Predictive Analytics for APM

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World-Class Customer Base, including…

Financial Services
- Intesa
- Sanpaolo
- Credit Suisse
- Bank of America
- Deutsche Bank
- Morgan Stanley
- HSBC
- Wells Fargo
- MetLife
- Citi

Media
- Verizon Wireless
- PayPal
- RIM
- BlackBerry
- CNN

Telecom
- E-Commerce
- Industrials
- Energy, Others
- Essilor
- U.S. Air Force
- BP
- CVS
Why is this always happening?

Amazon Cloud Outage Hits Netflix, Foursquare

Online banking outage sparks questions

Computer glitch takes out ATMs, online banking on a massive scale?
Typical strategies to assure performance

1. Overprovision to handle peak loads
2. Monitor IT infrastructure availability with multiple tools
3. Monitor Customer Experience and transaction latency with APM tools
“Drowning” in Data More than Ever*
With a continuously changing application environment

"Organizations collect 300% more metric data than 4 years ago… but only analyze about 30-40%" — Gartner

*Independent 3rd party Executive survey results
Its Time For a Paradigm Shift

- Do we need to manage what we have more effectively
  - Do it faster
  - Do it cheaper
  - Do more of it

- Or do we need to change what we manage?
  - Change our paradigm
  - Change the result

“Doing the same thing over and over and expecting different results”

Albert Einstein
Netuitive adds an **intelligence layer** on top of your existing application and infrastructure monitoring tools.
“Automated mathematics is more efficient than burdening your best engineer”
Predictive Analytics: A Must Have for Proactive APM

- Performance Visibility Across Business and IT metrics
- Cross-Domain Problem Isolation
- Proactive Notification
- Historical & Trended Reports
Service Provider
Bridging IT and Business
With Real-Time Analytics
for Point of Sale (POS) application suite
Scope of Case Study

• Point of Sale and Web Channel application
  • Cross-platform service model/analysis completed for POS Retail East

• Close to 6,000 managed elements (close to 1 million metrics)

• BAM metrics
  • Organized/analyzed hierarchically: Store, Region, District, Area, Channel
  • Price Plan, Quantity of devices, Customer Wait Times, Gross Sales
  • From POS data sources

• Customer Experience metrics from Compuware Vantage
  • Measuring hits, response time, success rate, etc.

• JVM metrics from CA APM (aka Wily Introscope)
  • Front/back-end response time, thread pool, JDBC connections, etc.
  • JVMs are configured and analyzed as load-balanced clusters
Case Study Solution Architecture for Real-Time Analytics

Correlation and analysis across existing data sources

Benefits ("VIP") = Visibility, Isolation, Proactive

Scope

IT (JVM, Clusters, etc.)
Customer Experience (Response time, etc.)
Business Activity (Total device quantity, wait time, etc.)

Additional target integrations

OS
Network
Firewall
Storage
Load Balancers
Database
Automated Statistical Correlation Across Silos
Continuous correlation discovery in real-time across CE, JVM cluster and Business metrics
Faster fault isolation using performance diagnostics tools
Historic baseline, correlated/contextual, and forecasted...for ultimate accuracy

CE, Business, and IT Key Performance Indicators (KPI)

Historic band of normalcy: green
Forecasted trend 2 hours in advance
Contextual band of normalcy: blue

Forecasting in Netuitive means each KPI can be projected forward based on learned behavior. Forecasting is automatic with no rule writing or scripting being required. The forecast (gold line) is two (2) hours head of the current value of the KPI (the black line).
Business metric visibility by geography, hierarchy, application, …

Color of each element indicates its Health Index state (Green, Amber, Red)
Cross-Platform Health Index Visibility
Cross-correlation across CE, Business metrics, and IT silos

- Health of overall POS application service
  Color indicates health.
- Health value for overall application
- Health of JVMs from CA Introscope
- Health Index
- Workload Index
- Service Model
- Business metrics
- CE Response Time
- JVM Cluster

Health of Customer Experience Metrics
Health of Business Activity Monitoring Metrics
Proactive Incident Case Study

May 16, 2012: NOC is reporting Multiple Network and Server Alarms for Data Center X impacting multiple applications.

1:35min before HP OVO Tool alarmed based on configured static threshold.

Problem Determination Start. 44+ Engineers Join Tech Bridge.

Tech Resolution Start.

Business Recovery Start

POS App Engineer Joins Bridge

Business Recovered

Bridge Ends

Earlier impact notice (2:07)

Isolating specific JVM back-end latency could have helped MTTR (1:56)

Pin-pointing the specific back-end call having the slow-down

Frontend Response Time (ms)
Netuitive 6.0 – “Open Platform”

1. Monitoring Data Collection
   - Monitoring Data Sources
     - Performance
     - Availability
     - Events
     - Attributes

2. Service Definitions
   - CMDB
     - CSV XML direct

3. Administration & Configuration
   - User & security management groups, policies, etc.

4. Incident Management
   - Alarm Consoles & Service Desk

5. Resource Management
   - Service Director, Run Book Automation, Triggers, etc.

6. Reporting
   - Reports (PDF, CSV)
   - PMDB
     - Custom DBs, Data Warehouses, 3rd party BI Tools

Integration Studio

Web API
Building the Proactive IT Operations Team

Technology + Process + People = Proactive

What makes Proactive IT Management so hard?

