"where PI geeks meet"

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Considerations of the new PI Security Model

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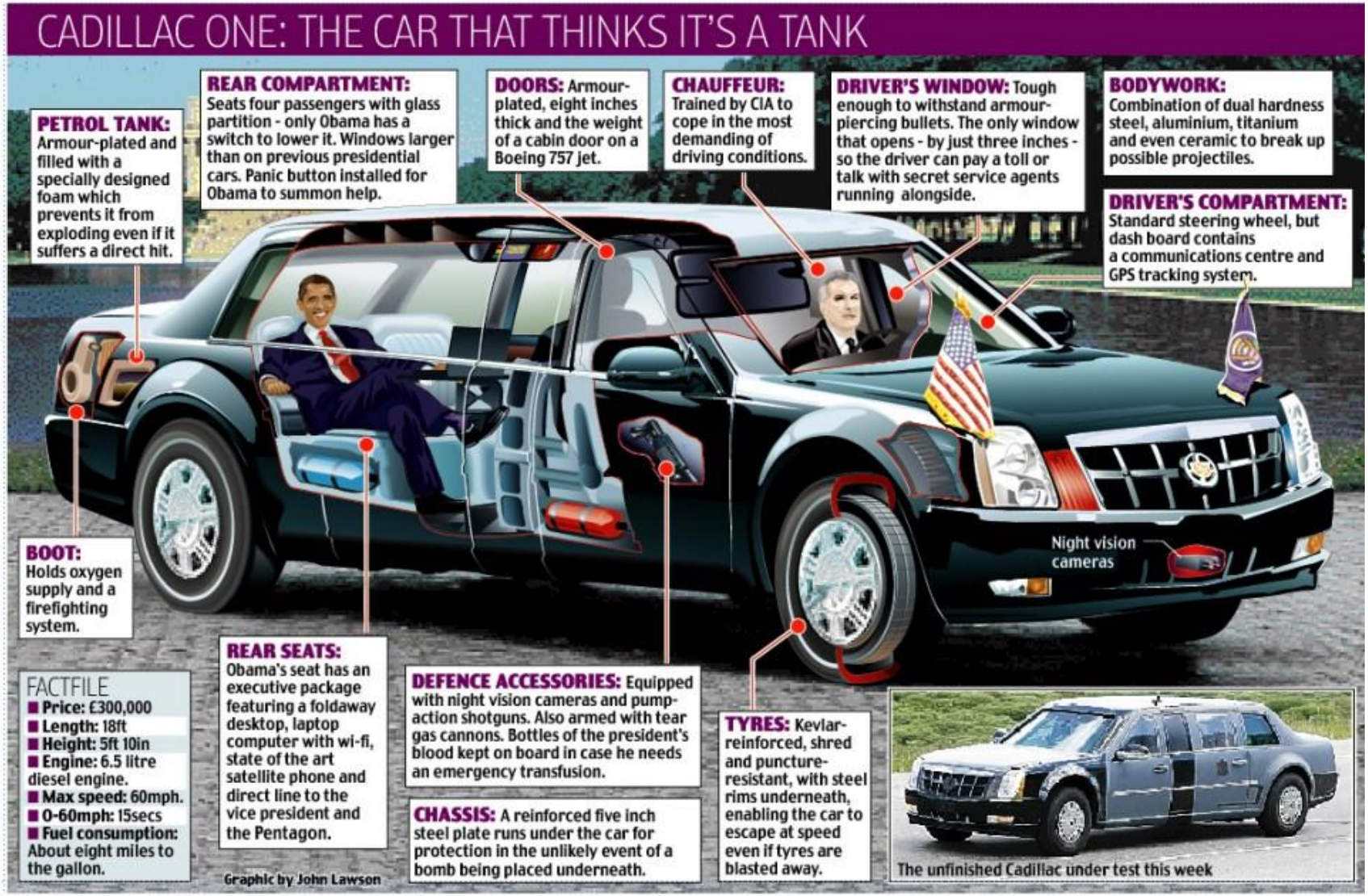
Security Roadmap…



Security Reality Today

- State of denial is over
  - Transference of risk is next

  …getting more difficult
- Compliance mandates
  - Duty to protect the public

  …not just assets
- Cost escalation
  - 10% of IT budget and growing

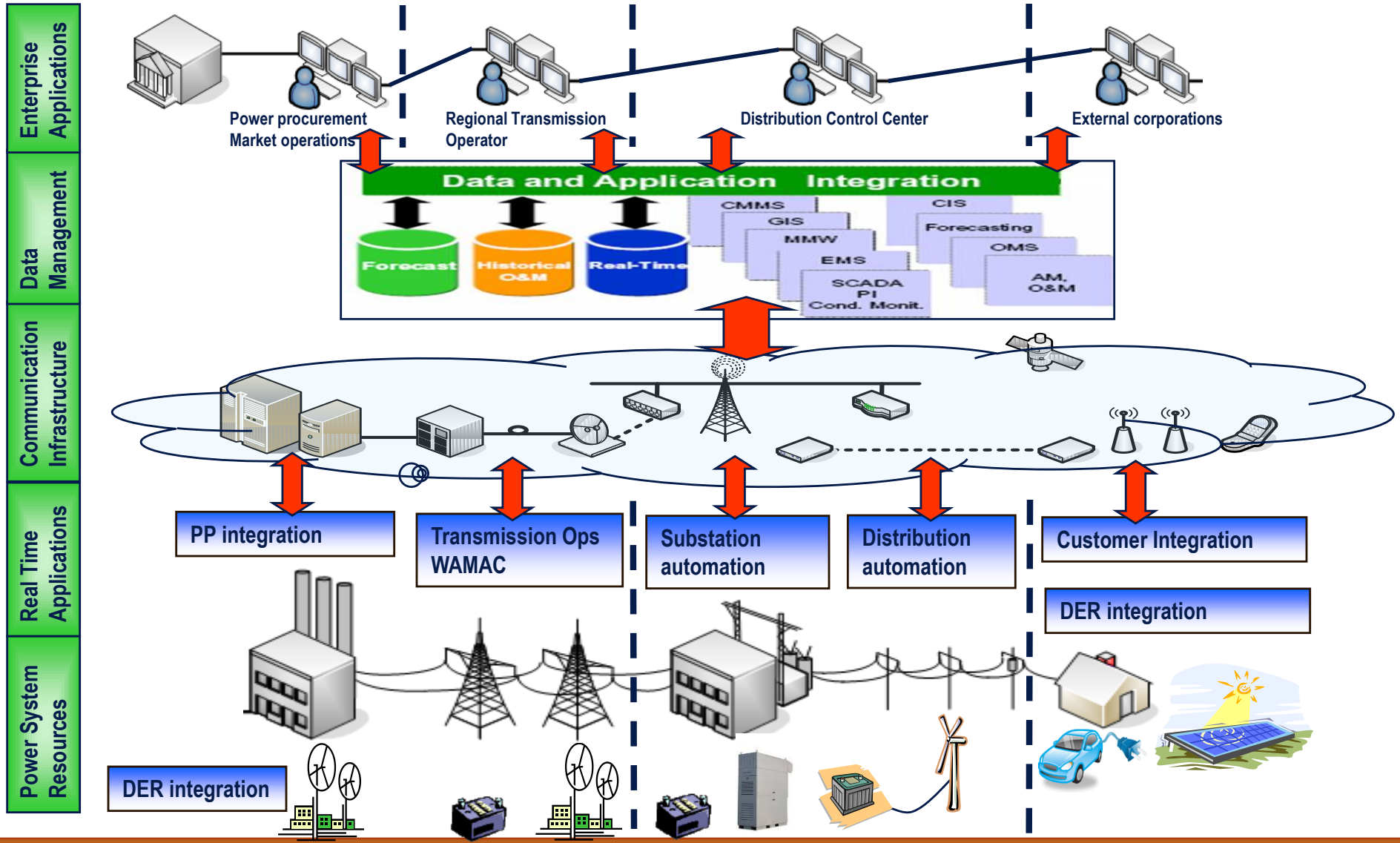
  …not sustainable, need a better approach

