

Audit Report Number 2007-08  
**City of Richmond**  
**Audit of DIT - Help Desk**  
**March 2007**

## **Executive Summary**

March 16, 2007

The Honorable Members of City Council  
Richmond City Audit Committee

The City's Auditor's Office has completed an audit of the Department of Information Technology's Help Desk. The primary objective of the audit was to ascertain whether policies and procedures in place were adequate and aligned with best practices.

### ***Background***

The Department of Information Technology's (DIT) help desk serves as a central point of contact for users of the City's automated systems. Its overall objective is to resolve computer problems in an effective and efficient manner.

The help desk plays a significant role in influencing the productivity of an organization's operations. To ensure users meet their business goals and objectives, the help desk staff should take a proactive role and focus on eliminating problems at the root instead of being reactive and only curing symptoms reported to them by users.

### ***Methodology***

We conducted our audit in accordance with Government Auditing Standards issued by the Comptroller General of the United States. To satisfy the objective of this audit, interviews were conducted with the Department of Information Technology's staff, reviewed policies and procedures, analyzed reports, and observed help desk technicians. In addition, best practices were researched via the Internet, and other local governments were contacted. The City Auditor's office believes that the audit provides a reasonable basis for conclusions regarding the internal control structure and recommendations.

The management of the City of Richmond, Virginia is responsible for maintaining the financial records of the City. It is also responsible for establishing and maintaining a system of internal accounting control. In fulfilling this responsibility, management is required to assess the expected benefits and related costs of control procedures.

### ***Overall Results***

The Department of Information Technology's help desk has inadequate policies and procedures. The lack of knowledge of the hardware and software supported by the help desk has not allowed management to clearly define its goals and objectives. The audit identified best practices and industry proven technologies that would improve the help desk function in the areas of productivity, incident tracking, customer services, and performance management. Implementing the best practices discussed in the detailed report may improve the effectiveness of this service function.

### ***Recommendations***

The following recommendations are listed in the order they appear in the detailed report:

1. *Determine the total scope of service provided by help desk.*
2. *Invest in and use an appropriate asset management tool for keeping records of hardware and software supported by help desk.*
3. *Evaluate best practices identified in the aforementioned table and incorporating them into the help desk's process.*
4. *Provide adequate resources to enable DIT to provide adequate support to City employees and other users.*
5. *Interface Support Magic with the City's Payroll System.*
6. *Re-evaluate the description categories and eliminate duplicate or similar descriptions.*
7. *Utilize the knowledge database capabilities of Support Magic.*
8. *Establish a method to review incident reports on a regular basis to ensure accuracy and completeness of documentation.*
9. *Make the knowledge database available to the clients thereby they could also research resolutions in order to resolve incidents or issues without involving the help desk. This will free up much needed resources.*
10. *In the short term, help desk technicians should be instructed to log all calls handled during the course of business.*
11. *In the long term, the help desk should interface the telephone system with Support Magic.*
12. *Train staff and fully implement SMS software application.*
13. *Evaluate password management self service applications as a means to better serve clients and minimize the help desk call volume and time spent resetting the passwords.*
14. *Evaluate the feasibility of configuring Support Magic to send automatic notifications to appropriate management for incidents not handled within the specified time frame.*

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- 15. Notify management if high priority calls remain open for time exceeding established limits.*
  - 16. Keep incidents open until the reported issue is resolved to the user satisfaction.*
  - 17. Develop performance surveys and make them available to clients.*
  - 18. Establish performance measures for the help desk staff that will assist management in monitoring productivity and staffing needs.*
  - 19. Establish monitoring procedures for calls handled by the help desk.*
  - 20. Automate the change management process.*
  - 21. Develop a plan to consolidate the help desk functions of different City agencies.*

The City Auditor's Office appreciates the cooperation received from DIT staff. These recommendations have been shared with Department of Information Technology management. Please feel free to contact the City's Auditor's Office for any questions related this report.

Umesh V. Dalal, CPA

***Introduction***

The City Auditor's Office has completed an audit of the Department of Information Technology's Help Desk Operations. This audit was performed at the request of the Director of Information Technology and was conducted in accordance with Generally Accepted Government Auditing Standards.

***Objective***

The objective of the audit was to ascertain whether the Department of Information Technology's help desk had adequate policies and procedures that were aligned with best practices.

***Methodology***

To achieve the above objective, auditors conducted interviews with Department of Information Technology staff, reviewed policies and procedures, analyzed reports, and observed help desk technicians. In addition, best practices were researched via the Internet, and other local governments were contacted.

***Background***

The help desk is a function designed to help and support users in an automated business environment. It can play a significant role in influencing productivity of an organization's operations. To ensure that users meet their business goals and objectives, the help desk staff should take a proactive role and focus on resolving problems at

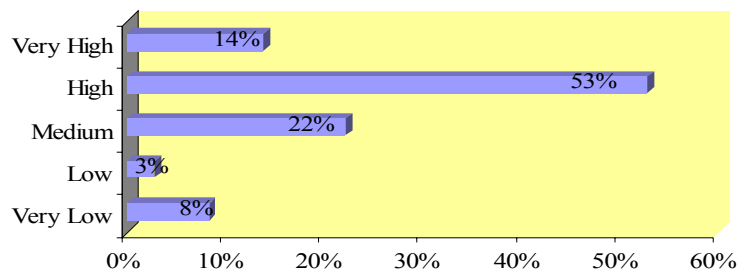
the root instead of being reactive and only curing symptoms reported to them by users.