I have yet to meet an IT operations manager who doesn’t dread being proactive. The maximization of the term “proactive” may sound like a utopian buzzword. However, the concept is fundamentally appealing. The operational value is simply to shorten mean time to resolution (MTTR) while increasing the mean time between failures (MTBF) and increasing the cost efficiency of managing application environments. This results in a business value recognized in the form of an improved application service quality and uptime, achieved at a lower cost.

This model is responsible for creating a substantial industry in product and consulting services over the past few decades. The offerings range from process re-engineering to monitoring tools and cloud-based computing platforms. Yet, the vast majority of IT operations organizations continue with the same processes as being more reactive than proactive. This raises the question: Is it realistic to expect most large enterprise IT operations teams to be proactive in the foreseeable future?

To answer this, we must recognize that, as with most concepts, there is a full spectrum of definitions for the word “proactive” which share varying nuances. For IT operations teams that adopt a proactive stance in which the risk reaches a 100% failure threshold, being proactive, which is a successful implementation of the application once due to a full file system. However, the type of process that application once due to a full file system. However, the type of process that application once due to a full file system. However, the type of process that application once due to a full file system.

The definition of proactive even stretches to a self-healing application environment that guarantees a Service Level Agreement (SLA) of 100% uptime and performance.

Many factors contribute to operationalizing IT operations teams into a reactive stance. Change management issues around application architecture as well as the management of change, availability, performance, and capacity can all impede proactive management. The IT operations teams cannot stop their capacity to influence application development and operations teams to address issues prior to failing in an application outage. The performance claims that can’t be addressed either directly or via escalation are too dangerous to “acknowledge.”

A new approach is needed.

So how do we go from a static threshold on a disk volume to the next level of proactive notification and management? As a provider of proactive analysis for large scale APM solutions, we are asked that question every day. We have collaborated with dozens of Fortune 500 companies for better part of a decade to learn how to overcome some of the challenges that stand in the way of proactive management. The journey has been long and testing, and there is much more to learn, but that again is where we come in. We’ve been here for a long time and it’s a good time to stop. The key is among the large enterprises IT managers that we have worked with to see that a new approach is required as compared to the beaten path of the approaches they have used in the past. The last decade’s worth of experience has allowed us to simplify the hard lessons we have learned so far in the following three levels of a successful transition towards proactive management.
Progressive Operational Adoption
The “VIP” Approach

Pre-Netuitive

- Availability monitoring along with disjoint views of service performance.
- No real-time insight into service health
- Performance problems difficult to isolate
- Reactive, break-fix approach to service assurance.
- Multiple monitoring tools in silos
- Long MTTR and bridge calls
- Inability to detect degradations leading to cascading failures
- Costly outages

Visibility

Single pane of glass for application support.

**BENEFITS**
- “At-a-glance” insight into the workload and health of services.
- Visualize what’s normal behavior for KPIs.
- Understand the correlation between IT, customer experience and business KPIs.

Isolation

Troubleshooting techniques for domain experts.

**BENEFITS**
- Cross-platform diagnostics across silos
- Faster problem isolation across application tiers.
- Less time wasted by dozens of skilled staff on crisis calls.
- Reduced MTTR.

Proactive

Escalation procedures for Level-1 operators.

**BENEFITS**
- Actionable, proactive notification of impending performance problems
- Service degradation prevented or mitigated that may spiral into a cascading failure.

**TYPICAL USER**
- Level 3
- Level 2
- Level 1
Engagement Model Overview
Milestones of Value Delivery

You learn about us.

We learn about you.

Joint project success.

Your project success.

Incremental investment & ROI

Assessment

Live Demo. APM Workshop.

Identify Target App (APM) and/or Hypervisor (VDC).

Form Tiger Team (CoE).

Conduct Proof of Value.

Plan Ops/Eng. Adoption.

Financial Impact Analysis (FIA).

Proof of Value & Workshops

Focus on 1st App (APM) or Hypervisor (VDC).

Focus Ops Adoption on Use Case.

Customer-Specific Procedures.

Customized Training.

Initial Implementation

Visibility (Reports & Dashboards)

Isolation (Diagnostics & Procedures)

Proactive (Alarms & Run-books)

Expansion

More Applications & Data Sources

Expansions & Data Sources

LOBs & Entire Enterprise

Target Top Apps (APM) or Platforms (VDC).

Global Ops Adoption.

More Integrations.

Enterprise-wide Deployment.

Led by Account Team

Led by PS Team
Why Netuitive?

Netuitive’s award-winning software already helps ensure the performance of some of the world’s most critical applications and private clouds.

- **8 of 10 top global banks**
  - Global Payments
  - Online Banking
  - Treasury
  - Virtual Data Center
  - Desktop Virtualization Infrastructure

- **Large Telco services companies**
  - Messaging
  - Provisioning
  - IP TV
  - Video chat
  - Device security

- **Unique “behavior learning” technology**
  - 9 patents for advanced mathematics and analytics
Predictive Analytics for APM

Vielen Dank – Fragen?

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