This is an except from a personal yearly retrospective of 2015, nearing the end of a 18-month full IT transformation effort. The presentation is the result of a team wide effort I had the honor of leading to completely rebuild all infrastructure, operations, development and procurement.

This presentation is part of a larger experiment in embracing public, visual personal brand building, available at:

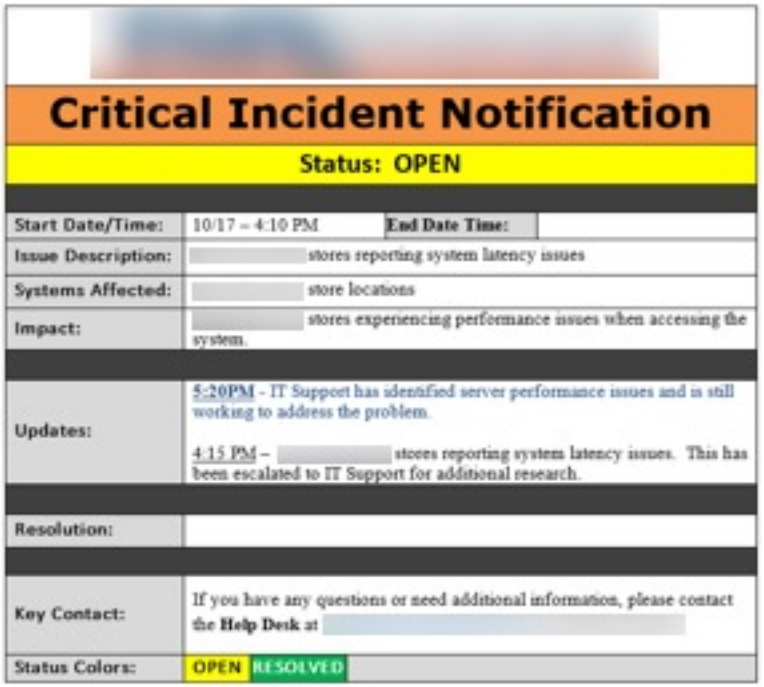
https://mattschneider-visualcv.github.io/

VisualCV started as a Pathfinder's project at Dell Technologies while I was mentoring engineers through our career ladder into roles requiring panel & packet review, Principals & Distinguished.

Process

Critical Incident Process

- Instituted Critical Incident Process to increase awareness and decrease time to resolution.
- Notification to all interested parties ensures acknowledgement of issues with stakeholders:
  - Executive Team
  - Department Heads
  - All IT
- Raises awareness to business impacting issues, ensuring knowledge of these issues is accurate from the source.
- Bridge call hosted to drive to quick resolution with all IT teams represented.
- Ensures a cultural bias toward resolving issues.
- Has increased knowledge on Applications.
- Defined Critical Incident for clarity.
- Created Situation Management role.
- Situation Management Policy



Critical Incident Notification

Status: OPEN

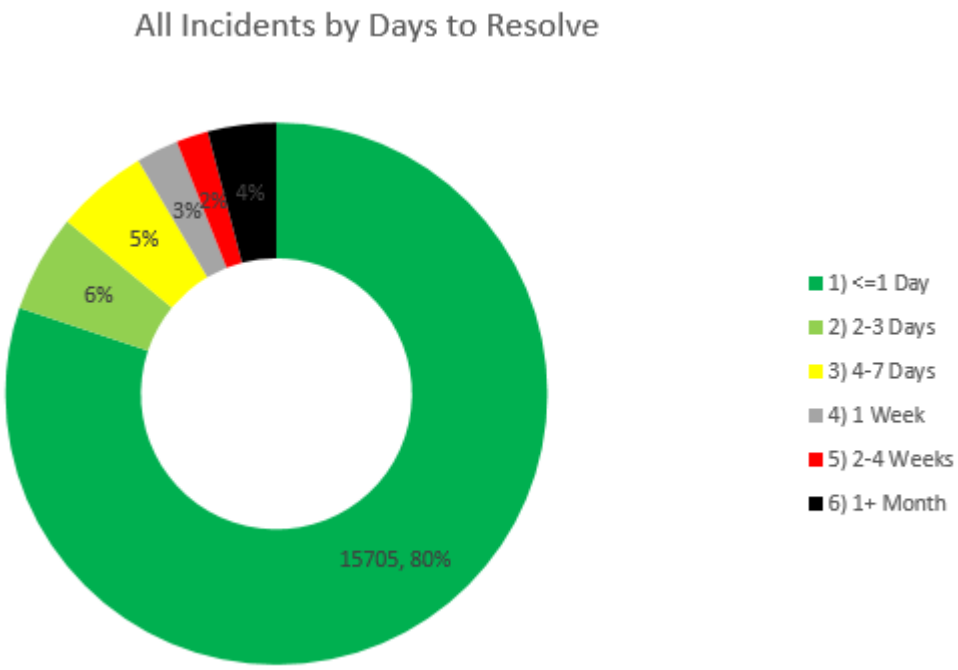
Start Date/Time:	10/17 – 4:10 PM **End Date Time:**
Issue Description:	stores reporting system latency issues
Systems Affected:	store locations
Impact:	stores experiencing performance issues when accessing the system.
Updates:	5:20PM - IT Support has identified server performance issues and is still working to address the problem. 4:15 PM – stores reporting system latency issues. This has been escalated to IT Support for additional research.
Resolution:	
Key Contact:	If you have any questions or need additional information, please contact the **Help Desk** at
Status Colors:	OPEN RESOLVED

Incident Management Process

- Developed the incident management process where none existed.
- Moved Incident Management on to MS System Center Service Manager.
- Created a priority matrix around incidents incorporating business impact to drive team to work on restoration of service in a business oriented way.
- Created Service Level Objectives associated to each priority level with acknowledgment and resolution appropriate for each priority.
- Implemented post incident surveys through Bomgar, eliciting end-user feedback on incident response to provide insight for management into areas for improvement.
- Leveraged the IT Central Application list to help categorize incidents by the affected application, ensuring clarity around which applications were causing incidents.
- Extensive documentation around process and procedures, including training aids.
- Trained IT team through multiple sessions.
- Incident Logging Cheat Sheet
- Creating Incident Job Aid

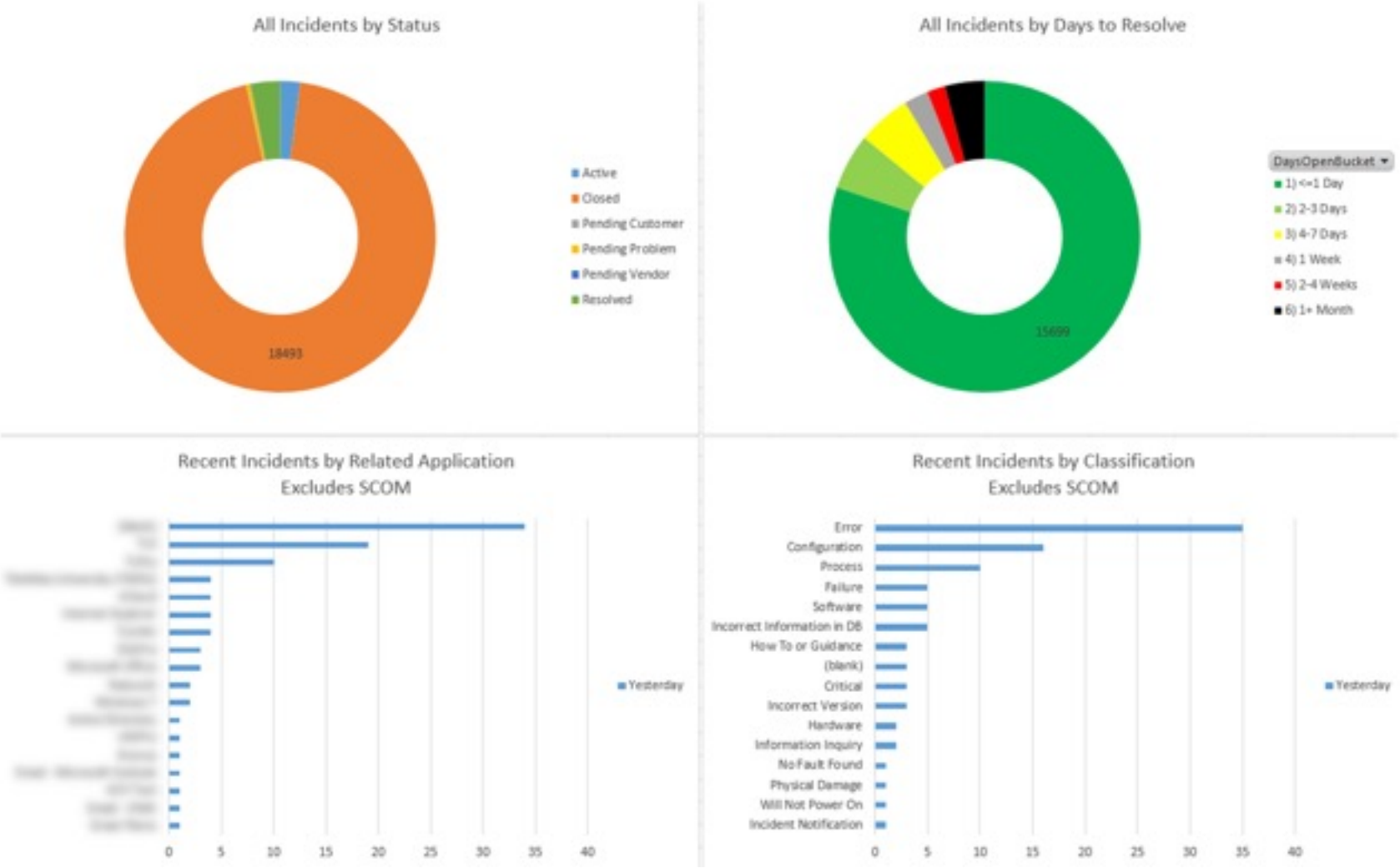
Incident Management Process - Statistics

- Full go-live of SCSM based incident management
  - 90 days from go live, 16,406 incidents have been logged and resolved, with an average of ~5500 per month.
  - Of those incidents, 80% have been resolved within the same day.

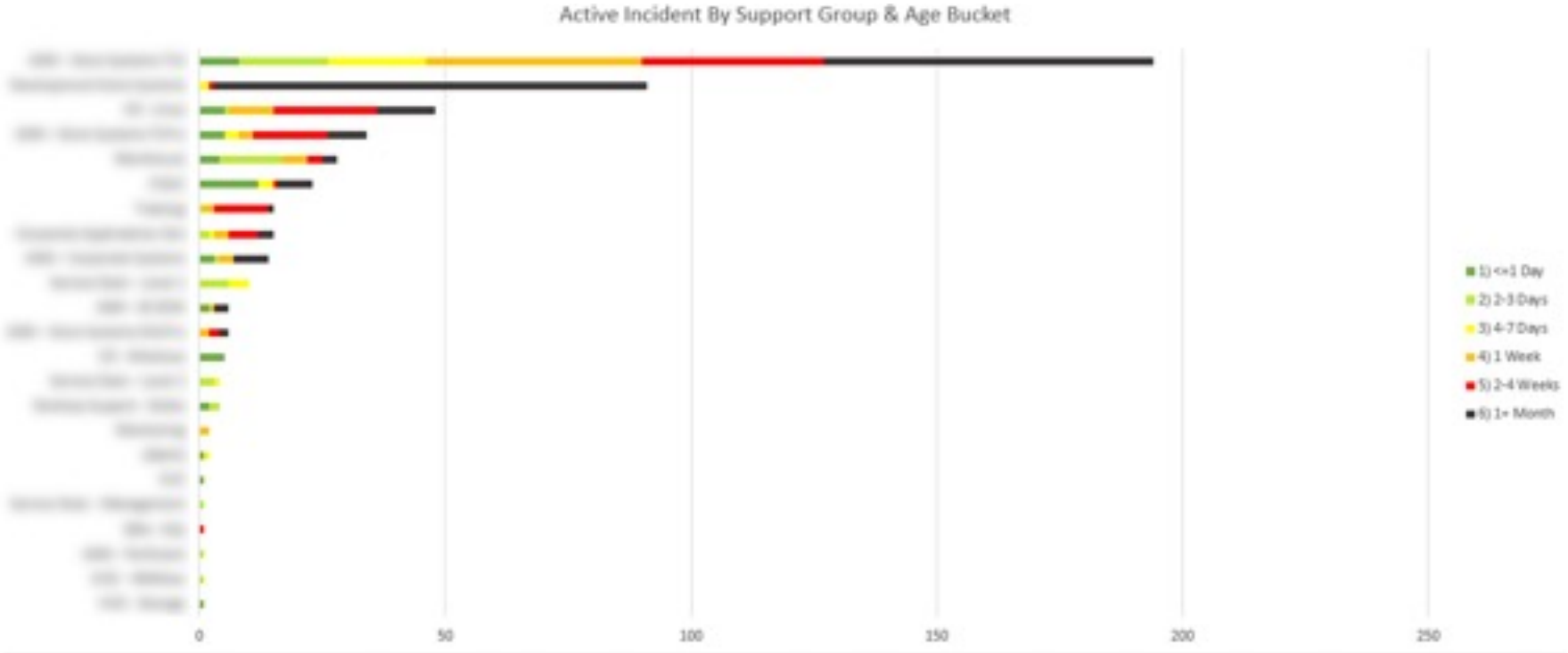


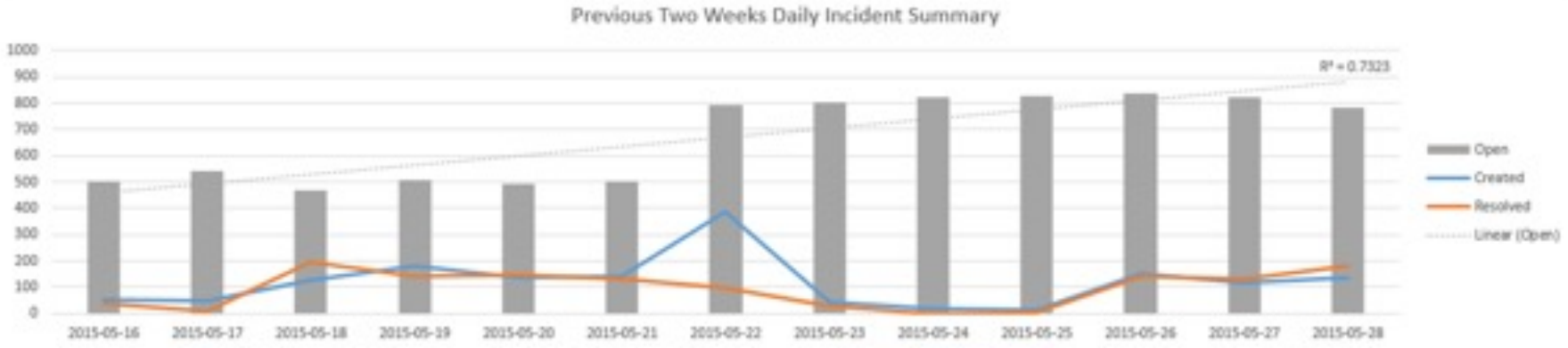
Incident Management Process - Statistics

- IT Reviews Incident Statistics every morning to keep abreast of status, including team breakdown, incident age and related application and category.



Incident Management Process - Statistics





Incident Management Process - Statistics

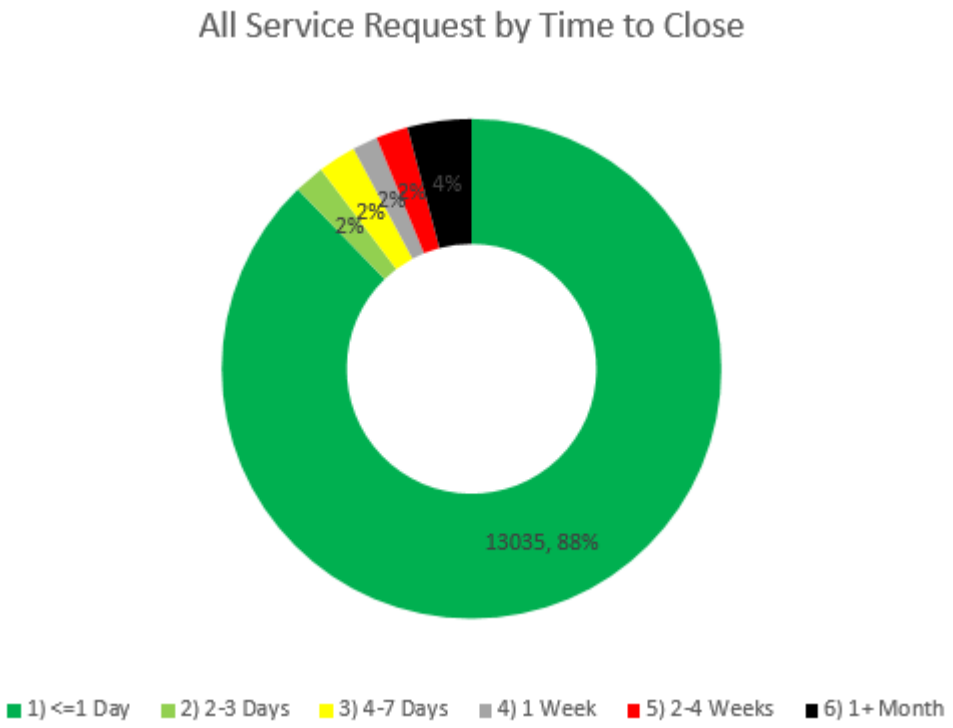
- Word Clouds of incident descriptions are generated to search for abnormal activities that need additional research and attention.

Service Request Process

- Introduced Service Requests, dividing incidents (something broken) from service requests (something functioning correctly that needs updates or changes). The separation helps ensure priority on restoration of service, while categorizing the different ticket types for trending and analysis.
- Built Service Requests on System Center Service Manager, providing a single interface for tickets.
- Developed enhanced self-service forms for service requests, allowing end users to quickly enter requests and ensure they are properly categorized and routed.