***Customer Service***

The help desk is a service function. The City Auditor's Office surveyed 100 City employees to obtain their overall satisfaction with the assistance provided by the help desk. Thirty-six of the City employee responded and the results are depicted in the graph below:

***67% of Clients are satisfied with the help desk***

**Overall Client Satisfaction**



***Staffing***

Currently, the help desk is staffed with three full-time technicians, which includes one contractual employee and a lead. Its personnel budget is \$186,229 for fiscal year 2007. In addition to the three full-time staff, employees from Telecommunication and Desktop Support work four hour shifts on a rotating schedule. Based on the auditor's analysis, the technicians at the help desk possess a combination of education and experience that are aligned with their job descriptions.

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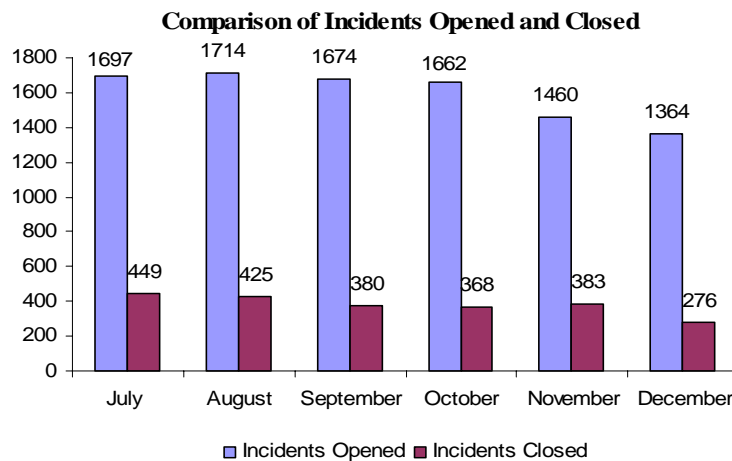
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Pertinent information regarding the actual number of users, number of products supported by the help desk and other performance measures necessary to calculate industry standard ratios was not available. Therefore, industry standards relating to staffing levels for a help desk could not be applied during this audit.

***Productivity***

For the period of July 2006 through December 2006, the City's help desk received 8,938 telephone calls and 9,817 e-mails from various user departments within the City. Of those calls and e-mails, 9,571 of them resulted in the opening of incident reports; however, only 2,281 were resolved and closed by the help desk. The remaining incidents were referred to other areas within DIT or to a vendor. The following graph depicts the number of reported incidents opened and closed by the help desk over a six month period.

***Resolution rates are 40% lower than industry average***



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***64% is the industry average for first tier resolution***

Our analysis of the above data shows the help desk resolves less than one in four or 24% of incidents reported. Based on a study performed by the Gartner Group, the industry average for first tier resolution is 64%. There are definitely opportunities for the City's help desk to improve its operation and better serve its clients. DIT can improve its performance by incorporating best practices that have emerged from proven help desk models.

***What are Best Practices?***

Using Forrester's Business Technographic March 2005 United States Technology User Benchmark Study, City Auditor's Office identified best practices for DIT's use in improving its resolution rate and overall operations. Below is a table that depicts best practices reported in the above study:

Best Practice	Description	Implemented?
Provide Timely Updates	Communicate information and service expectations with each incident. Summarize and report — both up the management chain and out to the users — on a monthly and quarterly basis at a minimum. It is far easier to cut back on communications than it is to repair the damage an aloof and out-of-touch service desk can cause for all of IT.	No
Set Users Exceptions at Every Contact	When a service incident is initiated, set customer expectations for service. Let customers know when they can expect resolution, or at least an update of status, based upon organization policies and service levels. Don't assume that the users know the policies.	No
Balance Outcome Metrics with Predictive Metrics	In addition to operational and outcome metrics, which look at what happened in a previous period, a best-practice organization will also define, monitor, and communicate predictive indicators. These metrics will help the organization better forecast future support demands and may point to areas requiring proactive intervention. For example, predictive metrics can include: <b>Diversity of assets.</b> The number of hardware makes, models,	No