Network is the Battlefield

- Now()
  - Practically all critical infrastructure and key resource elements have an IT backbone
  - Needs to be available, reliable, and secure
- Tomorrow()
  - New initiatives and more dependency on internet
    - Cloud Computing
    - Energy distribution
    - Transportation

1-Watt GPS Jammer

EPRI IntelliGrid – Real Time Integration



Trust

Application services must trust infrastructure

and

Application services must be trusted

What is the basis for trust?

A Non-Trivial Challenge

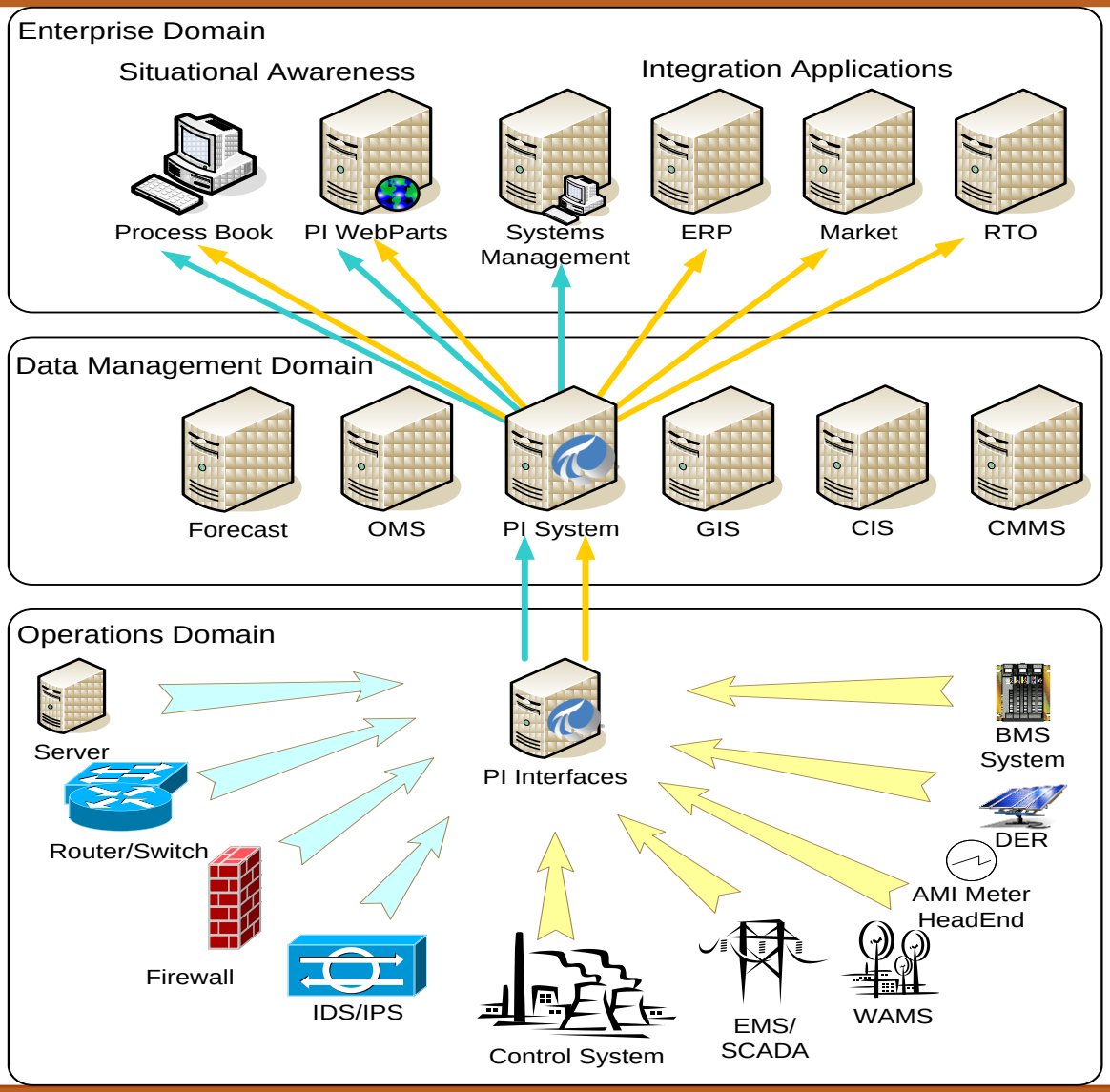
- Cyber security is asymmetric warfare
  - Defend against all possible attacks, even the unknown
  - New defenses are expensive, new attacks are cheap
  - Deterrence can't be measured, but exploits can

Approach

- Plugging holes faster is not enough
  - Need to build a proactive stance
  - Effectively block attackers
    - Delay, disrupt and “disincentivize”
    - Technical and non-technical means

- Use all available intelligence
  - Tap security features and resources
    - Enable defenses
    - Instrument, collect, and analyze logs
  - Effective collaboration

Operational Data Management



Digital Bond – Portaledge

- Project funded by the U.S. Department of Energy
  - PI is widely deployed in the energy sector
- Adds capability to detect cyber attacks
  - Aggregate and correlate security events in PI
  - Uses IT Monitor + PI ACE
- Design, manuals and source online: “Scadapedia”
  - Released modules
    - Availability – computer, network, system degradation
    - Enumeration – port scan, anomalous network traffic