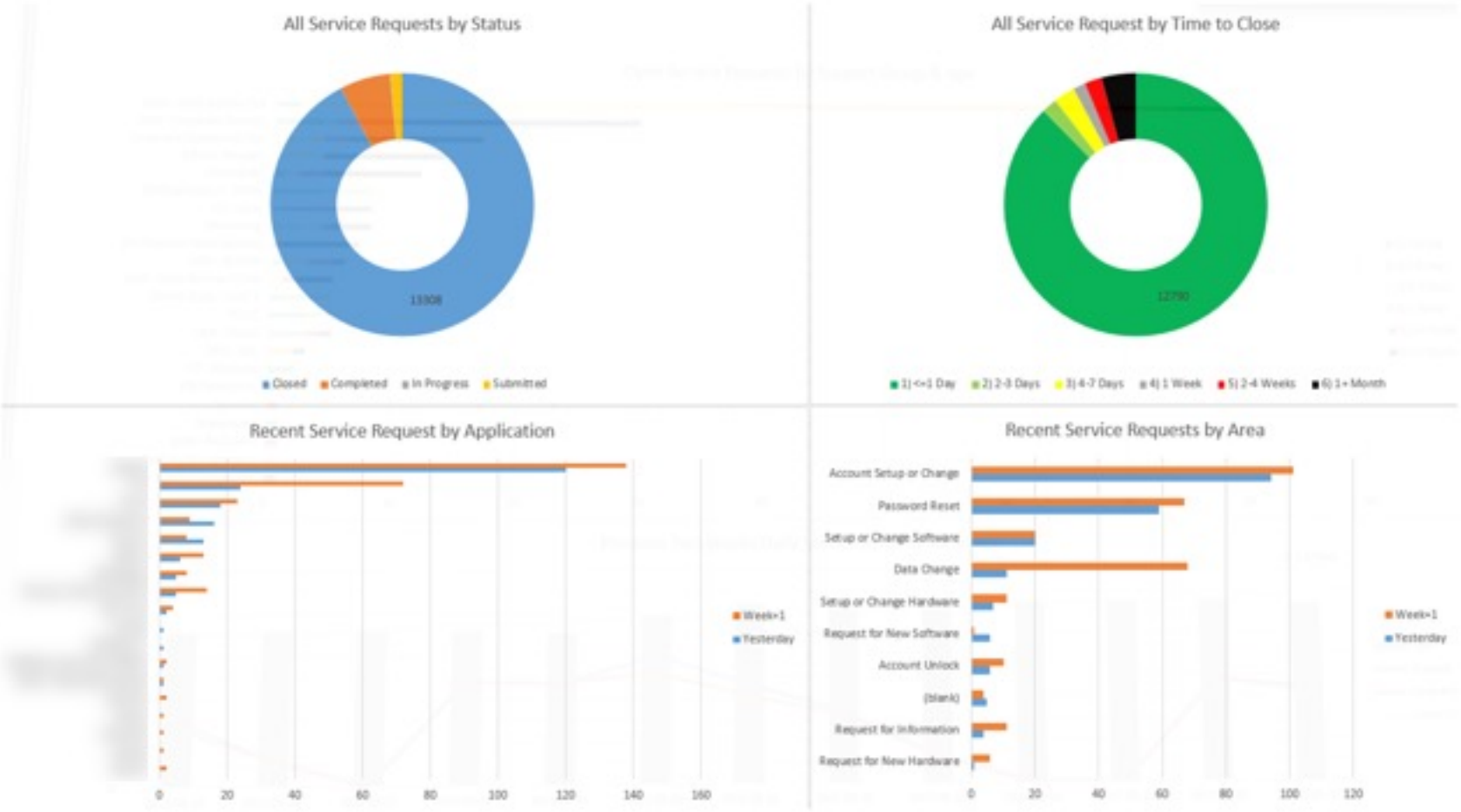
Service Request Process - Statistics

- Full go-live of SCSM based service request management
  - 90 days from go-live, 12,428 service requests have been logged and resolved, with an average of ~4100 per month.
  - Of those incidents, 88% have been resolved within the same day.

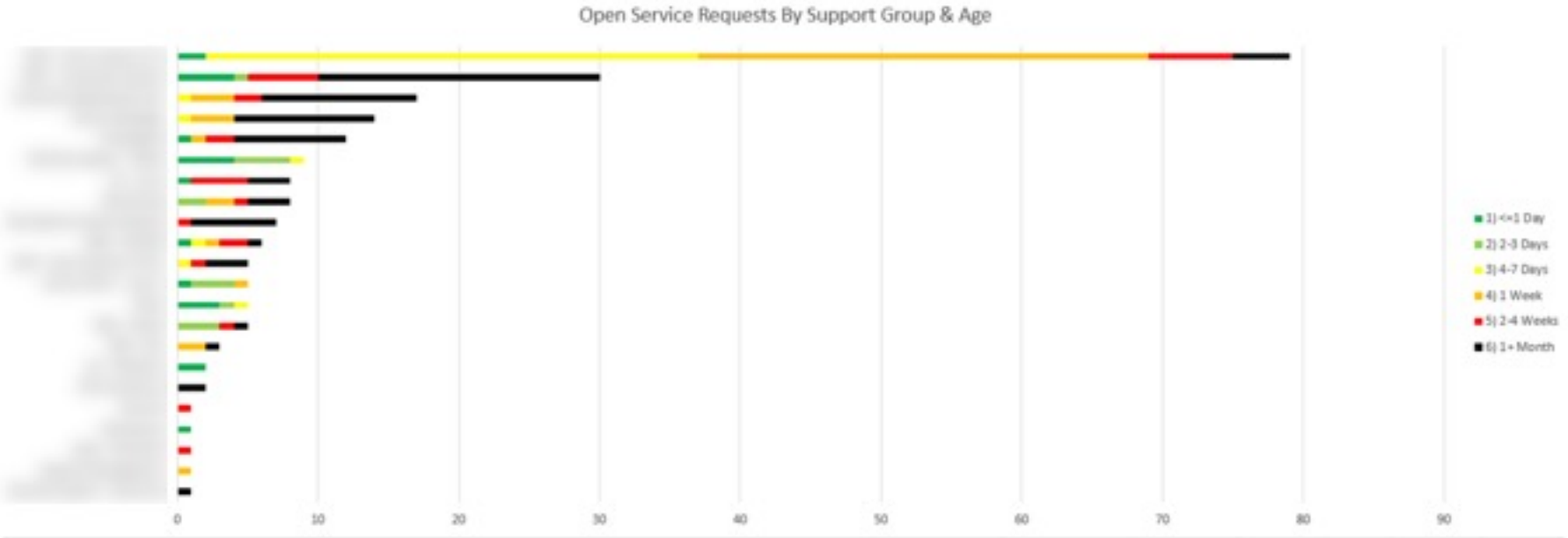


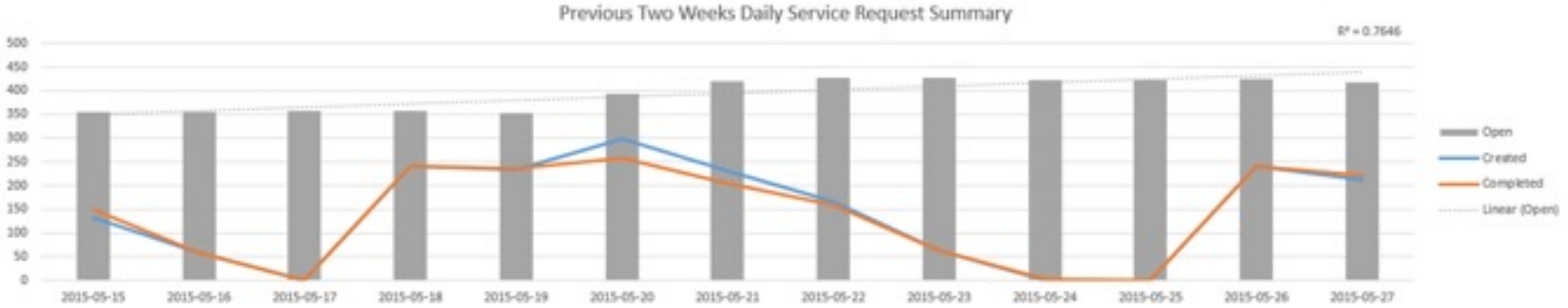
Service Request Process - Statistics

- IT Reviews Service Request Statistics every morning to keep abreast of status, including team breakdown, request age and related application and category.



Service Request Process - Statistics



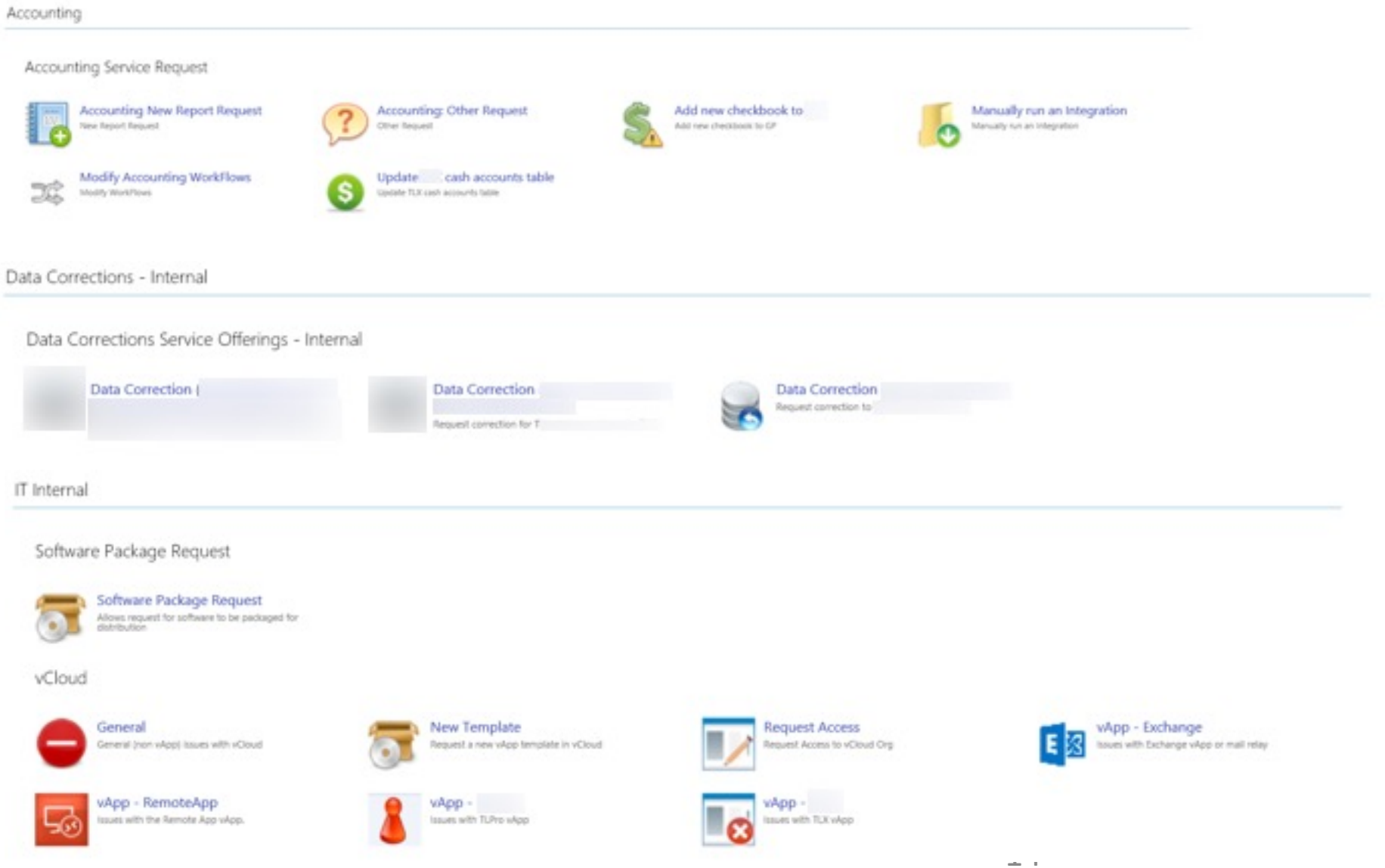


Service Request Process - Statistics

- Word Clouds of request descriptions are generated to search for abnormal activities that need additional research and attention.

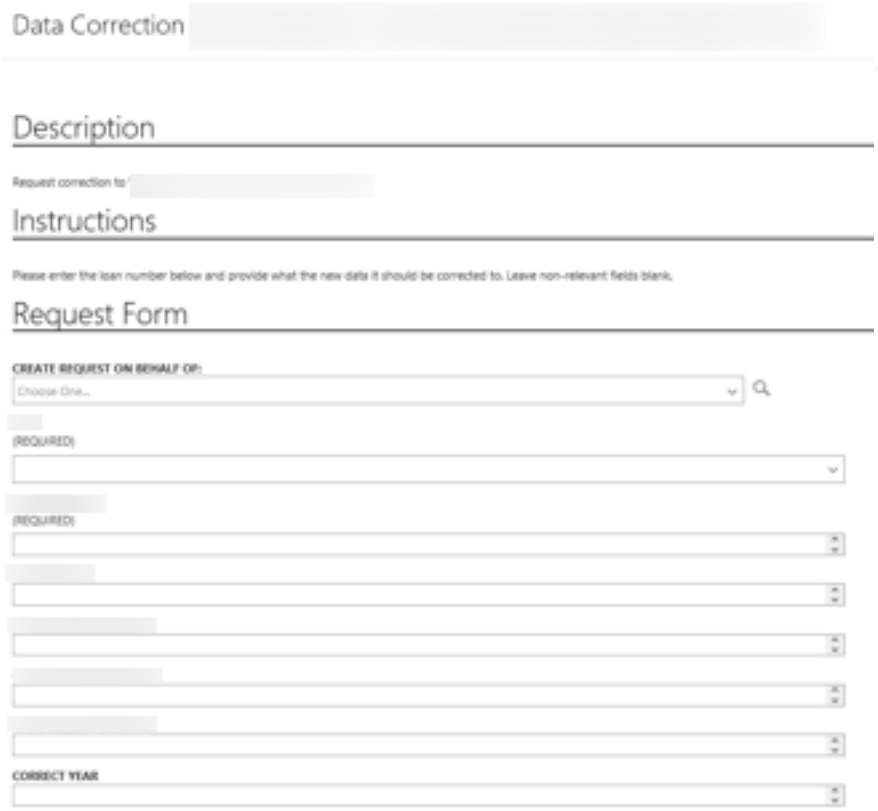
Service Request Process - Examples

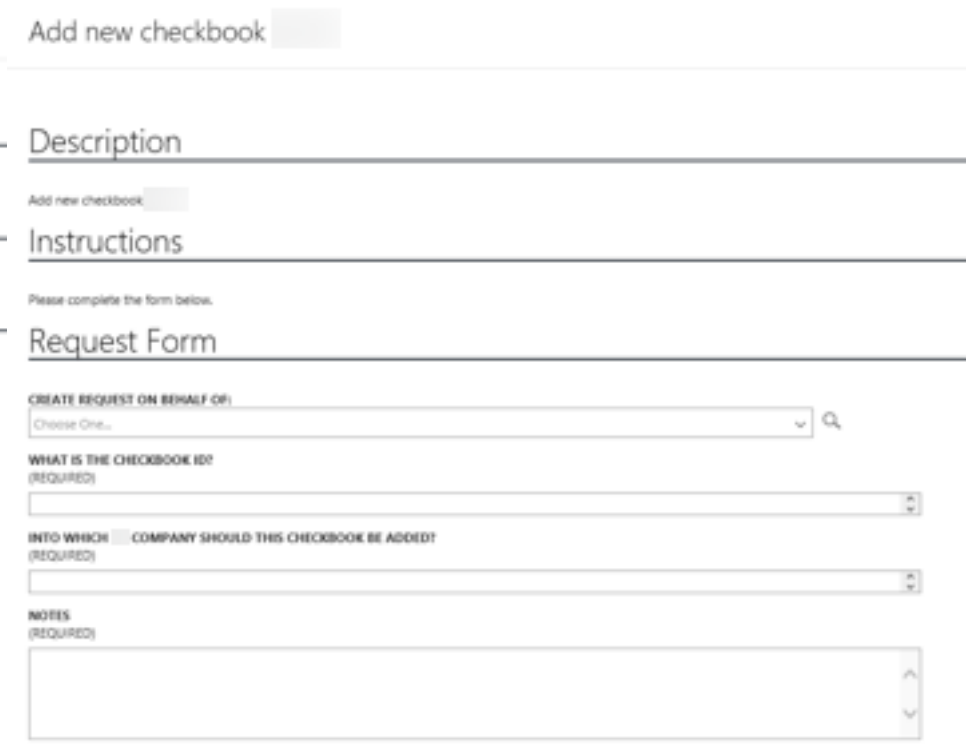
- Web based self service requests are available to help facilitate end-users creating tickets quickly and without interaction from IT. Some examples:



Service Request Process - Examples

- Service Request form allows detailed information to be entered to ensure IT has the proper information to quickly fulfill the request, and long term, build automation around the form to complete without human interaction.



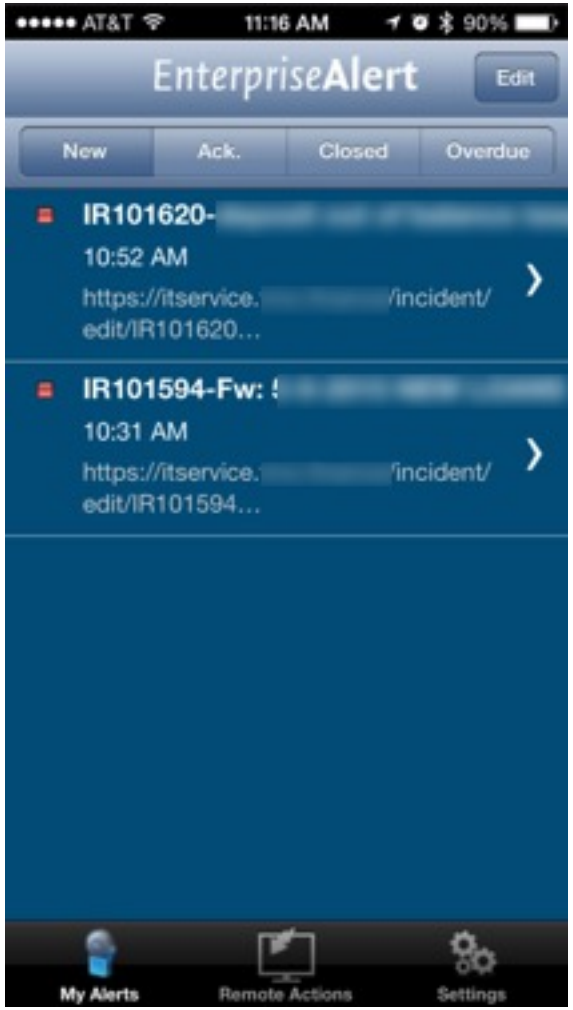


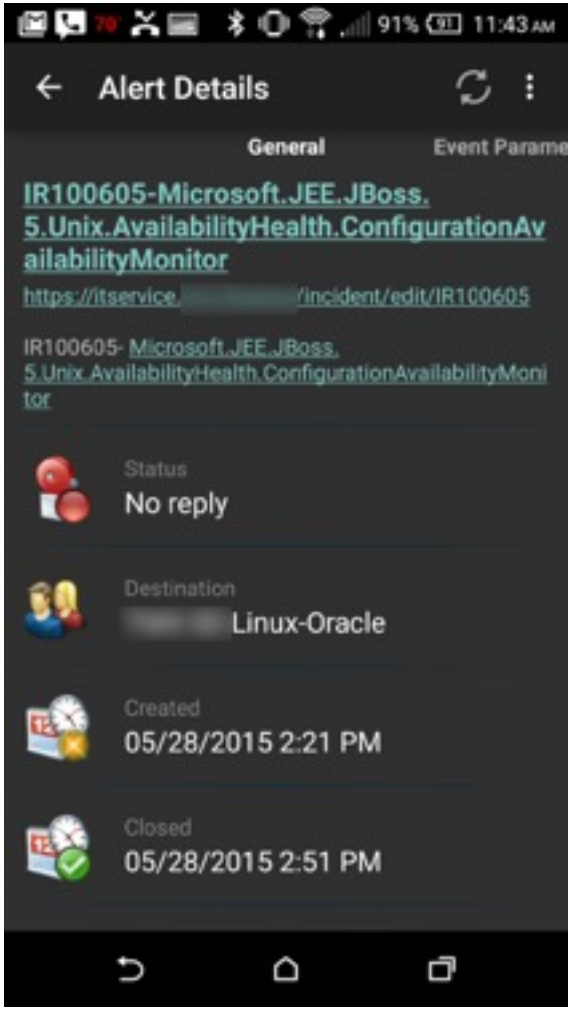
Alert Management

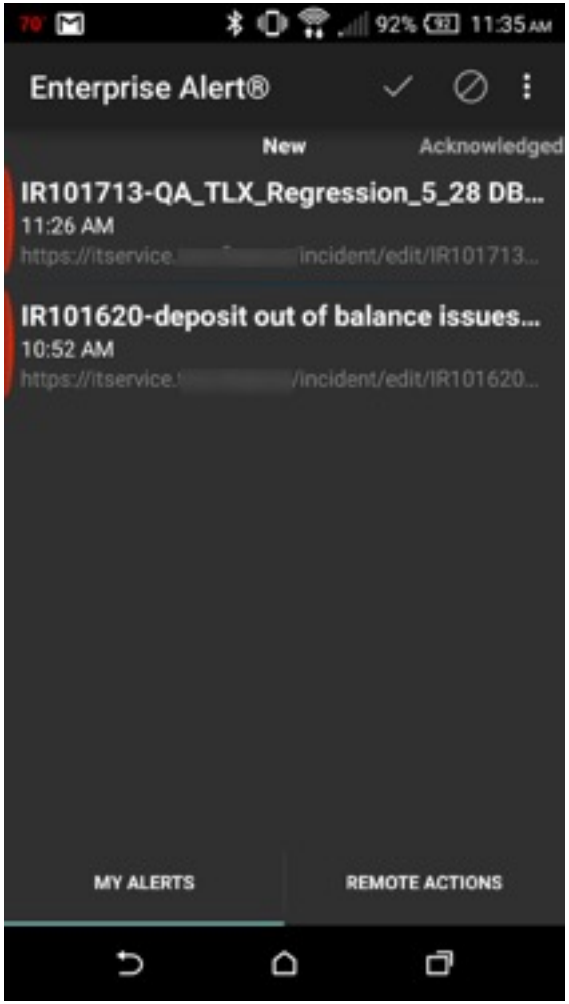
- Instituted Service Level Objective around the acknowledgement and resolution of incidents according to priority level.
- SLO Breaches are notified using DerDack Enterprise Alert (EA), providing Lync IM, E-mail, Voice, Text Message or dedicated smart phone app push notification alerts.
- Alerts will escalate up the management chain if not acknowledged in a timely fashion, ensuring awareness of incidents not properly handled preventing issues ‘slipping through the cracks’.
- EA provides a rich web portal accessible anywhere for managing on-call calendar rotation; simultaneously easing management overhead while ensuring the right people are always available for working high and critical priority incidents.

