



Centricity Performance

Technically Speaking

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/whois_joshua_wollard

Director of IT Services
(2012 – Present)

APA: Director of IT Services for Austin Pain Associates and Arise Medical Center. Providing technical direction and understanding of all projects within the IT world. My goal as a director is to increase technology adoption and integration to improve patient care.

Chief Network
Engineer
(2000 – 2012)

MSP: Working at a local Austin MSP for 12 years, with my final tenure as chief network engineer. In that role I oversaw a group of ten system integrators. My team worked together to solve the difficult IT problems and create custom large scale deployments.

Disclaimer

- These are all suggestions, how we have had success in our organization. May not apply to you.
- GE or Centricity does not condone what we are sharing.
- Your results may vary from ours, chill.
- APA, Arise, or IT Alliance shall not be responsible for what you do on your own network.

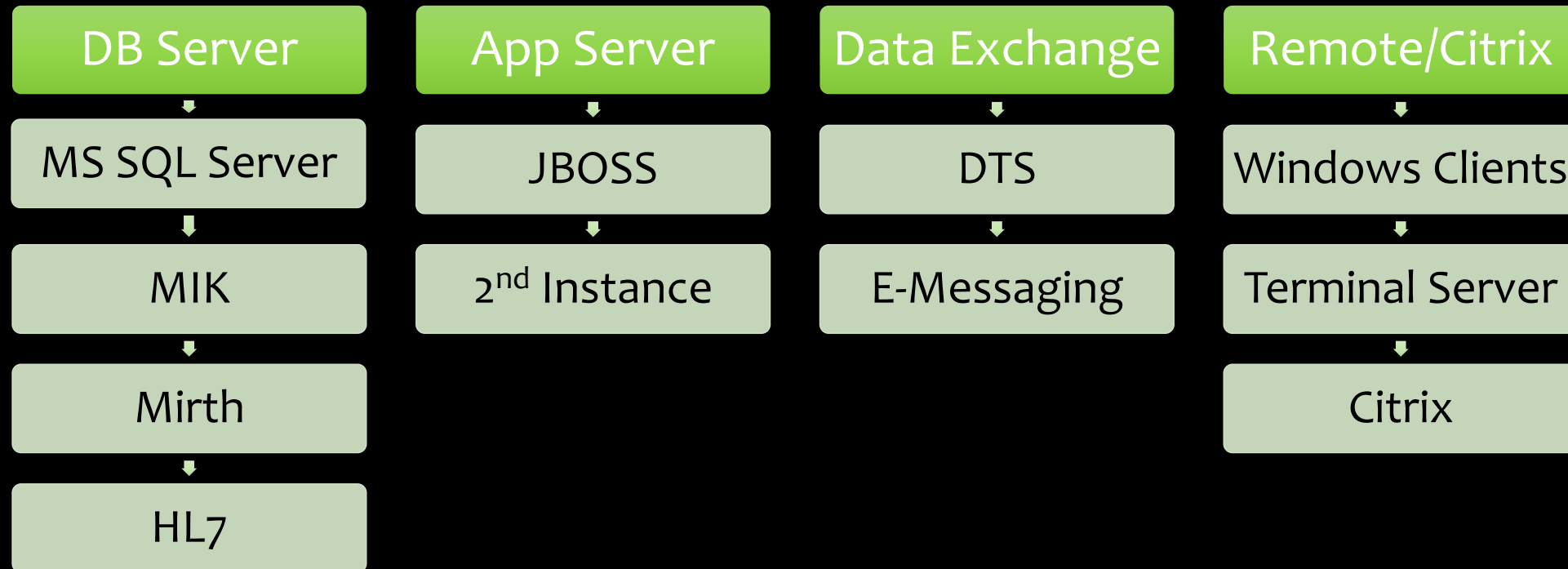


Tools for Centricity Design

- Configuring Environments for Centricity®
 - (Complete PDF Document)
 - GE Service Portal
- Calculating_Hardware_Requirements
 - (Excel Document)
- Performance Counter
 - (Stop Watch)
- User experience
 - What user feel while using CPS