Best Practice	Description	Implemented?
	<p>configurations, software versions, the concordance or deviation of installed hardware, and software from published and tested standards can predict future conflicts and service costs.</p> <p><b>Age of installed hardware.</b> PCs, laptops, printers, routers, and other such devices fail more frequently as they age. Tracking and reporting these metrics, as an indicator of likely hardware failure and future business interruption, also points to the targets for preventative maintenance.</p>	
<p>Conduct Satisfaction Surveys</p>	<p>Know what is important to users, what help desk is doing well, and what changes users desire. Surveying for satisfaction is not a one-time event; it means having an ongoing program in place to measure how satisfied employees are with all aspects of service desk support — courtesy, competency, and communication. Surveys highlight potential problem areas for managers. While surveys identify pain points and potential problems, make sure help desk personnel understand the reasons for dips in satisfaction, if they occur.</p>	<p>No</p>
<p>Buy, Don't Build Help Desk Applications</p>	<p>Service desk applications are peripheral to core business functions at the vast majority of organizations. Save your business-savvy resources for applications that contribute business value.</p> <p><b>Benefiting from leveraged development.</b> Commercial software buyers benefit from the competitive pressures that spur innovation. Each new version of a commercial package adds functionality, fixes, and extensions to the service desk offering.</p> <p><b>Integrating more easily.</b> Commercial software is designed to integrate with other software. Minimize the integration.</p>	<p>Yes</p>
<p>Limit Menu Choices and Problem Categories</p>	<p>Numerous menu choices and problem categories could grow past the point of usefulness. As new problems and problem classes occur, new categories are added to menu choices. Don't have more than a dozen or so problem classes in any menu. With too many choices, users will end up picking the same dozen anyway. Help desk will get less information about what is really going on than it will with a more limited, but well-designed set of choices.</p>	<p>No</p>
<p>Balance the Use of Knowledge Bases Against the Diversity of Problems</p>	<p>Many times, the sheer number of permutations and combinations of installed hardware and software creates a problem set that makes the use of standard knowledge base tools difficult and less effective for internal service desks than external customer support organizations. This is not to say that solutions to frequently encountered problems shouldn't be available to everyone in the service desk organization. It is to say that the effort to document the problems and solutions should be aimed at problems that are likely to reoccur.</p>	<p>No</p>

Best Practice	Description	Implemented?
Use Analytics	Find the patterns and fix the ones that are problematic. Use robust tools to troll through incident data. Turn this data into information and the information into actions through the use of analytics.	No
Invest In Asset Management Tools	Know thy customers and know thy customers' systems. Without asset repositories, predictive metrics are difficult, problem resolution is longer, and rollout of new apps is problematic. With repositories, changes to installed software can be tested against common configurations, hardware leases and maintenance contracts can be tracked, and software licensing compliance is easier.	No
Use Remote Control Software	Remote-control solutions allow you and your users to "meet" at a secure online location. Seeing the user's configuration can speed diagnosis. Watching a user take the recommend steps ensures proper compliance with instructions. Demonstrating how to do something teaches a technique and may head off a future call.	No
Embrace Password Reset Tools	Increased security, audit requirements, and legislation have raised the bar on password complexity, rates of change, and reuse. As such, user lock-outs will rise over time. Allowing users to fix the problem and get on with work on their own will help the service desk avoid the fallout of these corporate policies.	No

To implement these best practices, DIT must identify the hardware and software supported by the help desk function as well as its workload. Currently, DIT does not have that information; therefore, management can not clearly define goals and objectives for the help desk.

Given the magnitude of recordkeeping involved in tracking hardware and software, investing in an application for asset management purposes would be efficient. Such a tool would assist in tracking assets owned or supported by the City. In addition, DIT needs to systematically gather data about the

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***Loss of productivity  
can not be  
determined***

total scope of work to be addressed by the help desk personnel. Proper resources must be allocated to this function to realistically attend to all the service needs of the organization. In any organization that is dependent on automation needs, a well functioning help desk is needed in order to avoid significant computer downtime and adverse impact on employee productivity. Currently, the extent of organization-wide loss of productivity due to waiting for computer support is not known. The cost of additional resources being allocated to the help desk function can not be justified by available data.

***Recommendations***

- 1. Determine the total scope of service provided by help desk.*
- 2. Invest in and use an appropriate asset management tool for keeping records of hardware and software supported by help desk.*
- 3. Evaluate best practices identified in the aforementioned table and incorporating them into the help desk's process.*
- 4. Provide adequate resources to enable DIT to provide adequate support to City employees and other users.*

***Incident Tracking***

Currently, the City's Help Desk uses an industry accepted off-the-shelf application called Support Magic in order to track reported incidents along with their resolutions. DIT

***Support Magic is  
being used in an  
inefficient manner***

has implemented the following modules available for the applications:

- Client Module - tracks data about the client such as user ID, client name, department and contact information
- Incident Module - tracks data about incidents reported such as time reported, description of incident, assignee, and resolution
- Work Order Module - tracks data about incidents that involve task oriented resolutions

While the above modules have been implemented, they are not being used in the most efficient manner as discussed below:

- The client information is manually entered instead of being automatically populated. Currently, information about new users and users leaving City employment is manually updated in the Support Magic software. Interfacing Support Magic with the payroll system and an asset management tool would allow the uploading of relevant information on users and equipment needing service.

This action would allow management to add and delete user accounts. In addition, it would allow the tracking of assets by unique identifiers, their locations, and link incidents to assets and track the history of

***Increase  
efficiency by re-  
configuring  
Support Magic***

each asset. Furthermore, such an interface could assist in the development of predictive metrics and improve problem resolution rate.