Alert Management - Examples

- Dedicated smart phone applications for iPhone, Android, Blackberry and Windows Phone ensure alerts are out of band of e-mail or text message:

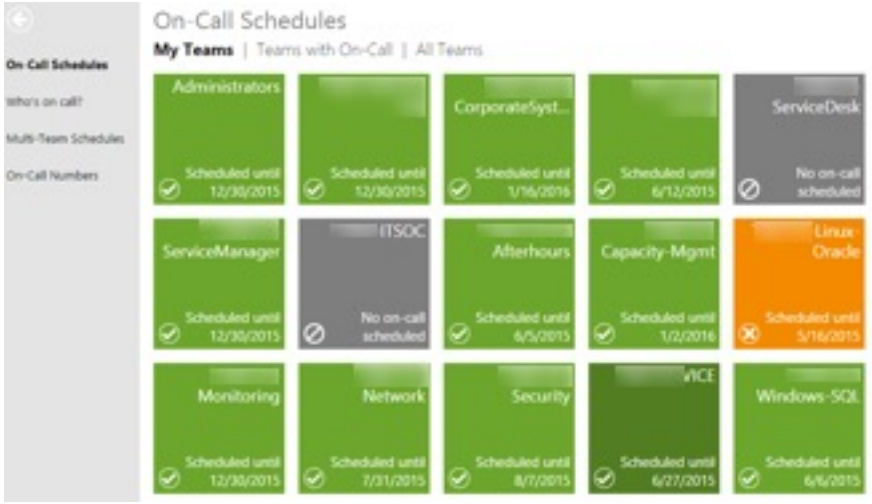


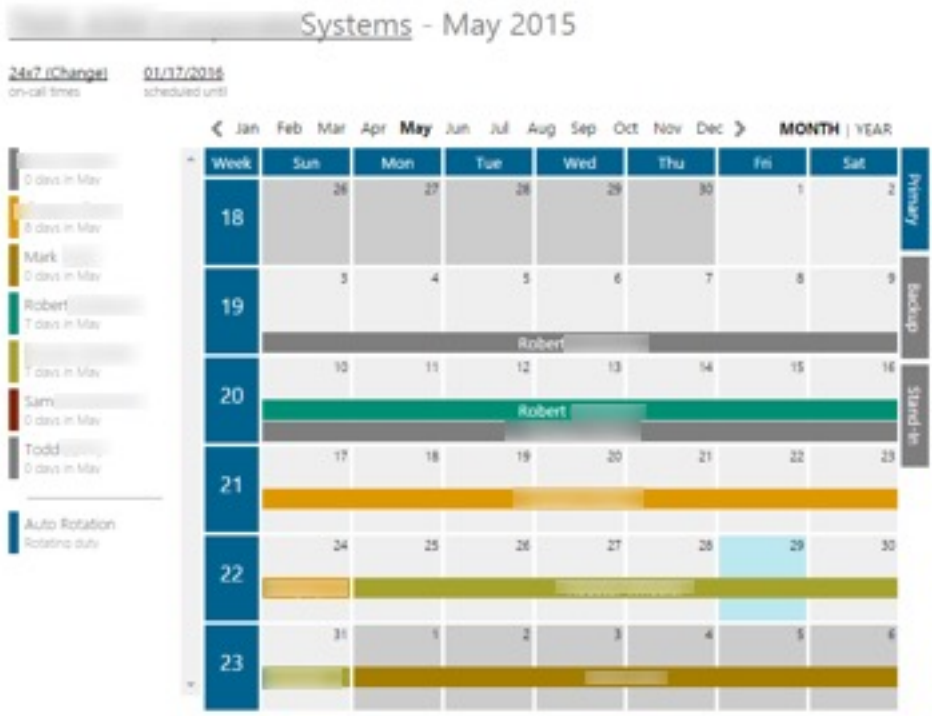




Alert Management - Examples

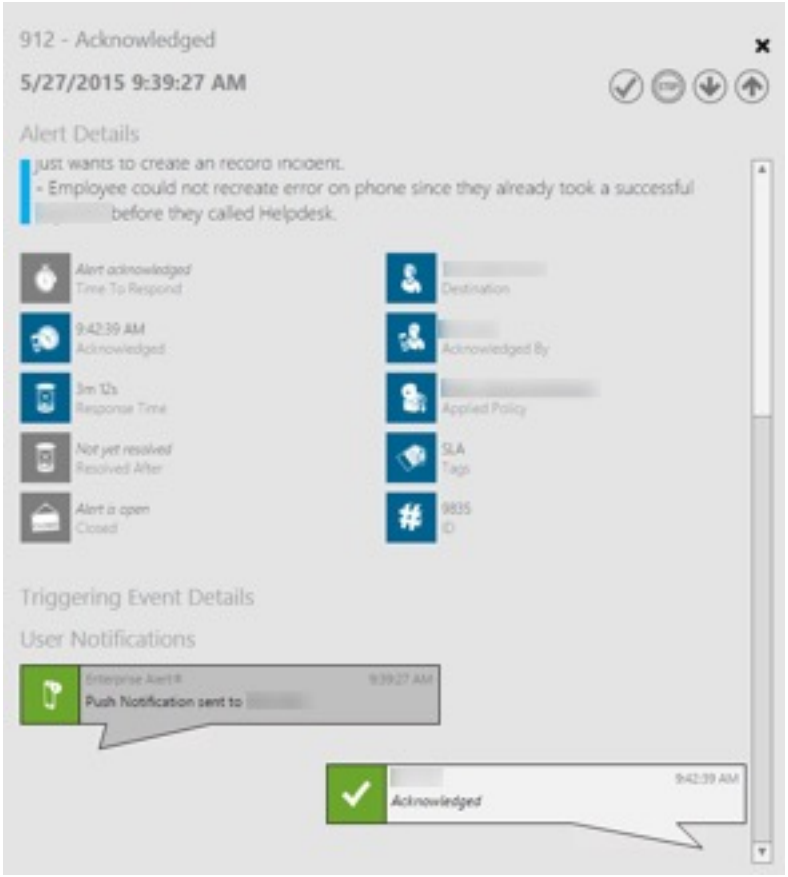
- EA web interface, available on the internet allows scheduling on-call rotation, ensuring all teams have personnel available 24x7 for alert notification on critical and high incidents.
- This allow facilitates team members finding the correct resource to escalate issues to:

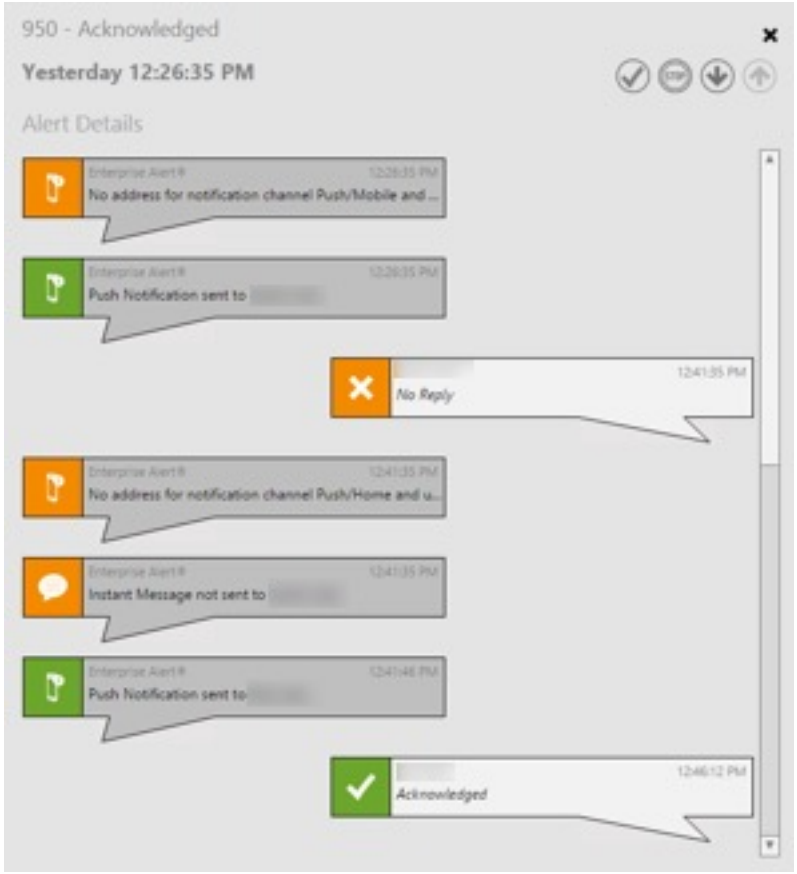




Alert Management - Examples

- Alerts through EA track who was notified, if they acknowledged and if not, who the alert was escalated to. This ensures we have traceability to show if alerts are properly handled.





Change Management Process

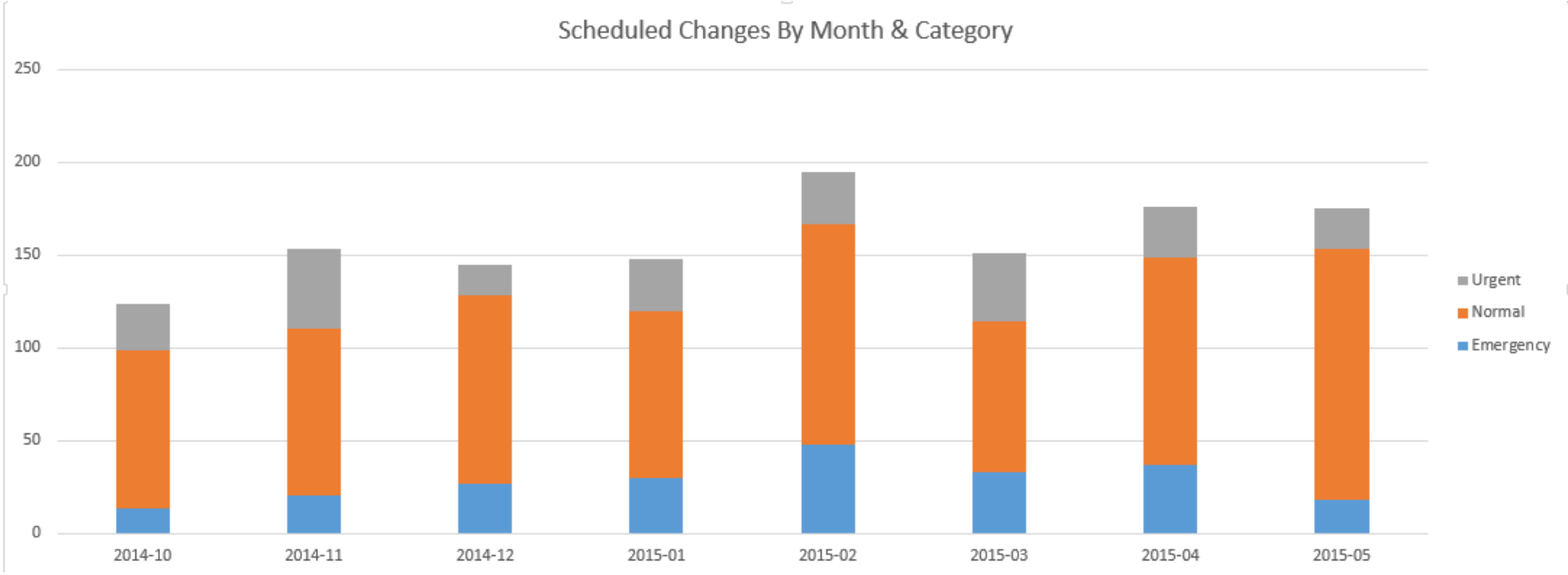
- Completely re-wrote the IT Change Management Process.
  - Published official policies needed to meet audit criteria.
  - Documented in detail the process and procedures for entering changes.
  - Trained all IT staff on Change Management process and tooling.
- Adjusted the Change Management Process around stability and security.
  - Altered the process to require the implementer of changes to enter the change request; this ensures a separation of duty from the development team as well as a final review of the release procedures.
  - Adjusted the presentation of the changes to be both the requestor and implementer; encouraging teamwork between the two major divisions of IT to roll-out changes.
  - Made the Change Advisory Board meeting an IT wide event, bringing awareness to all IT staff around the changes being made, ensuring all team members are hearing about the changes and provide an opportunity to discuss concerns increasing the chances of success.
  - Made all IT Leaders members of the Change Advisory Board (previously just a few people were), delegating the authority to IT leadership to make our changes smooth and successful.
  - Provided multiple tiers of changes; Normal, Urgent and Emergency.
    - Emergency changes are allowed without pre-approval should a system be in a non-functional state; ensuring rapid restoration of service is always the top priority. These changes are reviewed after implementation to ensure proper use of the change type.
    - Urgent changes are those that cannot wait for the next CAB, but need to be put in to reduce risk to our systems. These may be approved by 3 IT Leaders, and reviewed by all of CAB afterwards. Previously this required the VP of Infrastructure to approval, which was slowing processes that were time sensitive down.

Change Management Process

- Rebuilt Incident Management on MS System Center Service Manager, bringing countless enhancements to the process, such as:
  - E-mail based approval workflows; helping ensure approval are on time and recorded for audit purposes.
  - Change Advisory Board reporting, bringing clarity and simplicity to the bi-weekly change review and approval meetings.
  - Custom developed SharePoint based calendar of Forward Schedule of Change, allowing team members to see overlapping change windows to analyze for risk and awareness.
  - Change statistical reporting, helping bring transparency to trends in changes to IT systems.
  - Change auditing reporting, providing click-button data availability for audit of the process. Reducing overhead on IT to pull the data, as well as audit transparency to prevent IT not providing full details of change.
  - Change Advisory Board Report
  - Change Audit Report for SOX
  - Forward Schedule of Change Calendar

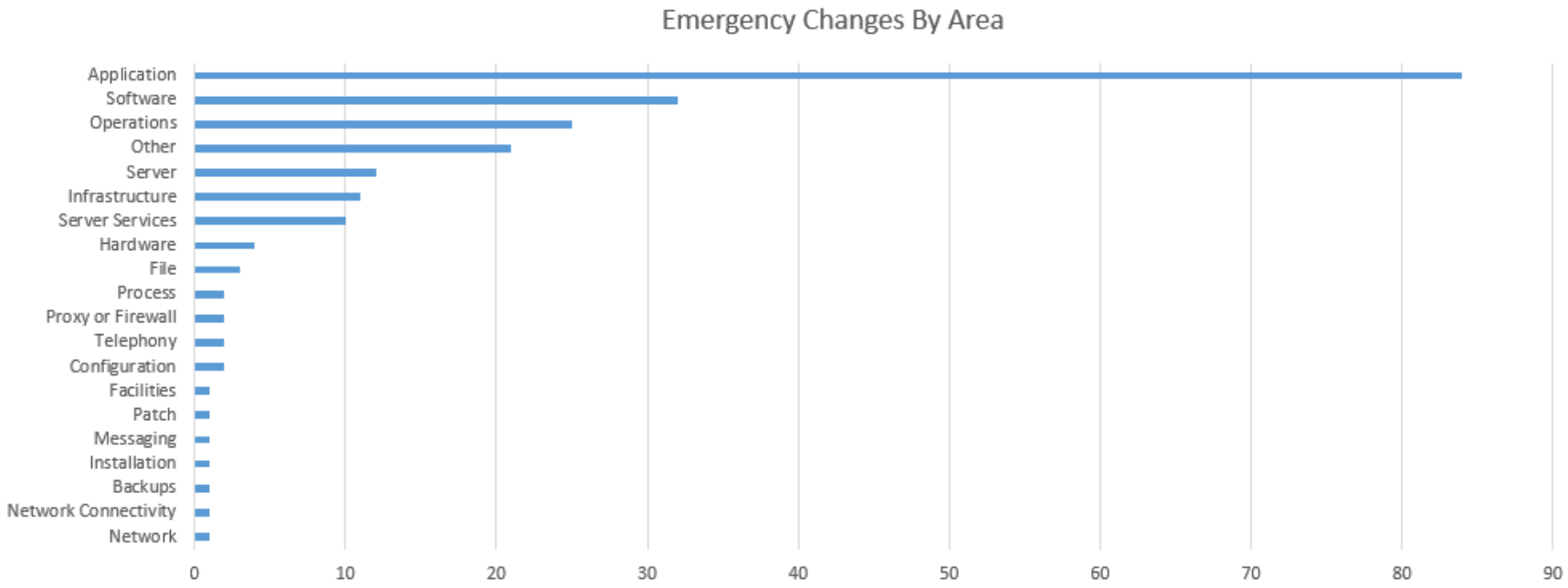
Change Management Process - Statistics

- The full go-live of Change Management in System Center Service Manager was October 2014, since then we've created 1279 changes, and average of 160 per month.