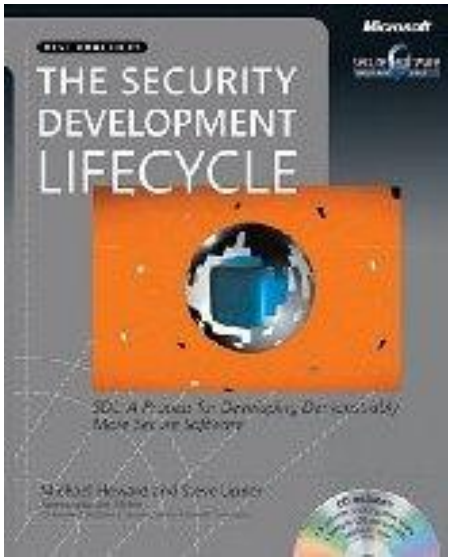
Affect on ISV Solutions

- Accountable
  - Verify software supply chain

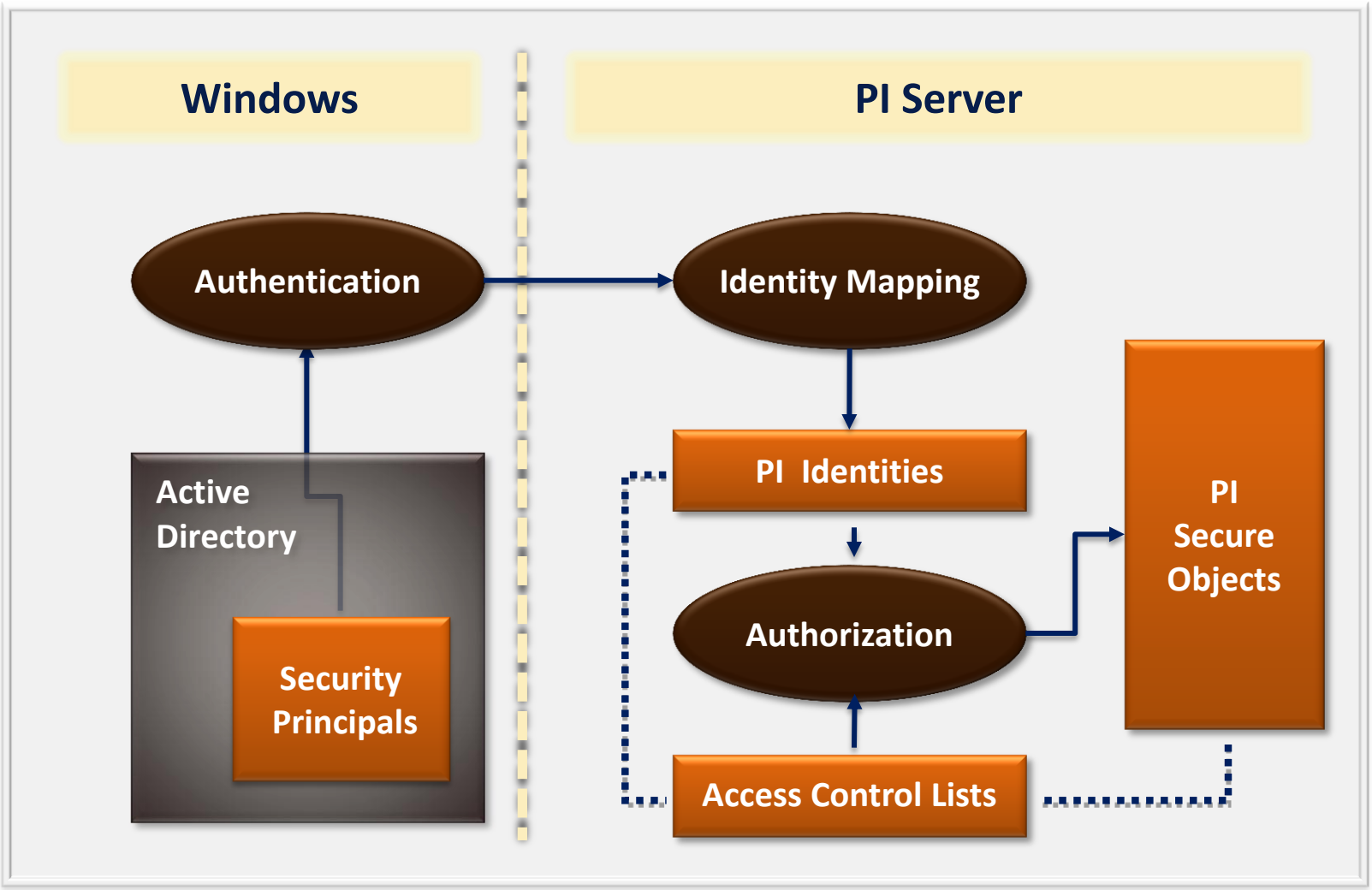
  …minimize on-going risk
- Agile
  - Build for security not just compliance

  …adapt to emerging threats
- Affordability
  - Leverage infrastructure services

  …Windows integrated security “WIS”



