Cisco IT’s Cloud Journey - AppDynamics in Cisco’s IT Application Management

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Cisco on Cisco
Agenda

- Why AppDynamics?
- AppDynamics: The APM Solution
- How Cisco IT Uses AppDynamics
- AppDynamics Walkthrough
- Cisco Case Studies
- Lessons Learned
Cisco IT at a Glance

- 93 Countries
- 458 Offices
- 139,317 Connected Stakeholders
- 500+ SaaS Apps
- 60,900 Virtual Machines
- 13,630 UCS Blades
- 26 Data Centers
- 17,000 Containers
- 98 IT Services
- 3000 apps
- 13,630 DNS Requests Per Day
- SJC 45%
- RTP 14%
- India 21%
- EU/EM 7%
- AP Other 7%
- AM Other 6%
- Global Distribution of IT Staff
- <15 Min Infra Provisioning Time

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Why AppDynamics?

Business Case
Business Impact

Credit Reporting Service Application

Slow

Users

Competitor’s Application

Fast

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The **TRANSACTION** is one of the best measures of user experience and business impact.
AppDynamics

The APM Solution
AppDynamics Components

Agents
- Application & Web
- End User Monitoring
- Infrastructure

AppDynamics Controller

Product for End Users
- Developer
- IT Operations
- Marketing
- Business Owner

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The AppDynamics Solution

**Application & Web Server Monitoring**
- End-to-End Transaction Tracing
- Real-Time Visibility
- Detect Issues. Identify root cause

**End User Monitoring**
- Browser, Mobile Real User Monitoring
- End User Global Experience
- Synthetic Monitoring

**Infrastructure Monitoring**
- Application and Infrastructure Correlation
- Server Monitoring
- Database Monitoring

**Application / Business iQ**
- Transaction Analytics: Performance and Business
- Log Analytics
- Browser and Mobile Analytics: Contextual data
The “How”

- Byte Code Injection
- Deep Dive Analysis
  - Slow, Stalled, Error
  - Health Rule Violation
How Cisco IT Uses AppDynamics?
Cisco IT AppDynamics Architecture

Cisco Premises

- Application Server Agent (Java, .Net, PHP, node.js)
- Machine Agent (OS)

Public Cloud

- AppDynamics Controller
  - One-way HTTP/S

- End User Monitoring
  - One-way HTTP/S

- Mobile Monitoring
  - One-way HTTP/S

- Central Management Server
- SaaS
- User Interface & Reporting

Firewall
Deployment Status

Performance Domains

<table>
<thead>
<tr>
<th>Application</th>
<th>PaaS</th>
<th>IaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>End User</td>
<td>Middleware</td>
<td>Compute</td>
</tr>
<tr>
<td>Browser/Mobile</td>
<td>Database</td>
<td>Network</td>
</tr>
<tr>
<td>Web Server</td>
<td></td>
<td>Storage</td>
</tr>
<tr>
<td>App Server</td>
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</tbody>
</table>

- **Current Implementation**
- **In-Flight / Future Implementation**

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AppDynamics

Walkthrough
Step 1 - Application Modeling on AppDynamics – A Prototype

Business Application —
a top-level container in AppDynamics that comprises of set of inter related services/applications called Tiers

Tier —
an individual service/application that connects one or more nodes. It generally interacts with other tiers to serve the business purpose

Node —
an individual application server or JVM on which you have installed an AppDynamics agent
AppDynamics Home Page

Overview

Recently Visited
- EndpointMessageListener:IEEOutboundQueue
- EndpointMessageListener:IEEOOutboundQueue
- Business Transactions
- Tiers & Nodes
- ServiceLink - Dashboard
- RequestCenter - Dashboard
- prod1-171 - Dashboard
- Tiers & Nodes
- eStore-prod - Dashboard

Applications 344
- 90 critical, 17 warning, 237 normal
- eStore
- eStore-prod
- GIT-ES-Devices-eStore-p

User Experience

Browser Apps 23
- ANNUITY-p
- ASDC
- CCW
- CCW_NGW
- CCW_Renewals_NonProd
- CdrSearch-nong