What	Who
Configuring CPS.pdf	System Engineer
Calculating Hardware.xlsx	EMR Support and System Engineer
Performance Counter	EMR Support
User Experience	Users, System Engineers, and EMR Support

Configuring Environments for Centricity Practice Solutions (PDF)



DB Server

Hardware

- “Choose the fastest processor within your budget”
- “Striping RAID groups vertically across heads scales better than dedicating one or more entire disk arrays to a single head.”
- See Calculating_Hardware.xlsx
- 32GB or greater RAM
- Solid State are the key

Software

- 2008r2 or 2012 SP1 SQL Server
- Tempdb per Server Core
- Windows Setting to Optimize Memory
- Use Redundant Server for reliability
- Enough Bandwidth for Size
 - iPerf or jperf

APP Server

JBOSS

- Needs a dedicated server (VM)
- Adding RAM doesn't matter unless you configure jboss to use it
- Pretty low requirements.

Pro-Tips

- Clients do not route requests through it. Still go direct to DB Server
- Java application, tons of Java performance tweaks. Backup your config

Clients

Fat – Thin – Skinny Fat(VDI)

Fat Clients

- Single Dual Core
 - Go Faster
- 4GB of RAM
- Windows 7 or 8
- Do not use Win8 reader
 - I say don't use Adobe PDF
 - Foxit/Power

Thin

- 2008r2 or 2012 Remote Desktop Services
- XenApp 6.5
- Choose Fast Processor
- 40 users MAX per VM
- 24GB of RAM

VDI

- VMWare View
- Xen Desktop
- Window Server 2012 R2
- Whole PC in data Center

Calculating Hardware – Use this document!

- Database Server Info
- Citrix or Terminal Server Info
- Virtualizing your Data Center
- Physical Deployments
- Network Bitrate or Remote site calculator
- OMG Look out - Warning



Performance Counters

- Document what people do inside Centricity
 - Example: Login, Open Chart, Search for Patient, Open Establish Patient Office Visit
- Get a stop watch or computer clock and time what it takes.
 - Each process will have its own timer.
- Try configurations to see what exhibits the best improvements
 - 1gb vs 10gb
 - 4gb of RAM vs 8gb
 - 2 proc vs 4 proc
 - 40 users vs 20 users (terminal server / citrix)

