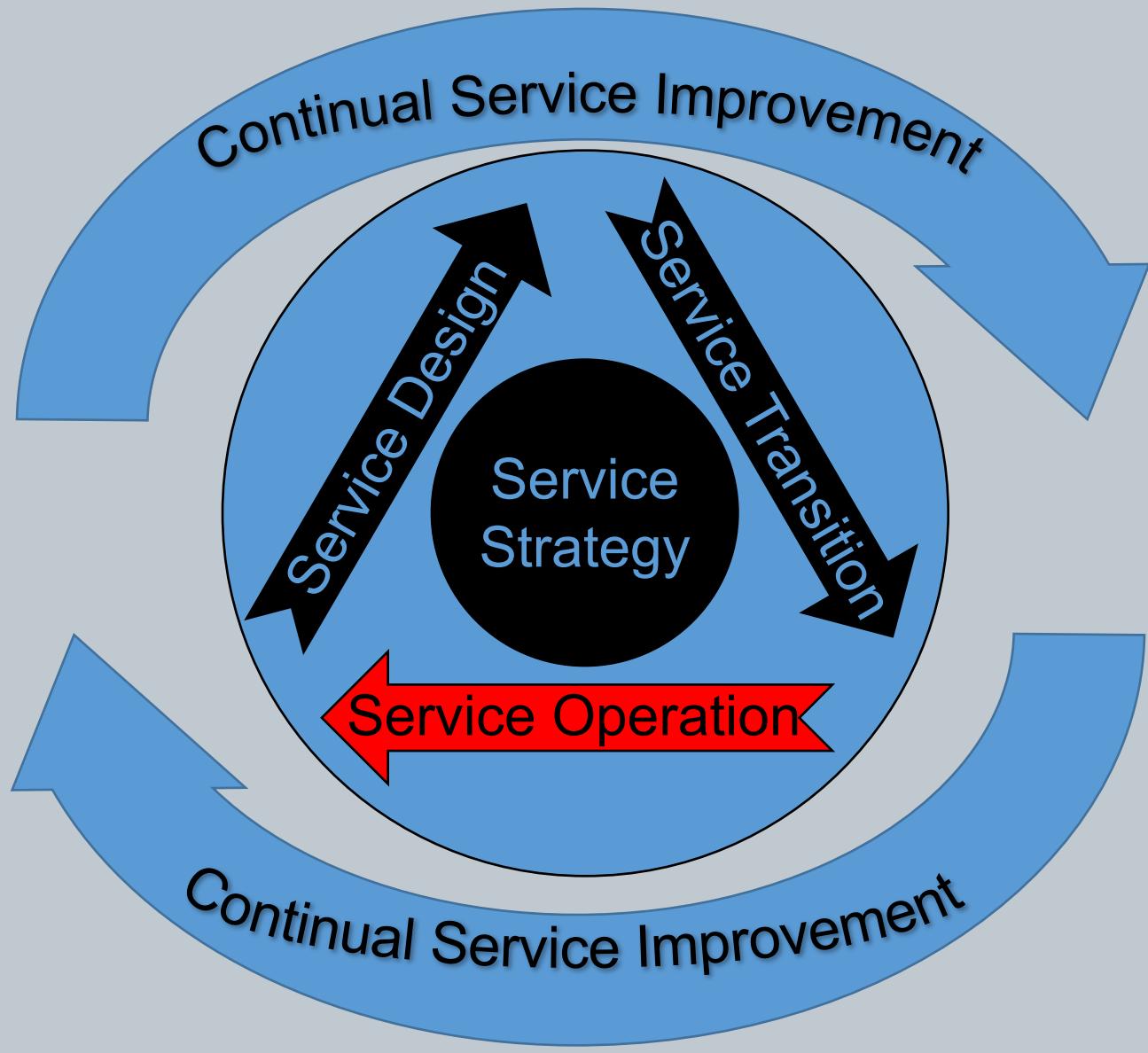




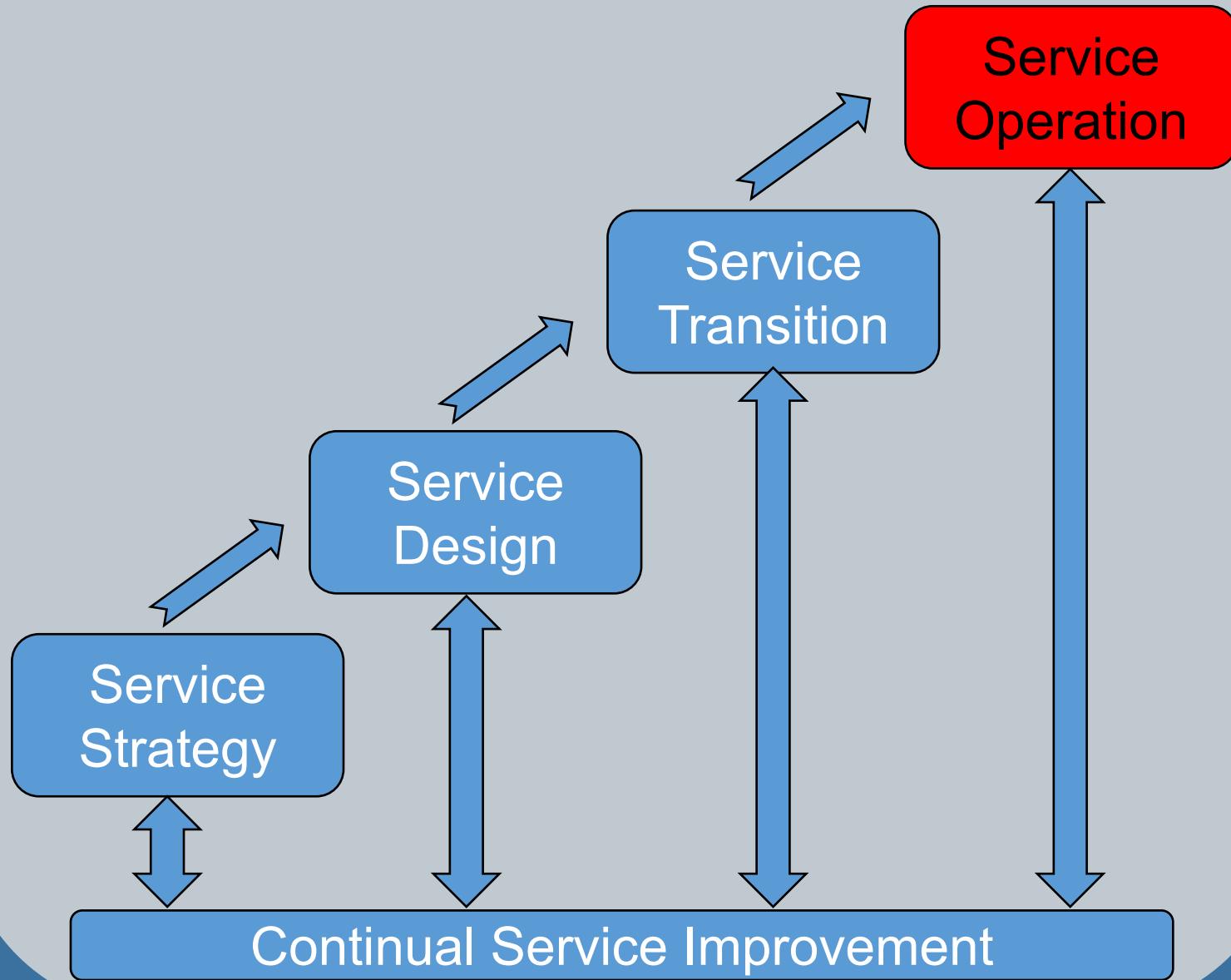
Service Operation (Overview)

ITIL Foundations

Typical ITIL Lifecycle Diagram



ITIL Lifecycle With Feedback



Service Operation

- Begins upon transition of a new service to facilitate the outcomes desired by customers
- Urgent operational problems are handled by this stage while others are fed back to Strategy, Design, or Transition (as appropriate)



Work with What You've Got!

- Service Operation often requires you to be flexible
- Don't have the benefit of reengineering everything from the beginning
- Operations must continue, but Continual Service Improvements must also occur



Key Takeaways

- Service Operations never really end but they do feedback to earlier stages for future development
- Provides users and customers with agreed-upon services
- Identified faults are quickly fixed or referred back to an earlier stage





Objectives of Service Operation

ITIL Foundations

Objectives of Service Operation

- Deliver and support agreed-upon IT services
- Minimize the impact of failure
- Control access to services based on organizational IT security policy



The Scope

- Services
- People
- Processes
 - Event Management
 - Incident Management
 - Problem Management
 - Request Fulfillment
 - Access Management
- Technology





Principles of Service Operation

ITIL Foundations

Principles

- Balance
- Communication



Four (4) Elements of Balance

- Internal IT versus External Business
- Stability versus Responsiveness
- Cost versus Quality
- Proactive versus Reactive



Communication is Critical

- With users and customers
- Between operational teams
- Between operational shifts
- In performance reporting
- With projects and programs
- For any changes, releases, & deployments
- For any failures, exceptions, & emergencies





Event Management

ITIL Foundations

Purpose

- To manage events throughout their lifecycle
 - *Lifecycle of an event is usually short*
- An event is a change of state that has significance for the management of a CI or IT service



Functions

- Detect changes of state that have an impact for any specified configuration item (such as an IT service or system)
- Identify the type of event detected and take appropriate actions
- Trigger other service management process or actions (if needed)



Functions

- Capture performance information for comparison against the design specifications and SLA targets
- Provide inputs to service assurance and to the Continual Service Improvement (CSI) phase



What Does That Really Mean?

