Saheem Granados,CISSP® (sgranado@us.ibm.com) – IBM Software Engineer
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# Don't Judge an LDAP Server By Its Name

## SHARE Orlando

## August 2011

## S9545

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Source If Applicable

# Agenda

- Re-introduce IBM Tivoli Directory Server (TDS) for z/OS®
- Highlight Key TDS for z/OS Optimizations
  - WLM
  - ICSF
  - RACF
  - SMF
  - Sysplex
  - DB2
  - ARM
  - System SSL
  - Network Authentication Service (Kerberos)
- Review TDS for z/OS Architecture
- What's new with TDS for z/OS?
  - z/OS V1.10
    - Plug-in
    - AES encryption using ICSF
    - SSL certificate mapping
    - Operations Monitor support
    - RACF custom profiles

# Agenda (cont...)

- z/OS V1.11
  - Advanced Replication
  - WLM support
  - RACF resource profiles
- z/OS V1.12
  - Filtered Access control
  - Password Policy
  - Activity Log updates
  - Salted SHA support
- z/OS V1.13
  - Administrator Roles
  - 64 bit TDBM
  - Paged/Sorted Search
  - SHA-2 Support
  - Group Specific size/time limits

- List References to Publications

# LDAP on z/OS

- LDAP Client C APIs first introduced with OS/390 V2R4
- LDAP Server first introduced on OS/390 V2R5 as “SecureWay Security Server LDAP Server” (ISS adopted as unofficial acronym)
  - Port from distributed code base
- OS/390 V2R10 first major shift from distributed code base with introduction of TDBM
- z/OS V1R6 new LDAP Client C APIs introduced
  - 64 bit support
  - Rewritten & Optimized for z/OS
- z/OS V1R8 new LDAP Server introduced
  - Rewritten & Optimized for z/OS (more later....)
  - New Name: IBM Tivoli Directory Server for z/OS (TDS adopted as unofficial acronym)
- z/OS V1R8 – z/OS V1R10: both TDS and ISS shipped as part of z/OS
  - z/OS V1R10 was LAST release with ISS

# TDS on z/OS

- Despite Tivoli and no LDAP in name, TDS for z/OS is:
  - Base component of z/OS, i.e., not a priced feature
  - Supports LDAP V3
  - New code base, fully optimized for z/OS

- TDS and System z Optimizations classified by Key System Traits
  - Reliability
  - Availability
  - Serviceability
  - Scalability
  - Security

- Reliability & Serviceability
  - Same extensive test cycle and service process as all base components
  - Dynamic trace and z/OS Component Trace to help ffdc and use of IPCS CTRACE routines to process trace data