- The configuration of the application can be better organized to improve its efficiency. Presently, Support Magic has 289 types of incident description categories to select from in a drop down menu. Such a large number of categories expose the application to the loss of data integrity. An analysis of the categories showed that there are multiple descriptions that represent the same type of incident. This type of configuration clusters the information resulting in the lack of usefulness for management purposes. Best practices in this area prescribe that there should be a significantly smaller number of description categories.
- DIT has not taken advantage of Support Magic's knowledge database capabilities. Description of incidents and resolutions are not being entered into Support Magic in a structured manner that would facilitate future searches for specific information. For commonly reported incidents, technicians should use standard verbiage from a drop down list of resolutions. The objective of the database is to provide a reference to resolve client incidents in an efficient manner. It allows technicians to search prior resolutions for "like"

or “similar” incidents to retrieve and suggest solution in an efficient manner.

***Actual volume of calls to the help desk can not be measured***

Currently, not all incidents or inquiries made are entered into Support Magic, specifically those that are considered administrative in nature such as repeat calls to the help desk or follow-up questions to reported incidents. Therefore, it is not possible to measure the actual volume of incidents reported to the help desk. By not tracking volume and types of incidents reported, management can not determine the number of technicians or the skill set needed to staff the help desk in an effective manner. To ensure logging of all calls, the current telephone system should be interfaced with Support Magic. The interface would automatically display the problem log screen along with the callers’ pertinent information.

***Recommendations***

- 5. Interface Support Magic with the City’s Payroll System.*
- 6. Re-evaluate the description categories and eliminate duplicate or similar descriptions.*
- 7. Utilize the knowledge database capabilities of Support Magic.*
- 8. Establish a method to review incident reports on a regular basis to ensure accuracy and completeness of documentation.*

9. *Make the knowledge database available to the clients thereby they could also research resolutions in order to resolve incidents or issues without involving the help desk. This will free up much needed resources.*
10. *In the short term, help desk technicians should be instructed to log all calls handled during the course of business.*
11. *In the long term, the help desk should interface the telephone system with Support Magic.*

### ***Customer Service***

Taking advantage of industry accepted practices and applications can further improve customer service. This audit identified the following opportunities to improve customer service:

#### **Resetting Passwords**

### ***Password resets take up valuable resources***

Currently, 78% of incidents resolved by the help desk relate to user account lock-outs and password resets. It is not uncommon for a help desk to receive a significant number of incident calls for resetting user passwords. These calls take up valuable time that is needed to resolve more complex problems reported by other users. This issue can be addressed more efficiently by using an industry-wide accepted technology called “password self-help reset tool.” In addition to increasing efficiency, use of this tool will strengthen the password policy.

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***City systems are exposed to unauthorized access***

Using password self-help reset tool to allow users to reset passwords without waiting for DIT technician's assistance will save significant time for the users and help desk technicians. Presently, the procedures in place used to reset passwords provide standard passwords for the mainframe and network. However, while the use of standard passwords saves the technicians time, it exposes the City's systems to the risk of unauthorized access being granted via legitimate means. Authentication involves the establishment of genuine identity of persons and their assigned privileges. Presently, a client is asked for their user ID which is agreed to the Active Directory. Minimal knowledge of the City's protocol for assigning user IDs is needed to predict a valid one from information already available to the public. Stronger authentication methods must be considered.

***Technicians are not always available to clients***

**Remote Access**

On occasion, technicians have to work away from their desk either at a user location or in other areas of DIT. During this period, the technician cannot be reached by other users for help. With limited staff in the help desk area to provide services to about 3,600 users, this situation presents a problem as other users have to wait for longer periods to get their issues resolved. Obviously, during this waiting period employee productivity suffers.

***Help desk needs remote control capability***

The Department of Information Technology (DIT) has a software application that would give the help desk remote control capabilities. In 1998, DIT purchased a robust software application called System Management Server (SMS) for an undetermined amount. Since obtaining the software, the City has spent approximately \$128,000 (\$16,000 annually) for its maintenance agreement; however, SMS has not been fully implemented. Procuring software and not using to its fullest capabilities represents wasted resources and results in not achieving its intended purpose. System Management Server software has the capabilities to perform the following:

<b>Business Process</b>	<b>Description</b>	<b>Implemented?</b>
<b>Application Deployment</b>	Remote software distribution can be targeted to machines and users	No
<b>Asset Management</b>	<b>Application usage monitoring</b> – Summary and detailed reports can be generated describing which applications were used by which users, for how long and on which managed system. Usage can be tracked by user or computer and reports created comparing concurrent usage data to current license ownership <b>Software Inventory</b> - Summary and detailed reports can be generated about software on network machines <b>Hardware Inventory</b> - Summary and detailed reports can be generated about hardware connected to the network	No
<b>Security Patch Management</b>	<b>Vulnerability application</b> – Inventory systems for applicable patches and vulnerabilities <b>Patch deployment</b> - Deploys patches to targeted devices	Yes
<b>Mobility</b>	<b>Bandwidth-aware clients</b> - Automatically detects the capability of the client network connection and adjust transfer rates efficiently <b>Location Awareness</b> - Ensures mobile users receive software package and updates	No
<b>Windows Management Services Integration</b>	<b>Remote Assistance features</b> - Allows remotely troubleshooting of clients machines	Partially

Based on above the table, it appears that DIT has not used SMS to its fullest potential and missed significant opportunities to adequately manage the City's hardware and software.