- Event management monitors CI's for their technical configuration, software licensing/usage, and adherence to the organizational security policy
- Components and services should remain in a steady state once designed or may operate within an allowed range or specification





Alerts & Event Types

ITIL Foundations

Alerts

- Warning that a threshold has been reached, a failure has occurred, or something significant has changed
- Generated by automated monitoring tools and trigger intervention
- May be indicative of event based on the severity level



Event Types

- Informational
- Warning
- Exception



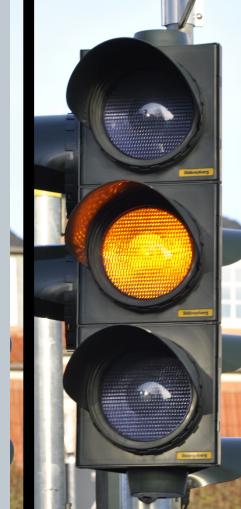
Informational

- Shows that everything is operating properly
- Examples:
 - Successful logons by an authorized user
 - Completion of a server backup to an offsite data center



Warning

- Something isn't operating properly
- Usually a threshold has been breached and this gives us enough time to respond before a failure
- Examples:
 - Primary hard disk is over 80% capacity
 - Network utilization is over 85% usage



Exception

- An error condition has occurred
- Performance level is currently unacceptable
- Examples:
 - Failed login attempts after 3 tries by user
 - Software license has expired
 - Backup server's network connectivity is no longer functional



What Do You Do With An Alert?

- Information
 - Considered a completed event and are logged in the CMS
- Warning
 - Trigger the Problem Management process to determine the root cause
 - Logged in CMS
- Exception
 - Trigger the Incident Management process or create a Change Management issue





Incident Management (Purpose)

ITIL Foundations

Purpose

- Restore normal service operation as quickly as possible while minimizing the adverse impact on business operations, thereby ensuring the agreed-upon level of service quality is maintained



Purpose

- Restore normal service operation as quickly as possible while minimizing the adverse impact on business operations, thereby ensuring the agreed-upon level of service quality is maintained

Normal service is defined by the Service Level Agreements (SLAs)



Purpose

- Restore normal service operation as quickly as possible while minimizing the adverse impact on business operations, thereby ensuring the agreed-upon level of service quality is maintained

Just because your SLA states to fix 90% of all problems within 2 hours doesn't mean you should wait 2 hours to fix the problem...some fixes take less time and some take more



Purpose

- Restore normal service operation as quickly as possible while minimizing the adverse impact on business operations, thereby ensuring the agreed-upon level of service quality is maintained

Efficient and effective incident management causes issues to be resolved faster with less impact to the organization...avoid chaos!



Purpose

- Restore normal service operation as quickly as possible while minimizing the adverse impact on business operations, thereby ensuring the agreed-upon level of service quality is maintained

Check your SLA...

What was agreed upon?





Incident Management (Scope)

ITIL Foundations

Scope of Incident Management

- Covers any event or occurrence that disrupts or may disrupt service delivery



Definition of An Incident

- An unplanned interruption to an IT service, a reduction in the quality of an IT service, or failure of a CI that may impact an IT service



Definition of An Incident

- An unplanned interruption to an IT service, a reduction in the quality of an IT service, or failure of a CI that may impact an IT service

*If it was planned,
it would fall under
change management
(called a change, not an incident)*



Definition of An Incident

- An unplanned interruption to an IT service, a reduction in the quality of an IT service, or failure of a CI that may impact an IT service

IT services are managed in ITIL based on your SLAs



Definition of An Incident

- An unplanned interruption to an IT service, a reduction in the quality of an IT service, or failure of a CI that may impact an IT service

*Reduction in quality
is an incident,
we don't need to
wait for total failure
to take action*



Definition of An Incident

- An unplanned interruption to an IT service, a reduction in the quality of an IT service, or failure of a CI that may impact an IT service

Even if a failure hasn't occurred to the overall service, the failure of a CI must be addressed