WIS Overview

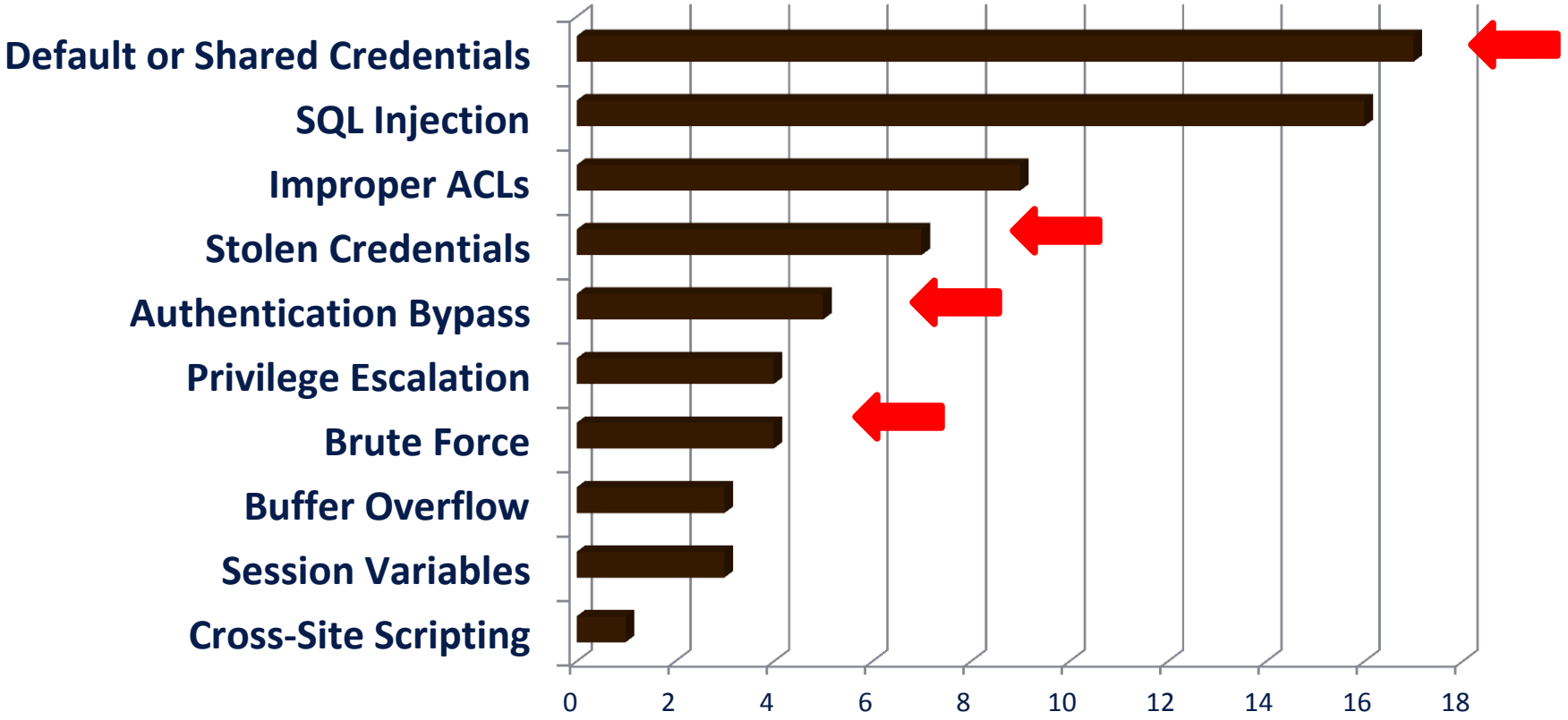


WIS Implementation Benefits

- Enhanced security
  - Increased control and flexibility
  - Standards and compliance templates
- Less Maintenance
  - Stability
  - Domain accounts
- Better Manageability
  - System Management Tools (SMT)
  - Group policy tools
- Lifecycle Support
  - Backward compatible
  - Windows 2008 R2 (x64) on Server Core

Authentication – Still the Weakest Link

Hacking Breach by Type



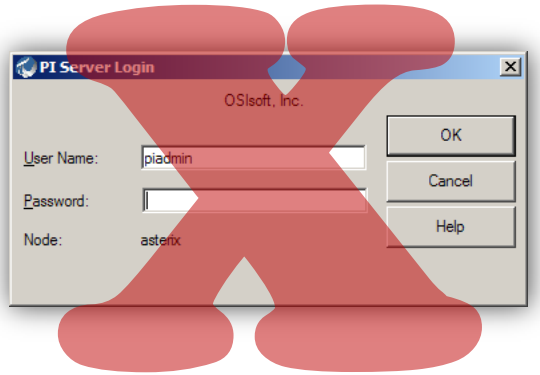
Source: 2009 Verizon Data Breach Report

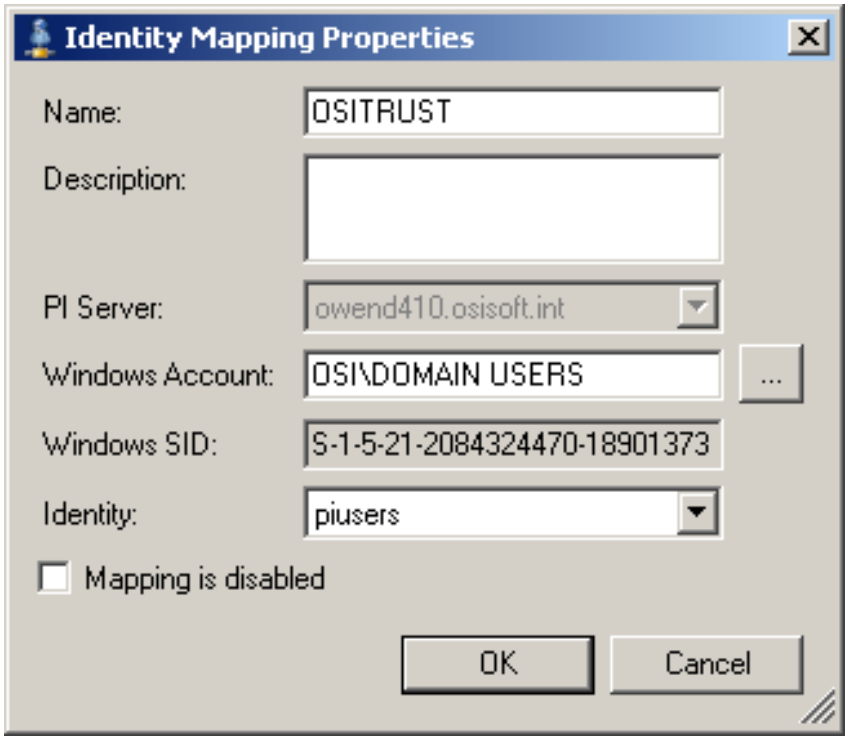
WIS Prerequisites

- Client application using PI-SDK 1.3.6
- PI Server 3.4.380
- Domain membership strongly recommended
  - Clients, application servers, database servers
  - PI Interface nodes remain centric to data source

Mapping Active Directory Groups

- Single Sign On – Windows Security (Kerberos)
  - One time mapping for Active Directory Groups



