Technology Strategies

Defining OI&T's "To Be" Technology Vision

Enterprise Design Patterns: End-to-End Application Performance Management (APM)

What are Enterprise Design Patterns?
Reusable templates that guide the enterprise to implement a set of technologies in standard ways

How do Enterprise Design Patterns relate to the Enterprise?
Enterprise Design Patterns translate OI&T's strategic goals, as documented in the Enterprise Technology Strategic Plan (ETSP), into "real world" direction to guide system design

How can I learn more?
To learn more about Mobile Enterprise Design Patterns, contact Joseph Brooks (joseph.brooks2@va.gov)

To read the full document, see the TS website

To ask questions about Enterprise Design Patterns in general, reach out to AskTS@va.gov

- **Enterprise Design Pattern Scope:** Information Technology (IT) projects within the Department of Veterans Affairs (VA) developed or acquired solutions in a stove-piped fashion, resulting in redundant functionality including application performance management (APM). This duplication has resulted in an increased total cost of ownership (TCO) and APM complexity. APM tools were not deployed end-to-end, hindering VA's ability to evaluate application health consistently and to identify problems proactively. This Enterprise Design Pattern provides guidance to projects in applying end-to-end APM capabilities provided by Enterprise Shared Services (ESS). This document guides projects in the use of standard APM capabilities provided by VA regional data centers. Additional coordination with OI&T Service Delivery and Engineering (SDE) Enterprise Operations (EO) on capacity and operations planning is required prior to deployment.

- **Current State:** End-to-end APM is currently available at regional data centers to monitor all operational systems and services, including ESS (Appendix E). All new applications are required to integrate the APM capabilities provided by the VA data centers. The current approach applies to solutions deployed at VA's data centers and will accommodate VA-approved external cloud service providers as the VA Cloud Strategy is deployed.

  The current end-to-end APM tools in VA data centers deliver a holistic view of all user transactions, helping IT stakeholders understand the health, availability, service impact, and end-user experience of critical applications. APM enables projects to diagnose and resolve problems proactively while optimizing the performance of mission critical services. APM supports prioritization of incidents based on service impact and quickly pinpoints problems across disparate technology silos.

  The current APM capabilities focus on the VA regional data centers and emphasize web-based applications. VA will also require the monitoring of cloud services and mobile applications in the future. PD and SDE will require upfront coordination prior to Milestone 1 to conduct capacity planning and establishing KPIs prior to deployment. This necessitates a "DevOps" mindset involving close collaboration between development and operations staff, especially as VA shifts to a continuous integration and deployment paradigm.

- **Design Pattern Solution:** The future-state operational vision consists of end-to-end APM covering on-premise, cloud and hybrid environments, and support for DevOps practices for building, testing, and deploying applications. APM includes visibility into cloud environments, as discussed in detail in the Cloud Computing Enterprise Design Patterns. APM integrates predictive analytics capabilities to enhance proactive monitoring and trouble resolution. These capabilities support mobile applications and will integrate with enterprise mobile analytics capabilities, as explained in the Mobility Enterprise Design Patterns. Specifically, end-user experience monitoring supports mobile analytics, and APM achieves this through the following functions:

  - Deploying a mobile performance agent on top of end-user monitoring capabilities, which may require adding a library and recompiling the code to perform APM for the application
  - Agent piggybacking on other user's service calls through an application programming interface (API)
  - Generating crash analytics to create a snapshot of device crash statistics

  Deploying APM for cloud services will include health endpoint monitoring. This is typically the combination of two factors: the checks (if any) performed by the application or service in response to the request to the health verification endpoint, and analysis of the result by the tool or framework that is performing the health verification check. The response code indicates the status of the application and, optionally, any components or services it uses.

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