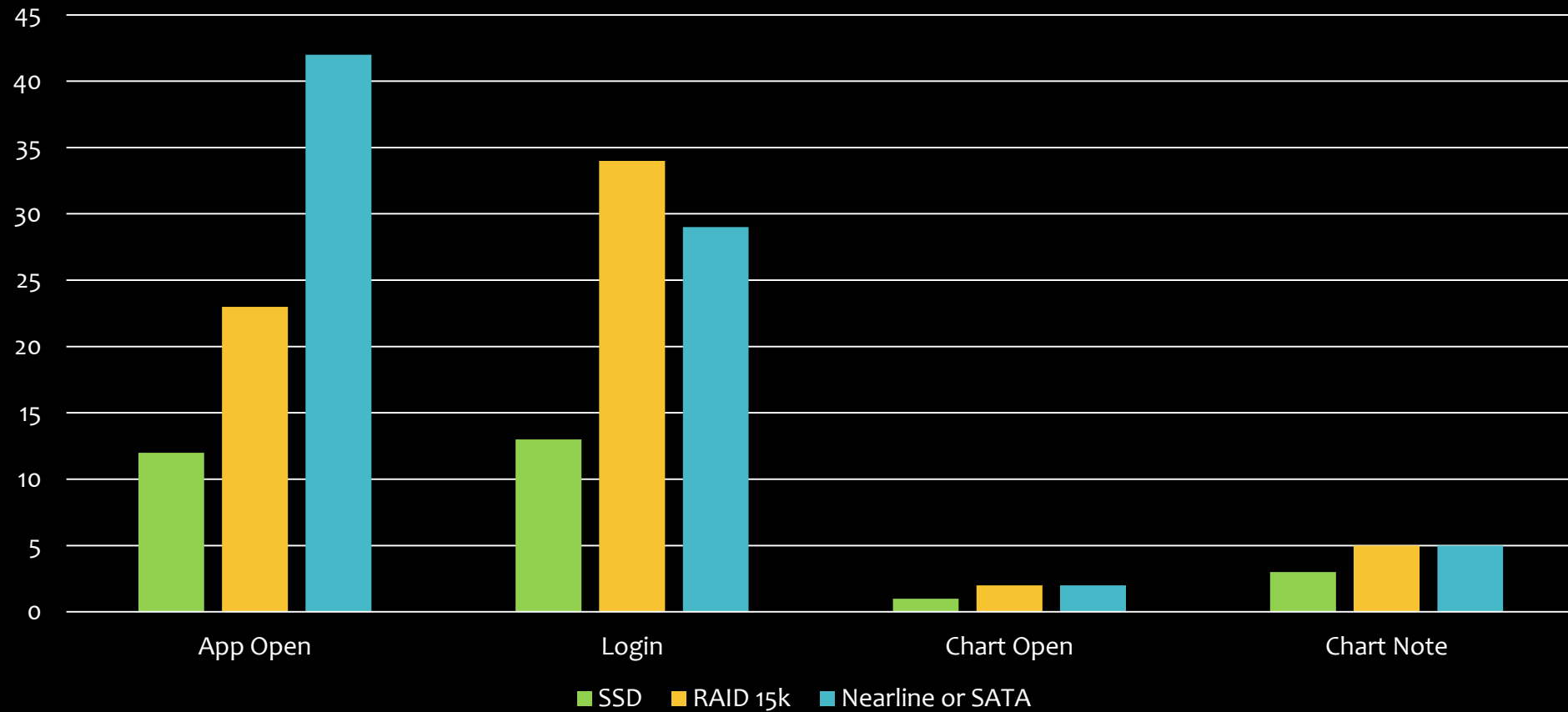
Perception is Reality

- Ask your users what they see
- Is it faster, does it feel better
- User's satisfaction is what determines success, not hardware installed
 - (that goes out to network admins)
- Once they explain better/worse have them show you.
 - Replicate their tests in your process
 - Use Chester Tester

Storage Comparison

- Local Storage or Nearline Storage Speed (Sata or NL SAS)
- 15k SAS (Serial Attached Storage)
 - RAID5 or RAID1
- Solid State
 - Enterprise Solid state Drive
 - Converged SSD SAN – Nimble Storage
 - Full SSD Sled – Pure Storage (Expensive)