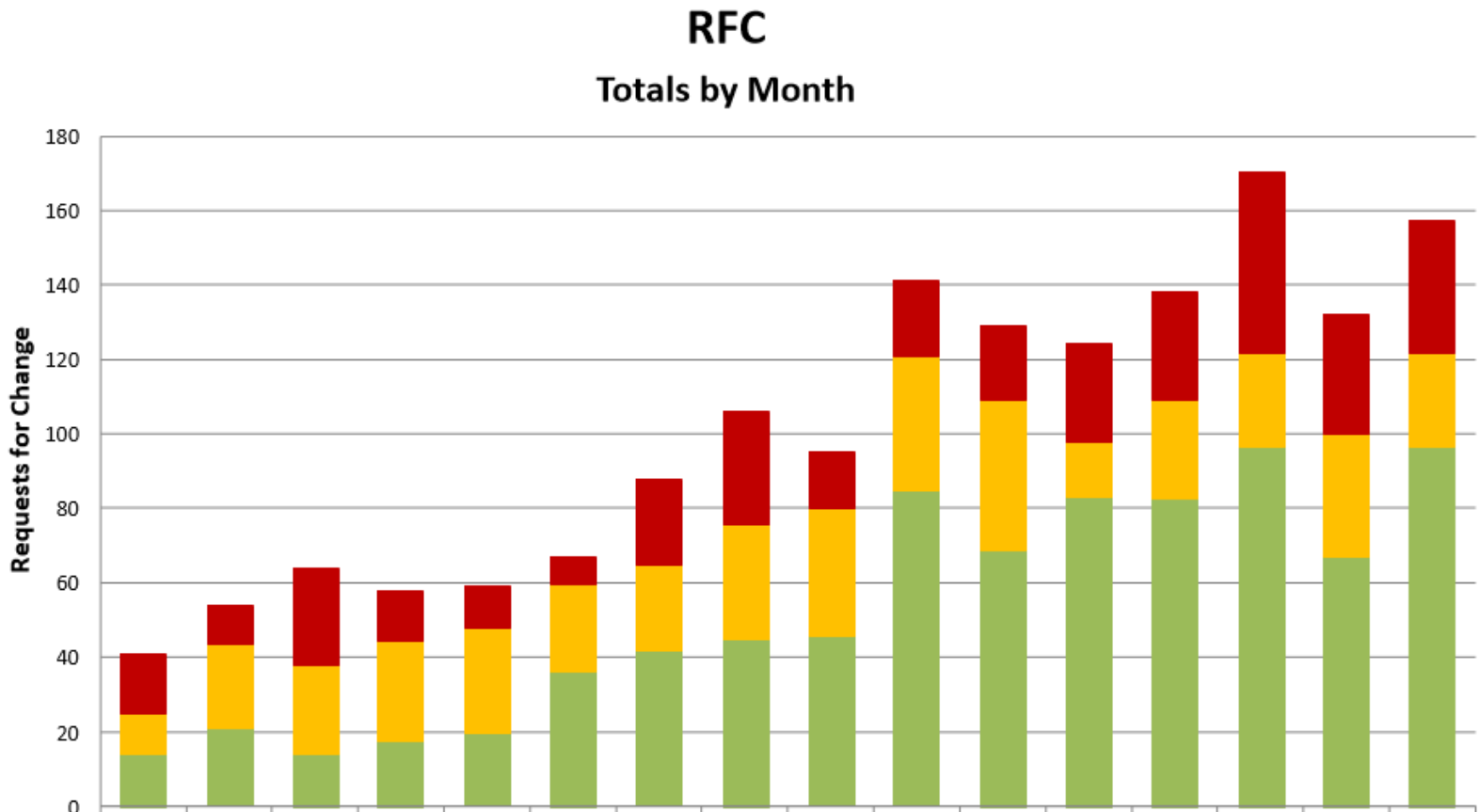
Change Management Process - Statistics

- Emergency changes, those that are solely to resolve an incident are broken down into categories to help us find common themes affecting service stability.



Change Management Process - Statistics

- Statistics have been tracked as we changed the process and tooling as well, you can see the overall increase of changes over the past 15 months.



	Jan-2014	Feb-2014	Mar-2014	Apr-2014	May-2014	Jun-2014	Jul-2014	Aug-2014	Sep-2014	Oct-2014	Nov-2014	Dec-2014	Jan-2015	Feb-2015	Mar-2015	Apr-2015
Emergency	16	10	26	13	11	7	23	30	15	20	20	26	29	48	32	35
Urgent	11	23	24	27	28	24	23	31	34	36	40	15	26	25	33	25
Normal	14	21	14	18	20	36	42	45	46	85	69	83	83	97	67	97
Total	41	54	64	58	59	67	88	106	95	141	129	124	138	170	132	157

Technology Standards & Policies

- Created Technology Standards initiative to document how systems should be built.
- Built cross team relationships to ensure full review of standards across the Infrastructure Engineering organization; creating a consensus on configuration while dramatically increasing the stability and performance of our systems as well as the consistency.

- Backup Catalog
- Cognos Standards
- DHCP Standards
- Exchange standards
- Firewall Configuration Procedures
- Linux Stack Standards
- NTP Standards
- Oracle Database standards
- SharePoint Standards
- SQL Server Database standards
- Switch & Router configuration standards
- Acceptable Use Policy

- Account Management Policy
- Domain Management Policy
- Informatica System Standards
- Password Management Policy
- Password Policy
- Windows Patching Policy
- Workstation Patching Policy
- Windows Stack Standards
- Wireless Standards

Project Management Process

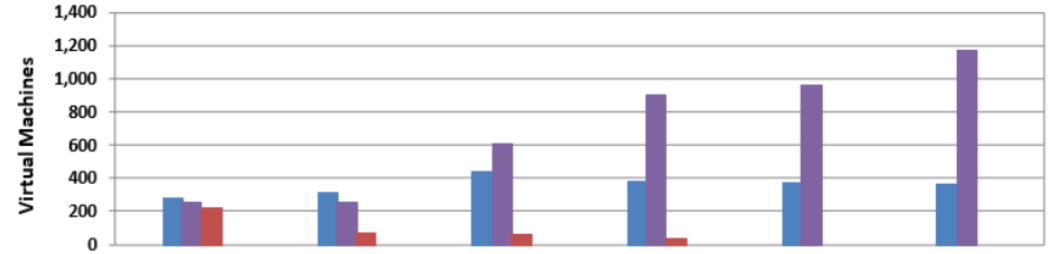
- Created the centralized IT Project List to bring together IT on one page around project approval, status and priority.
- Championed the consolidation of project lists, depreciating countless spreadsheet and tools that had duplicated or conflicting information.
- Built numerous reports to show project status, ensuring key roles are in place, scope is defined.
- Project list was leveraged as BILT approval processes was put in play.
- Project list is now used to source capital time, used for contractor invoicing, and continues to bring clarity across IT, and IT consumers.
- List and exception reporting is being used for SOX and other regulatory compliance, ensuring we are following our stated procedures.
- Project documents are also stored on IT Central, related back to the project list itself, helps track all documented artifacts around projects.
- The project change request system was built on top of the project list, tracking approval of major changes in scope to projects.

Capacity Management Process

- Monthly Capacity & Operational Report is now in excesses of 100 pages.
  - Identification of Exchange compliance issues through deep metrics.
  - Identification of Malware in store through abnormal bandwidth usage.
  - Reporting on browser compliance issues led to improved POS performance.
  - In-depth understanding of our platform and infrastructure capacity will ensure we do not run out.
  - Right-sizing reports that analyze usage of every server helps ensure everything is properly sized; both to ensure optimal performance as well reduce unnecessary consumption.
  - Application level reporting is helping trend key transactions to forecast needs for optimal application performance and stability.
  - Waste reporting helps identify areas where storage can be reclaimed, ensuring we prevent unnecessary spending.
  - Store WAN availability and performance help us identify stores that need deeper research into potential circuit issues, improper network usage or other factors that could be negatively affecting stores.
  - Current Capacity Report

Capacity Management Process - Examples

VMware Complex Virtual Machines



	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15
Production	284	307	438	385	376	364
Dev/Test	253	253	610	899	956	1,174
DR	220	68	59	30	0	0
Total VM's	757	628	1,107	1,314	1,332	1,538

Production DataStore Waste Summary

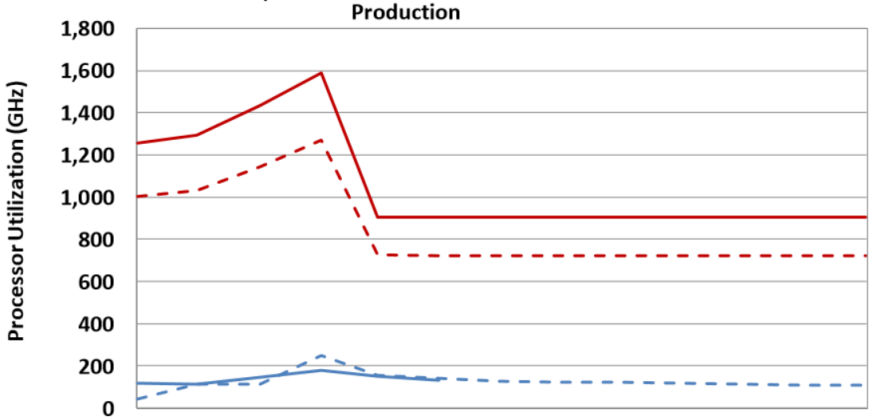
Total Waste Summary	
Waste Data Storage Attribute	**Overall Total (GB)**
Total Waste	6,316
Disk Space Capacity	277,370
Disk Space Used	250,931
Idle Disk Space Used	861
Number of Templates	0
Snapshots Disk Space Used	86
Powered-Off Disk Space Used	6,083

Idle/Busy VM's for Production

Idle	Never Exceeded 1% CPU		Never exceeded 10% CPU	
vCenter	Last Month	This Month	Last Month	This Month
Production	0	11	4	96

Busy	Exceeded 75% at least once		Exceeded 90% at least once	
vCenter	Last Month	This Month	Last Month	This Month
Production	0	22	0	12

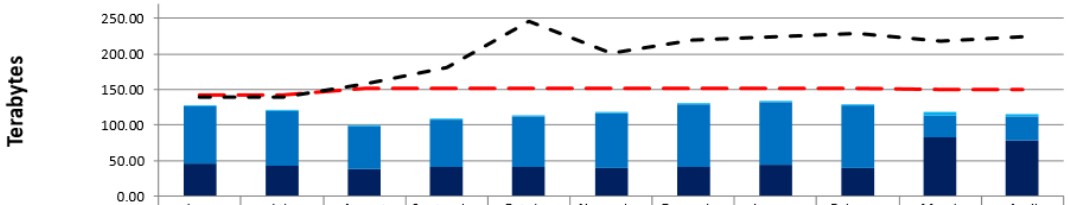
VMware Complex Peak Period Processor Utilization and Trend Production



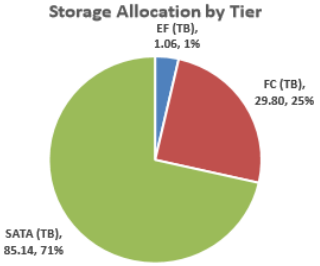
	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15
Peak Period (GHz)	118	111	146	178	147	130							
Trend (GHz)	41	111	110	249	156	140	126	123	119	116	112	109	105
Capacity (GHz)	1,255	1,292	1,433	1,588	905	905	905	905	905	905	905	905	905
Target Capacity	1,004	1,033	1,146	1,270	724	724	724	724	724	724	724	724	724

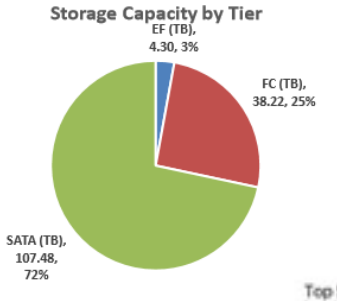
Capacity Management Process - Examples

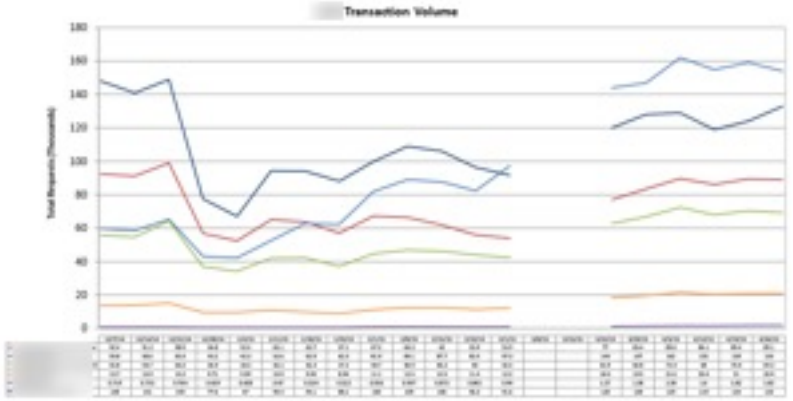
Production VMAX Overview

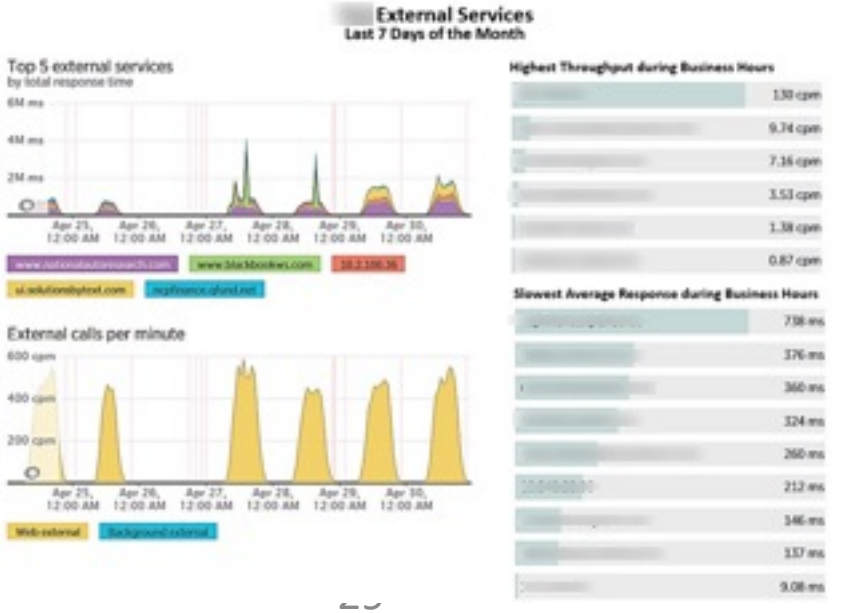


	June	July	August	September	October	November	December	January	February	March	April
				2014				2015			
Total Alloc(TB)	127.75	121.40	98.98	109.06	113.53	118.01	129.56	132.63	128.23	118.31	115.98
EF Alloc (TB)	1.1	1.1	0.2	1.1	1.1	1.1	1.1	1.1	1.1	4.3	4.2
FC Alloc (TB)	80.7	76.9	60.4	67.2	71.7	77.6	86.9	88.0	87.8	30.4	33.4
SATA Alloc (TB)	46.0	43.4	38.4	40.8	40.8	39.3	41.6	43.5	39.4	83.7	78.4
Capacity (TB)	141.7	141.7	151.2	151.2	151.2	151.2	151.2	151.2	152.0	150.0	150.0
Subscribed (TB)	138.8	138.8	158.4	180.4	246.5	201.3	219.5	223.8	228.5	218.2	223.6









Capacity Management Process - Examples

Non [redacted] Approved Software Installed [redacted]

Software Name	Number of Store Computers
Google Update Helper	77
Google Chrome	66
Search App by Ask	25
Malwarebytes' Anti-Malware	24
Microsoft Endpoint Protection Management Comp	19
Google Toolbar for Internet Explorer	13
Malwarebytes Anti-Malware version 2.0.4.1028	10
Coupon Printer for Windows	9
Ask Toolbar	5
Mozilla Maintenance Service	5
BeFrugal.com Shopping toolbar	5
Malwarebytes Anti-Malware version 2.0.2.1012	5
Shopping App by Ask	4
Yahoo! Toolbar	4
Couponbar	3
Bing Bar	3
ShopAtHome.com Toolbar	2
Yahoo Toolbar	2
CCleaner (remove only)	2
Bing Rewards Client Installer	2
ShopAtHome.com Helper	2
Bing Bar Platform	2
ReeAldeal	1
WowCoupeon	1
Free Opener	1
Yahoo! Install Manager	1
Cash Back Assistant	1
AVG 2015	1

Software Name	Number of Store Computers
DefaultTab	1
BeFrugal.com Toolbar	1
WeatherBug®	1
AppEnable	1
FromDocToPDF Internet Explorer Toolbar	1
ImproveSpeedPC	1
RadioRage Toolbar	1
Inbox Toolbar	1
Catalina Savings Printer	1
BetterPriceChec	1
Fastdgam PC Booster	1
Baidu PC Faster	1
The Weather Channel App	1
dnaadvtal	1
Windows Driver Package - Google, Inc. (WinUSB)	1
dnaAreocal	1
WSE_Astromenda	1
Mozilla Firefox 33.0.2 (x86 en-US)	1
GeekBuddy	1
Mozilla Firefox 34.0 (x86 en-US)	1
Jitk7 Help	1
Google Drive	1

Top 25 Alerts by Volume

Rank	Name	Count	Count Last Month	Rank Last Month
1	% Disk Free Space Under 15%	9489	-	-
2	SQL Server Page Life Expectancy Under 300	3913	3486	2
3	Request 1 - http://itcentral [redacted] /IT/	1746	638	13
4	Web Application - ITCentral	1746	638	14
5	Node has gone down	1517	126	71
6	IIS 8 Application Pool is unavailable	1314	-	-
7	Health Service Heartbeat Failure	702	1322	6
8	% Disk Free Space Under 10%	625	6329	1
9	Exchange Alerts for new Exchange servers	597	542	17
10	VM Memory Swapped is above 25MB	595	434	20
11	Web Application - Remote App 37 - VIP	547	-	-
12	Request 1 - http:// [redacted]	547	-	-
13	SQL DB Engine 2012 Page Life Expectancy is too low	545	241	41
14	Request 1 - https:// [redacted]	536	410	22
15	Web Application - Concur	536	410	21
16	Request 2 - https:// [redacted]	523	990	9
17	Web Application - [redacted]	522	994	8
18	Web Application - SharePoint	511	244	40
19	Request 1 [redacted]	511	245	39
20	Request 1 - [redacted]	493	72	96
21	Web Application - Remote App 36 - VIP	493	72	97
22	Request 1 - h [redacted]	464	136	65
23	Web Application - [redacted]	464	136	63
24	Request 1 - [redacted]	411	1961	4
25	Web Application - Dashboards	411	1960	5