### ***Recommendation***

*12. Train staff and fully implement SMS software application.*

### ***SMS offers remote control capabilities***

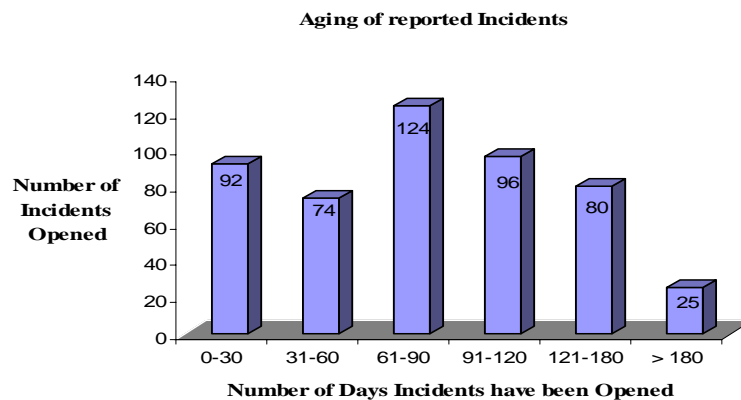
If remote capabilities were fully implemented, the SMS application would allow help desk technicians to access clients' personal computers without leaving their desk. By remotely accessing computers, the technicians could view the user's computer configuration, diagnose the problem and resolve it without leaving their location. The ability to see a user's computer system configuration could assist the help desk staff to better understand and resolve the problem experienced by the user. This feature can save traveling time and improve the technician and user productivity.

### **Escalation Process**

Escalation is an important process in help desk environment. Currently, incidents are assigned ratings that have been predefined as critical, non-critical, priority, and routine. Non-critical is the most common rating used by the help

***There are no procedures for escalating calls***

desk. Non-critical incidents require resolutions within 72 hours, while critical incidents require resolutions within 24 hours. However, there are no procedures in place to escalate incidents if a resolution is not obtained in the established time frame. Audit's analysis identified the following pattern in DIT's incident reporting data:



Escalation procedures ensure that incidents that remain open for a longer time than specified by policy are dealt with. It is desirable that the escalation procedures be automatic. The procedures should include: e-mail reminders to the assignee; notification to the assignee's manager or supervisor; and/or notification to the Director.

To ensure the effectiveness of the escalation process, the help desk should follow up on all incidents to verify that a resolution has been obtained and meets the client's expectation. Currently, there is no feedback provided to the

help desk informing them that a reported incident has been resolved or that the client is satisfied with the resolution.

### ***Critical Issues***

The 24 hour timeframe to resolve critical issues is excessive. Industry standards specify such incidents should be resolved within an hour.

### ***Recommendations***

- 13. Evaluate password management self service applications as a means to better serve clients and minimize the help desk call volume and time spent resetting the passwords.*
- 14. Evaluate the feasibility of configuring Support Magic to send automatic notifications to appropriate management for incidents not handled within the specified time frame.*
- 15. Notify management if high priority calls remain open for time exceeding established limits.*
- 16. Keep incidents open until the reported issue is resolved to the user satisfaction.*
- 17. Develop performance surveys and make them available to clients.*

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***Performance  
Measurement***

Performance measures are a management tool to assure appropriate service levels for meeting established goals and objectives. Currently, DIT management receives reports on the overall number of incidents opened and closed by the help desk. The reports are as follows:

- List of incidents opened three days or longer
- The list of work order opened 60 days or longer

Based on the available documentation, it is not clear if this information is being utilized to monitor help desk performance.

***Management does  
not have  
established  
performance  
measures***

Data used to measure performance should be obtained from the incident tracking system, call monitoring system and customer surveys. Currently, management has not established performance measures. This is partly due to lack of data gathered that would allow the calculations of metrics. At a minimum, management should track how many problems clients are encountering and how quickly they are getting the answers they need. Tracking actual numbers of incidents on a regular basis helps measure service level and staff productivity. In addition, such metrics allows reporting of root causes and trends of hardware and software failures and assists in forecasting future support needs.

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Audit research identified the following list of commonly used metrics for monitoring and evaluating help desk performance:

Measurement criteria	Best Practices	Source
Total number of calls received in a specified time period	N/A	Telephone Automatic Contact Distribution (ACD) Report
Average time a call takes to reach an available agent	90% within 40 seconds	ACD Report
Average time call user holds prior to reaching an agent, abandoning the call, or leaving a voice mail message	30-60 seconds	ACD Report
Percent of users who end a call before the call is answered	4-8%	ACD Report
Total time spent out of the queue finishing up work from a prior call	N/A	ACD Report
Total time spent on the telephone handling an incoming call plus time spent completing a call after hanging up	13.1 minutes	ACD Report
Total time spent logged into the ACD system and waiting for a call	12% of logged in ACD time	ACD Report
Total time spent on non-calling-handling-tasks, such as meetings, projects and training	20% of logged in ACD time	ACD Report
Percent of calls resolved on the initial contact with the user	75-80%	Incident tracking system

In addition to the lack of performance metrics, DIT management does not perform quality assurance checks as indicated in the DIT Desk Guidelines for the Client. The department already owns technology to assist in monitoring live calls; however, they have not been installed and implemented it. Without using a product purchased for a specific City function, the investment made in the product is not beneficial to the City.