We are always looking to improve reliability and resilience of the service

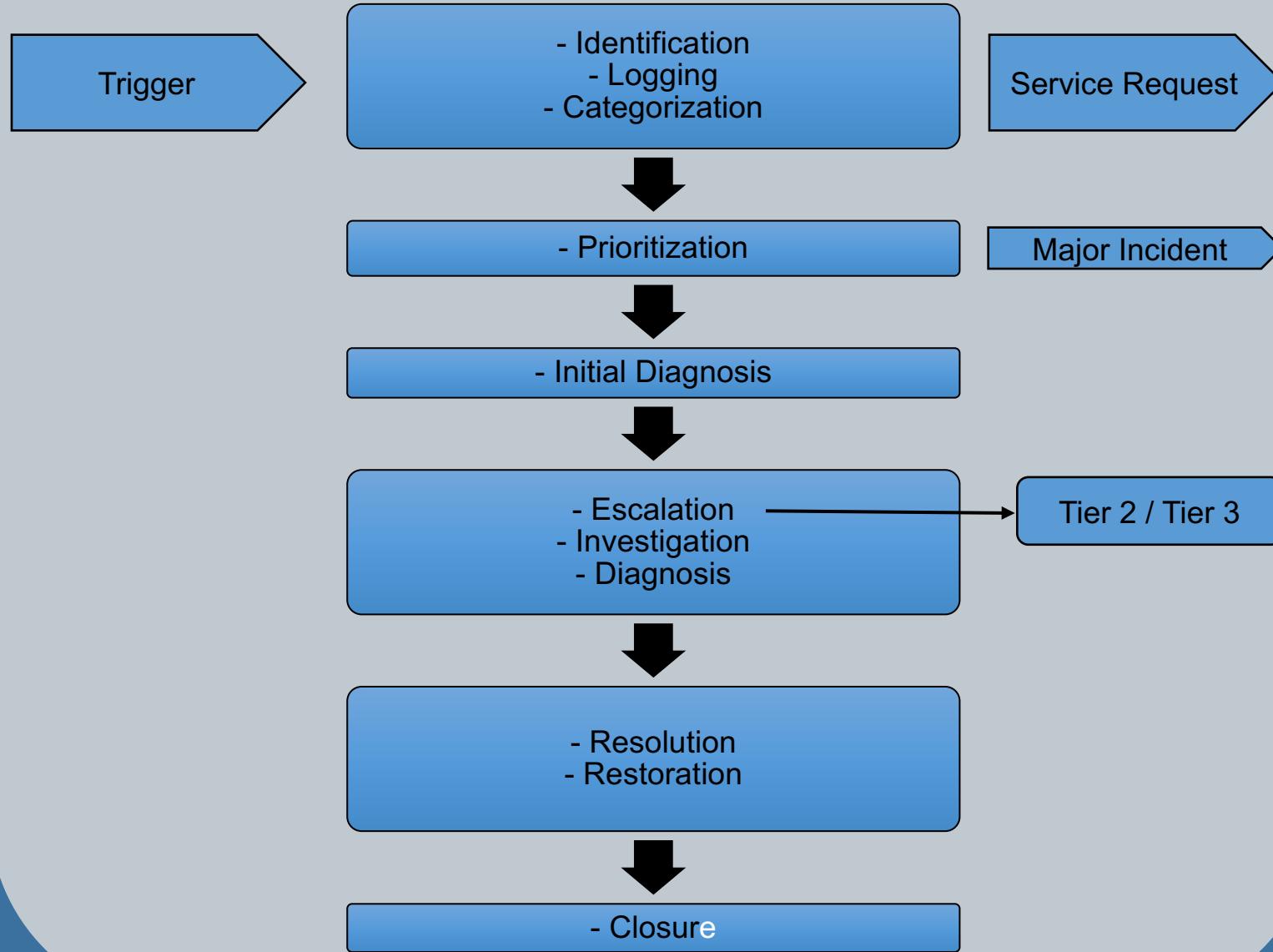




Incident Management Process

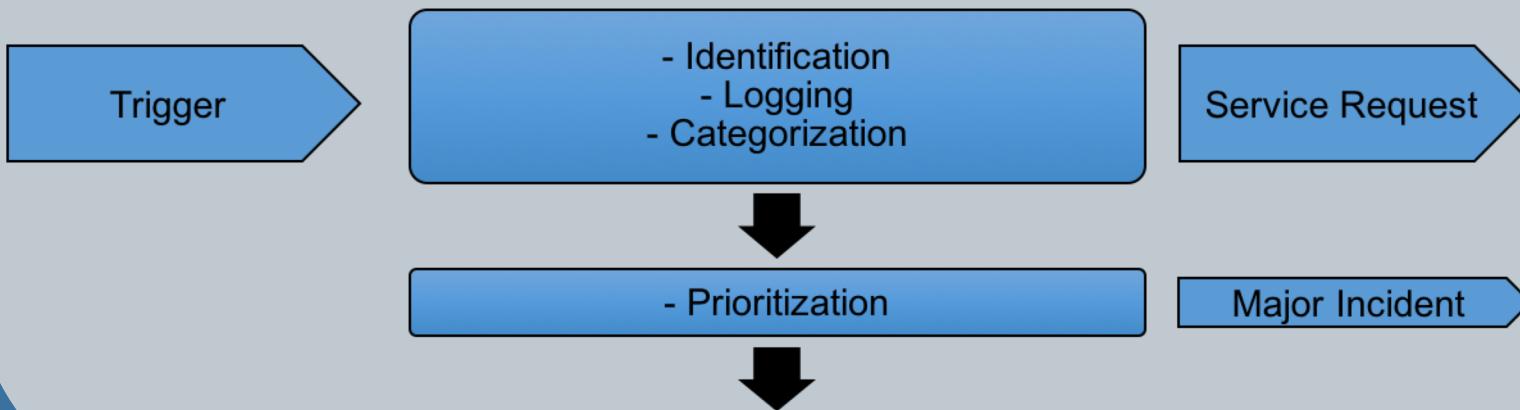
ITIL Foundations

Incident Management Process



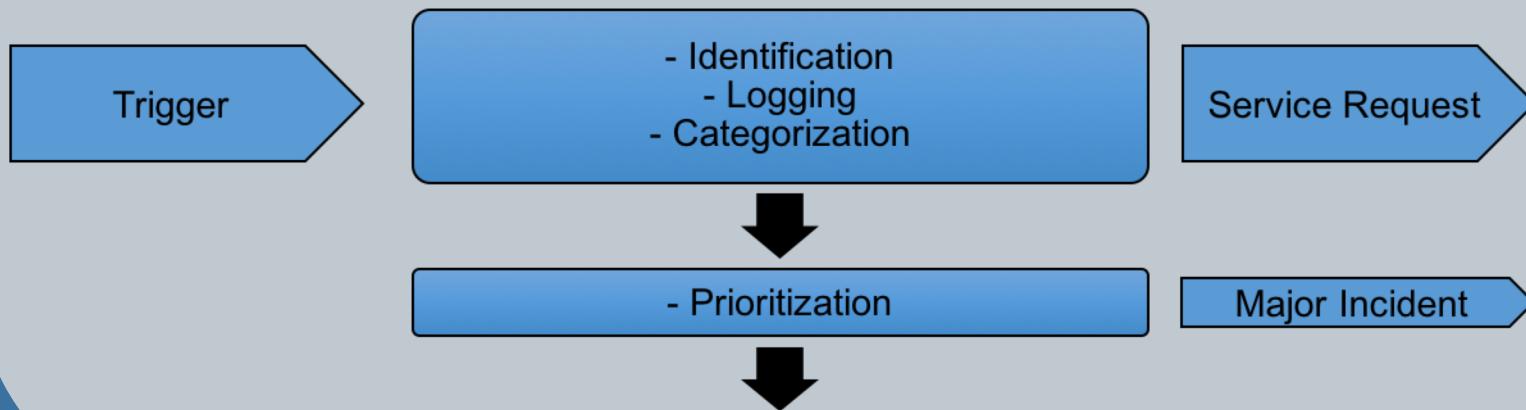
Identification

- Occurs when a trigger happens
 - Exception occurs in Event Management
 - Technician discovers an issue
 - System auto-detects an issue and creates a service ticket
 - User calls to complain



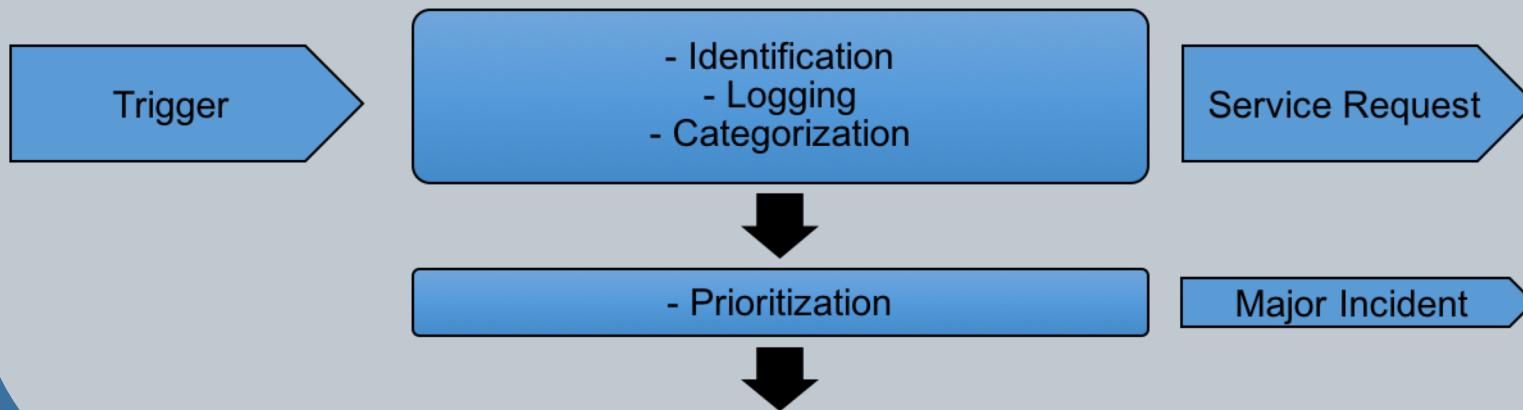
Logging

- Service desk logs all incidents
 - Help Desk Analyst creates a ticket with as much detailed information as they can gather on the incident



Categorization

- Service desk determines if an incident or just a service request
 - Push ticket to service request (OR)
 - Continue incident process per SLAs



Determine Priority

- Incident response occurs based on triage of events and priority
 - Impact
 - What is effect on the business?
 - Urgency
 - How long before impact is considered significant?



Determine Priority

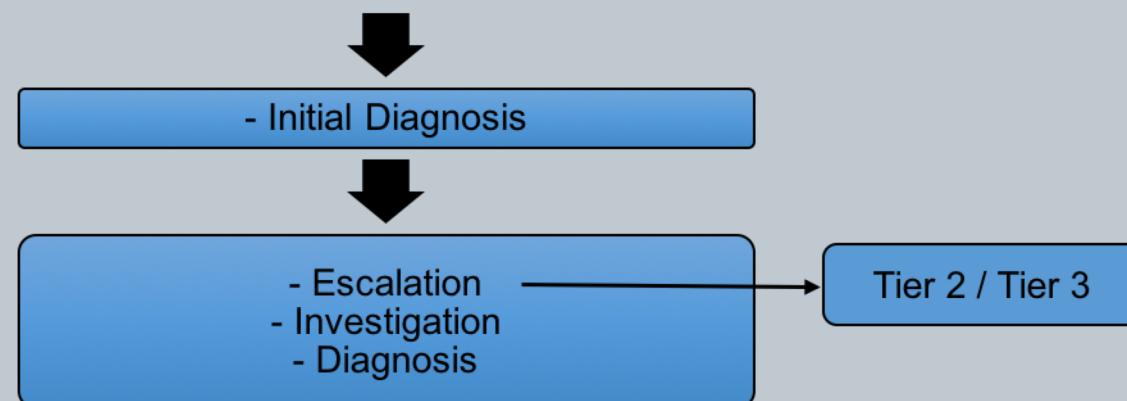
- Priority is determined by the SLA
- Also determines timeline to correct

Priority	Category	Time to Correct
1	Critical	1 hour
2	High	4 hours
3	Medium	48 hours
4	Low	96 hours
5	When able	N/A



Initial Diagnosis & Escalation

- Tier 1 Support is all about triage
 - What can I fix quickly?
 - What needs a specialist?
- If the Service Desk can't fix it fast, escalate to a higher tier or a specialist



Escalation

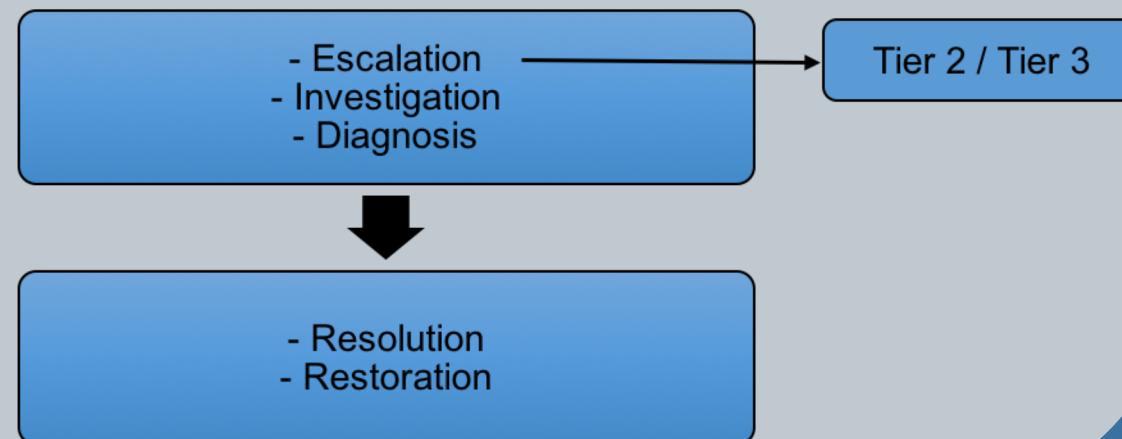
- Functional
 - Most common escalation
 - Incident requires a specialist or skills beyond initial Tier of the Service Desk
- Hierarchal
 - Referred to management due to severity, persons affected, or permission to obtain replacement components due to cost threshold

*Remember that the Service Desk
still owns the incident...*



Resolution and Restoration

- Complete investigation and appropriate incident correction occurs
- Incident solution is reported back to the Service Desk and the user



Closure

- Just because a technician says it is fixed does not mean you close incident
- Check with the end user that it is fixed
- Close the ticket and detail what was wrong and how it was fixed



- Resolution
- Restoration



- Closure





Major Incidents

ITIL Foundations

What Is a Major Incident?

