Knowledge Transfer

Information Systems Analyst II
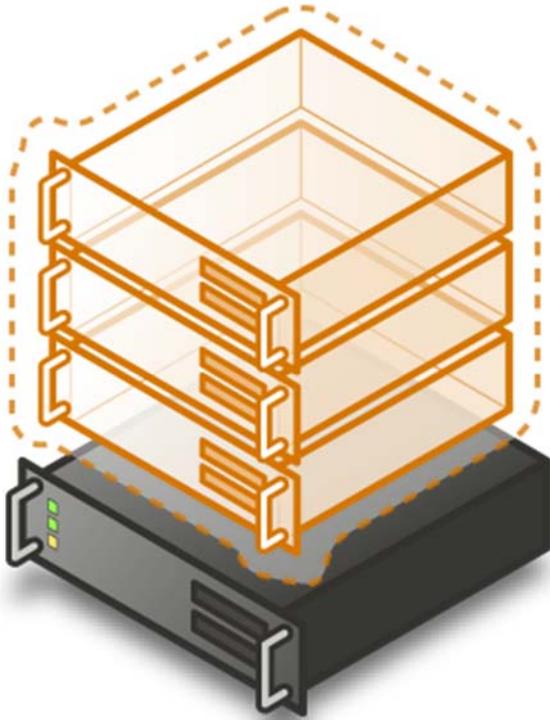
Prepared by:

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I. <u>OBJECTIVE</u>

Knowledge transfer seeks to organize, create, capture or distribute employee's knowledge and ensure its availability for future users. Knowledge, in the current context, could be defined as the information elements necessary for IS Analyst II to execute work and meet KCDC's expectations. Therefore, the knowledge transfer initiative will play an important role in the recruitment process by helping to ensure that KCDC hires an individual who possesses all the skills, knowledge, and ability that the agency needs.

Due to the resignation of the staff member listed below, RNR Consulting was commissioned to document the knowledge possessed by Analyst II.

Name:	Job Title:	Reports to:	Last Day with KCDC:
	IS Analyst II	IS Director	10.22.2010

The following constitute the "knowledge" that needs to be transferred to a potential newly recruited IS Analyst II:

- Virtual Environment
- Server Maintenance/Development
- Database Maintenance/Development
- Intranet/Internet
- Programming

II.   KCDC NETWORK

KCDC utilizes a star-topography Wide Area Network (WAN). The WAN star is laid out in a star configuration with one location as the "hub". A single site acts as the central connection point for several other points. The Main Office at 901 North Broadway is the hub, with data connections coming from the remote offices. Each office is connected using a T1, non-channelized, 1.5 MBS nailed up connection. T1s are delivered from the AT&T Central Office in downtown Knoxville to KCDC over fiber. All T1s connect at the Main Office to one Cisco 7200 VXR, except at the Vista Maintenance office which utilizes fiber optic connection. At each location, Remote and Main Offices, Cisco Switches are in place. Connection to the Internet through a Comcast cable is provided at the Main Office for all remote locations. The following program shows KCDC's Wide Area Network including the connections between the remote sites and the Main Office. This diagram was provided by KCDC IS Staff.

III.   SERVERS

1.   GENERAL INFORMATION

The following table shows the type and quantities of servers which KCDC maintains. Each server supports a specific application or utility. Regarding Dell products, the larger numbers represent newer versions of servers. Also noted is the number of servers with an expired support agreement.

2.   HARDWARE VENDOR

KCDC utilizes Dell hardware devices

- Chassis:
- Blades:

3.   VIRTUAL INFRASTRUCTURE

Software utilized:

- KCDC utilizes *Windows Server 2008 R1 with Hyper-V* virtual software

4.   VIRTUAL SERVER INFRASTRUCTURE

KCDC utilizes the following:

- *One (1) Physical Domain Controller, referred to as "XXXX"*
- *One (1) Back-up Domain Controller, referred to as "XXXX"*
- *Virtual Servers are clustered.*
- *Four (4) hosts are currently utilized, including Core 1, Core 2, Core 3, and Core 4*
- *The table on the following page lists all virtual servers*

The following table lists KCDC's virtual servers, including their names, the software that is being run on each, as well as a short description. Please note that all servers are virtual, unless specified otherwise.