### ***Recommendations***

- 18. Establish performance measures for the help desk staff that will assist management in monitoring productivity and staffing needs.*
- 19. Establish monitoring procedures for calls handled by the help desk.*

### ***Change Management***

Change management involves the process of obtaining approval and scheduling changes in the production environment with minimal user impact. While handling and referring technical issues is the main function of a help desk, DIT's help desk is also responsible for change management.

For the period of July 2006-December 2006, the help desk prepared 851 change order requests. The changes and the time spent preparing them are not tracked. Without the proper tool to track changes in the production environment, DIT is at risk of not being able to identify and revert changes made that negatively impacts the computing environment. Automating the change management process offers many benefits such as: automated approval processing that ensures all affected are notified and prepared, and managed scheduling and tracking of costs.

### ***Recommendation***

- 20. Automate the change management process.*

***Consolidation***

The City's help desk is the central point of reporting when users experience problems with personal computers, local area networks, communications, software, hardware, telephone, and security. As problems are reported, the help desk technicians perform the initial troubleshooting to resolve them. If technicians can not resolve the problem the users are referred to other areas within DIT or to a vendor.

While the DIT help desk is the most recognized and used, there are other areas that offer similar, if not the same type of functionality. Specifically, the Police and Social Services Departments operate their own help desk function to employees within those agencies.

***Benefits of help desk consolidation***

The consistency and efficiency of service provided to the users needing help may differ if more than one unit is providing the service. The City as a whole could benefit by consolidating and properly staffing a centralized help desk function. Proper tools and training could be provided to the staff in the centralized unit in order to provide efficient and timely service to users. Consolidation would lead the City to the establishment of consistent policies and procedures to meet its mission. The Departments' functions would be aligned as well as its processes. It also would permit shared

resources such as staffing, knowledge, and application tools that support the operation.

***Recommendation***

- 21. Develop a plan to consolidate the help desk functions of different City agencies.*

***MANAGEMENT RESPONSES***

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**To: Umesh Dalal, City Auditor**

**From: Gene J. Doody, CIO & Director of Information Technology**

**Date: March 6, 2007**

**Subject: Response to Audit Findings for Help Desk Operations Audit**

The purpose of this memo is to provide an official response from the Department of Information Technology (DIT) to the recent Help Desk Operations Audit conducted by the City Auditor, Umesh Dalal. The audit findings have revealed a number of weaknesses that currently exist in the process and execution of the DIT Help Desk and services provided to city employees. The Department of Information Technology does not dispute the validity of any of the findings that were identified as part of the audit documentation, and either has ongoing activities or plans in place that are targeted at addressing these weaknesses. DIT has already performed extensive research on best practices for help desk functions utilizing several well respected research organizations, including Gartner, Norex, and the CIO Executive Council. The team I have assigned has also been conducting a business process review of all help desk activities, and identifying opportunities where automation and/or software tools will deliver improved efficiencies.

As has existed in prior audit reviews and findings, the primary inhibitor for the Department of Information Technology in performing the remediation activities is the lack of allocated funding that is required to complete this work. An equally significant inhibitor to DIT's ability to implement the necessary changes to cure all findings identified is the organizational challenges that exist in order to deliver a consolidated help desk that would exist as part of the DIT organization. This would require the transfer of resources from Police, Social Services, and Finance at a minimum, as each are performing some form of help desk support to citywide personnel. In order to achieve the efficiency and effectiveness of the recommendations presented in this audit, this consolidation would need to be a priority and occur as part of the many other automated and process improvements currently being performed and/or targeted by DIT.

C: William E. Harrell, Chief Administrative Officer  
Patrick Roberts, Chief of Staff to the CAO  
Rick Wood, IT Manager, End User Services

**Appendix A – Management Responses/Action Plan  
 DIT – Help Desk Support**

**Recommendation # 1: Determine the total scope of service provided by help desk.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Perform audit for six months capturing the number of calls, emails and identify other tasks that may not be tracked at the moment.	1. Help Desk Team	1. June, 2007

**Recommendation # 2: Invest in and use an appropriate asset management tool for keeping records of hardware and software supported by help desk.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Support Magic currently contains an asset management tool that will allow for establishing inventory and configuration management.	1. Help Desk Team	1. June, 2007
2. Load all inventories into Support Magic Database	2. Help Desk Team, System Engineering, Desktop Support	2. June, 2007
3. Require the Help Desk to manage the Support Magic inventory through incoming calls, Change Advisory Board, or updates	3. Help Desk Team, CAB, Desktop Support	3. June, 2007

from Desktop Support		
4. Research, request budget and acquire a Radio Frequency Bar Code solution to automate the collection of inventory items and upload to Support Magic	4. Help Desk Team, Management	4. December, 2007