# TDS on z/OS

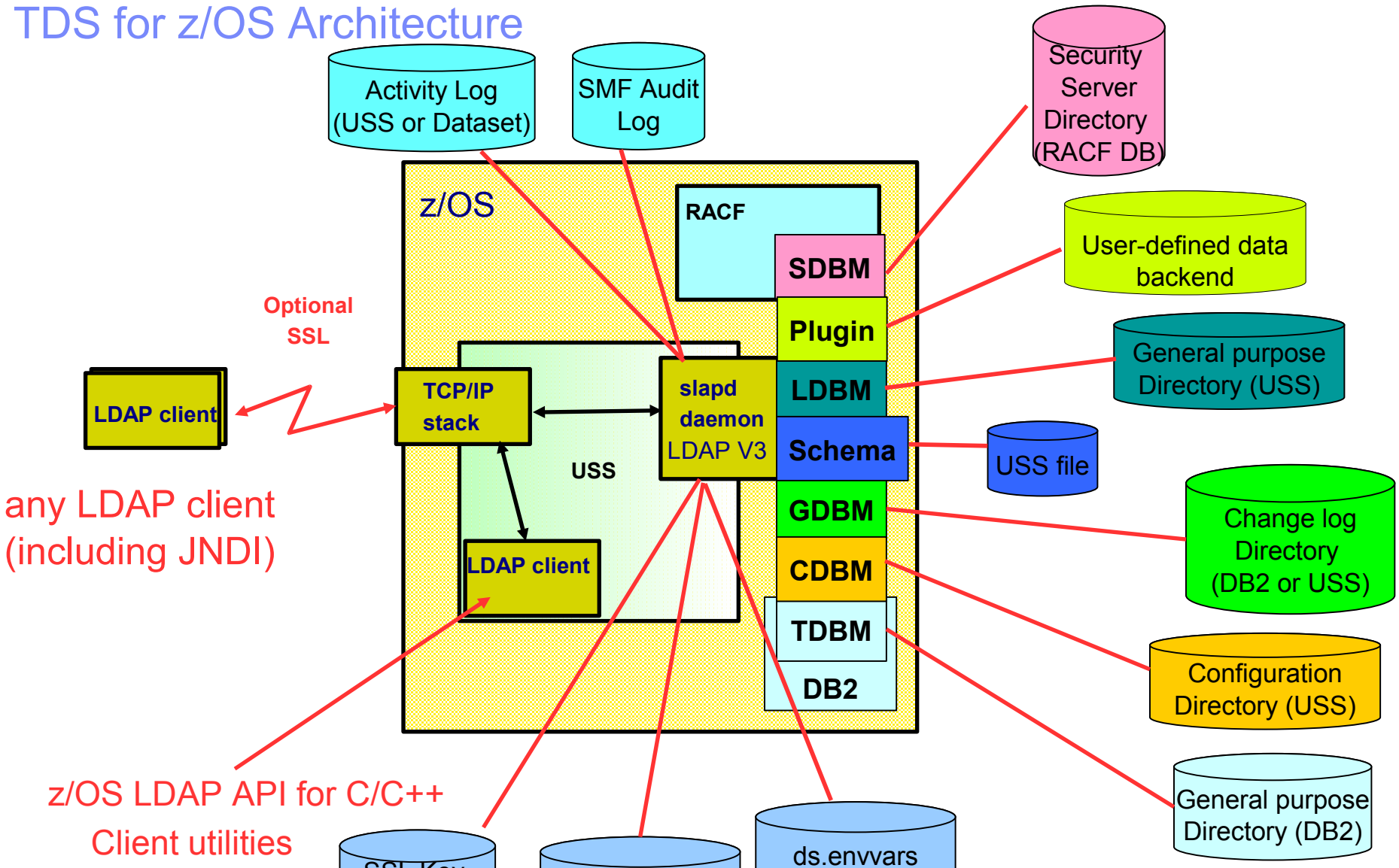
- Availability
  - Supports Parallel Sysplex Clustering Technology to allow clustering of many server instances
    - VIPA/DVIPA helps ensure client requests can be handled even if server instances are down
  - Supports Workload Manager to help ensure overall System z availability/performance requirements met
  - Supports Automatic Restart Manager to help recover server instances in case of abend
- Scalability
  - DB2 support (data sharing and partitioning support)
  - 64 bit mode
  - Rewrite resulted in better performance/CPU utilization
- Security
  - Tight RACF co-existence/relationship
    - LDAP access to RACF users, groups, user-group connections, general resource profiles, SETROPTS settings
    - LDAP authentication against RACF database
  - Leverage System SSL for SSL communication
  - Leverage ICSF for crypto for hashing and encryption
  - Supports Integrated Security Services Network Authentication Service for Kerberos authentication
  - Cuts SMF Audit Records

# TDS vs ISS

- TDS fully supports 64 bit
  - ISS did not.
- TDS supports a file based backing store (LDBM), in addition to DB2 (TDBM)
  - ISS only supported DB2 (TDBM)
- TDS fully supports WLM, Sysplex, CTRACE, ARM
  - ISS did not
- TDS supports plug-ins
  - ISS did not

- Migration instructions available for moving from ISS->TDS
  - Recommended to unload LDAP data from ISS and reload to TDS