- During prioritization, an incident might be labeled as a Major Incident
- Based on predefined criteria
- If this occurs, it is reported up to Service Desk Management and the IT Director



Major Incident Teams

- Most organizations have a “major incident” team to attack these issues
- Have preplanned responses for major likely events
- Remember, the Service Desk still owns the incident



- Prioritization

Major Incident





Models for Incident Handling

ITIL Foundations

Incident Models

- Set of predefined steps for handling a particular type of incident
- Generic and Specific Models can exist



Generic Models

- Most service desks use a generic model for handling the initial logging and categorization of an incident
- Simple script for Help Desk Analysts to use ensure a consistent user experience and an efficient data collection process



Specific Models

- Once the incident is categorized, the help desk analyst can move to a specific model for common diagnostic issues
 - Password reset and user account lockout
 - Restoration of files from backup
 - Troubleshooting network connectivity
 - Workarounds for a current incident like a proxy server being offline



Incident Matching

- Help Desk Analysts should attempt to match incidents to the known existing incidents or recent incidents
- Can identify a negative trend that should be addressed for improvement
- Can match the symptoms to a database of known incidents and workarounds





Problem Management

ITIL Foundations

Problem vs. Incident Management

- Problem Management focuses on the long-term solution and fixing the root cause
- Incident Management often focuses on *firefighting* and correcting issues as quickly as possible



Purpose

- To manage problems through their lifecycle, seeking to minimize the adverse impact of incidents and problems caused by underlying errors and to prevent recurrence of incidents related to those errors



Purpose

- To manage problems through their lifecycle, seeking to minimize the adverse impact of incidents and problems caused by underlying errors and to prevent recurrence of incidents related to those errors
- Lifecycle exists for Problem Management, much like the Incident Management process



Purpose

- To manage problems through their lifecycle, seeking to minimize the adverse impact of incidents and problems caused by underlying errors and to prevent recurrence of incidents related to those errors
- Problem Management seeks to identify and correct the underlying cause of the incidents and to prevent future occurrences



Purpose

- To manage problems through their lifecycle, seeking to minimize the adverse impact of incidents and problems caused by underlying errors and to prevent recurrence of incidents related to those errors
- Why are we getting 32 incidents per month for users being unable to login? Yes, we can reset their login credentials, but is this solving the underlying issue?



Purpose

- To manage problems through their lifecycle, seeking to minimize the adverse impact of incidents and problems caused by underlying errors and to prevent recurrence of incidents related to those errors
- Allows us to prevent incidents and problems from occurring in the future...



Scope

- Triggered by Event Management, Incident Management, and Problem Management
- Implements solutions through Change Management and the Release & Deployment processes
- Proactively uses Availability Management and Capacity Management to prevent issues





Problem Management Concepts

ITIL Foundations

Problem Management Concepts

- Problem
- Workaround
- Known error
- Known error database (KEDB)



Problem

- Underlying cause of one or more incident, or even possible incidents (like warnings)



Workaround

- Method to minimize or eliminate the impact of an incident until a permanent fix can be implemented

- Example

A server loses power when an electrical breaker trips. You reset the breaker and restart the server.

Did we solve the root cause?

Why did the breaker trip?



Known Error

- Exists when you have an incident and a current workaround
- Not as good as a permanent solution, but it allows business operations to continue until a permanent solution can be implemented
- Example
 - You can't use the microwave and the toaster at the same time...



Known Error Database (KEDB)

- Forms part of the Configuration Management System (CMS)
- Details problems, workarounds, and known errors in a common database
- Contains Error records and Problem Records (these are different things)



Error and Problem Records

- Error Records
Problem with an associated workaround
- Problem Records
Problem without an associated workaround



Incident vs. Problem

- **Incident**

When open, normal service is interrupted;
when service is restored, incident is closed

- **Problem**

When open, a permanent solution hasn't
been implemented yet

- **Incidents, Problems, and Known Errors**

All are stored in your CMS and should show
the current relationship between them





Problem Management Process

ITIL Foundations

Problem Management Process

- Incident Matching
- Initiating the Process
- Problem Models
- Major Problems



Incident Matching

- Matching an incident to a known error helps the service desk's efficiency
- By matching symptoms to existing incidents and known errors, the Incident Management process is aided by the Problem Management process
- Goal: consistency, quality, and sharing of knowledge across the service desk analysts



Initiating the Process

- Does every incident trigger a Problem Management process?
- Often, organizations rely on the Service Desk supervisors and managers to determine when an incident meets the threshold to begin the Process Management process
- Conducting a full root cause analysis can cost lots of time and money...



Problem Models

- Just like in the Incident Management process, the Problem Management process likes to provide models to use
- Problem Models provide predefined steps to use when conducting the investigation of a given problem
- Creates a standard methodology to be used in the organization for problem analysis and resolution



Major Problems

- Just like Incident Management defines Major Incident, we need to define it
- Identify Major Problems and perform postmortem analysis
 - What went right?
 - What went wrong?
 - What could be done better next time?
 - How can we prevent this in the future?
 - What involvement did we have from 3rd parties, if any?





Request Fulfillment Process

ITIL Foundations

Purpose

- To manage the lifecycle for all service requests from users
- Deliver value directly and swiftly to users, enhancing their efficiency and effectiveness



Types of Requests

- Numerous types of requests are made:
 - New account creation
 - New hardware
 - New software
 - Resetting their password
 - Move a workstation to a new office



WARNING: Stick to the Process...

- Users want to circumvent the process
- Then, it usually makes the request take longer and aggravates both the user and the IT staff



Managerial or Individual?

- Is the request being made managerial or individual?
- If managerial, use the Business Relationship or Service Level Management processes
- If individual, use the Request Fulfillment process



Functions

- Increase user satisfaction
- Provide access to a standard service set (usually web-based)
- Provide information, help, and guidance for user issues and requests
- Handle complaints, comments, and compliments



Key Takeaways

- Request fulfillment is about handling all requests, not necessarily solving them
- All requests should be recorded, as this helps Continual Service Improvement
- Requests can trigger other processes (Change, Incident, & Problem MGMT)
- Some requests are impossible to fulfill





Access Management

ITIL Foundations

Purpose

- To provide the access rights to allow users to utilize a given service or group of services
- Access Management executes the IT Security Management policy set forth by the organization



Functions

- Operate per the IT Security Management policy
- Grant/Change/Remove access rights as approved and/or directed
- Ensure changes occur per the process
- Oversee access to services in conjunction with Event Management



Process Initiation

- Often trigger by a service request, Change Management, or Release & Deployment Management processes



Organizational Access Management

- Some organizations do not treat access management as a separate process
- Access management may be rolled into Request Fulfillment, Change Management, or Release & Deployment depending on your organizational design





The Service Desk

ITIL Foundations

Overview

- Crucial component to Service Management
- What most people think of with ITIL
- Personnel are generalists with expertise over a variety of services



Purpose

- To provide a single, central point of contact for all users of IT services
- To be the first point of contact for all issues with all services



Effective Service Desks Provide...

- Improved customer satisfaction
- Consistency in support to users
- Speedy service restoration for failures
- Quality and speed for fixing incidents



Effective Service Desks Provide...

- Effective teamwork by delegating tasks to specialists
- Better management and control of the infrastructure through use of CMS
- Proactive approach to service improvement and service provisioning
- Capture of metrics and relevant data





Service Desk Functions

ITIL Foundations

Functions of the Service Desk

- Log & categorize incidents
- Log & categorize service requests
- Prioritizing incidents
- Diagnose & correct Tier 1 incidents, restoring services when possible



Functions of the Service Desk

- Escalate incidents and service requests by function or hierarchy, per organizational directive
- Communicate status with users
 - Current incidents and problems
 - Future rollout of services
- Close incidents and service requests



Functions of the Service Desk

- Maintain currency of the CMS data
- Communication between user community and service provider
- Follow-up with users to determine their satisfaction level (surveys, calls, ...)