**Recommendation # 3: Evaluate best practices identified in the aforementioned table and incorporating them into the help desk's process.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. The Help Desk management staff has documented the 'as is' state for all current processes	1. Help Desk Team, Management	1. March, 2007
2. The Help Desk 'future state' is currently being documented and will focus on best practices as defined by Gardner, Norex and ITIL	2. Help Desk Team, Management	2. April, 2007
3. As we define the future state processes will be implemented in short duration as budget and technology permits.	3. Help Desk Team, IT Management	3. July, 2008

**Recommendation # 4: Provide adequate resources to enable DIT to provide adequate support to City employees and other users.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Review reports from recommendation #17 and determine DIT Help Desk workload.	1. Help Desk Team	1. June, 2007
2. Review and compare reports with Garner	2. Help Desk Tea,	2. June, 2007

Best Practices and determine adequate DIT Help Desk staff.	IT Management	3. June, 2007
3. Discuss findings of Garner Best Practices and determine any budgetary constraints and request approval.	3. IT Management	4. June, 2007
4. Obtain monetary adjustments to DIT's Budget	4. IT Management	

**Recommendation # 5: Interface Support Magic with the City's Payroll System.**  
 **Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Validation of active employees in payroll system and Support Magic	1. Help Desk Team, Resources Team	1. April, 2007
2. Develop processes that maintains the validity of the customer profile in the Help Desk system	2. Help Desk Team, Resources Team	2. July, 2007
3. Insure validity between Active Director (AD), payroll and Support Magic	3. Help Desk Team, Server Team, Resources Team	3. January, 2008

**Recommendation # 6: Re-evaluate the description categories and eliminate duplicate or similar descriptions**  
 **Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Review the current description categories	1. Help Desk Team	1. July, 2007

2. Collaborate with other system users for possible consolidation or deletion	2. Help Desk Team, DIT	2. September, 2007
3. Add/remove approved description categories	3. Help Desk Team	3. December, 2007
4. Create processes to validate and maintain category accuracy	4. Help Desk Team	4. December, 2007

**Recommendation # 7: Utilize the knowledge databases capabilities of Support Magic.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Statistical Information retrieval (SIR) is being re-synchronized and will be made available to all staff.	1. Help Desk Team	1. March, 2007
2. Business processes are being developed to provide standard, valid and descriptive incident descriptions and resolutions in SIR	2. Help Desk Team, DIT Staff, Management	2. September, 2007
3. Other knowledge databases are under review for consideration. The estimated cost for a knowledge database is approximately \$40,000.00.	3. Help Desk Team, Management, Budget	3. January, 2008

**Recommendation # 8: Establish a method to review incident reports on a regular basis to ensure accuracy and completeness of documentation.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Develop, train, and verify processes to validate quality service for the help desk.	1. Help Desk Team, DIT Project Groups	1. September, 2007
2. Determine Help Desk staff responsibilities, level and plan growth according to best practice.	2. Help Desk Team,, IT Management	2. January, 2008

**Recommendation # 9: Make the knowledge database available to the clients thereby they could also research resolutions in order to resolve incidents or issues without involving the help desk. This will free up much needed resources.**

**Concur**       **Do not concur (Please explain)**

<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. The Help Desk Team is reviewing available knowledge base solutions. A statement of work is required to review, select and purchase an application compatible with Support Magic. (The cost for this application is \$40,000.00 and is required in order to comply with the recommendation)	1. Help Desk Team	1. December, 2007
2. As additional processes are defined within the Help Desk future state, a more robust client Self Service Desk will be integrated with the existing help desk. This will allow for additional self help functionality for the clients.	2. Help Desk Team, IT Management	2. January, 2008

<p><b>Recommendation #10: In the short term, help desk technicians should be instructed to log all calls handled during the course of business.</b>  <input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Effective March 2007 Help Desk staff are currently opening tickets for ALL calls.	1. Help Desk Team	1. <b>March, 2007</b>
<p><b>Recommendation # 11: In the long term, the help desk should interface the telephone system with Support Magic.</b>  <input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. A work request has been created to develop the interface between Support Magic and the IP Telephone system.	1. Help Desk Team, IPT Team	1. May, 2007
<p><b>Recommendation # 12: Train staff and fully implement SMS software application.</b>  <input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
<b>Action steps</b>	<b>Responsible Employee</b>	<b>Target Date</b>
1. Leverage the knowledge of the Help Desk staff in using existing SMS tools.	1. Help Desk Team, Desktop Support Team, Server Team.	1. May, 2007
2. Install SMS at the Help Desk.	2. Help Desk Team,	2. May, 2007

3. Train Help Desk staff on SMS.	Desktop Support Team 3. Desktop Team	3. May, 2007
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**Recommendation # 13: Evaluate password management self service applications as a means to better serve clients and minimize the help desk call volume and time spent resetting the passwords.**

Concur       Do not concur (Please explain)

Action steps	Responsible Employee	Target Date
1. Create requirements documentation, review and select an acceptable password management self-service application. (the estimated cost is approximately \$25,000.00)	1. Help Desk Team, IT Management	1. January, 2008

**Recommendation # 14: Evaluate the feasibility of configuring Support Magic to send automatic notifications to appropriate management for incidents not handled within the specified time frame.**