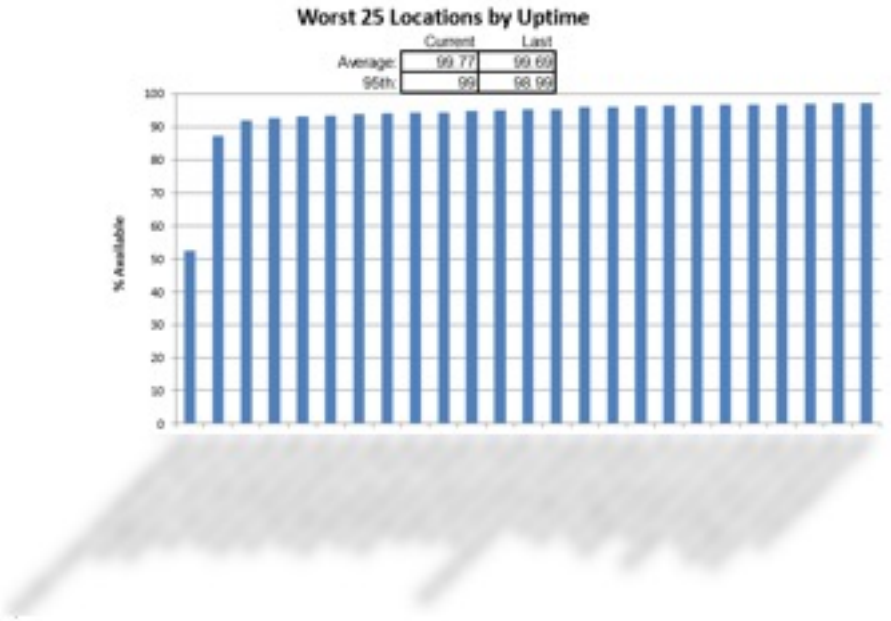
Antivirus Top 25 Alerts

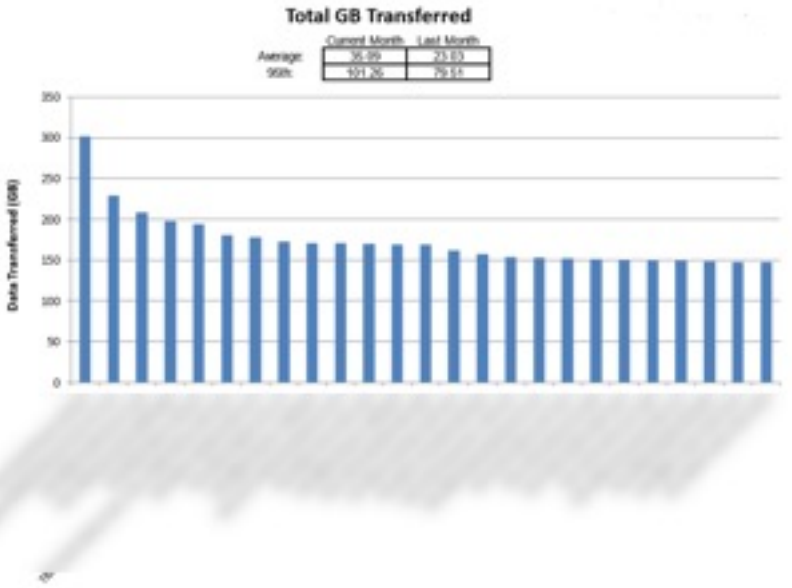
Item Name	Number of alerts and events	Percentage of total
Troj/CidoxVBR-A (N/A)	120	28
Internet Explorer 8 (2)	74	5
MS Windows Games (3)	74	5
Windows Mail (N/A)	51	2
Conduit Search Protect (6)	40	2
Generic PUA FO (24)	36	2
Troj/HkMain-CX (5)	36	2
OpenCandy (4)	33	1
Adobe Flash Player (N/A)	30	1
Windows FTP (N/A)	30	1
DealPly Updater (9)	26	1
Generic PUA CE (215)	23	1
CXweb/ExpJS-BS (39)	20	1
Microsoft Powershell (N/A)	16	1
Deployment Image Servicing and Mana	15	1
Mal/Generic-S (18)	14	1
SearchProtect (N/A)	12	1
Generic Bluetooth Adapter (40)	11	1
Java Update Scheduler (14)	11	1
MSN / Bing Toolbar (10)	11	1
Adobe Update Manager (1)	9	1
Install Core Click run software (12)	9	1
Browse Fox (16)	8	1
Generic PUA GN (8)	8	1
Generic PUA MP (168)	8	1

Most Visited Websites

Domain	Data Transferred GB	Action
akamaitechnologies.com	4680	
windows.net	2656	
amazonaws.com	1901	
1e100.net	1609	
pandora.com	556	
fbcdn.net	502	
informaticacloud.com	382	
cloudfront.net	372	
llnw.net	341	
outlook.com	309	
verizon.net	247	
yahoo.com	214	
aaplimg.com	179	
omnipath.com	151	
secureserver.net	142	
twtelecom.net	140	
qwest.net	131	
facebook.com	131	
yimg.com	105	
salesforce.com	82	
hwcdn.net	81	
c-msedge.net	73	
a-msedge.net	69	
force.com	66	
xodiax.net	57	

Capacity Management Process - Examples





IT Purchase Process

- Developed internal purchase tracking system on IT Central, providing easy purchase requests with tracking around time to approve and deliver.
- Organized weekly meetings with IT ELT and teams involved in purchase flow to ensure timely movement of IT purchases.
- Created standardized ITSC slide for purchase requests, detailing budget information, past expenditure and justification.
- Built and maintaining IT Budget based on historical purchase data.
- Identified numerous cost saving measures by stopping payments on services and software we no longer use, or correcting contractor rates.

Vendor Management

- Moved all major IT Vendors to local DFW coverage, replacing account execs.
  - Microsoft
  - EMC
  - VMWare
  - IBM
- Launched extensive vendor discovery process, both through system inventory and purchase history, identified IT Vendors and associated contracts, contacts and use.
  - IT Vendor List on IT Central
  - IT Vender Contacts on IT Central
  - IT Vendor Contracts on IT Central
- Company is now a member of the EMC and VMWare customer boards, this let's us provide feedback on technology roadmaps to our advantage, as well as a certain level of special treatment due to this status.

Vendor Management

- Completely re-negotiated EMC relationship, moving from a ~20% discount structure to a ~75% discount structure. This allowed keeping us run-rate neutral, while allowing us add many needed featured to our storage stack, including:
  - Like-for-like Production and Dev/Test, moving Dev/Test to VMAX technology.
  - Brought Dev/Test storage under maintenance to increase reliability.
  - Full data at rest encryption for primary storage and backup storage.
  - Enough backup licenses and capacity to fully backup production.
  - Additional cache and flash tier to VMAX, improving application performance.
  - OpenScale agreement provides on-demand growth when needed.
- Upgraded VMWare licensing agreement to cover non-compliance issues as well as add additional functionality, while remaining cost neutral on run-rate. Key additional features:
  - Moved from ala-carte model to vCloud Suite Advanced, simplifying licenses and correcting incompliance issues.
  - Negotiated unlimited Site Recovery Manager licenses, the only component of the Enterprise Suite needed, lowering overall costs.
  - Moved to processor based licenses across the board, allowing unlimited servers within hardware limitations.
  - Added vRealize Operations Manager suite, providing advanced monitoring and analytics, compliance and application dependency mapping.
  - VMware replication technology, replacing hardware devices that were problematic.

Vendor Management

- Restructured the Microsoft Enterprise License agreement, eliminating inappropriate and wasteful over sized licenses while also further negotiating discounts. End deal was less expensive in 2015 than the 2012, saving in excess of 1.8MM over the next three years, additionally added extensive functionality to the organization, including:
  - Office 2013 licenses for all employees, a much needed productivity enabler for stores.
  - Lync voice licenses for upcoming roll-out of Enterprise Lync company wide.
  - Full datacenter coverage of Windows, SQL, System Center, etc.
  - Cloud based Active Directory; providing Single Sign On, Multifactor Authentication and more.
  - Arranged for a monthly payment plan to help cash flow that is not a financing vehicle.
  - Added Premium Support around key technologies, ensuring escalations to Microsoft support go directly into a tier 3 support group that is far more knowledgeable and equipped to quickly solve problems.
  - Dedicated Microsoft Technical Account Manager to IT helps track and escalate incidents, as well as provide pro-active analysis of environment configuration to optimal performance.

Technology

Data Center

- Extensive data center organization effort has eliminated out of date hardware; ensured clean and redundant wiring of all components and easy troubleshooting of physical issues.
- Complete physical separation of production, non-production (dev/test) and disaster recovery environments helps us ensure foundational security stance as well as clean testing environments.
- Due to data center floor constraints, the DR Netezza was re-tooled to become dev/test, while the previous dev/test Netezza was moved between Phoenix and Richardson datacenter. Both migration efforts were smooth with no impacts to productivity or any data loss.
- Design, development and implementation of inventory tracking system, including information about location, purchase type, lease end date and more. Both data centers fully inventoried and catalogued to identify lifecycle maintenance needs and ensure all equipment is fully leveraged, supported and compliant.
- Device Inventory

Storage

- Identified and reclaimed over 50TB of unused storage within the first 90 days, preventing further catastrophic failures due to out of storage events.
- Leveraged lease end to refresh VMAX technology.
  - Cut cost per terabyte in half while increasing flash storage and improving disk layout.
  - Replaced antiquated Clariion storage in non-production with VMAX, ensuring sufficient performance in development and test while also providing internal validation of storage system prior to production changes.
  - Implemented Data at Rest encryption across all data center storage;
  - Implemented Fully Automated Storage Tiering (FAST) to provide super-speed flash storage based on business value; cutting average storage response time by ¼.
  - Rolled Power Path advanced load balancing and storage path redundancy tool datacenter wide, increasing resiliency and performance of all storage traffic.
  - Completely changed storage layout approach, isolating storage channels to VMWare cluster which provides multi-tenant assurance; then created storage groups for each data store which provides application level monitoring and policy control to ensure performance.
  - Implemented Unisphere storage management and monitoring tools; ensuing deep understanding of storage usage and performance.

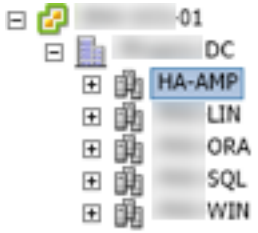
Virtual Infrastructure

- Leveraged natural lease end to consolidate onto vBlock Converged Infrastructure Platform.
  - Single Service & Support provider for hardware maintenance provides faster time to resolution.
  - Leveraging VCE for hardware maintenance reduces need for travel to data centers.
  - Reduced foot-print of data center floor and power consumption.
  - Upgraded all Ethernet networking from 1Gb to 10GB end-to-end.
  - Upgraded all fibre channel storage networking to 8GB end-to-end.
  - Eliminated all single points of failure in the datacenter hardware stack.
  - Doubled the average performance of server layer with newer chipset.
  - Provided a consistent hardware layer, ensuring no performance impact during failover scenarios.
  - Exact like-for-like configuration between two data center environments.
  - On-time lease return, successfully avoided issues due to lack of lease co-termination.
- Migration of all servers to vBlock (production & non-production) done on-time, with zero data loss and minimal availability or performance impact; with no application changes needed.

Virtual Infrastructure

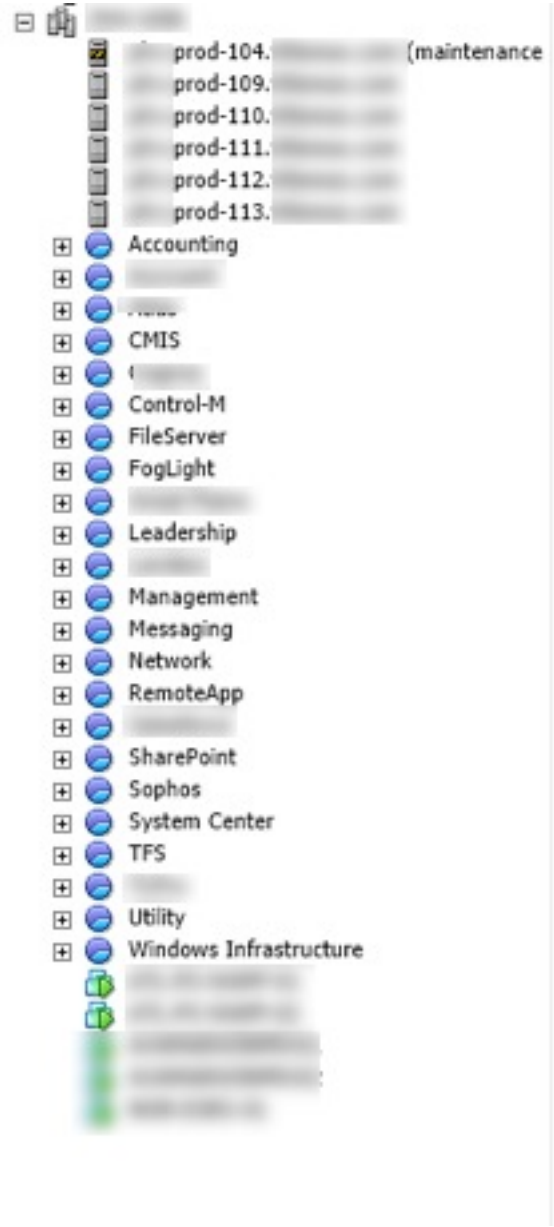
- vSphere Redesign
  - Completely rebuilt vSphere layer using latest operating system, patches and driver tuning. Implemented twice, first to stabilize system, second to move onto vBlock; both times seamless to application layer and executed exclusively by VICE team.
  - Consolidated on vSphere 5.5, moving from numerous different versions previously across the enterprise.
  - Organized hardware clusters around licensing models and workload patterns; decreasing long term cost of software while increasing performance of applications.
  - Split applications into Resource Pools, providing guaranteed resources to meet business demands.
  - Right-sized servers, increasing and decreasing server resources to improve performance.
  - Aligned applications with storage layer; increasing performance through allowing application level tuning while increasing reliability with isolated storage preventing cross application impact.
  - Configured vSphere alert to send to SCOM; alerting on capacity warning threshold to allow Platform teams necessary time to pro-actively address.
  - Upgraded all systems virtual hardware and VMTools to current, requiring hundreds of changes.
  - Retooled servers to ensure use of more modern, reliable and performant para-virtual drivers on the storage and networking stack.
  - Adjusted server disk independence to ensure backups are not inappropriately affecting performance or stability of database operations. Rolled to all servers requiring hundreds of changes.

Virtual Infrastructure



Virtual Infrastructure layout shown here demonstrates the layers of guaranteed compute and the separation provided by virtualization.

Systems are grouped first by OS/Function, then by application. Each pool with different resource allocations.



Platform Enhancements

- Fully virtualized MSSQL and Oracle database servers, moving multiple instances from physical servers. Replaced physical Oracle RAC environment with stand-alone virtual instances while increasing performance and reliability.
- Re-architecture of database layouts for virtualization and micro-service approach has distributed fault domains while increasing ability to tune server for application needs, monitor application specific workloads and allow for enhanced backup and disaster recovery scheduling.
- Converted highly unreliable NAS to Windows Distributed File System
  - Windows based file servers provide variable block de-duplication, saving over 2.7TB of space.
  - DFS allows limitless file servers to appear as one cohesive unit, easing system configuration and user understanding, as everything points simply to \\domain.local\Files\ and is routed to the correct server behind the scenes. This also facilitates changes to file servers without impacting the connections.
  - User based file shares, are now replicated in real-time between corporate offices and the datacenter. Ensuring fastest access no matter where you are located, while still having datacenter reliability and backups.
- New Certificate Authority System stood up and end user certificated deployed
  - Internal CA reduces our dependence and costs with GoDaddy
  - Deploying CA signed certs allows deeper security across our systems and digitally signing documentation.

Centralize SQL Server Reporting Services

- Built new MS SQL Service Reporting Services environment, with dedicated database, multiple front-end nodes for scalability, enhanced security and internet accessibility for mobile reporting.
- Deployed dedicated file system for automated reports to be delivered into a central location, ensuring traceability of reports delivered with enhanced security to ensure no tampering of reporting is occurring.
- Automated 80+ month end account reporting on new platform, streamlining month closing process to delivery reports the morning of the 1st of month; previously this effort took efforts from multiple IT teams days to complete manually; after SSRS automation 99% of reports were available before COB on the 1st.
- All report definitions are centrally stored in TFS, ensuring change tracking on report query to provide assurances around changes to reporting logics.
- Began effort to deliver all data-dump and ad-hoc reports on this new platform, reducing redundant time in re-coding reports manually every time needed.
- Provided a strategic separation of enterprise reports with quality assurance going to Cognos, while ad-hoc and simple data dumps are on IT Reports system.

Application Enhancements

- Re-architected Cognos reporting platform, moving to a distributed architecture for scalability, performance and reliability.
- Reconfigured Cognos monitoring to flow through SCOM, enabling deeper trending, reporting and incident creation.
- Virtualized Informatica, moving to a more scalable solution that provides high availability and disaster recovery.
- Reconfigured Informatic monitoring to flow through SCOM.
- Developed SDSS variance monitoring to create individual incidents for each varience, allowing more granualar reporting of issues, with the SLO, routing and awareness incidents management brings.

Patching & Support

- New deployment of Windows Server Update Services for Microsoft patching.
  - All Microsoft patches are up to date, with strategic 1 month lag in deployment for testing and validation.
  - Critical security patches have been applied within 3 days when appropriate.
  - All Exchange servers are up to date and on 1 month lag patching schedule.
  - All MSSQL servers are up to date and on 1 month lag patching schedule.
- Windows XP End of Life
  - All workstations, stores and corporate workstations were upgraded to Windows 7 prior to XP EOL
- Windows 2003 End of Life
  - Servers were identified in 2014Q4 and projects initiated to ensure Windows 2003 EOL compliance.
- New Deployment of RedHat Satellite for Linux patching.
  - All Linux servers are under automated patching with Satellite server with 1 month lag.
  - Critical Linux security patches have been applied in 1-3 when applicable.
- Deployed and configured VMware Update Manager
  - VUM performs rolling non-disruptive upgrades to the vSphere Hypervisor layer. Currently we remain 1 month behind, rolling to non-production, disaster recovery then production, with 2-3 week gap between each to ensure proper testing.

Data Protection

- Consolidated Data Protection Organizationally
  - Centralized responsibility for backup of systems to VICE, ensuring standardized and common approach across areas to drive to single solution with consolidated reporting and compliance.
- Deployed new, consolidated backup system.
  - Moved production backup coverage from 20% to 100%
  - Consolidated onto single backup software Avamar, backed by single backup storage Data Domain.
  - All backups are encrypted in flight and at rest, preventing theft of backup data.
  - All backup data is replicated between data centers in real time, ensuring dual copies of all backups.
  - 80x compression & deduplication rate provided through Data Domain technology has allowed us to fit over 5PB of backups in ~65TB of space; currently at 50% capacity of storage.
  - Leverage of Avamar for native database, file server and virtual machine backup allows a single pane of glass and alerting system to ensure backups are happening, both for data protection as well as regulatory compliance.
  - Backing up virtual machine images ensures quick recovery time if full server has been lost.

Monitoring

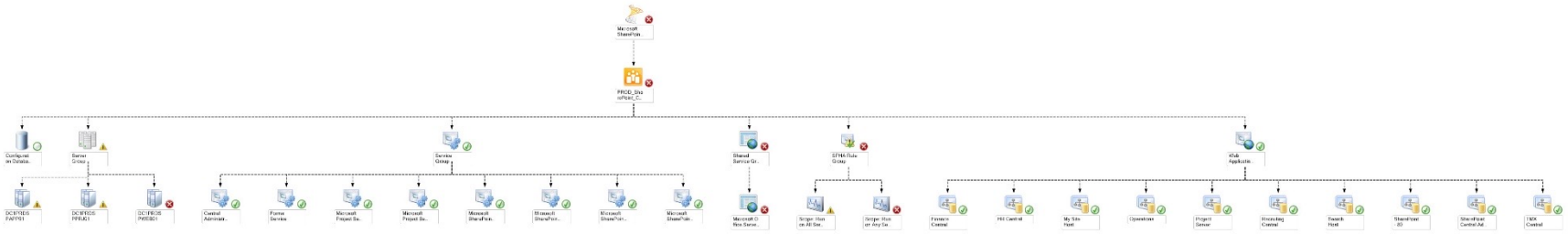
- Extensive work has been put in to completely overhaul our system and application monitoring. Ensuring all levels of our IT services are monitored and feeding through a central point (SCOM).
- Consolidated alerting through SCOM, allowing enterprise wide visibility; compared to previous culture of each team directly receiving e-mails which prevented anyone from knowing what was going on.
- Hosted cross team training sessions on new monitoring tools; including deep dives into Quest Performance Analysis on point of sale application to help find troublesome queries and New Relic to identify bottlenecks at the java layer.