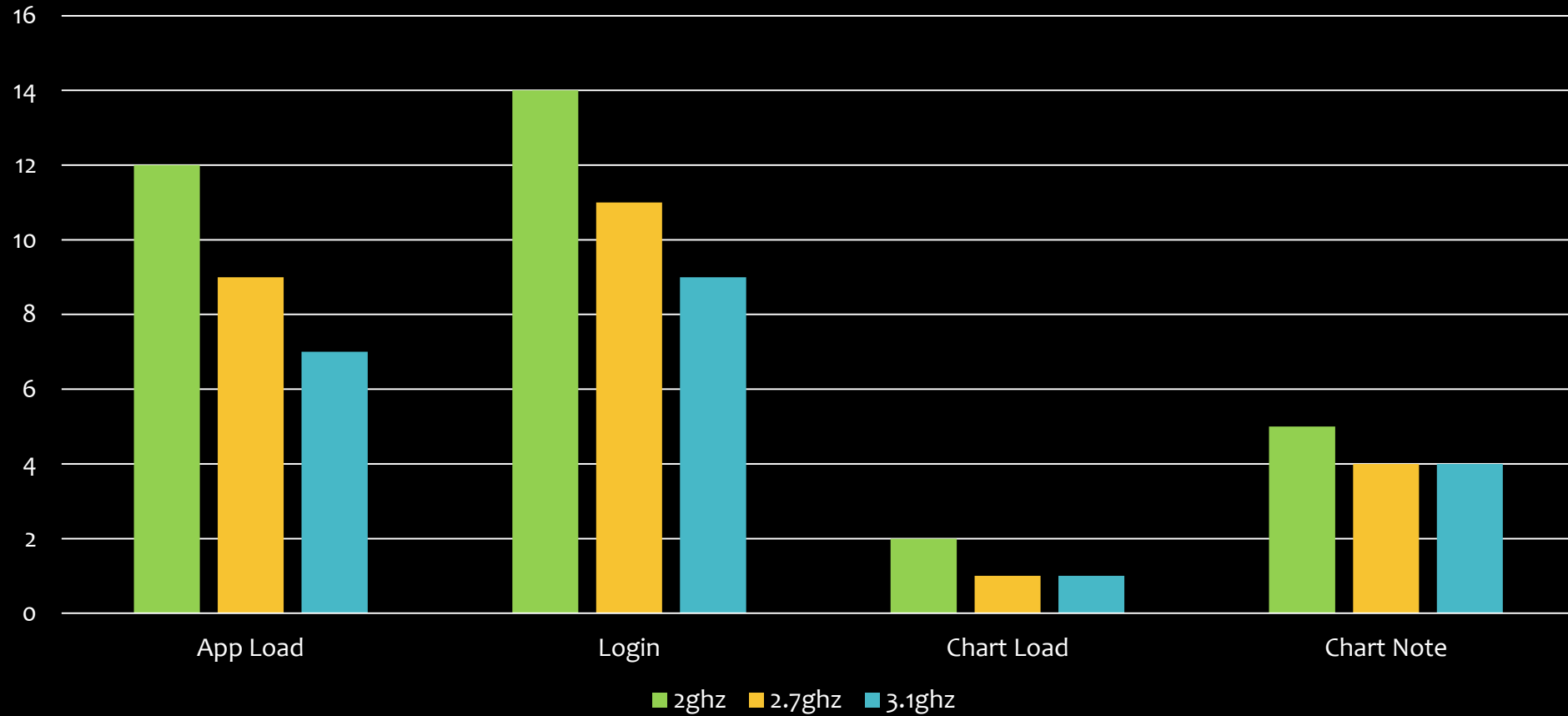
Storage Comparison (Lower is Better)



CPU Speed Core(s) vs CPU Clock

- More CPU Speed
- Core Speed Increments
- Intel Xeon Speed vs Family
- Deployment Suggestions

CPU Comparison (Lower is better)



Compliance Guidelines

- Fat Deployment
 - Local storage of files, scans, and temporary work
- Thin Client (Terminal Server / Citrix)
 - Centrality hosted, but computer still used to do deployment
- VDI Deployment
 - Entire computer in datacenter, limits exposure
 - Expensive Deployment, very complicated

Closing Statements

- Get SSD based storage
- Faster Clock Speeds Help
- Limit Users on Terminal Servers
- Read and USE GE Documentation

The End – Q&A

WE TOOK THE HOSTAGES,
SECURED THE BUILDING, AND
CUT THE COMMUNICATION
LINES LIKE YOU SAID.



EXCELLENT.

BUT THEN THIS GUY CLIMBED UP
THE VENTILATION DUCTS AND WALKED
ACROSS BROKEN GLASS, KILLING
ANYONE WE SENT TO STOP HIM.



AND HE RESCUED
THE HOSTAGES?

NO, HE IGNORED THEM.
HE JUST RECONNECTED
THE CABLES WE CUT,
MUTTERING SOMETHING
ABOUT "UPTIME".



SHIT, WE'RE
DEALING WITH
A SYSADMIN.