Service Desk Personnel

ITIL Foundations

Personnel of the Service Desk

- Often, the service desk is the first position in IT many will have
- It is still a vitally important role, though
- Training must be professional and complete for them to be successful



Qualities for Service Desk Analysts

- Knowledge and Awareness of the business' role to the user/customer
- Technical acumen and skill
- Communication and interpersonal skills
- Methodical approach to problems
- Ownership and responsibility





Structure of the Service Desk

ITIL Foundations

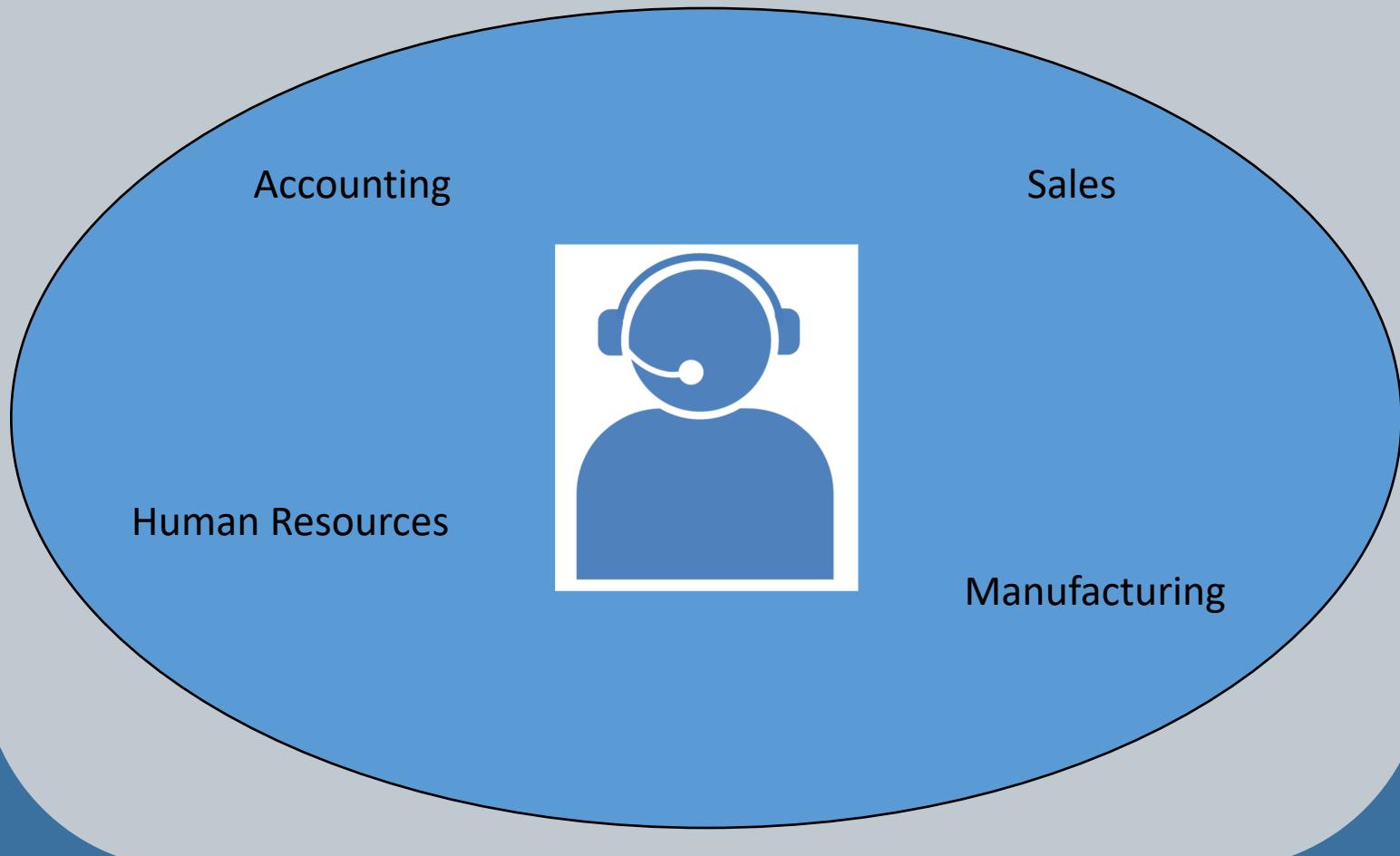
Help Desk -> Service Desk

- First service desks were simply call centers or help desks
- Over time, they became better organized and evolved into full service desks, offering more than just a “break-fix” mentality to problem solving



Local Service Desk

- Located physically close to the customers they support



Centralized Service Desk

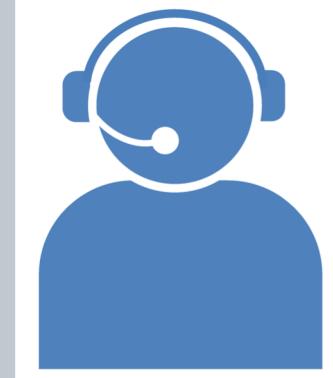
- Makes better use of resources, improves consistency, and centralizes management

New York

Washington

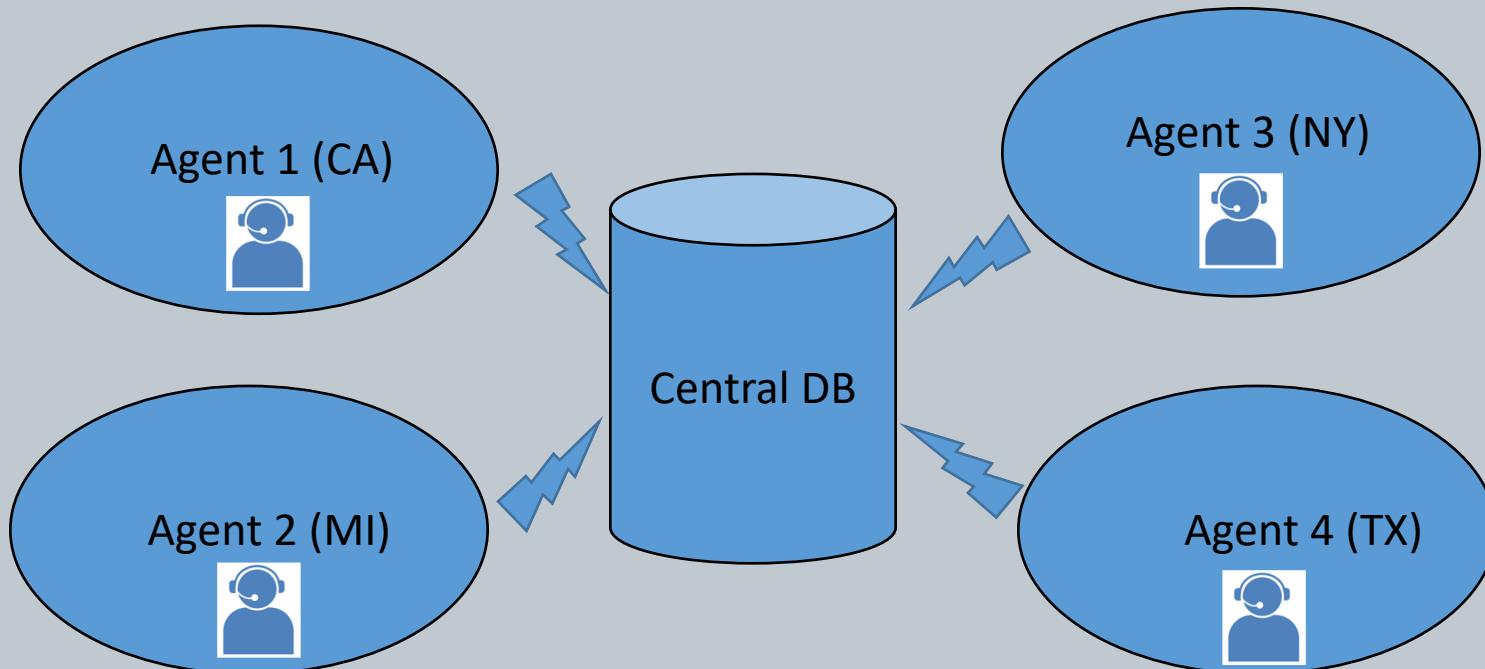
California

Florida



Virtual Service Desk

- Doesn't require a centralized location, but can still make better use of resources, improves consistency, and centralizes management



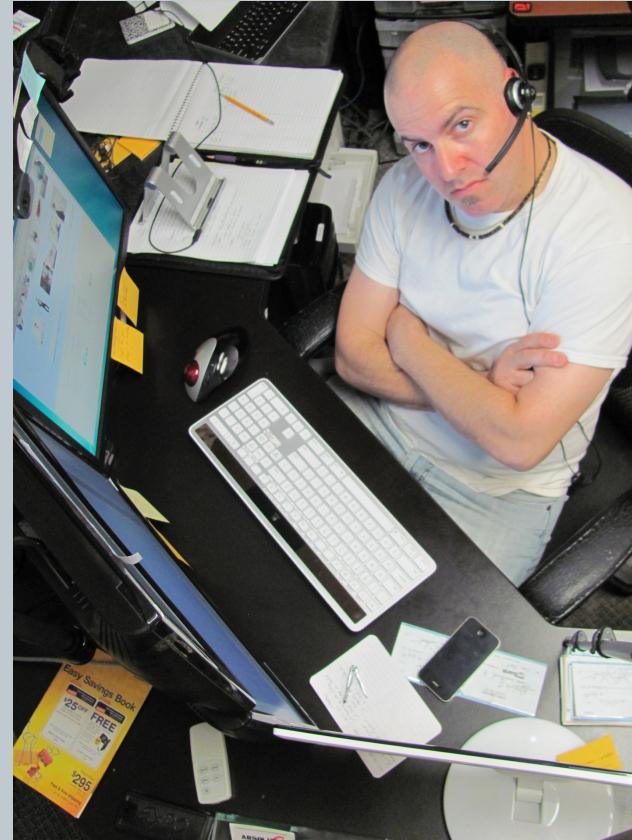
Follow-the-Sun

- Combines local, centralized, and virtual service desks, allowing for 24x7 coverage across all time zones
 - America
 - United Kingdom
 - India



