



Separating the cloud from the fog: A clear path to security

Northwest Regional Data Center

Tim Brown

Executive Director, CISSP, CISA

Introduction...

- **Common problems we face in security....**
- **What is the cloud?**
- **New challenges from the cloud...**
- **What we have done with NWRDC**

The problems that we face...

- More persistent threats
 - Global
 - Political based
- Identity theft a new market

The problems that we face...

- Localized controls?
 - Can we be there all the time?
 - Is this our specialty?
 - Know our business
 - Know our customers
- Data controls

What is the Cloud?

Is it new??

What is the Cloud?

“Cloud Computing provides widely accessible on-demand, elastic computing power. These services are metered and charged back based on usage.”

Kevin T. McDonald

“Above the Clouds: Managing Risk in the World of Cloud Computing”

The early days...

- Introduced on the mainframe in the mid 1960's with IBM System/360 Model 67



Beginnings of the cloud...

- NWRDC went to MVS/SP R1 (Multiple Virtual Storage) in 1981
- AMDAHL 470 v6



Mainframe cloud

- Can create separate logical partitions (LPAR)
- Resources can be shared across LPAR's
- OS can be specific to an LPAR, allowing for multiple versions of OS to be run as needed

Distributed Cloud

- Host based on VMware, Microsoft, Citrix, KVM
- Various hardware
 - Blades
 - Individual servers
- Client OS can be almost anything

Cloud Types

- **Public cloud**
- **Private cloud**
- **Community Cloud**
- **Hybrid Cloud**

Cloud Services “Whatever” as a Service

- **Software as a Service (SaaS)**
- **Platform as a Service (PaaS)**
- **Infrastructure as a Service (IaaS)**
- **Security as a Service (SECaaS)**
- **and so on and so on and so on....**

Things to think about before you buy...

- Who controls your data?
- Who OWNS your data?
- What is IN your data?
- Who is responsible for data breaches of sensitive information?
 - [Florida Statutes, 817.5681](#)

Things to think about before you buy...

- Where is your data?
 - Multiple sites?
 - Multiple countries?
- Who has access to your data?
 - Cloud administrators?
 - Background checks?

Things to think about before you buy...

- Telecommunications
 - How will you connect securely?
 - Bandwidth?
- Backups?
 - Who is responsible?
 - How are they stored?
 - Where are they stored?

Things to think about before you buy...

- Disaster Recovery
 - Who?
 - Where?
- Service Level Agreements
 - Performance standards
 - Security standards

Things to think about before you buy...

- How will you be segmented from other customers?
 - Can they see your data? (easy)
 - Can their performance impact yours? (more difficult)
- Are you locked into a particular performance level?
 - Can it increase?
 - Can it decrease?
 - How changes impact cost?

Things to think about before you buy...

- Internal standards :
 - Do YOU have a security standard\policy?
 - How does cloud vendor fit within your standard?
- Access controls: Who manages authentication and verification?

Things to think about before you buy...

3rd party assessments\standards:

- Statement on Auditing Standards (SAS) No. 70
- Statement on Standards for Attestation Engagements (SSAE) No. 16
- National Institute of Standards (NIST) 800-53

Things to think about before you buy...

- Audit Access: Will your auditors have access to review?
- Exit Strategy: So how do you get out of this?

Resources

Gartner:

SaaS Contract Negotiation toolkit

Cloud Security Alliance (<https://cloudsecurityalliance.org>)

<https://cloudsecurityalliance.org/download/security-guidance-for-critical-areas-of-focus-in-cloud-computing-v3/>

Northwest Regional Data Center

- NWRDC founded in 1972 as one of four regional data centers serving State University System of Florida
- 100% self funded
- Provide services to universities, colleges, K12, as well as city, county, and state government entities

NWRDC Customers

- Universities\colleges
- State Agencies
- K-12 School Districts
- City\County government

Northwest Regional Data Center

While an auxiliary of Florida State University, we operationally report to a Board made up of our customers

- Customers can “outsource”, but continue to have a say in the operational control of the data center
- Management Committee has oversight of financial operations



NWRDC

- Founded as a mainframe co-op
- Floor space designed for large systems, but systems have gotten smaller
- Evolve our technology, knowledge, and business practices to meet current needs of our customers

NWRDC and State of Florida

- Founded within the State University System of Florida
- Used as the model for data center consolidation for State Agencies
 - 1 of 3 primary data centers for the State of Florida
 - Resulted in increase in state government customers, but roots are in education

NWRDC Facility

- 96 feet above sea level
- 10,000 Square Feet Raised Floor
- N+1 UPS Systems and Generator Plants
- 1000+ Amp Utility Service
- 2000 Amp Emergency Power Transfer Switch
- 10 Liebert 20 ton CRAC Units, N+1 Redundancy
- Halon 1301 fire suppression system
- 7/24/365 Onsite Security with Video Surveillance

NWRDC Services

- Mainframe
 - Primary application hosting
 - Hosting applications for sunseting
 - DR services
- Server hosting
 - Collocation
 - Managed Services

NWRDC Services

- Networking
 - Tallahassee Fiber Loop (14.7 miles of dark fiber)
- Licensing
 - Provide site licensing and contract management for constituent groups

NWRDC Services

- Storage as a Service
 - Capacity based
 - IOPS based
- Infrastructure as a Service
- BaaS (Backup as a Service)
- SECaaS (Security as a Service)