Concur       Do not concur (Please explain)

Action steps	Responsible Employee	Target Date
1. Business rules and processes are currently being developed and will be implemented within the Help Desk future state process	1. Help Desk Team	1. July, 2007

Recommendation # 15: Notify management if high priority calls remain open for time exceeding established limits.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. Coordinate a standard escalation procedure	1. Help Desk Team, DIT	April, 2007
2. Create business rules and processes to comply with the procedures	2. Help Desk Team	July, 2007
3. Enforce and monitor progress of these business rules	3. Management	July, 2007
Recommendation # 16: Keep incidents open until the reported issue is resolved to the user satisfaction.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. Procedures have been created for each level to verify satisfaction of work completed	1. Help Desk Team	March, 2007 May, 2007
2. Procedures need to be created to monitor and validate the existing procedures are productive and followed.	2. Help Desk, IT Management	January, 2008
3. Procedures will need to be created to ensure the HD manages the tickets per ITIL best practice	3. Help Desk Lead	

Recommendation # 17: Develop performance surveys and make them available to client.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. The current version of Support Magic is being upgraded to Service Desk Express which contains a Survey tool.	1. Help Desk Team, Server Team	September, 2007
2. Define survey criteria and level of measurements	2. Help Desk Team, IT Management	September, 2007
3. Implement random survey according to ITIL best practice	3. Help Desk Team	October, 2007
Recommendation # 18: Establish performance measures for the help desk staff that will assist management in monitoring productivity and staffing needs.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. Determine best practices for performance measures in the Help Desk.	1. Help Desk Lead	April, 2007
2. Associate reports with performance of Help Desk.	2. Help Desk Lead	April, 2007
3. Produce meaningful reports to management in regard to HD performance. Items such as # all calls, emails, incidents, time on the phone with customers, available time and work orders handled by the Help Desk staff.	3. Help Desk Team	April, 2007

Recommendation # 19: Establish monitoring procedures for calls handled by the help desk.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. Create evaluation form to monitor staff for compliance and quality service	1. Help Desk Lead	April, 2007
2. Establish frequency of monitoring methods of mentoring the HD	2. Help Desk Lead, Management	April, 2007
3. Create and use measures to support the PFP ratings	3. Help Desk Lead	April, 2007
Recommendation # 20: Automate the change management process.		
<p><input checked="" type="checkbox"/> <b>Concur</b>      <input type="checkbox"/> <b>Do not concur (Please explain)</b></p>		
Action steps	Responsible Employee	Target Date
1. Create change control criteria and study options for DIT	1. Help Desk Team, IT Management, DIT Groups	May, 2007
2. Select and install Change control software	2. Help Desk Team, Resource Team, Management Team	December, 2007
3. Continue to manage the current process until an acceptable alternative is determined. (Estimate cost of an upgraded change control module in Support Magic is \$20,000.00)	3. Help Desk Team, CAB, Management	March, 2007

**Recommendation # 21: Develop a plan to consolidate the help desk functions of different City agencies.**

**Concur**       **Do not concur (Please explain)**

Action steps	Responsible Employee	Target Date
1. Establish criteria for a World Class Service Center	1. IT Management, HD Lead	January, 2008
2. Coordinate a meeting with all HD agencies and determine each agencies requirements, SLA's, expectations and evaluate the possibility of a merger (This may be a phased approach, HSIS first, Police next)	2. HSIS HD Team, Police HD Team, DIT HD Team, CIO, Management	January, 2008
3. Obtain agreement and approval to consolidate the HD's and create SLA's	3. CIO, Police Chief, Director of Social Services, CAO	March, 2008
4. Create Service Level Manager to Monitor progress	4. CIO, Management	January, 2008

The CIO and DIT Management welcomes the recommendations presented in the audit findings. DIT has recognized the importance of a world class help desk function in support of successful, efficient, and customer friendly organization. Management staff is attending the ITIL training as the mindsets and habits are changed to industry standards and best practices. This document as well as other sources will be used as one of our guides in reaching the objective of becoming a world class organization.

Currently, DIT lacks the resources to meet all of the recommendations of the audit. In our provided action steps, we identify either new or improved tools for the help desk. These knowledge database product identified will cost approximately \$40,000.00. This database will make it possible for the customer to look up standard answers to questions

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that help resolve problems through a self help feature and to create problem logs or work orders without the assistance of help desk personnel, saving the customer time and leaving co9mplicate problems to the help desk

In addition to the Knowledge database a password self help is recommended. This application can be built into the existing Support Magic Service Desk. This feature will again expedite the help desk support and free the help desk personnel more complex problems. The cost for the self help password module is estimated to be \$30,000.00

Finally, DIT has initiated a change management process. The Teams meet weekly to look at planned changes and are notified of other changes such as emergencies and information only changes. Metastorm is currently being used to manage the change process. For Support Magic to be fully compatible with the Change process an additional module and license is required. The cost for this modification is just over \$20,000.00. This purchase will fully integrate the Change Control process with Support Magic significantly improving the manageability of change for the city.

Compliance to the recommendations of the audit are obtainable goals for DIT but will require the financial support and procedural change that have been outlined in the above action steps.