SERVER NAME	SOFTWARE	DESCRIPTION
		•
		•
		•

5.   STORAGE AREA NETWORK (SAN)

- Currently, the entire SAN environment is stored in-house at one location, the Main Office.
- The Storage Area Network runs on a Gigabit Ethernet pipe.
- The EMC AX SAN is used for holding the Virtual Servers and their data.
- The EMC has a DELL physical chassis which includes the storage processor unit and a single Disk Array Enclosure (DAE) which holds sixteen (16) 300GB SATA drives.

- SAN total raw capacity is 2.49TB.
- At present, KCDC has 437.33 GB of unused SAN space.
- A separate 4TB SAN, located in the Boardroom closet, is utilized for backup purposes only. The 4TB SAN will soon be replaced by a 16TB SAN.

6.   SERVER MANAGEMENT SOFTWARE

System Center Operations Manager: Enables IS Analyst II to gain rapid insight in the state of the Server infrastructure through numerous views that show state, health and performance information as well as alerts generated according to some availability, performance, configuration or security situation being identified.

System Center Data Protection Manager: Delivers unified data protection for Windows servers such as SQL Server, Exchange, SharePoint, Virtualization and File servers

7.   IP ADDRESSES

The IP addresses for all servers may be located on KCDC's intranet at: www.kcdc.org/XXX

The following screen shot was taken on 10.14.2010:

8.   LICENSE NUMBERS/PRODUCT KEYS

All license numbers are scanned and saved in a folder on the XXXX server.

Path:

9.   PATCHES/UPDATES

- All Windows 2008 Servers are running Service Pack 2.
- Updates are automatically installed each Tuesday.
- Updates may be monitored through Windows Update Services.

10. SERVER APPLICATIONS

The following table lists the current versions of all major server applications:

APPLICATION	CURRENT VERSION

11. SERVER MONITORING AND REMOTE ACCESS
- Solarwinds IP Address Manager is utilized for server monitoring
- MS Remote Desktop Connection Software is utilized for remote access

12. SERVER MAINTENANCE

- IS Analyst II does not perform daily server maintenance
- Instead, IS Analyst I would log into each server every morning in order to verify that servers are operational

13. MAINTENANCE AGREEMENTS
Maintenance agreements are present for the following:

- Symantec Backup Exec
- ApplicationXtender
- System Galaxy
- Watchguard
- Citrix

Maintenance agreements are not kept. One can obtain them online.

14. TROUBLESHOOTING PROCEDURES

1. Not enough physical memory available on virtual server:

The most common error associated with virtual server failure results from exhausting the amount of physical memory available. An example of such type of error is listed below.

The number of errors associated with exhaustion of physical memory was significantly decreased by not allowing the dynamic disks to expand automatically.

No virtual server outages have occurred within the past four (4) months

The following procedure may be utilized to expand the memory of a virtual machine:

- Identify what virtual server must be expanded
- Identify which host the virtual machine is on
- Log into the host machine
  - o User name:
  - o Password:
- Start Disk Management
- Log into SAN at XXX.XXX.X.XXX
  - o User name:
  - o Password:
- Go to Virtual Disks
- Locate the disk, which is to be extended
- Select the disk
- Click the Expand button
- Specify how much the disk is to be increased by
- Go back to host
- Right click on disk to be expanded
- Select Rescan Disks from the menu
- Open cmd prompt
- Type in **diskpart** and hit the enter key
- Type in **list volume** and hit the enter key
- Type in **select volume XXXX**[1] and hit the enter key
- Type in **extend** and hit the enter key
2. A virtual server loses its virtual network configuration during migration

