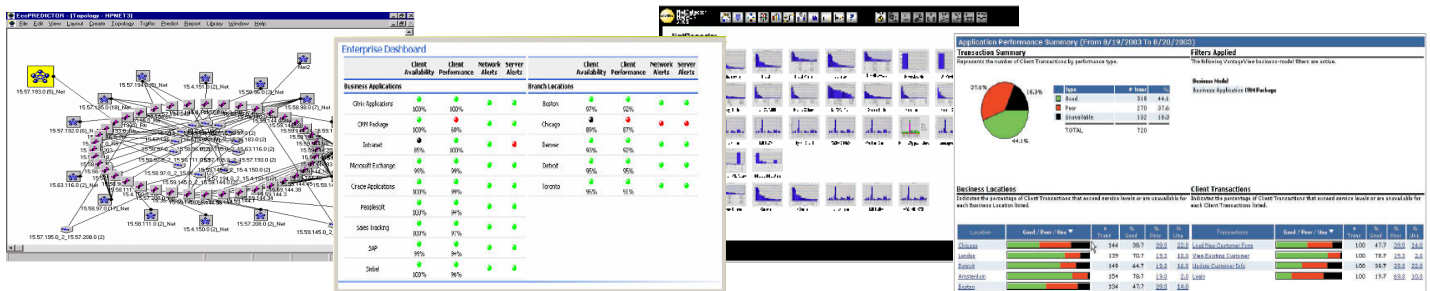
- Automatically detect and classify hundreds of business and recreational applications
- Identify top applications, users, servers, branch offices and Web destinations
- Analyze bandwidth usage, response times, the impact of configuration changes and sources of delay
- Track response times and break them down into time spent on the network and server
- Set standards for service levels and track their compliance
- Monitor conditions of interest, then, when thresholds are crossed, automatically take action to correct, document and/or notify someone of the problem
- Measure, graph and/or export more than 100 metrics describing usage, availability, efficiency, response times, errors and diagnostics



Pro-active Monitoring Benefits:

- Protect the performance of important applications, such as SAP and Oracle
- Contain unsanctioned and recreational traffic, such as P2P and Internet radio.
- Provision steady streams for voice or video traffic to ensure smooth performance
- Stop applications or users from monopolizing the link
- Reserve or cap bandwidth using an explicit rate, percentage of capacity or priority
- Detect attacks and limit their impact
- Balance applications, such as Microsoft® Exchange, that are both bandwidth-hungry and critically important, to deliver prompt performance with minimal impact
- Provision bandwidth equitably between multiple locations, groups or users
- Monitor conditions of interest, then, when thresholds are crossed, automatically take action to correct, document, and/or notify someone of the problem

Management Dashboards Once monitoring tools have been deployed, management (corporate and IT) is interested to have the ability to retrieve vital network performance data in real-time and preferably in one single view. IPCS develops dashboards to suit your individual needs and preferences. Together with you business and IT team, we develop boundaries of the acceptable performance / service of you applications and network and create single-click dashboard views for you to receive a real-time snapshot for your pro-active application and network service management.



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