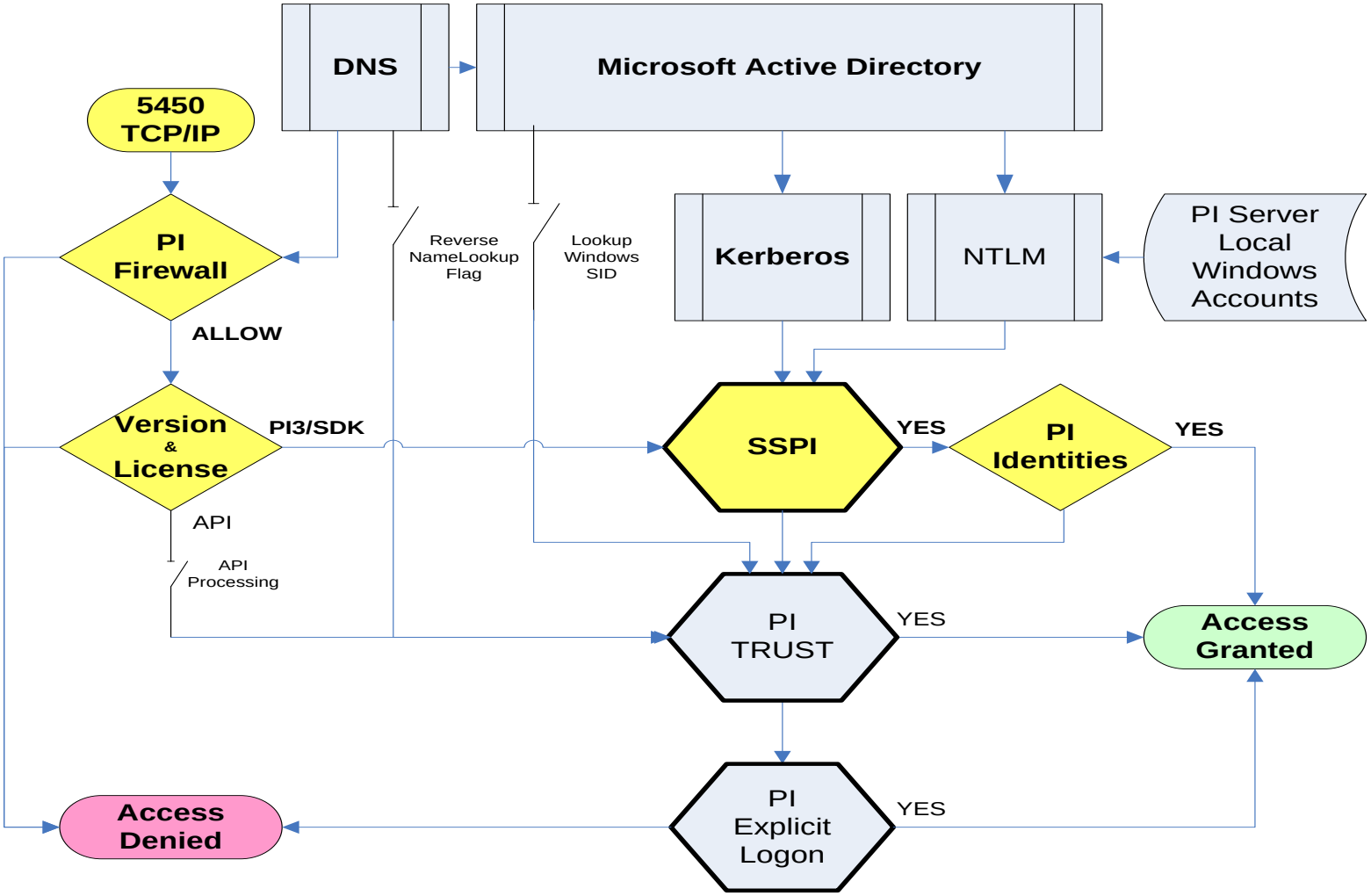


Legacy Methods are Weak

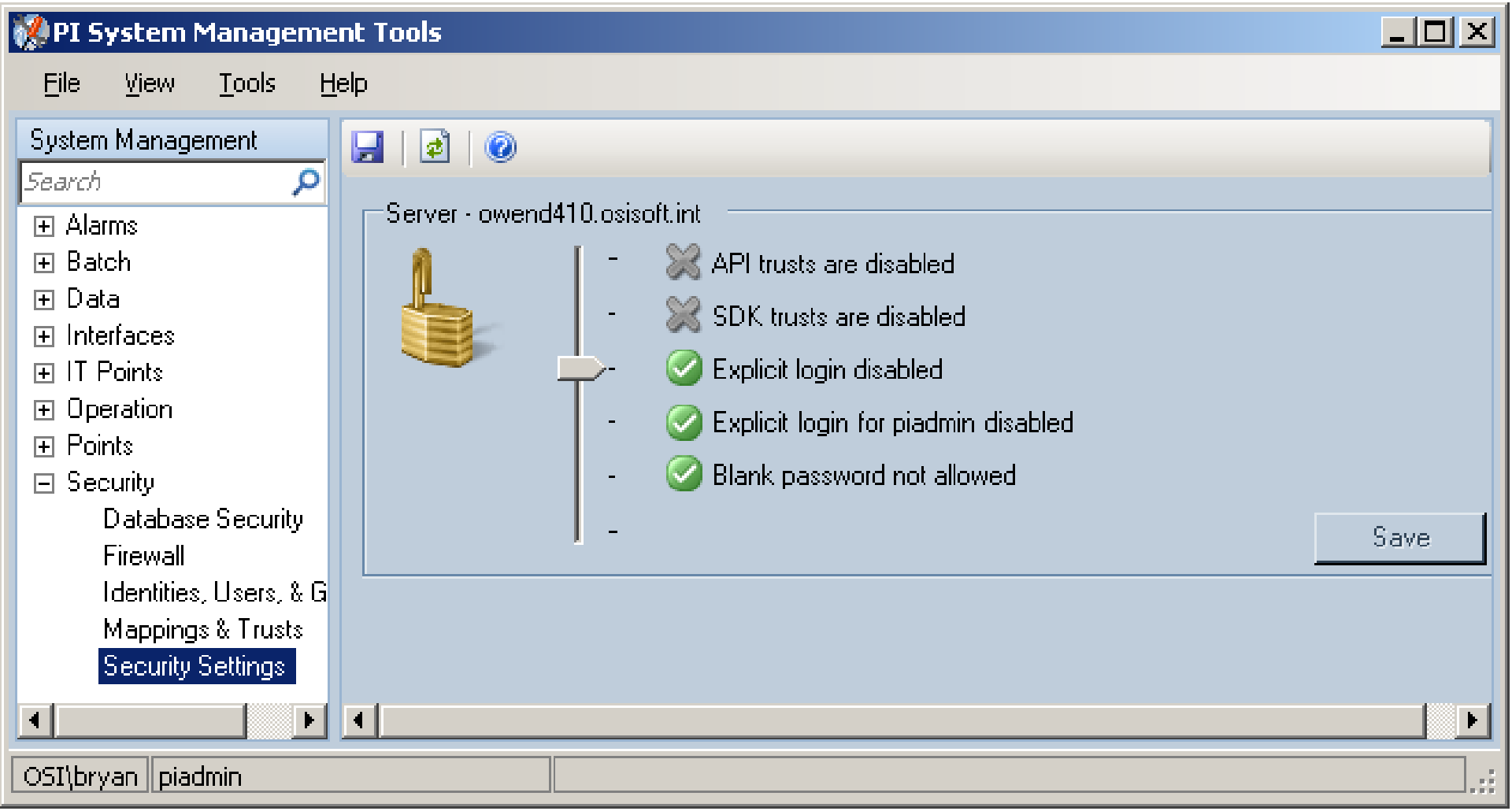
- Security Alert: PI Authentication Weakness
  - OSIsoft Technical Support Bulletin
    - Eliminate use of PI User passwords in versions prior to WIS (KB Article # KB00304)
  - 2009/09/30 C4 SCADA Security Advisory
  - US CERT **CVE-2009-0209**