# TDS for z/OS Architecture



# What's new with TDS for z/OS V1R10?

- Passphrase support
  - Supports native/RACF passphrases for LDAP authentication
- Plug-in
  - TDS allows custom user exit code to be introduced
  - 3 basic entry points: Pre, Post, Client
    - Pre: user exit called prior to TDS processing operation
    - Post: user exit called after TDS processes operation
    - Client: user exit called instead of TDS processing operation
  - APIs available to plug-ins
- AES encryption using ICSF
  - TDS can use AES with keys in CKDS for encrypting passwords stored in TDS
- SSL certificate mapping
  - Allows SDBM operations after certificate/SASL/native auth binds to LDAP
- Operations Monitor support
  - Helps monitor real time traffic to detect DOS attacks, performance issues
- RACF custom profiles
  - SDBM can now set and use RACF custom fields

# What's new with TDS for z/OS V1R11?

- Advanced Replication (original replication model is still supported. Refer to Basic Replication)
  - Distributed TDS replication model implement in TDS for z/OS
  - Additional Replication Topologies available
    - Peer-Peer
    - Gateway
    - Forwader
    - Master-replica
  - Additional tools/extended operations to manage replication environment
  - Server's role, i.e., master, peer, replica, forwarder, for a given topology is determined at a subtree level (as opposed to a backend basis)
  - Peer-peer supports conflict resolution
  - Filtered/partial replication
  - Scheduling
- WLM support
  - TDS interfaces with WLM's health service to indicate a health value
  - Useful for TCP/IP to route client requests
- RACF resource profiles
  - Allow SDBM access of RACF resource profiles and SETROPTS settings

# What's new with TDS for z/OS V1R12?

- Filtered Access control
  - Access control can be extended to take into account dynamic characteristics of the user
    - Time of access
    - Day of access
    - Encrypted connection
    - Bind mechanism
    - Client's IP
  - aclEntry/entryOwner values now can be extended with filters that are checked against the client's dynamic characteristics
  - Standard values are "logically" combined with filtered ACL values using set arithmetic, i.e. UNION, INTERSECT, REPLACE
- Password Policy
  - Establish/enforce password rules for passwords stored in TDS
- Activity Log updates
  - Allow for activity log roll-over
  - Allow for IP filtering of activity log entries
- Salted SHA support
  - Support Salted SHA hashing of passwords stored in TDS

# What's new with TDS for z/OS V1R13?

- Administrator Roles
  - Supports an Administrator Group
    - Addresses the issue of having more than one administrator share the same credentials
  - Also, addresses “all admins are not created equally”
- 64 bit TDBM
  - Support 64bit TDBM
- Paged/Sorted Search
  - Support Paged/Sorted results for LDAP search commands
- SHA-2 Support
  - Support SHA-2 hashing of passwords stored in TDS
- Group Specific size/time limits
  - Establish size/time limits via group membership
    - In the past, admin had no limits, and all other clients were governed by value in ds.conf

# QUESTIONS?

# LDAP Related References & Publications

- z/OS Hot Topics Newsletter
  http://www-03.ibm.com/systems/z/os/zos/bkserv/hot_topics.html
  - #22, March 2010: “We’ve got your back(bone)”
  - #25, August 2011: “Don’t judge an LDAP server by its name!”
- z/OS Publications
  http://www-03.ibm.com/systems/z/os/zos/bkserv/
  - IBM Tivoli Directory Server Client Programming for z/OS
  - IBM Tivoli Directory Server Messages and Codes for z/OS
  - IBM Tivoli Directory Server Plug-in Reference for z/OS
  - IBM Tivoli Directory Server Administration and Use for z/OS
- IBM Education Assistant
  http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp?topic=/com.ibm.iea.zos/plugin_coverpage.html
  - V1R11 – Security
    - Accessing RACF Resource Profiles through the IBM Tivoli Directory Server for z/OS
    - Introduction to configuring advanced replication in the IBM Tivoli Directory Server for z/OS
  - V1R12 – Security
    - Password policy in the IBM Tivoli Directory Server for z/OS