Specialist Service Desks

- Internal variation on Tier 1 service desk
- Sub-team of the service desk to address a certain type of issue that occurs frequently, instead of escalating everything to Tier 2





IT Operations Management

ITIL Foundations

Purpose

- To provide a stable platform on which services can be delivered to meet the agreed-upon business needs
- To perform the day-to-day running of the IT infrastructure



IT Operations Management

- Consists of
 - IT Operations Control
 - Facilities Management



IT Operations Control

- Monitors the infrastructure for optimal performance minute-by-minute
- Carries out the administrative and functional tasks to keep services up



IT Operations Control: NOC

- Network Operations Center (NOC) or Operations Bridge are common terms for their workspace



IT Operations Control: Activities

- Monitoring the infrastructure performance and event management process
- Scheduling jobs, roll-outs, and upgrades
- Performing backups and restorations
- Managing production of reports and metrics



Facilities Management

- Concerned with the physical environment of the infrastructure
 - Data centers, server rooms, ...
 - Power Supplies
 - Air Conditioning (HVAC)
 - Physical access control
- Close relationship necessary with the IT Operations Control for success
- Only concerned with IT facilities, not kitchens, bathrooms, etc.





Technical Management

ITIL Foundations

Purpose

- To provide technical resources to various phases, including Service Operations, Service Transition, Service Design, and Continual Service Improvement



Roles of Technical Management

- Custodian of technical knowledge and skills in the organization
- Source of technical resources needed to support the entire ITIL lifecycle
- Helps to plan, implement, and maintain a stable technical infrastructure



What is Technical Infrastructure?

- Networks
- Servers
- Mainframes
- Operating systems
- Desktop
- Middleware
- Databases
- Other components that makeup the topology or platform that runs services



Functions of Technical Management

- Produce a well-designed, resilient, flexible, and cost-effective platform for services to run upon
- Provide guidance to IT Operations Management to maintain operations
- Keep technical infrastructure in the best operating condition
- Provide additional support during investigation, diagnosis, and resolution





Applications Management

ITIL Foundations

Purpose

- To provide application resources to various phases, including Service Operations, Service Transition, Service Design, and Continual Service Improvement
- To help identify software requirements and their sourcing (internal/external)



Roles of Application Management

- Custodian of technical knowledge and skills relating to the management of applications in the organization
- Source of actual application resources needed to support the entire ITIL lifecycle
- Helps to determine if an application should be developed in-house or outsourced



Functions of Applications Management

- Design cost-effective and resilient applications
- Ensure applications deliver the required functionality (*utility*)
- Provide applications-related technical skills to keep applications in the best condition
- Provide additional support during investigation, diagnosis, and resolution



App Management vs Development

- Application Development

Focused on design and construction of a application solution to gain initial utility

- Application Management

Focused on the ongoing oversight, operational management, and improvement of applications for both utility and warranty





Roles in Service Operation

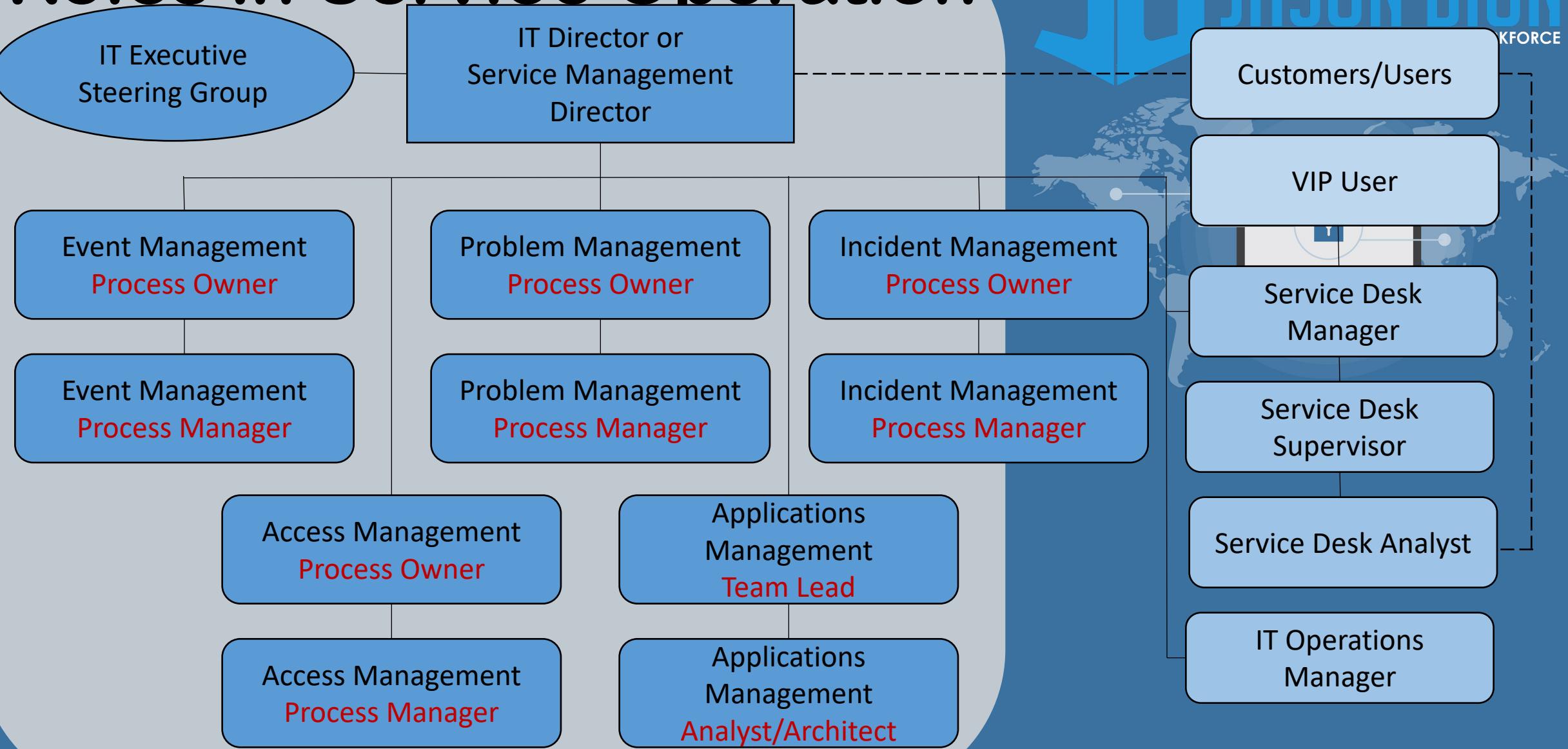
ITIL Foundations

Roles in Service Operation

- ITIL doesn't dictate how an organization should be organized
- ITIL does recommends roles:
 - Service Owner
 - Process Owner
 - Process Manager



Roles in Service Operation





Tools in Service Operation

ITIL Foundations

Tools in Service Operation

- Numerous tools have been developed to help in Service Operation
- Don't lose sight of the importance of processes in favor of tools
- Tools should be used once your processes have been documented and implemented in the organization



Tools Capture Metrics

- Tools can be especially helpful during Service Operations to capture performance data for use in the Continual Service Improvement phase
- Incident and Problem Management are key areas in Service Operations to implement tools to process workflows



Tools: Self-Help Functionality

- Provide users a method to conduct routine service requests quickly and initiate standard changes
 - Password resets
 - Ordering toner/ink
 - Gaining access to Knowledge Bases
 - Request access to files/folders
 - Submitting incidents to the Service Desk



Tools: Workflow and Process Control

- Process control in Service Operations is one of the biggest area of ITIL toolset available
- Example
 - Remedy



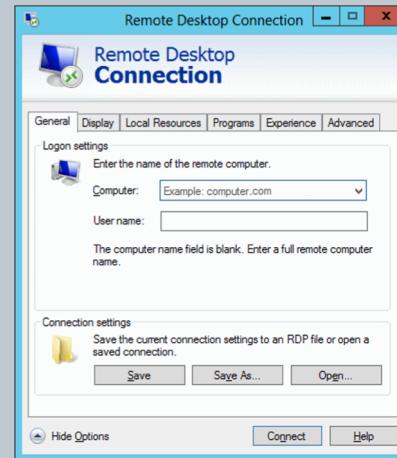
Tools: Configuration Management System

- A good CMS will automate many of the processes and functions in Service Operations
- Example:
 - Log an incident ticket, and user information service level agreements, workarounds, and configurations will auto populate for the analyst



Tools: Remote Control of User Desktop

- Service Analysts can use software to remotely control the user's workstation and fix an issue or provide training
- Example:
 - Remote Desktop (by Microsoft)
 - LogMeIn



Tools: Diagnostic Scripting

- Service Analysts can use diagnostic scripts created by Tier 2 and Tier 3 analysts to collect data and possibly resolve issues quicker for a user