Installation Warning

Authentication Path

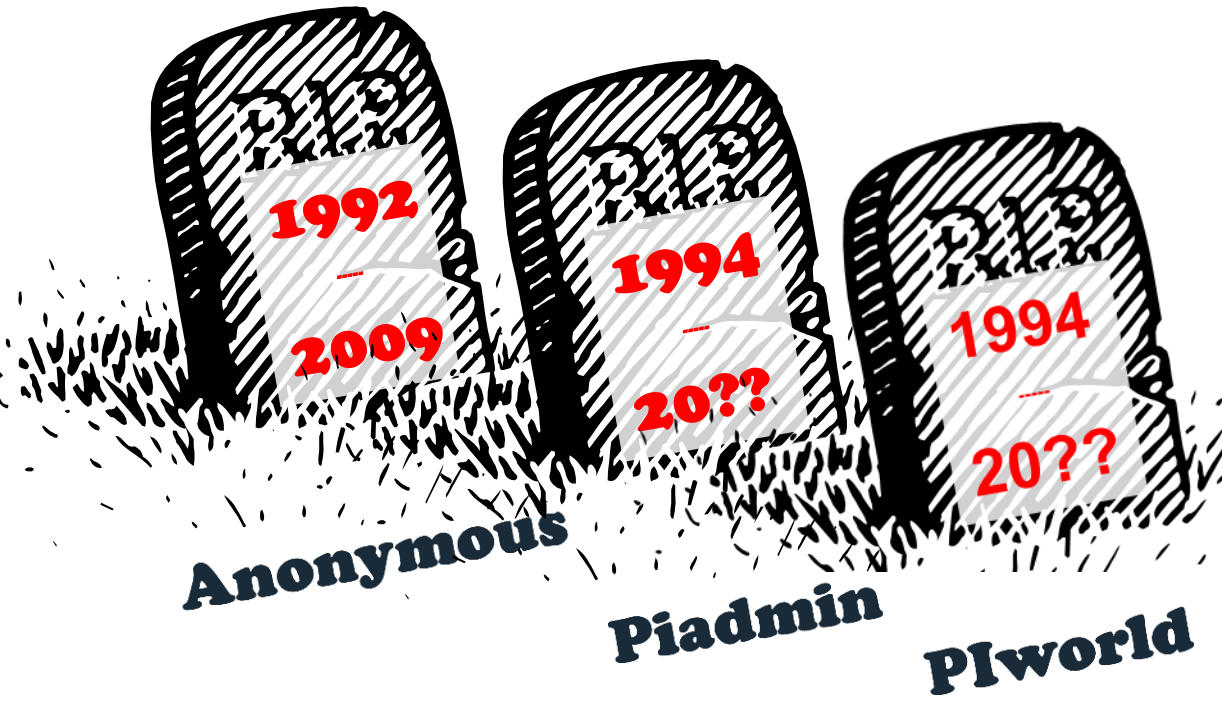


PI-SMT Security Settings



Authentication Policy

- Policies to Allow and Prioritize Methods
  - Windows SSPI
  - PI Trust
  - Explicit Login
- Granular Scope
  - Server
  - Client
  - Each Identity



Group Policy for WIS

- Access this computer from the network
  - Remove “Everyone” default
- NTLM
  - Sharing and security model for local accounts
    - Change “Guest” to “Classic” (guest is Windows XP default)
  - Lan Manager authentication level
    - Run at level 5 to prevent downgrade attacks
- Kerberos
  - Configure PI WebParts for SSO using Kerberos

(KB Article # KB00100)

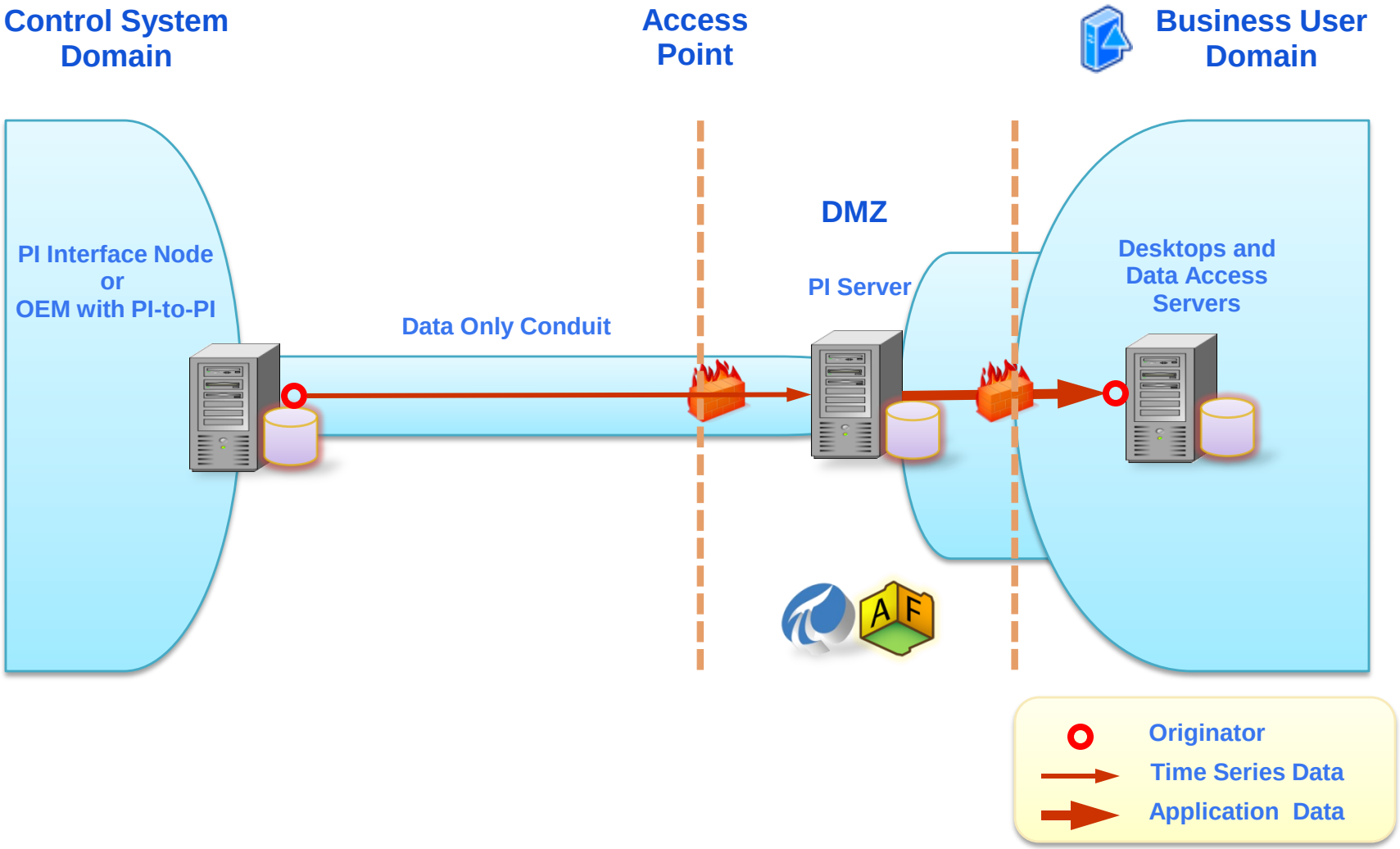
PI-SDK Programming and WIS

- Server Object “CurrentUser”
  - List of PI identities granted for this connection
- New: IServerConnect interface “DisplayUser”
  - Normally represents the Windows user
- Unimplemented methods are documented
  - Is programmatic access to WIS configuration needed?
  - Is Piconfig enough?