Monitoring - SCOM

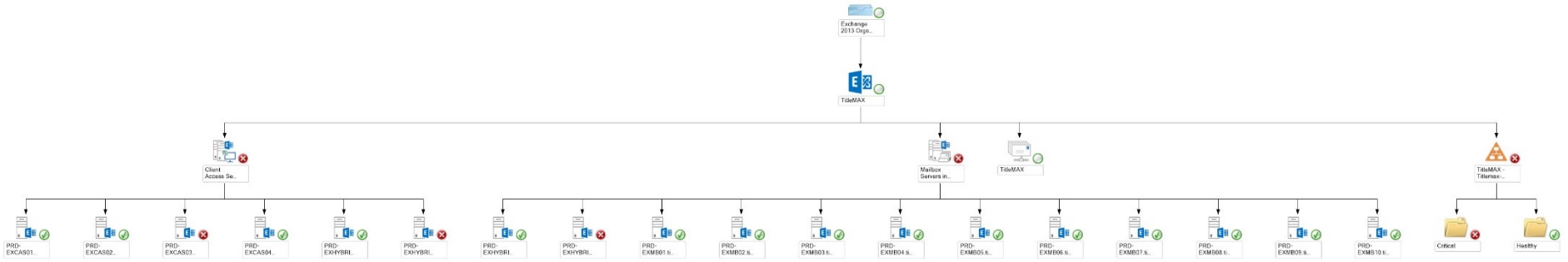
- Complete new deployment of System Center Operations Manager 2012R2
  - SCOM now serves as the main consolidation point for all monitoring.
  - All virtual servers (Windows & Linux) are running up to date SCOM monitoring agent, with 214 Windows servers and 40 Linux servers monitored.
  - 272 Management Packs deployed consisting of 7,773 rules and 4,140 monitors.
  - On average, 750K events are collected every day, 97K performance data points and 1500 alerts with 4% of alerts escalating to incidents inside Service Manager for resolution.
  - Since standing up SCOM, over 122MM events, 30MM performance metrics and 430K alerts have been logged into the data warehouse.
  - Integration with Oracle Enterprise Manager provides native Oracle alerts.
  - Implemented custom blocking SPID alerting to help reduce locking in database causing outages.
  - Custom developed e-mail integration allows all third-party monitoring to flow into SCOM.
    - Bomgar system
    - DataDomain
    - Data Protection Suite
    - GoDaddy
    - Informatica
    - Netezza
    - NewRelic
    - Password State
    - SalesForce
    - SFTP Server
    - SolarWindws
    - Sophos
    - Unisphere
    - vCOPs
    - vSphere
    - Countless more proprietary or LOB applications

Monitoring – SCOM Examples

- SCOM maps systems, like SharePoint, to show application layout and identify issues and opportunities.

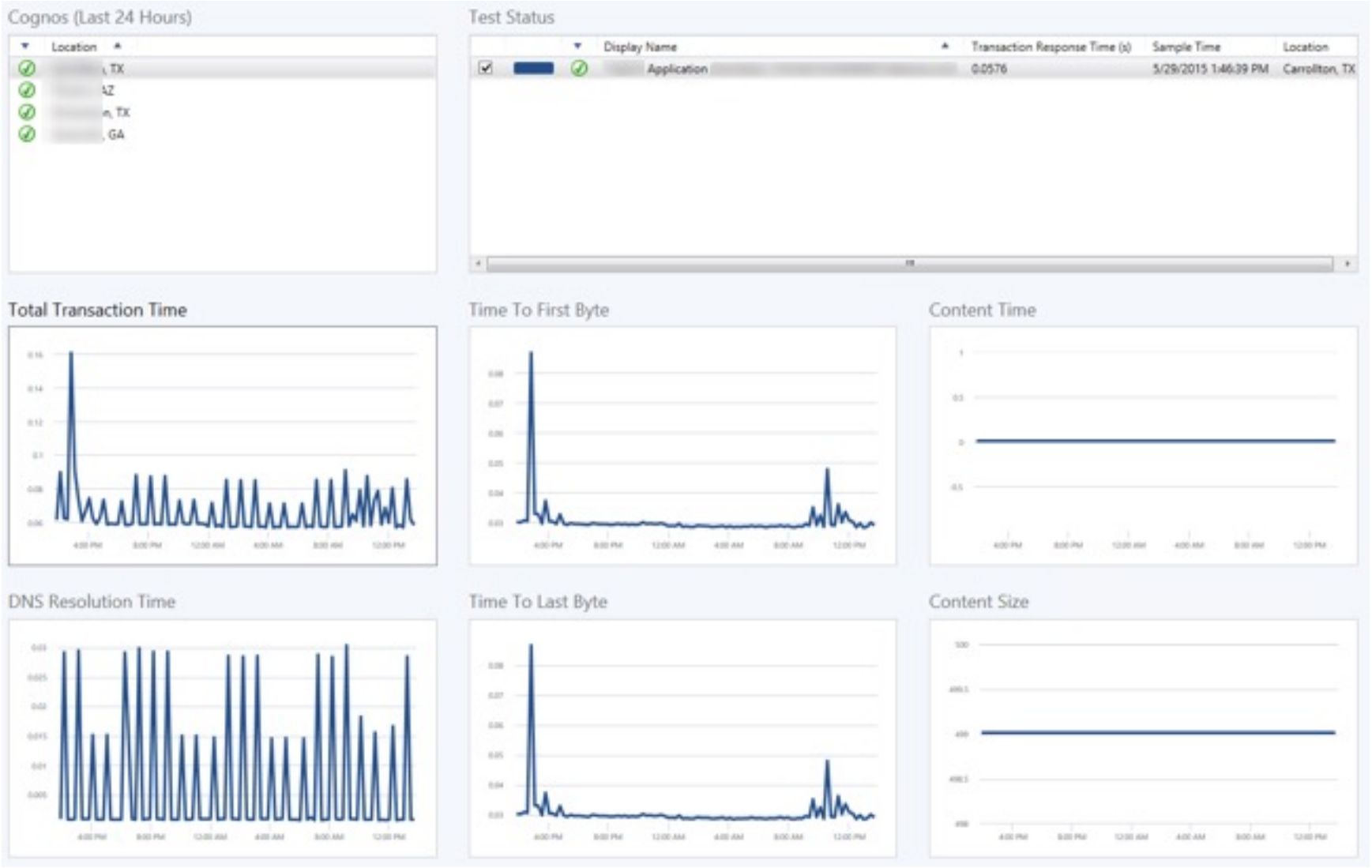


- As well, Exchange is full mapped, with custom monitoring to ensure mail flow is running and timely.



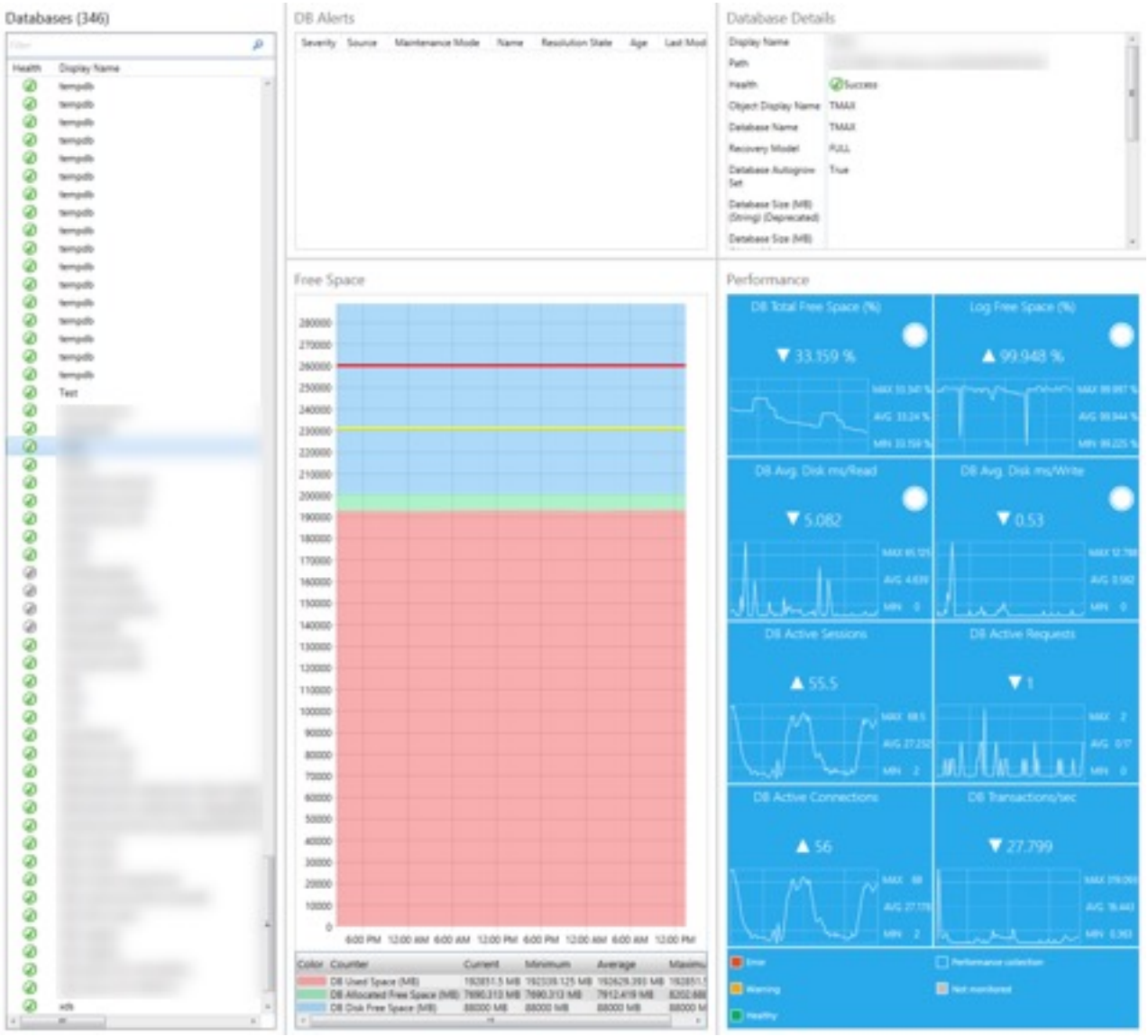
Monitoring – SCOM Examples

- Web application monitoring will test key web sites from locations across the country, to ensure it's operational as well as the performance deviation geographically.



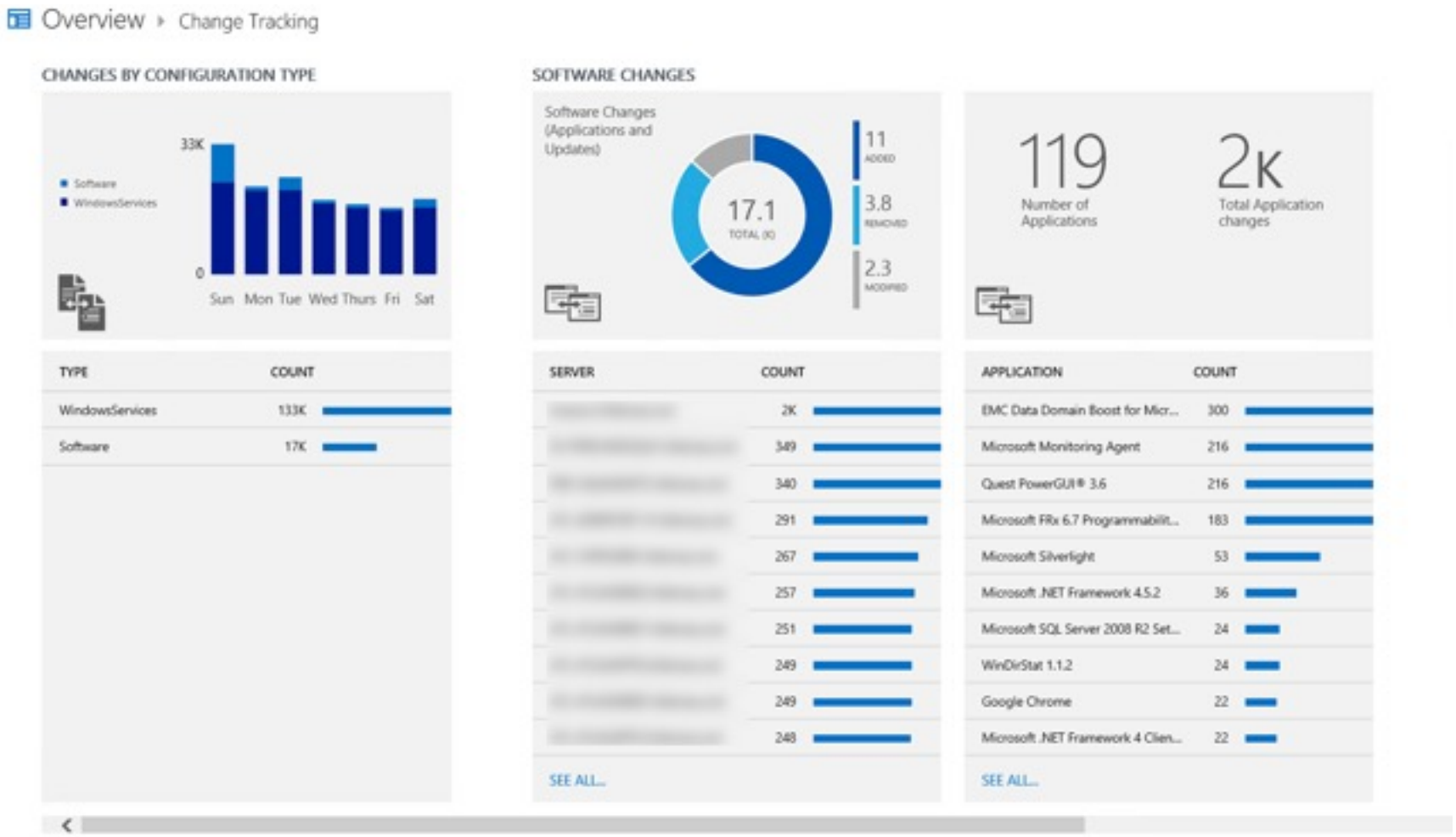
Monitoring – SCOM Examples

- Database dashboards allow quick status and diagnosis of issues:



Monitoring – SCOM Operational Insights

- Operational Insights, a cloud based advanced analytics platform that processes the data SCOM is collecting has been configured to help further find opportunities for improvement. This is a sample of change tracking to help identify what is occurring in our environments.



Monitoring - SolarWinds

- Complete new deployment of SolarWinds Network Performance Monitor
  - Monitoring all store routers for store performance and availability alerting.
  - Full coverage of datacenter networking switches for complete visibility.
  - Netflow traffic monitoring allows us to drill into what applications, conversations and endpoints are using the bandwidth; helping identify issues as well as diagnose application traffic patterns.
  - Diagram overlays help understand the impact of networking and circuit issues.
  - WiFi monitoring shows connected devices to help understand bandwidth usage.
  - IP Address Management provides a central location to maintain all IP address usage.
  - Network Device configuration management helps log unauthorized changes, ensures network devices are backed up, shows common security configuration issues and more.
  - Data is fed into Capacity Management for trending and reporting.

Monitoring – SolarWinds Examples

All Nodes MANAGE NODES EDIT HELP

GROUPED BY ADDRESS_STATE, STATUS

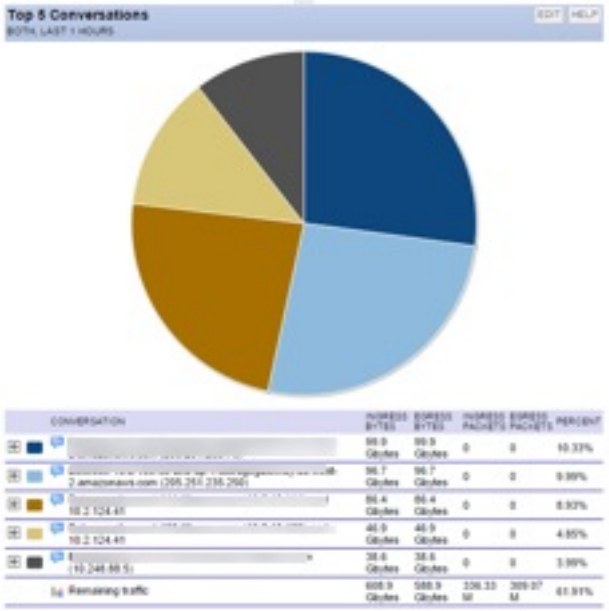
- [redacted]
- *VPN
- AL
- AZ
- CA
- DE
- FL
- GA
- IL
- KS
- MO
- MS
- NM
- NV
- OH
- SC
- TN
- TX
- UT
- VA
- WI

Policy Violations EDIT HELP

NAME	INFO	WARN	CRITICAL
Cisco Policy Report	[redacted]	[redacted]	[redacted]
SOX Security Report	[redacted]	0	[redacted]
HIPAA Security Report	0	0	[redacted]
CISP Reports	[redacted]	0	[redacted]

View All Policy Reports »