Mobile Apps 0
No Mobile Apps

Get Started

Databases 13
- 0 critical, 0 warning, 13 normal
- BNP_LT_MongoDB_POC_Host1
- BNP_LT_mongoDB_POC_Host2

Servers 150
- 8 critical, 0 warning, 31 normal
- 0a40b1aa8ab7
- alfcms-a20-roc1-01

Analytics

Transactions 0
Browser Requests 0

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End User Experience

End User Response Time Distribution

End User Response Time Trend

Browsers

Top Ten
- Chrome
- Firefox
- Internet Explorer
- Android Mobile
- Safari
- Edge
- iOS Mobile
- iOS Chrome
- iOS App Web View
- Liebao browser

Devices

Top Ten
- Windows
- Mac
- Android
- iOS - iPhone
- Linux
- iOS - iPad
- Unknown
- Windows Mobile
- BlackBerry
- Samsung

Top 5 Countries by Total Page Requests

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Page Requests</th>
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<tbody>
<tr>
<td>United States</td>
<td>3,797,403...</td>
</tr>
<tr>
<td>India</td>
<td>2,335,926...</td>
</tr>
<tr>
<td>China</td>
<td>1,266,192...</td>
</tr>
</tbody>
</table>
Policies, Rules and Actions – Autonomous Operations

Home | Applications | User Experience | Analytics | Dashboards & Reports

- Policies
- Health Rules
- Actions
- Email Digests

**Policies**

<table>
<thead>
<tr>
<th>Name</th>
<th>Trigger</th>
<th>Enabled</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Agent stopped</td>
<td>Health Rule Violation Events: Health Rule Violation Started - Warning,</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Health Rule Violation Started - Critical, Health Rule Violation...</td>
<td></td>
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</tr>
<tr>
<td>Business Trans</td>
<td>Health Rule Violation Events: Health Rule Violation Started - Critical,</td>
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<td>Health Rule Violation Started - Warning, Health Rule Violation...</td>
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</tr>
</tbody>
</table>

Actions:
- Create
- Edit
- Delete
- Copy
- Enable
- Disable
AppDynamics

Case Studies in Cisco IT
Application Developers

- Quality & Speed
Quality Shift-Left

- LT
  - App Under Test
    - AppDynamics App Agent
    - DevOps
      - Release
    - DB Profiler (home grown)
Outcomes

- Defects Reduction
- Quality Code
- Lower Dev Cost
Cisco Networking Academy (NetAcad)

- End User Monitoring
NetAcad

Java, Ruby, Postgres, Custom, Oracle

SaaS, Public & Private Cloud

Technologies/Languages

Distributed Environment

1.4M

Users

160

Countries
NetAcad Challenges

Frustrated Users

Support Team: Stumped
NetAcad: EUM

End User Response Time: 7,277 ms average
NetAcad: Value Realized

Operational Metrics

- 48% faster response times
- 2-6 hours (from 1-3 days)

User Experience

MTTI Speed

Cost

$2M cost avoidance

Business Metrics

- # of Students
- # of Downloads
- # of Instructors
- Geo-Location/Perf Relation

NetAcad: Value Realized

# of Students

# of Downloads

# of Instructors

Geo-Location/Perf Relation

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Cisco OneSearch

- Complexity
The Complexity Battle

- **WEB**: 45 Websites
- **15M**: Web searches
- **6 Sub-systems**: 6 Sub-systems
- **357**: JVMs
- **Distributed**: Distributed
- **Heterogeneous**: Heterogeneous
Monitoring Solutions

Siloed Monitoring Solution

- Sub-Sys 1 → Monitoring System 1
- Sub-Sys 6 → Monitoring System 6

Large Log Files

No correlation

Single Monitoring Solution

- Sub-Sys 1
- Sub-Sys 6

AppDynamics
Lessons Learned

Not Yet Another Tool

One “complete stack” Deployment

Health Rules Fine Tuning

Effective Adoption

RBAC – Controller Overload
Cisco IT Vision
Self-Driving Operations

- End to end visibility

Business Performance
Self Defending

Self Provisioning
Self Driving and Healing Operations

Intuitive network

SaaS

PaaS
Thank you