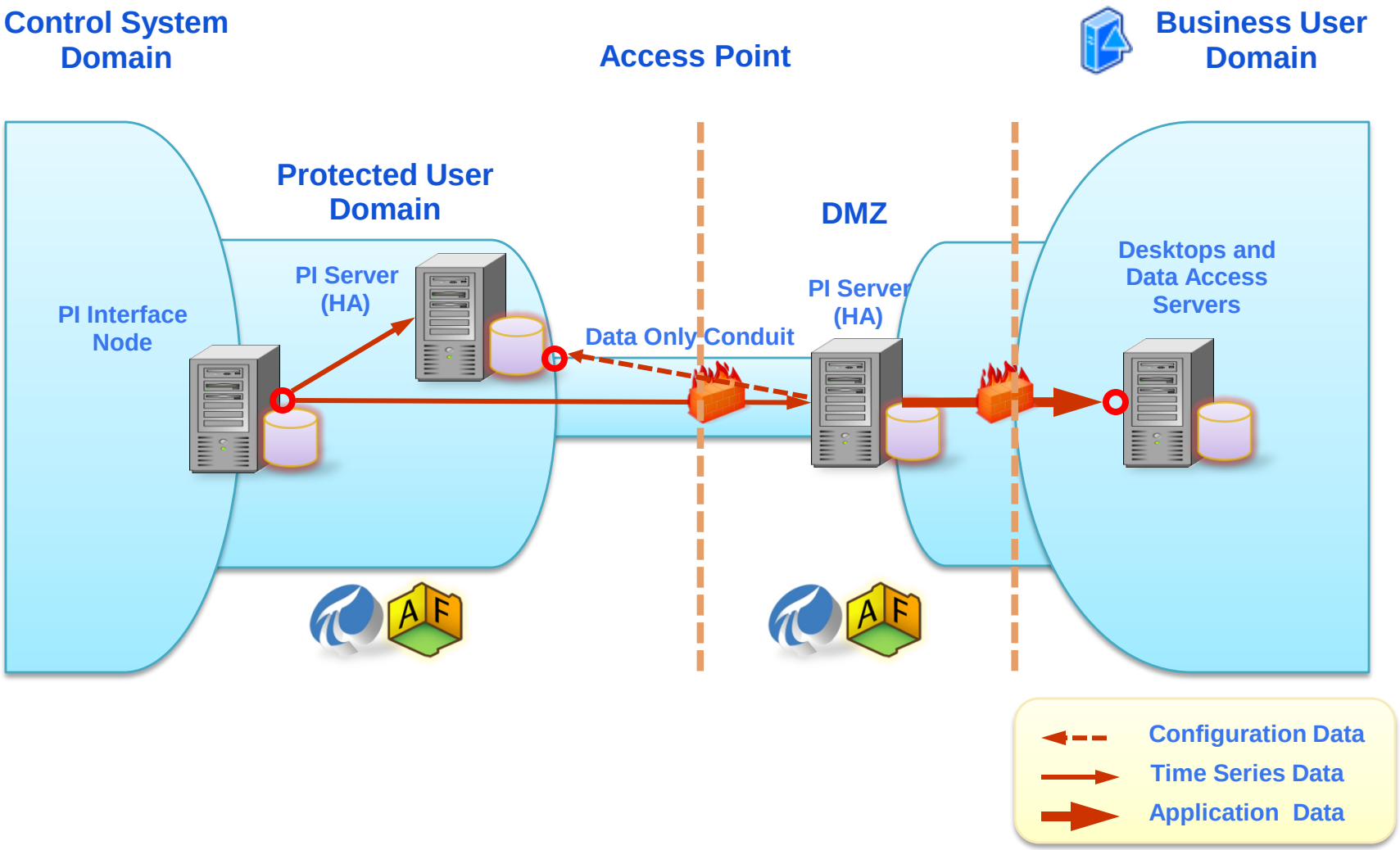
Authentication Summary

- Domain Membership
  - Strongly Recommended
  - Clients and Servers
- Manage Users and Groups
  - Centrally in Windows
  - One time association in PI
- Explicit Login and Trust
  - You have control