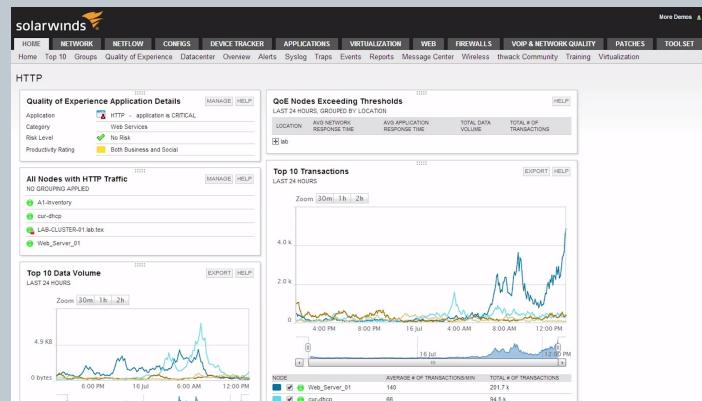
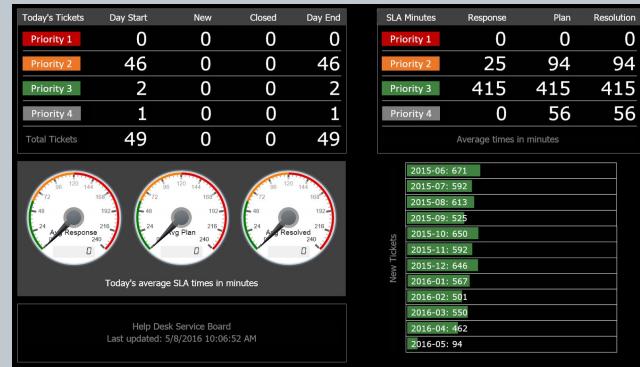
```
1. Disk Partition Tools...
2. Disk Clone Tools...
3. Antivirus Tools...
4. Recovery Tools...
5. Testing Tools...
6. Hard Disk Tools...
7. System Info Tools...
8. File Managers...
9. Next...
```

Enter a choice: 9



Tools: Dashboards and Reporting

- Provide real-time performance information and detailed metrics to NOC personnel and management





Service Operation Interactions

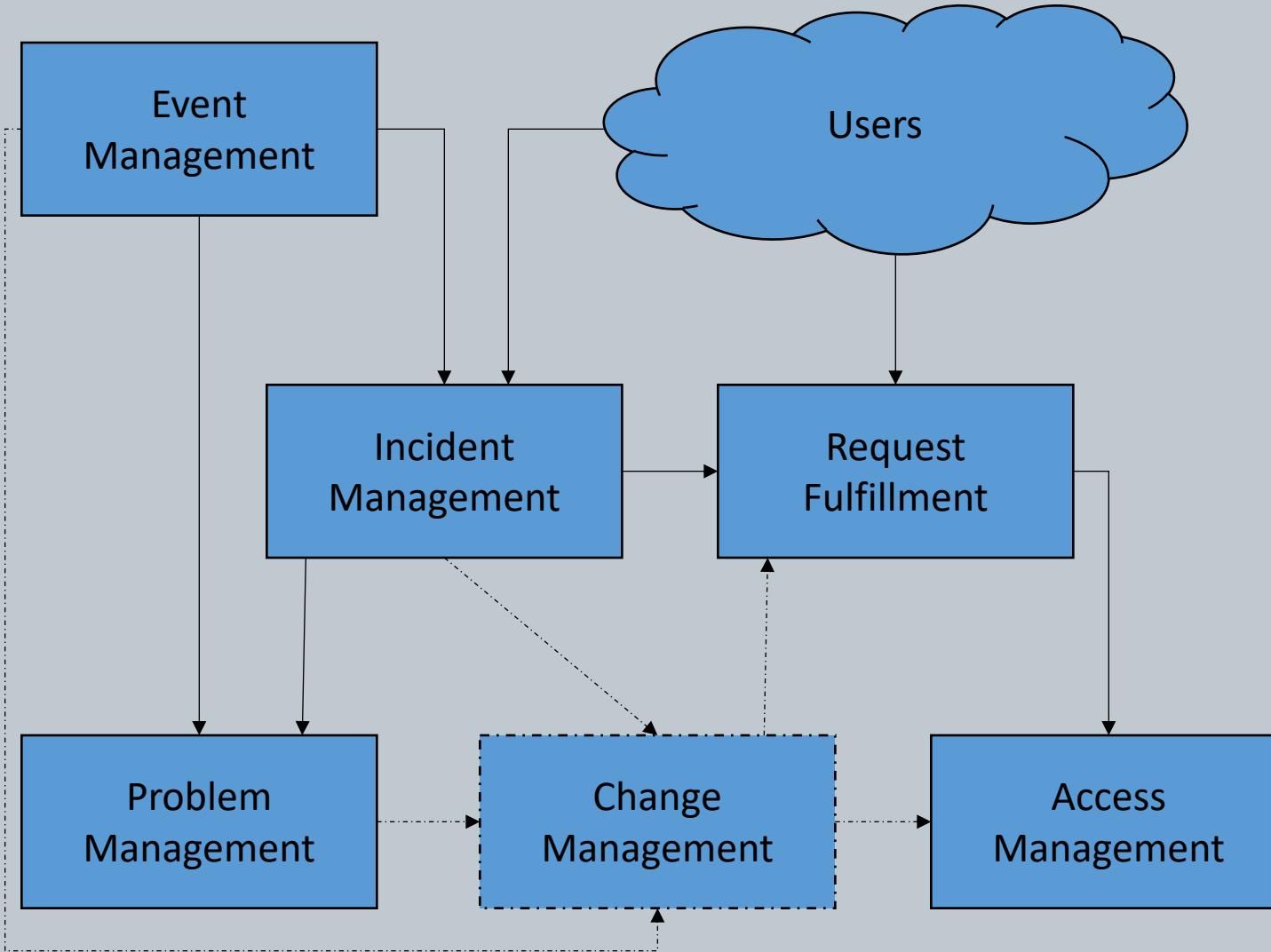
ITIL Foundations

Service Operation Interactions

- Many of the processes in Service Operations trigger each other and are interwoven by events, incidents, and problems

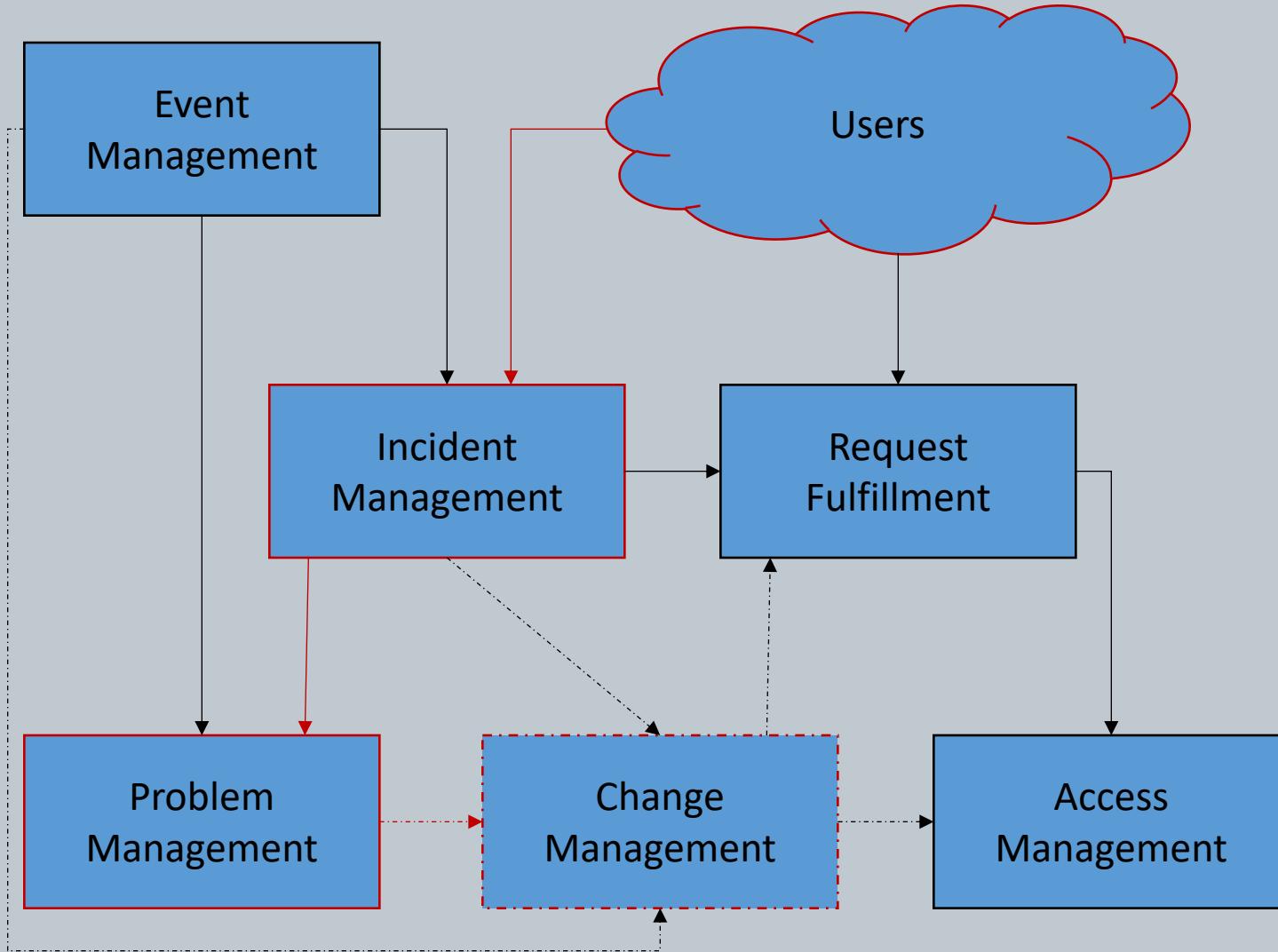


Service Operation Interactions



Now, I know this looks like a spaghetti chart, but we are going to carefully consider a couple of examples to help this make sense. First, notice the dashed lines. These represent processes outside of the Service Operations phase, but still have a tie into the Service Operations phase. Let's consider our first example...