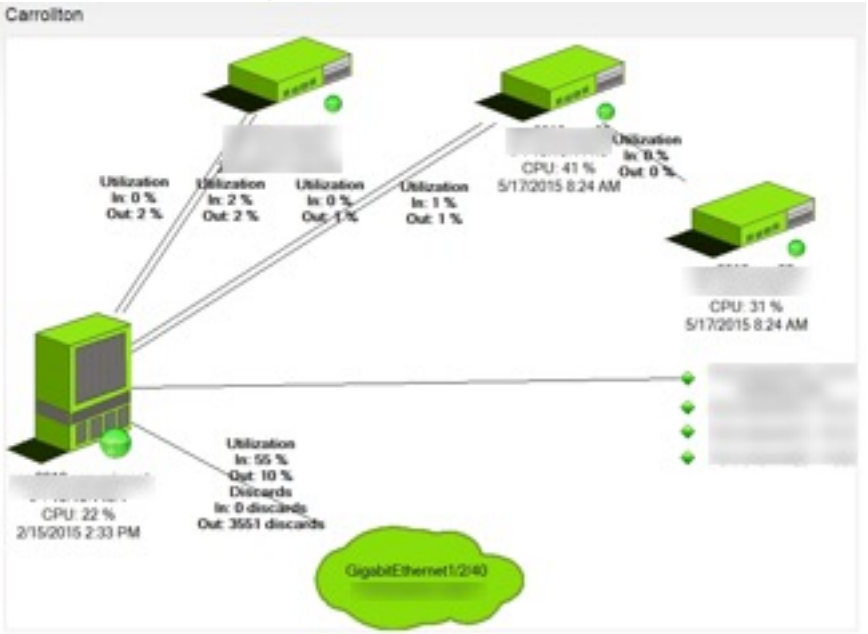
Top 5 Conversations

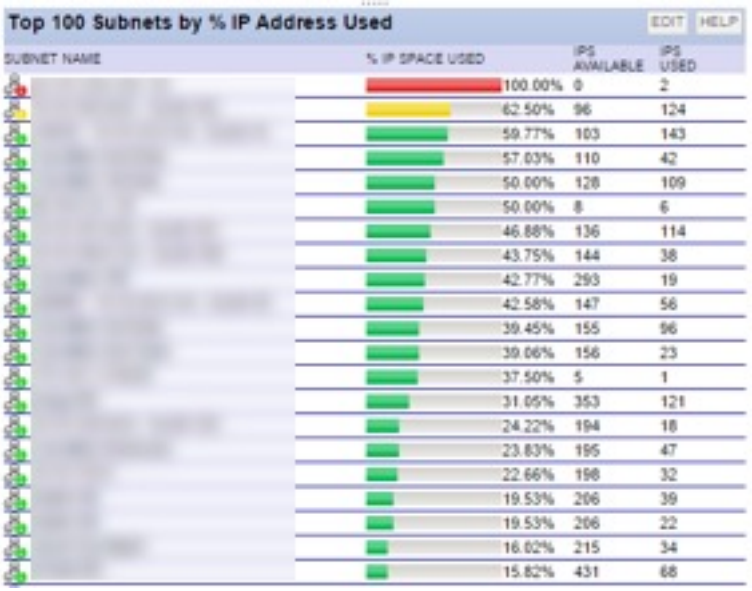


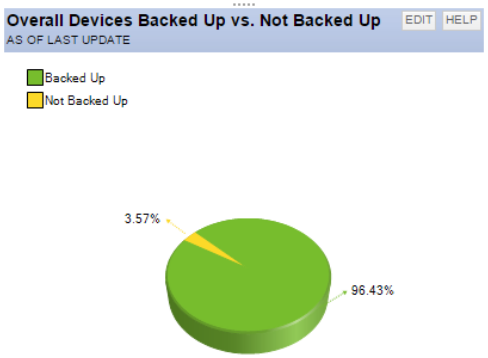
Top 10 Interfaces by Percent Utilization HELP

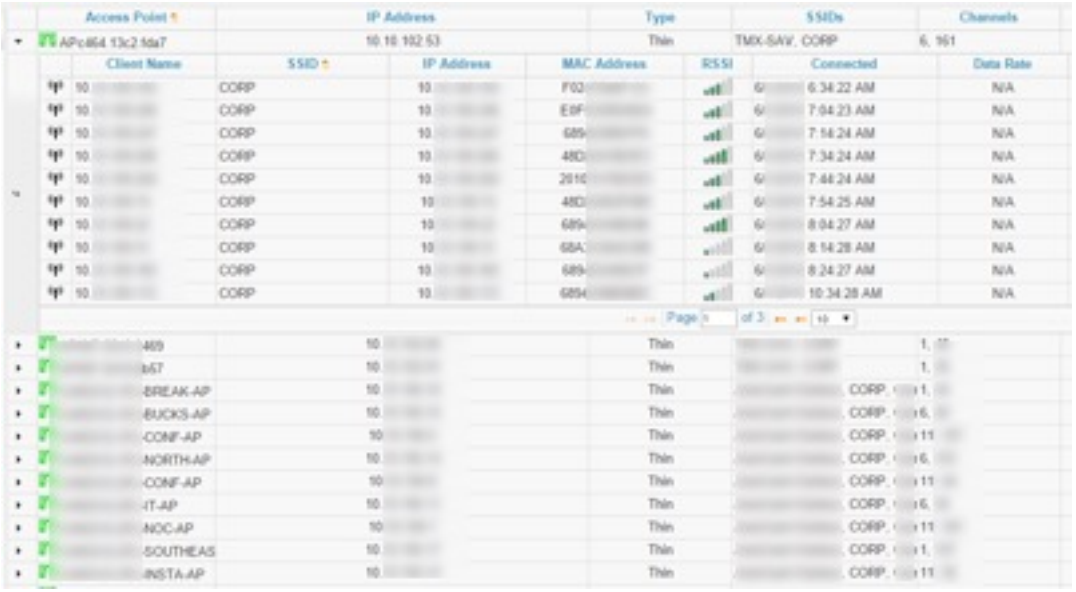
NODE	INTERFACE	RECEIVE	TRANSMIT
TM-12125-Athens-AL1	ppp 1 · CTL MPLS; DS1IT-16137964; CMP-139720856	75 %	61 %
TM-23642-Stockbridge-GA1	Serial1/0:1 · |4020440|_public_TITLEMAX STOCKBRIDGE 23642 - VOXIP	74 %	41 %
TM-24225-Gadsden-AL2	Serial1/0:1 · |4016285|_public_TITLEMAX GADSEN 24225 - VOXIP	78 %	20 %
TM-12229-Phoenix-AZ4	Serial1/0:1 · |4329216|_public_TITLEMAX PHOENIX AZ4 12229 - VOXIP	31 %	64 %
TM-14645-RollingMeadows-IL1	Serial1/0:0 · =) MPLS VPN via PAETEC	91 %	3 %
TM-39189-Athens-TX1	ppp 1 · I1L: 172608159 CMP: 172608228 DS1IT-16950802	90 %	4 %
TM-39189-Athens-TX1	t1 1/1: T1/FT1 Network Interface Module (DS1 Port [T1DSXGA]) · DS1IT-16950802	89 %	4 %
TM-10466-Pacific-MO1	Serial1/0:1 · |4016002|_public_TITLEMAX PACIFIC 10466 - VOXIP	75 %	15 %
TM-11866-Fenton-MO1	Serial1/0:1 · |4011536|_public_TITLEMAX FENTON 11866 - VOXIP	83 %	5 %
TM-10442-Hiram-GA1	Serial1/0:1 · |4015992|_public_TITLEMAX HIRAM 10442 - VOXIP	6 %	81 %

Monitoring – SolarWinds Examples





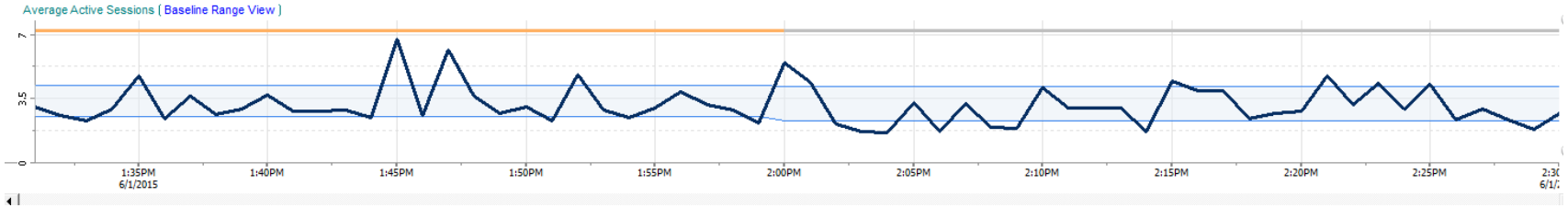


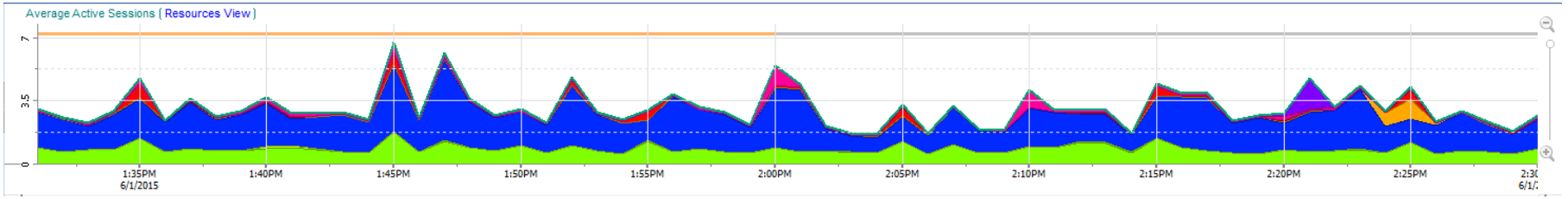


Monitoring – Quest Performance Analysis

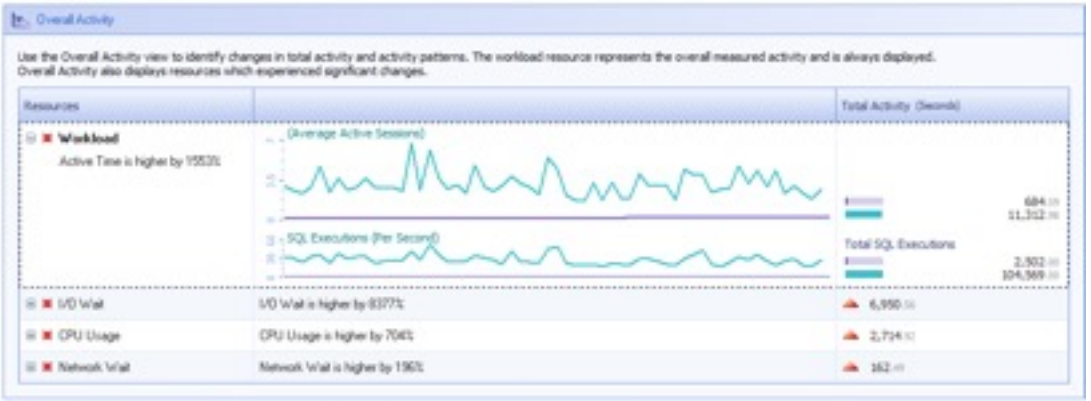
- Replaced several database diagnostic tools with Quest Performance Analysis
  - Consolidation of toolset decreased overall cost.
  - Single deep analysis tools across MSSQL and Oracle decreases need for specific domain knowledge.
  - Trained team across IT to use toolset for production performance improvement and troubleshooting.
  - Queries identified and tuned in major applications resulted in 2x overall performance improvement.
  - Was an instrumental tool to finding and fixing the issues with major releases.
  - Baseline identification automatically determines and then calls out activity out of ‘normal’.
  - Comparison tools help pinpoint query or user activity different between set period, this quickly helps identify delta due to configuration or code changes.
  - Advisory tools quickly identify performance problems and recommended actions to correct.
  - Historical Lock Analysis tools help identify root cause for lock chains.

Monitoring – Quest Performance Analysis Examples





Priority	Advisories	Effort
Medium	Inefficient or Missing Indexes	high
	View all detected occurences (1)	
Medium	Inefficient Query Plans	high
	View all detected occurences (1)	
Low	Database File Configuration	high
	View all detected occurences (1)	

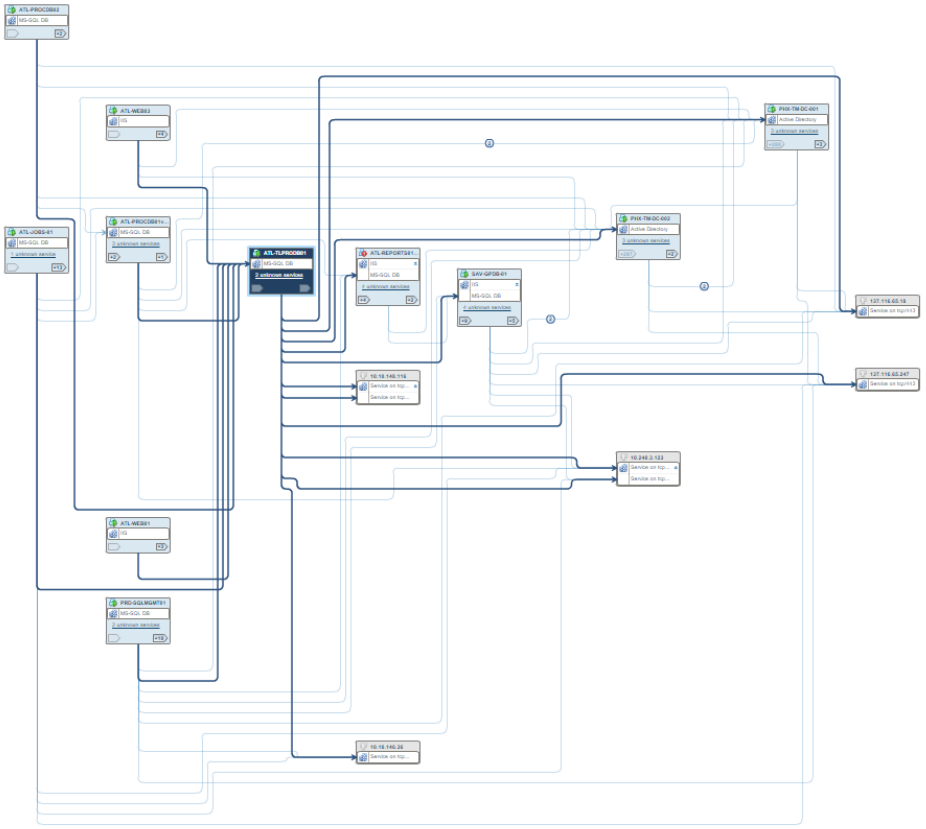


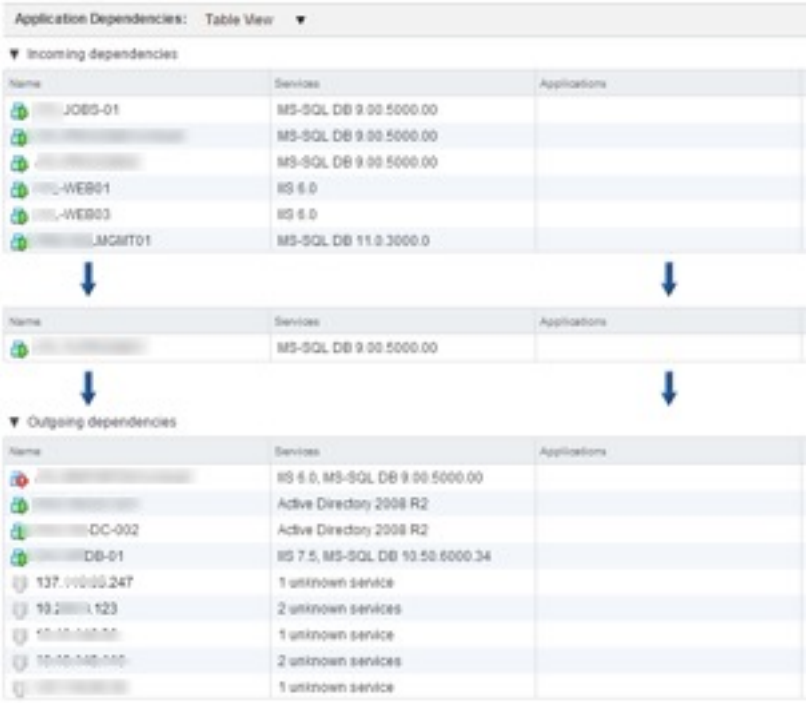
Monitoring – VMware vRealize

- Implemented VMware vRealize Operations Manager
  - Advanced monitoring of virtual infrastructure layer with automated alerting.
  - Automated baseline deviation reporting alerts on abnormal activity.
  - Detailed heat map reports quickly shows source of performance issues.
  - Automated right-sizing report continually ensures servers are not under or over sized.
  - Analytical forecasting of out of capacity events ensure ample time to adjust or buy new capacity.
  - Infrastructure Navigator performs continuous network mapping to show application and server inter-dependency; easing production issue troubleshooting and increasing overall understanding of the IT ecosystem.

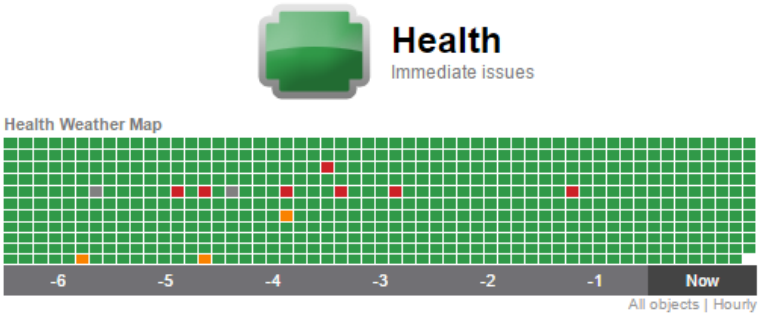
Monitoring – VMware vRealize

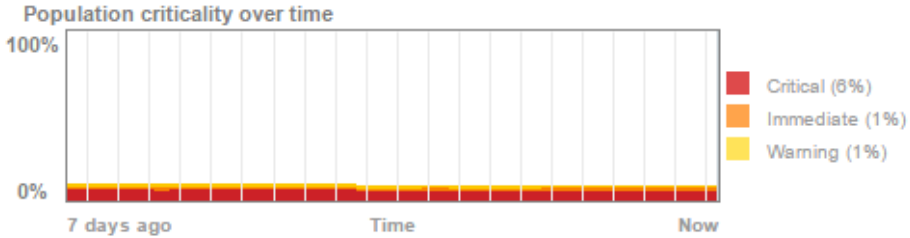
- Infrastructure Navigator maps server connections by application and port, allowing us to navigate upstream and downstream dependencies.





Monitoring – VMware vRealize



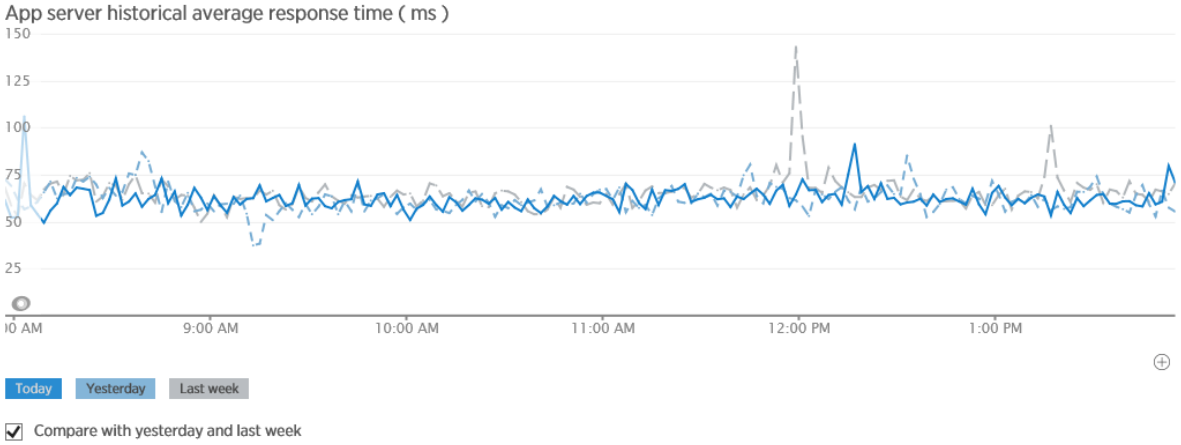


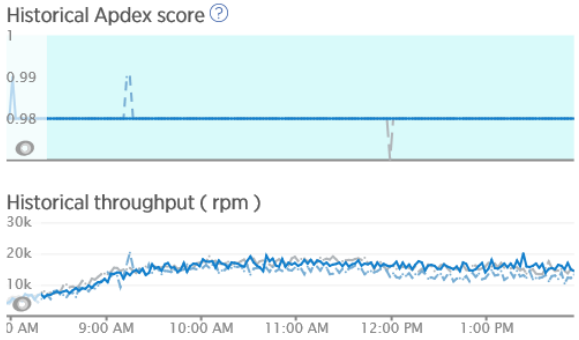
Monitoring

- AD Audit Purchased & Implemented
  - Full change logging and auditing on all Active Directory events has brought full visibility to highly sensitive system. Identification of improper changes due to lack of role clarity found and resolved.
  - Full file system monitoring ensures we have logs of all created, updated and deleted file on corporate file servers hosting sensitive data.
  - Alerting and reporting on potential security breaches in place.
  - Full detail logon failure audits, show breach attempts, bad passwords, failing service accounts and more.