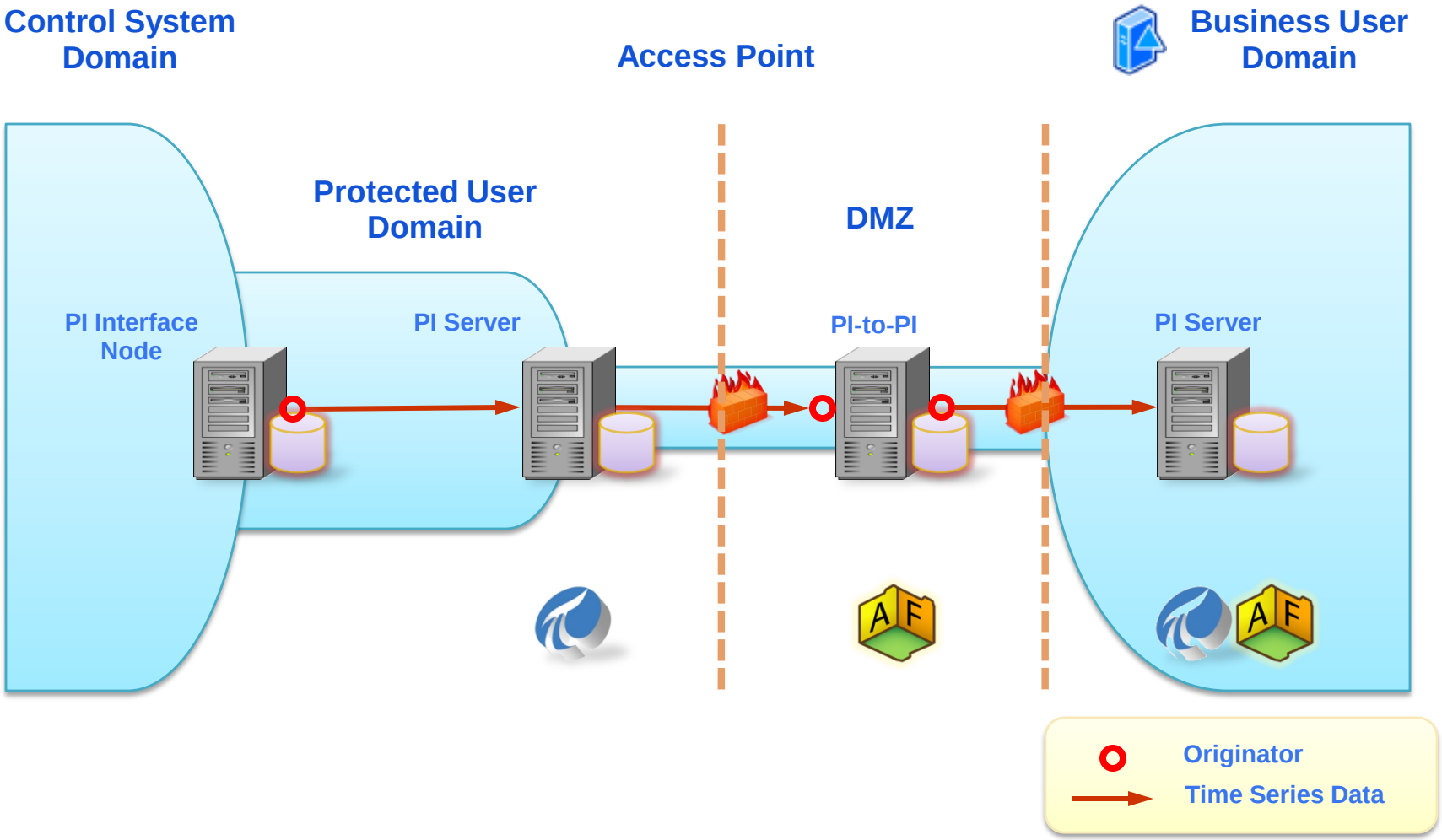
Basic Deployment Pattern



High Availability Deployment Pattern



PI to PI Deployment Pattern



What else in PI 3.4.380?

- PI Network Manager
  - Stability and hardened stack
  - Performance
  - Enhanced SMT plug-in
- Message Log Subsystem
  - Filter by severity
    - Critical, Error, Warning, Informational, Debug
- Audit Trail
  - Windows user preserved

Backup Enhancements

- Backup
  - Performs incremental backup
  - Checks integrity
  - Maintains “Last Known Good”
  - New SMT plug-in
    - On demand copy backup
    - Viewing backup history

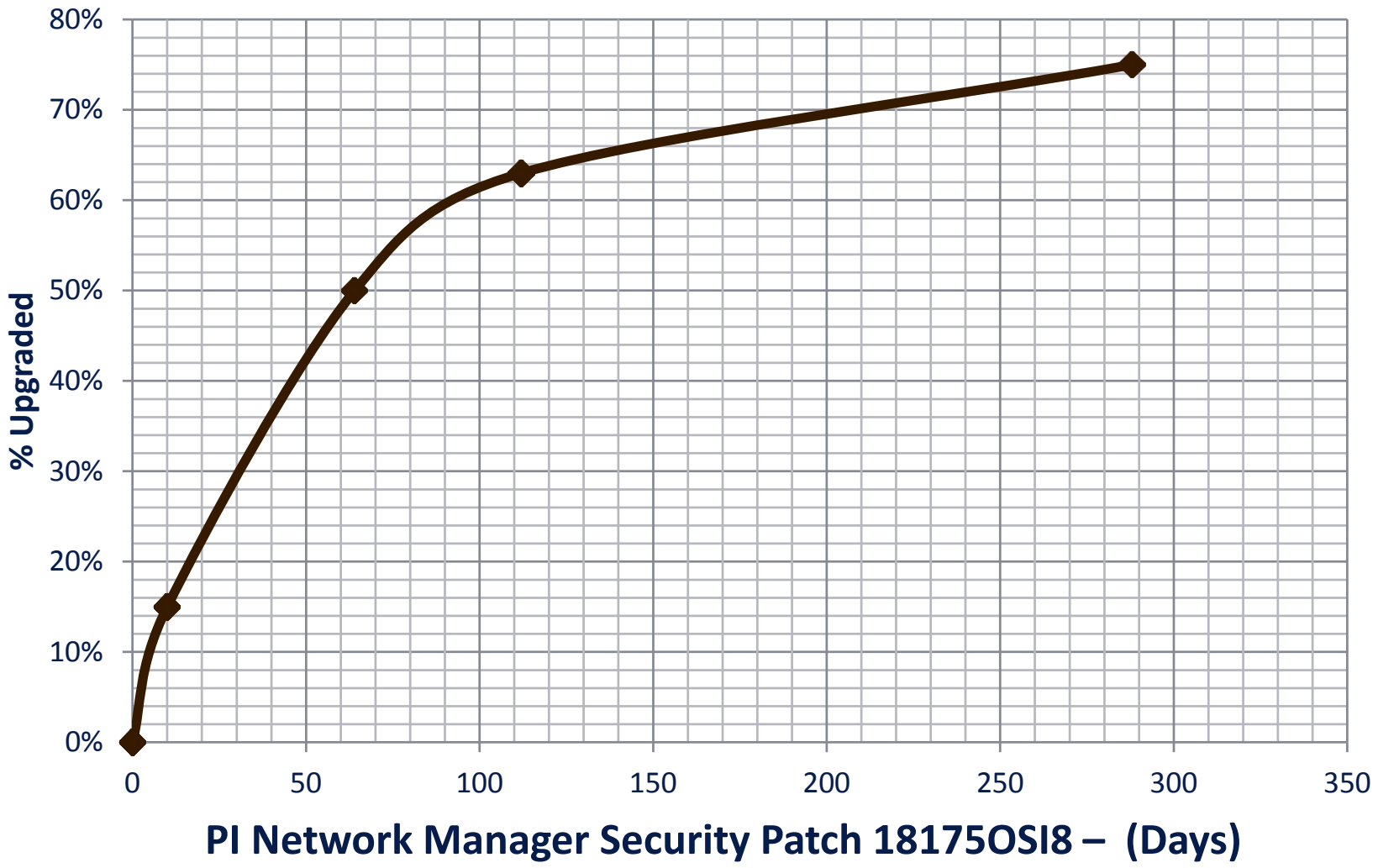
Certification and Security

- Windows Server 2008 R2 'Certified' program
  - Goal: increase quality of applications
  - More compatible, reliable, secure
- A few of the security requirements
  - Instrument for User Account Control (UAC)
  - SSPI authentication must use secure default
  - Digitally sign all executables
  - Must not relax default security settings
    - Document exceptions: AntiVirus, Firewall

Our Commitment to You

- Ongoing focus of Security Development Lifecycle
  - Help you with Best Practices
    - Reduce effort and improve usability
  - Eliminate Weakest Code
    - Cumulative QA effort with every release
  - Collaborate with Security Experts
    - Industry, Government, Academia, Partners, Customers

When will you Upgrade?



Being Secure Is…

- More than regulations and features
  - Technology can help
- A state of mind, knowing
  - Your systems
  - What to do
  - Who you trust
  - OSIsoft wants to earn your trust

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THANK YOU.