Solution:

1. Right Click on the virtual machine, which has the issue
2. Click Properties

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[1] XXXX refers to the volume the disk should be after it is resized

3. Click Hardware Configuration
4. Click Network Adapters (on the left)
5. Click the "NOT CONNECTED RADIO" button in order to change it to "CONNECTED"
6. Click OK
7. May need to reboot

15. MAINTENANCE PROCEDURES

EXPANDING RAM CAPACITY

The following procedure may be utilized to expand the RAM on a virtual machine

- Log into EMC management
- Select the Virtual Disk, which the Virtual Machine runs on
- Expand the amount of space needed
- Select Disk Management
- Rescan the disk associated with the virtual machine
- Open the "CMD" command prompt
- Type in *diskpart* and hit Enter
- Select the volume that has to be extended
- Type in *extend* and hit Enter

LOADING LARGE FILES

The following procedure may be used load large files on the virtual machines:

- Run TeraCopy software
- To copy a file, select the content that has to be copied
- Drag and drop the selected content to the desired location

HARDWARE MAINTENANCE

The DELL 1800 number should be utilized if hardware-related issues occur

Dell Support Center: 1-800-456-3355
The table below lists the service tag for the related hardware device

HARDWARE DEVICE	SERVICE TAG

* The EMC SAN was procured through Dell. Support for this product may be obtained through DELL.

16.   SERVER ACCOUNT INFORMATION

The following table lists the user names and passwords associated with:

- Active Directory Administrator Account
- SQL Server
- Domain SQL Account
- ApplicationXtender
- System Galaxy
- Dell Chassis
- EMC SAN
- Blackberry Enterprise Server

Account	User Name	Password

17.   CURRENT AND FUTURE PROJECTS

Future projects:

- Procure one (1) or two (2) additional blades in order to expand virtualization project
- Implement Virtual Desktops
- Virtualize XXXX server
- Increase SAN capacity
- Implement Mimosa Systems Email Archiving application
- Virtualize the KIOSK client computers
- Implement an Executive Dashboard tool

- Implement the following modules:
    - o Resident Services Module
    - o Redevelopment Module
    - o Trespass Module
    - o Executive Module

Current Projects:

- Implement Open Enrollment within PDS VISTA[2]
- Implement Leave Request Workflow within PDS VISTA[3]

IV. <u>WEB SERVER</u>

Operating System: MS Windows Server 2008

Web Server XXXX   version

1.   WEB SERVER INFRASTRUCTURE LAYOUT

- Pluto services client machines
- Traffic is filtered in through XXXX solution
- Emphasys IS is used internally only (no client machines are serviced by it)
- Web Server does not host or run SMTP

2.   CONTENT AND SESSION STATE
STATIC CONTENT

- Only one percent (1%) of all content is static
- Static content is associated with PDS VISTA and ProcureIT third party modules

DYNAMIC CONTENT

- Ninety Nine percent (99%) of all content is dynamic
- .NET is the predominant type of dynamic content
- ProcureIT utilizes ColdFusion dynamic content

SESSION STATE

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[2] Completed
[3] Completed

- Sessions states remain on server
- Cookies are only stored on client machines

3.   WEB APPLICATIONS

 "XXXX" server hosts:

- KCDC's Intranet
- KCDC's external website
- Third party website

The following applications are hosted by XXXX:

- ApplicationXtender Web Access
- Sharepoint Website Client
- Help Desk
- SpecOps[4]

    The following applications are hosted by Emphasys IS:
- VISTA
- ProcureIT
- Web Services for Emphasys Elite

*Standard Application Log File location is utilized at KCDC

4.   THIRD PARTY SOFTWARE

Telerik Sitefinity

- Version 3.7
- Service Pack 4

.NET Framework

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[4] Although SpecOps is available, it is not utilized