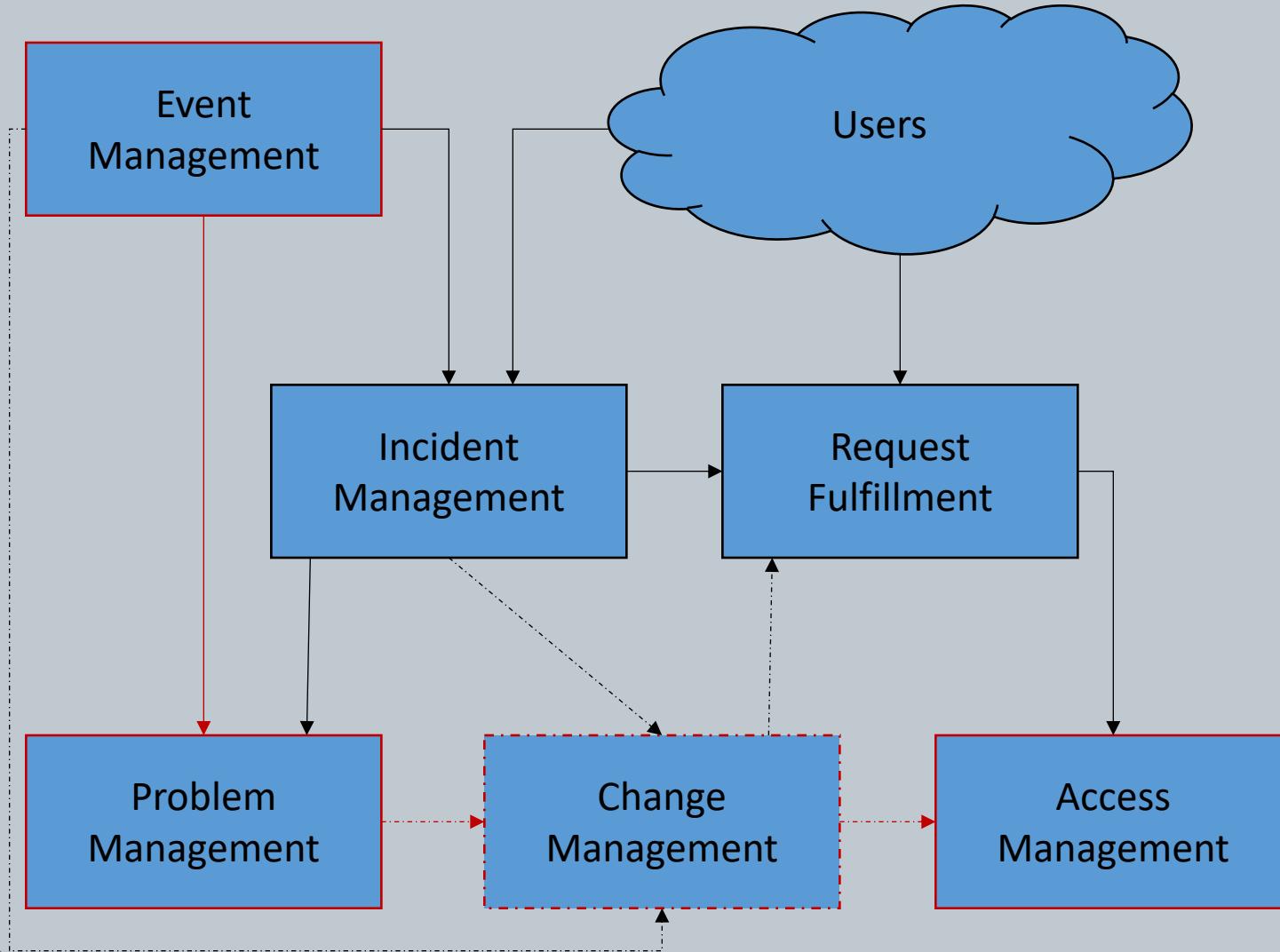
Service Operation Interactions



User calls with an issue, this creates an incident. This incident is more systemic, so it becomes a problem. The problem creates a workaround (therefore it is now a Known Error), and eventually a solution is determined.

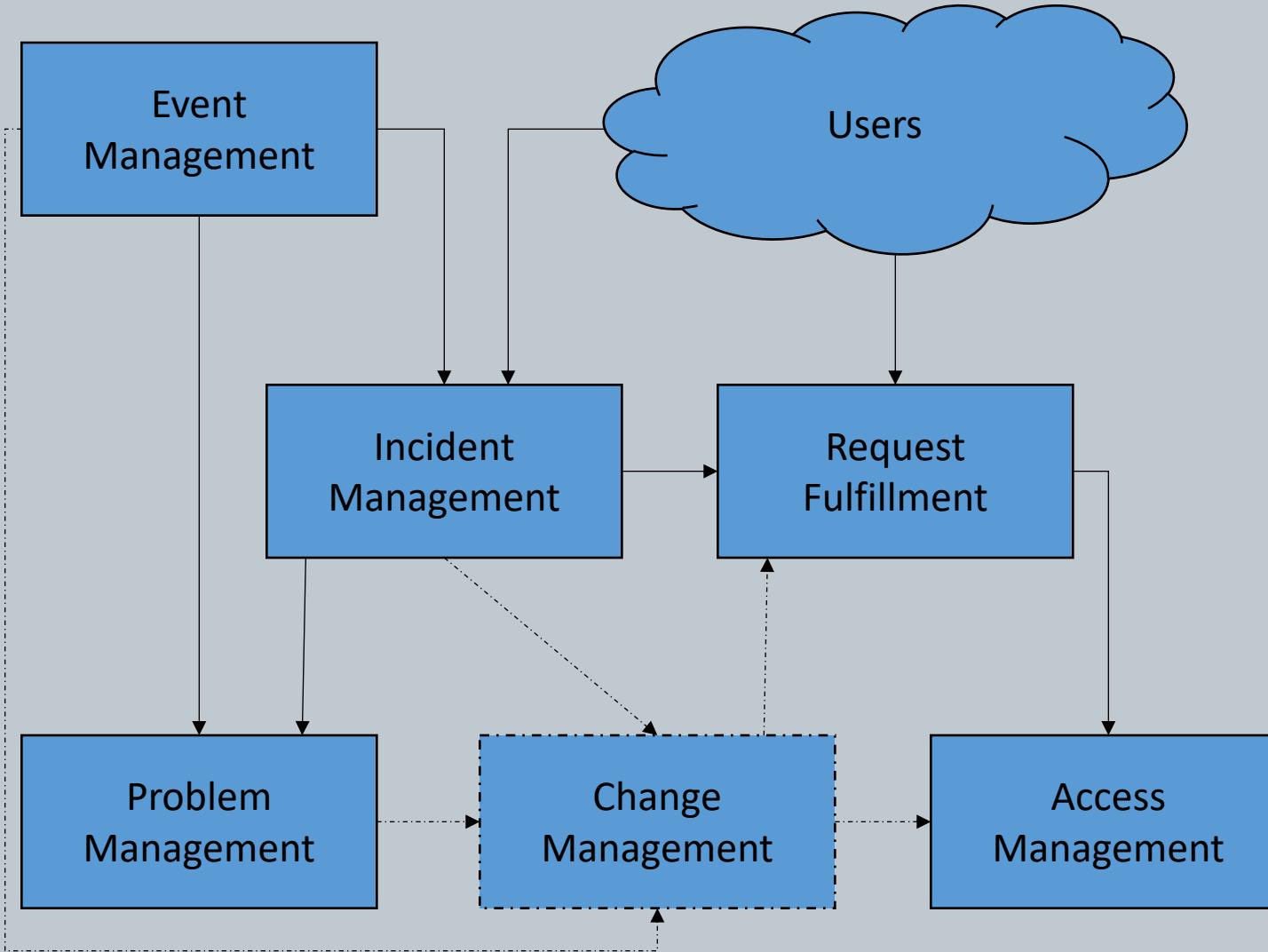
That solution is implemented through a change request and the problem is closed.

Service Operation Interactions



IT Operations sees that numerous users are having issues logging into a particular service. They recommend a problem is created. When a solution is found, they recommend a change through change Management, which ultimately requires access rights being changes for a particular user group, which Access Management implements.

Service Operation Interactions



So, you can see how all our processes and functions work together to provide us with successful and efficient Service Operations.