Monitoring – New Relic

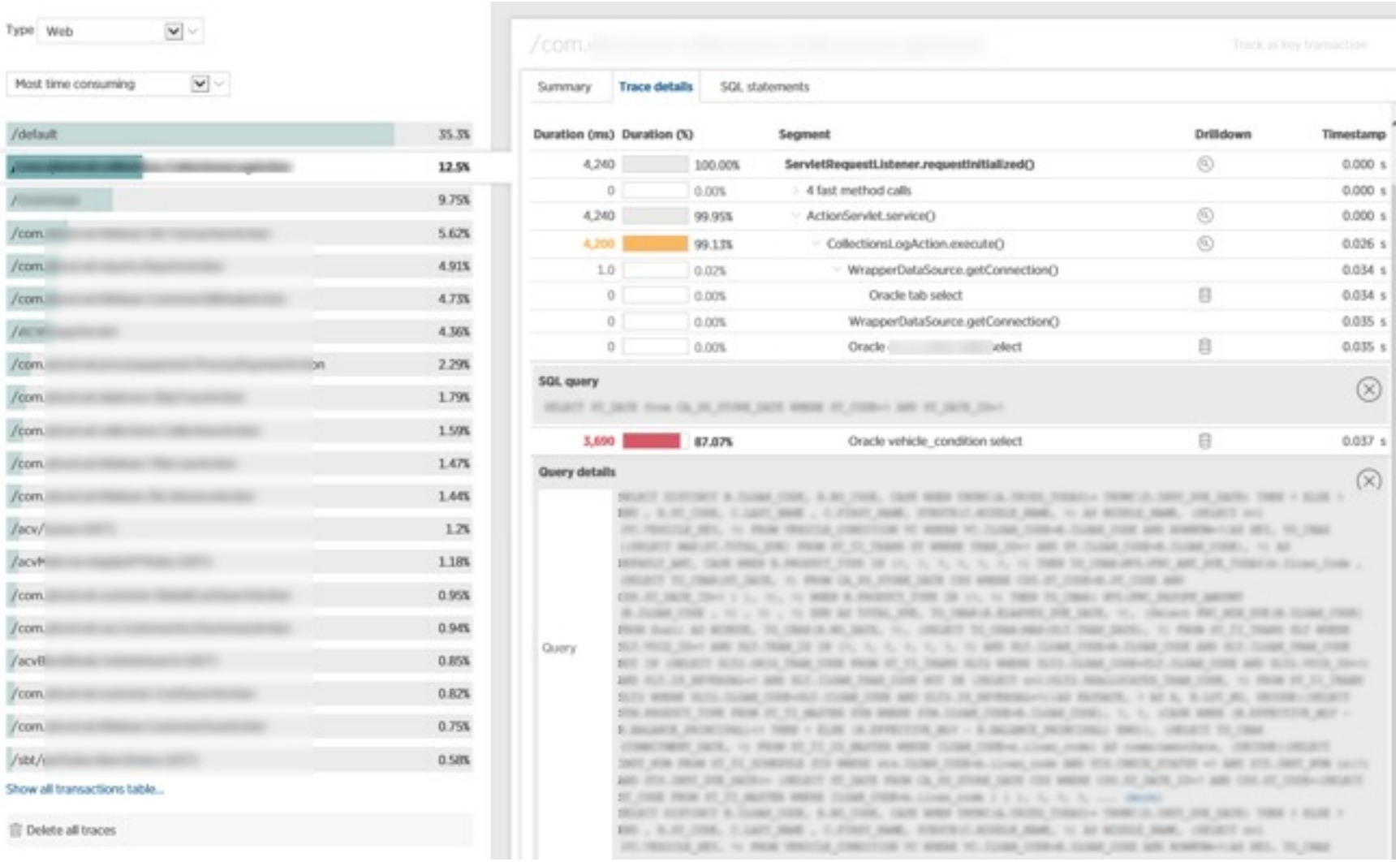
- New Relic Implemented on primary revenue generating application
  - Providing deep application monitoring, New Relic shows the traffic patterns and performance on key applications inside the code.
  - Worked with development to tag key transactions for trending and business traffic analysis.
  - Identified numerous performance issues that have been addressed.
  - Was the defining tool to find the issue with the major releases, without this it could have been countless days of outage.
  - Decommissioned antiquated and hard to use DynaTrace application, saving thousands yearly.
  - New Relic allows us quick comparison of performance across timeframe, allowing us to identify negative impacts due to configuration changes or software releases.





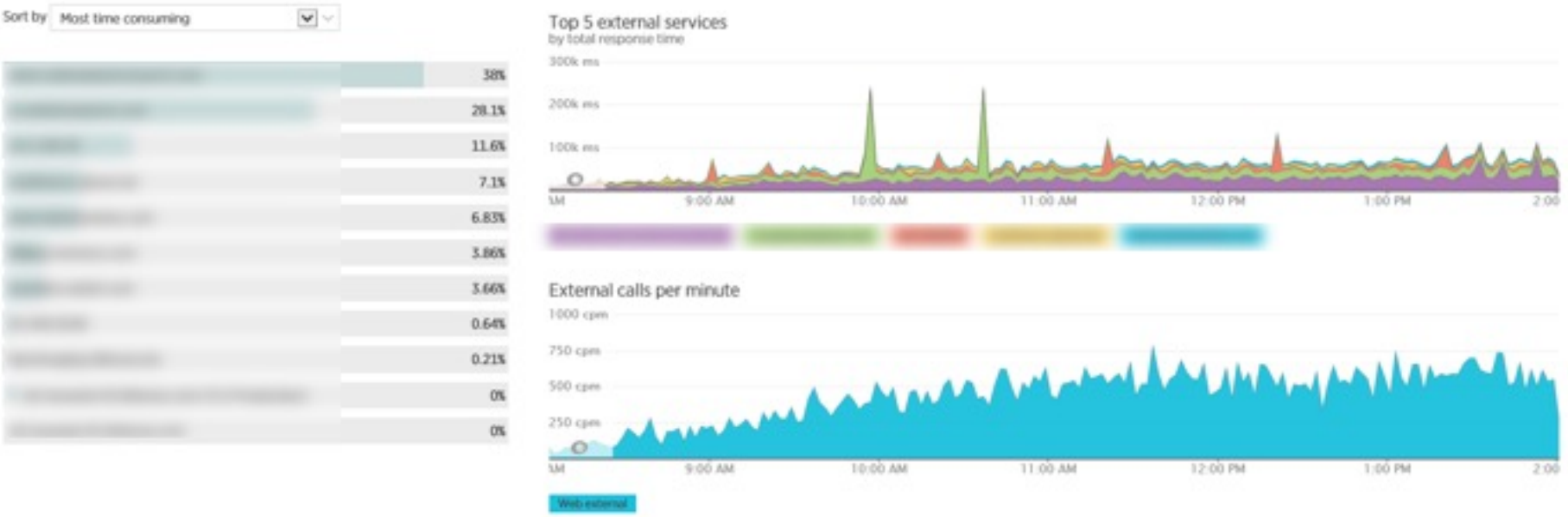
Monitoring – New Relic

- Transaction identification and tracing allows us to drill into why certain areas of the application are slow, including code level visibility.



Monitoring – New Relic

- Monitoring of data leaving the application to external services allow us to understand application dependencies, for performance, security and availability.



Configuration Management

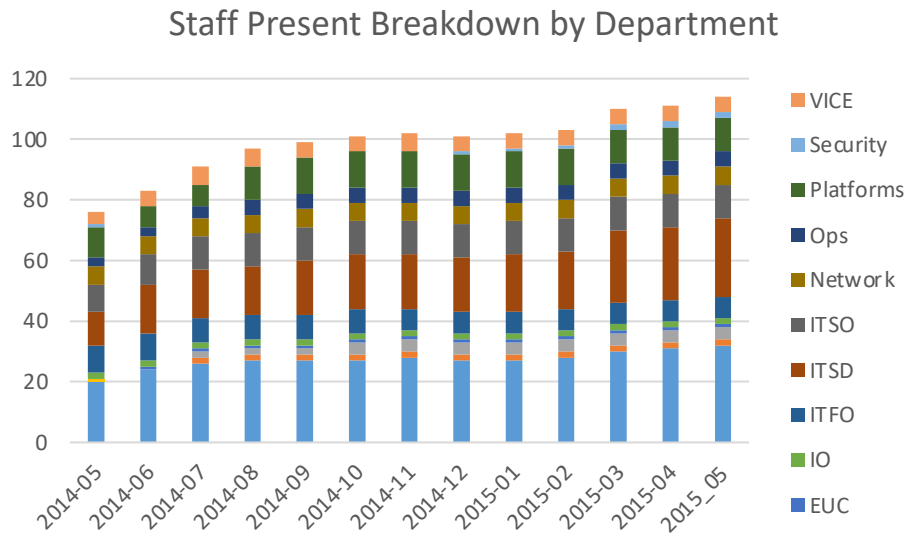
- Complete new deployment of System Center Configuration Manager 2012R2
  - SCCM is now deployed on all workstations with 6672 managed devices.
  - SCCM packages are being developed for all workstation software deployment, 45 packages exist today covering 32 applications, with over 103 deployments performed across 6K+ workstations.
  - Self-Service web-site for application deployment created, 17 applications are available on the catalog today.
    - http://appcatalog
  - SCCM is reporting on rouge software in the field allowed by need for store applications to have full administrator access; this collection and reporting coupled with automated package to remove known rouge application is continually driving up the stability and security of our systems.
- IT Central Application List
  - The application list is a consolidated database for all the IT services we offer. This is used to understand our service base, catalog the vendors and support contacts behind the application. This is also used to feed into IT Service Management to categorize incidents and service requests.
- IT Central Server List
- IT Central

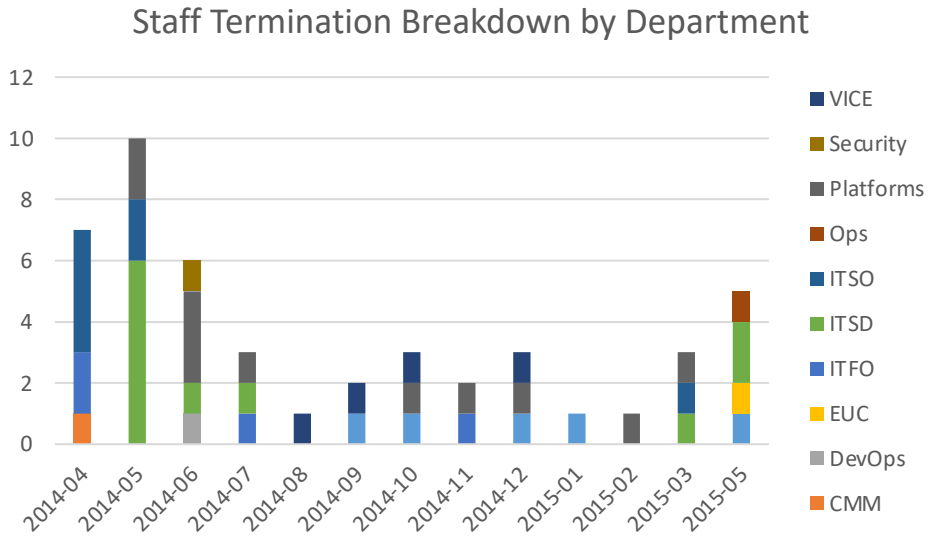
Service Management Toolset

- Platform
  - Redirected the existing project from ServiceNow to focus on Microsoft System Center Service Manager which allowed leverage of existing licenses and a far more flexible product; saving on costs while speeding time to delivery.
  - Stood up SCSM 2012R2 systems with load balancing and high availability at no cost to company, leveraging virtual infrastructure and current licensing to build systems.
- Platform Enhancements
  - Identified, championed, purchased and implemented Cireson suite of SCSM add-ons, providing:
    - HTML5 portal providing self-service service offerings as well as analyst portal to working tickets; functional across browsers on Windows, Mac, iPhone, iPad, Windows Phone and Android. Facilitates creating and working tickets anywhere (portal is internet accessible) and any-time.
    - Tier-Watcher application provides system tray pop-up functionality (akin outlook) for ticket (re-)assignment and updates.
    - Outlook plug-in provides ability to work, create and update tickets from inside Outlooks, ensuring seamless integration of comments from e-mails into Service Manager.
    - Advanced notification provides e-mail status on ticket assignment, re-assignment, updated notes and more, ensuring team members are kept up to date on the status of incident and service requests.
    - Advanced Knowledge Base provided key-word searchable help for end users to solve their own issues.
    - Portal and notification system coupled together ensures end-users are able to monitor the status of their incidents and service requests. Receiving e-mails when the ticket is closed, and ability to look at status on any device at any time.

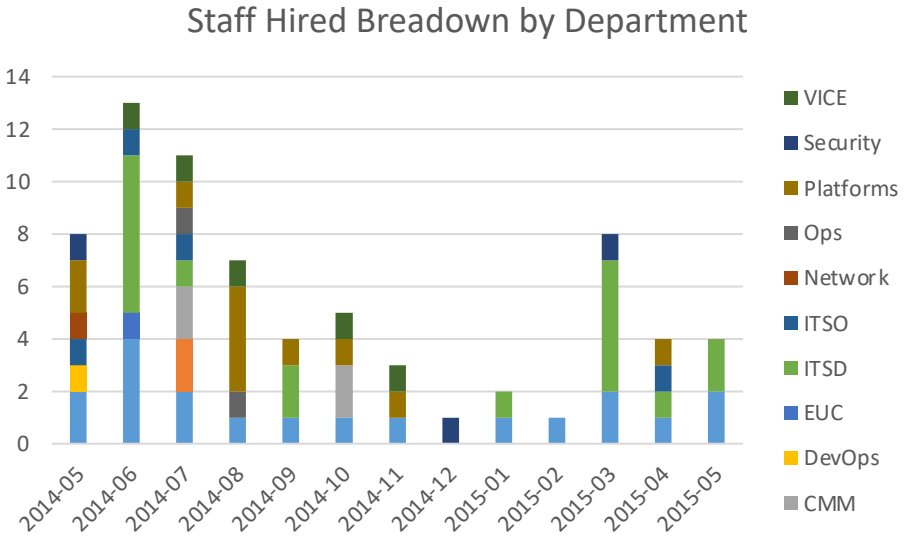
People

Staffing History





- 1 Year
  - 47 Terminations
  - 71 Hires



Organizational Upgrade Highlights

- Created Capacity Management department, filling with trusted former associates.
  - Team provides a healthy check and balance, reporting on infrastructure and operational capacity metrics.
- Eliminated Director of Infrastructure & System Manager positions (and people)
  - Split core system team into OS/Middleware, End User Computing, Virtual Infrastructure & Cloud Engineering.
  - Hired leadership team with high technical knowledge to drive velocity and solutions.
- Eliminated Director of Database role (and person filling position)
  - Folded DBA roles in with OS/Middleware to make Platform Engineering team.
  - Consolidation of responsibilities has led to increased collaboration and increased velocity.
- Promoted internally to Sr. Director of IT Operations
  - Internal candidate was an Atlanta transplant and an enormous source of our continual improvement; in promotion we re-organized his department into IT Service Desk (ITSD), IT Service Operations (ITSO), ITFO (IT Field Operations) and IT Service Management (ITSM). Aligning these teams with ITIL related functions has helped affect the culture of the organization to be more service oriented.
- Eliminated Director of Application Support & Maintenance
  - Individual filling position was not focused on how to 'get to yes'.
  - More direct management of ASM managers has led to improved productivity.
- Eliminated End User Computing Manager position (and person filling role)
  - EUC was a necessary for a year to help focus individual teams on separate projects.
  - Maturity of the organization allows this combination of responsibilities, driving up collaboration and velocity.

Cultural Improvement

- Organizational Clarity
  - Created the IT structured organizational chart, with pictures of people to create a cultural awareness of **who** the people are.
  - Developed the organizational missions for each I&O department, to raise awareness of **what** each department team does.
  - Created the first IT RACI chart, helping bring clarity to who is **r**esponsible, **a**pproves, **c**onsulted and **i**nformed on different areas.
- Leveraged SharePoint upgrade to drive IT cultural improvement
  - Centralized all IT documentation onto IT Central. Previously each team held documentation separately, with no team able to see each others documentation. This has resulted in lack of duplication of documentation and separate versions of the truth.
  - Published all ITSC presentation; reducing the fear around ITSC meeting as well as the lack of visibility the IT team had into the decisions being made. Championed all of IT to update the ITSC deck weekly, ensuring a single version of the truth while being perpetually prepared for the meeting.
- Meeting standards have brought teams together.
  - Setup standard weekly cadence for all teams to have staff meetings.
  - Ensured each leader was having weekly 1:1 meetings to provider leadership to all.
  - Regular skip level meetings with associates and VP ensure full communication.
  - Weekly I&O Leadership review of all projects either I&O sponsored, or involving I&O team members; this regular discussion ensures proper prioritization of efforts from the team and awareness of project initiatives prepares all team members to contribute.

Cultural Improvement

- Morning Meeting
  - Championed then built the agenda and process around the Morning IT Meeting, with a daily review of:
    - Current and recent Critical Incident
    - Recent and Future Changes
    - Service Desk Interaction Trending
    - Incident and Service Request Trending
    - Red, Yellow and Critical Project Status
  - Meeting is run by IT Operations department, with data prepared every morning.
  - Serves as a rally point for all IT to discuss key efforts that need attention and focus.
  - Data and topics continue to be enhanced.
  - IT Morning Call Documents
- IT Blog
  - Developed and deployed the IT Blog on IT Central, providing a central rich blogging tool for IT wide announcements. Preserving the content for future employees and reference, as well encouraging team members to share information across departments.
- IT Rankings
  - Embraced the ranking process, eliminated the fear of culture around rankings.
  - Led management review sessions, training leaders how to discuss their staff openly and honestly; leading to more accurate rankings as well as identified leaders miss-ranking to avoid difficult conversations.
  - Lead the team through discussions about how to differentiate between engineers, ensuring rankings were consistent throughout the teams.

Organizational Management

- Developed Staff Spreadsheet tracking & reporting system.
  - With Excel, SSIS, SSRS and MSSQL behind the scenes the Staff Spreadsheet is IT's means of tracking information around staffing, including ranking, salary, squad assignments, department, start/termination dates and more.
  - Developed reports that interact with HR system of record to identify discrepancies in IT organization and HR information; numerous terminated contractors that were still active, mismatched departments and more were identified.
  - Quarterly updates to staff ranking including reports around trending helps IT leadership identify opportunities for personnel advancement and performance management.
  - Salary information coupled with the IT Project list feeds custom reports around capitalized labor for both employees and contractor invoices.