5.   PORT SETTINGS

KCDC utilizes default (XXXX) ports for client/user connectivity

The following screen shot displays KCDC's port mappings:

6.   SECURE SOCKET LAYER (SSL)

SSL is utilized for:

- KCDC's Website (internal; through Intranet)
- Terminal Services Gateway
- Exchange

7.   IP ADDRESSES
The following table lists IP Addresses and port numbers for the Static, Exchange, SMTP, and Terminal Services Gateway:

	IP	Port
Static		
Exchange		
Terminal Services Gateway		
SMTP		

Five (5) Static (Comcast) IP Addresses, ranging from X to X, are also available.

8.   DOMAIN NAME SYSTEM (DNS)

KCDC hosts and manages its DNS:

- Two (2) external
  - NS1
  - NS2
- Two (2) internal
  - DCONTROLLER
  - BDCONTROLLER

9.   INTRANET ACCESS REQUIREMENTS

Staff members utilize user accounts with KCDC in order to connect to the agency's Intranet

KCDC Employee Login page:

KCDC Intranet Home Page:

10.   INTRANET UPLOADING PROCEDURE

Information, including Crystal Reports, is uploaded to KCDC's website through a custom module.

Log-in to Intranet:

   User name:

   Password:

Reports are stored in a report library, located on Jupiter within the KCDC CMS Database

11.   WEBSITE MAINTENANCE

   - Telerik Sitefinity is utilized to maintain KCDC's website.
   - Basic content changes to KCDC's website are made by IS Analyst I

12.   TROUBLESHOOTING PROCEDURES

Issue: Error message associated with incorrect protocol stream in ESP applications.

Solution:

   - Open the "cmd" command prompt in MS Windows
   - Type in "iisrest"
   - Hit Enter

The following is a sample error:

13.   FUTURE PROJECTS

   The following is a list of future projects, as suggested by IS Analyst II:

- Migration from Telerik Sitefinity 3.7 to 4.0

- Updating applications

- Update to 4.0 module - Implement Purchasing Solicitation

- Implement Online Pre-bid registration

- Update to 4.0 module - Implement Vendor registration

- Update to 4.0 module - Implement Landlord module

- Update to 4.0 module - Implement Insurance/Claims tracking

V. DATABASES

Database Server Operating System: *Windows Server 2008 R2*[5]

XXXX Server: MS SQL SERVER 2005 version XXXX

The following databases are hosted on Jupiter:

DATABASE	DESCRIPTION

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[5] No Third Party software is utilized with the DB server

Emphasys SQL: MS SQL SERVER 2008 R2 version XXXX

The following databases are hosted on the Emphasys SQL Server: DATABASE	DESCRIPTION

1. SIZE AND PREDICTED GROWTH OF KCDC'S DATABASES

- KCDC Databases vary by size, with Emphasys being the largest one (9.3GB)
- At present the Elite Database grows by three percent (3%) per year
- System Galaxy Database also has the potential to grow
- The remaining databases are static

2. USER TRAFFIC

- The total number of KCDC users equals one hundred and twenty (120)
- The average number of concurrent users is fifty (50) to sixty (60) KCDC employees

The following table lists the number of concurrent KCDC users per system/application:

SYSTEM/APPLICATION	NUMBER OF CONCURRENT USERS
Emphasys Elite	70
Intranet	50
Custom Applications	4
Windows Update Services	1
ApplicationXtender	5

3. BACKUP FREQUENCY

Backups on KCDC's databases are performed NIGHTLY

The following steps are utilized for database backup:

- Re-index
- Full text re-index
- Compaction
- Backup

4. LICENSE NUMBERS/PRODUCT KEYS

Product Keys are stored on the XXXX server. The following path may be utilized in order to locate them:

5. REQUIREMENTS GATHERING PROCEDURE

- KCDC does not utilize a structured procedure for gathering staff requirements/needs
- The process is client-driven
- Most KCDC staff members would directly contact IS Analyst II
- Requirements are gathered through communication with KCDC staff
- Requirements are documented by hand in a note book

Procedure:

- IS Analyst II develops a data model, which fits the clients' needs
- IS Analyst II generates sample screen shots
- IS Analyst II shares the screen shots with client and obtains feedback
- IS Analyst II addresses client's comments
- IS Analyst II develops live screens
- IS Analyst II shares the live screens with client and obtains feedback
- IS Analyst II addresses client's comments

6. ISSUES/RADAR ITEMS

- No outstanding performance-related issues have been experienced with any of KCDC's databases, since the virtualization imitative earlier this year
- The most common issues related to KCDC's databases are related to log-in mistakes.

VI. REPORTS

1. GENERAL INFORMATION

Crystal Reports is the only report writing tool utilized at KCDC

Reports may be located on KCDC's Intranet Site

IS Analyst II was responsible for generating reports per the following functional areas:

- Purchasing
- Accounting
- Demographics
- Wait List[6] (half)
- Letters[7] (half)

2. REQUIREMENTS GATHERING PROCEDURE

- KCDC does not utilize a standard procedure for gathering requirements related to reports
- Staff would communicate their requirements to IS Analyst II
- IS Analyst II would work on each report, while keeping a communication channel with the requesting staff member open at all times
- Communication between IS Analyst II and requesting staff member remains consistent, throughout the development phase

VII. CUSTOM APPLICATIONS

.NET C# was utilized to develop the custom applications listed below:

- Elite Extender (used with MCCM programming pattern)
- Intranet Website
- Crystal Reports Viewer
- Claims Module (utilized for insurance claims)
- Landlord Module (allows Section 8 landlords to examine their HAP and UAP)
- Purchasing Module (utilized for vendor registration and solicitation)
- Reports Module (contains Crystal Reports Viewer, as well as listings of available reports)
- WebUI (utilized for creation of links for easy navigation)

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[6] The remaining fifty percent (50%) were developed by IS Analyst II (Jeff Ferrel)
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- GITBIT (utilized to integrate the Help Desk feature into KCDC's Intranet site)
- Vista Admin (utilized to keep the payroll system up-to-date)
- Weather Module (for Intranet website)
- KUB Exporter (Utilized for pulling information from Emphasys Elite, in order to generate flat files for utility provider)
- Tag Importer (Utilized to import data into flat files from barcode scanners)[8]
- Personnel Tracker (Utilized by the HR Department to track applications)[9]
- Property Tracker (Utilized to track property acquisitions)
- Vendor Catalogue (Utilized to track vendor information)
- Evaluations (Utilized for staff evaluations)

*Code samples for custom applications are located in IS Analyst II's "My Documents" folder on his workstation.

VIII. VENDOR SUPPORT

The following procedures may be utilized to request vendor support from Emphasys Elite, PDS, and Telerik.

Emphasys Elite:

The following steps may be utilized to obtain support related to Emphasys Elite[10]:

- Email Emphasys support staff[11]
- Contact Emphasys support staff (XXXX) via phone at
- Open a support ticket with Emphasys
- Connect to logmein123.com to obtain remote support
- Obtain specific directions from Emphasys staff for issue resolution

Telerik:

The following steps may be utilized to request support from Telerik:

Communication with Telerik support staff occurs through forums located at www.telerik.com or www.sitefinity.com

The following user name and password may be utilized to log into the forums:

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[8] Not utilized anymore
[9] Not utilized anymore
[10] Support for the Vista and ProcureIT third party modules is also obtained through Emphasys
[11] Frankie Dickinson (Emphasys) is responsible for providing support to KCDC

User name:

Password:

PDS Vista

Support from PDS Software may be obtained using the following user name and password:

User Name:

Password:

IX.INSTALLATION CDs

KCDC's installation CDs are stored in a CD case, which is located in the cabinet in IS Analyst II's work area.

The following installation CDs are available: