OES as Linux, V3

Advertised as "Open Enterprise Server as Linux Add-On"

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Definition of Open Enterprise Server

- Successor product to the Novell NetWare Server Operating System

  - Linux + "Novell" services (mostly related from eDirectory)

- Base OS Layer is derived (forked) from SUSE Linux Enterprise Server

  - SUSE is a German company, one of the oldest and most respected Linux distributions.

  - Small market share in the U.S., bigger in the rest of the world.

  - Distinct differences from the Redhat/Debian/Ubuntu strains of Linux.

    - "Gospel of John" approach.

- Most popular proprietary services are eDirectory (X.500 Directory Server), varied File Services, and iPrint.

- Customer base is a mix of legacy customers and large corporations with specific needs.

- Current release as of this writing is OES 2018sp3, released in July 2021.

Platforms

- A working definition: A *platform* is a set of related services that can stand alone by themselves but which also provide programmatic access to build new solutions. The services most form a cohesive mental model but each service serves a different purpose and accomplishes tasks in different domains.

- The advantages of a platform are that it can provide a single technical solution for marginal limited IT organizations and can provide a strong basis for expansion and customization for a more capable one.

- The disadvantages are lock-in to a single vendor, dependence on the overall robustness of the underlying platform for higher functionality, and divergence of platform-maker intent from platform-user desire. The biggest risk is platform death.

- Picking a well-engineered platform and forging a maker/user relationship that allows for good business and user influence in planning are ways to mitigate but not eliminate these risks.

- Yes, this is a subtweet.

Platform Examples

- Microsoft Windows (OS)
  Microsoft Azure / Office 365 (Cloud)

- Google Workplace (Cloud)

- Amazon AWS (Cloud)

- Apple ecosystem

  - Operating Systems

  - iCloud

- OpenVMS (Legacy)

- NetWare (Legacy)

- But is Linux a platform?

The Platform Question

- NetWare originally became popular because it was the first desktop hardware server to offer file and print services.

- In the 1990s it began to decline because Windows filled that space with commodity pricing, better GUI tools, and a much better sales force.

- But at the same time, NetWare began to base its functionality on eDirectory, which made it a much better engineered system and a more extensible platform.

- As the average customer moved away from it, customers that cared about engineering and robust platform characteristics moved towards it.

- The core services of NetWare were ported to SUSE Linux to gain commodity support for things like 64-bit processes.

- However, NetWare was a platform.

- OES, by design, is not.

  - It has not expanded the services offered by NetWare

  - It does not offer significant programmatic access.

  - We need to stop trying to make Fetch happen.

- eDirectory still is a platform.

  - See my other work, particularly "eDirectory as a Core Service"

- OES is a client platform of eDirectory built on SUSE Linux for commodity purposes.

The State of Linux in ~~2020~~ 2022

- Linux is Everywhere and Linux is Nowhere

- Linux as an ongoing business by itself continues to struggle.

  - Look at what the Linux distros are advertising.

- Finding employees who understand Linux Architecture and can administer systems is very difficult.

  - Easy to find Windows Server administrators

  - Easy to find college students who run Linux on a laptop.

  - Easy to find programmers who use a small subset of Linux services for an app.

  - Hard to find folks who can securely run an end-to-end Linux system without resulting to Cargo Cult practices.

- American Linux distributions fall into two categories:

  - Red Hat Knockoffs

  - Flavor-Of-The-Month Desktops

- Lots of Linux in appliances and mobile devices, but only as a base layer for commodity OS operations.

  - Containerization and "Linux-on-Lightbulb" are the logical end results of these trends.

Some Negative Axioms About Linux

- "Linux is only free if your time has no value" — JWZ

- The GUI Lies

  - The people who write Linux do not use GUI tools, they make them because they have to.

  - Most GUI tools end up either mimicking or piping to a command-line version or library.

  - It is not "macho" to use the Linux CLI, it is the only sensible approach.

- If a service has more than one back-end, it is not robust.

  - Systems that rely on SQL are exempt from this rule.

- Open standards or reverse-engineered protocols are a subset of functionality, not the entirety of functionality, for any robust system.

- Linux is often used as a commodity OS, to fill in gaps (such as basic I/O access) that vendors do not wish to create.

  - i.e. Android (and see previous slide)

The Case for Running SUSE

- SUSE Linux has a definite point-of-view and the technical maturity to execute on it.

  - They develop and push the next generation of standards first.

  - Examples: systemd, btrfs, wicked, firewalld

  - They usually push these too early, but they commit the resources to them.

  - (Still mad about keeping "joe" but not "nano")

- The differences between SUSE and other distributions are well-thought-out and still adhere to Linux standardization:

  - Use of /srv instead of /var for server service data storage.

  - zypper for package management and YaST for overall management

- SUSE is committed to release quality, creating one iron-clad chain from fresh builds to supported product.

  - Tumbleweed -> LEAP -> SLES -> OES

- SUSE implements the next stage of Linux development first in a more ideal form, and other distros follow when it is safe.

  - Witness their containerization initiatives versus competition.

- On balance, running SUSE is recommended for a forward-looking, maintaining Linux platform.

Criticisms of Open Enterprise Server in 2022

- A niche product - nobody has heard of it.

- Focuses on File, Print, and Directory (next slides)

  - Intentionally de-prioritized services outside of these.

- Main usage is for clients who need a more robust storage solution than Windows Server.

- Never became a coherent and unified platform

  - No unified model or toolset for administration

  - No coherent strategy for architecture — mixture of Unix and proprietary services to keep processes running (i.e. NSS depends upon namcd and xtier etc.)

- What is good about it was good 15 years ago.

  - Component quality remains high and support is very knowledgeable and responsive.

What is Good About OES?

- eDirectory allows any service that uses it as a back-end to get stable, fast, replicated data.

    - Easiest way to run eDirectory.

- NSS remains the best end-user file system.

- No vendor is investing seriously in On-Prem solutions but the base advantages of OES make it the best for On-Prem.

- All client types are well-supported (Windows, Mac, Linux, Chrome)

- It makes Linux better (the point of this presentation).

- The IT Departments that use it are a good crowd to hang around.

Direct Replacements

- NAM vs. LDAP PAM for external users.

- CUPS vs. iPrint for Printing

- SAMBA vs. Micro Focus file services (SMB, NCP, AFP, etc.)

- OpenLDAP vs. eDirectory for Directory

- Linux ACLs and Ext4/Btrfs/XFS vs. NSS Volumes for File System and Rights

Enhancements

- Pure FTP - Not only eDirectory users but gateway functionality

- DNS and DHCP - Bind and Linux DHCP but with eDirectory as data store.

Management

- Things unique to OES (i.e. not SSH and VNC)

  - YaST is a reason to use SUSE instead of other Linux distress

- Novell Remote Manager (NoRM) on port 8009

  - NoRM is a bit of a crown jewel.

- iManager

  - Comprehensive server management via web.

- DNS/DHCP Java Console

  - Mixed experience, but good for large installs.

- NLVM

  - Quite nice for Linux volumes by itself.

File

- NSS Disk Formatted Volumes

  - Robust with powerful rights model.

  - Clustering Support

- Cloud-Integrated Storage

  - Utilizing Shadow Volumes (separate feature)

- File-Sharing Protocols

  - SMBv3 (including using users from AD if desired)

  - NCP

  - SSH and FTP

  - Web

    - NetStorage (including WebDAV) and

    - Filr (possibly additional cost)

  - AFP (Deprecated - Use SMBv3)

    - But Mac Administration of CIFS can be done via NFARM

Print

- Legacy iPrint and iPrint Advanced

  - Varied printer discovery via web pages, maps, and mDNS.

  - Fine-grained printing control and security (users, encryption, etc.)

  - Printing via:

    - Traditional printing methods

    - Mobile printing

    - Walk-up printing

    - Printing via e-mail

Directory

- Directory:

  - eDirectory - Robust X.500 Directory Service with partitioning and replication.

    - Excellent support for LDAP services, including internal services.

  - Active Directory

    - Domain Services for Windows - eDirectory pretending to be AD.

    - NIT — Novell Identity Translator for direct translation of AD users to NSS.

Certificates

- Certificate Server Built into eDirectory

- Centralized certificate store for all certs

  - Certs automatically replicated

  - Same certs for all server services

  - Better failure recovery

- Common CA for all clients.

- No auto-creation of workstation certificates for radius, etc.

Which SUSE?

- If you need the most current packages OR what you are doing is unlikely to be supported, then LEAP is the best choice.

  - "Unlikely to be Supported" includes custom programming, even if it uses supported libraries.

  - Tumbleweed is the latest-and-greatest, but it is not subject to the same QA and intent of maintenance that LEAP is.

- If you need support, SUSE Linux Enterprise Server is the obvious choice.

  - Support payments are for two purposes:

    - High QA where all package are verified to work and be compatible with each other.

    - A voice at the other end of the phone with troubleshooting knowledge and the power to escalate to development.

OES or SUSE? (I)

- The requirements for SLES support are also met by OES support.

  - Including SUSE advantages like supportutils

- SUSE culture and OES culture are very different — which you prefer will depend on what you value.

- OES will always be roughly a service pack behind SLES.

  - In practice this means little because security updates still applied.

  - Packages do not change major releases between service packs.

- OES lacks control over major components, including SUSE parts but also eDirectory.

OES or SUSE? (II)

- Enabling repositories for SDK and Web and Scripting is non-intuitive in any OES version since MF/SUSE split.

- Micro Focus support organization is overall larger and more mature than SUSE and will continue to be so as SUSE organization diverges.

- OES includes services beyond those offered by SUSE.

- Support has said that OES services slow down SUSE components.

  - In my experience this is not true: ndsd is the only one with any significant upkeep, and on a small partition it is nearly negligible.

- OES Licensing more pleasant than SUSE — bundling, relationships, etc.

- SUSE more responsive for early community requests (Tumbleweed, LEAP) but OES more responsive to later customer requests.

OES Instead of Regular Linux (I)

- OES users in eDirectory and NIRT can also be users for purposes of Linux services and administration.

  - Allows for finer-grained control over sudoers, auditing, etc.

  - OES services depend on this link (via namcd etc.) and so it has to work in every release.

- NSS Volumes can be used for robust Linux storage

  - Can be shared via a variety of file-sharing methods (see earlier slides)

  - Flexible rights and backup options.

  - In production ECSD uses NSS for web services, SSH/FTP, and git.

  - Do NOT use NSS with NFS (would like this to change).

OES Instead of Regular Linux (II)

- OES servers are aware of each other:

  - Can share users/directory and volumes.

  - Common monitoring capabilities.

  - Common certificate framework.

  - Allows for distributed DNS and DHCP services.

- Additional admin tools for Linux specifically:

  - NoRM: Remote Manager (web-based admin)

    - Still under development, recently added cron

  - iManager

  - Parts of NIRT, certificate repair tool (unsupported), etc.

All The Binary Directories

/opt/novell/afptcp/opt/novell/bin

/opt/novell/bin

/opt/novell/ci/opt/novell/bin

/opt/novell/ci/opt/novell/e/opt/novell/bin

/opt/novell/ci/opt/novell/kafk/opt/novell/bin

/opt/novell/ci/opt/novell/z/opt/novell/bin

/opt/novell/cif/opt/novell/bin

/opt/novell/dashboar/opt/novell/bin

/opt/novell/dhc/opt/novell/bin

/opt/novell/dhcp/opt/novell/bin

/opt/novell/eDirector/opt/novell/bin

/opt/novell/eDirector/opt/novell/sbin

/opt/novell/gangli/opt/novell/monito/opt/novell/bin

/opt/novell/gangli/opt/novell/monito/opt/novell/sbin

/opt/novell/httpstk/opt/novell/sbin

/opt/novell/iprin/opt/novell/bin

/opt/novell/iprintadmi/opt/novell/bin

/opt/novell/iprintaut/opt/novell/bin

/opt/novell/iprintmgm/opt/novell/bin

/opt/novell/iprintmobil/opt/novell/bin

/opt/novell/migratio/opt/novell/bin

/opt/novell/migratio/opt/novell/sbin

/opt/novell/name/opt/novell/bin

/opt/novell/nc/opt/novell/bin

/opt/novell/ncpser/opt/novell/bin

/opt/novell/ncpser/opt/novell/sbin

/opt/novell/netstorag/opt/novell/bin

/opt/novell/ns/opt/novell/sbin

/opt/novell/nur/opt/novell/nurmcl/opt/novell/sbin

/opt/novell/proxymgm/opt/novell/bin

/opt/novell/sbin

/opt/novell/sm/opt/novell/bin

/opt/novell/sm/opt/novell/sbin

/opt/novell/telemetr/opt/novell/bin

/opt/novell/vigi/opt/novell/bin

/opt/novell/vigi/opt/novell/sbin

/opt/novell/xa/opt/novell/bin

/opt/novell/xa/opt/novell/sbin

/opt/novell/xtie/opt/novell/bin

A Recommendation for Server Deployment

- If a server absolutely requires Windows, use Windows.

- For everything else, use Linux.

  - Overall more efficient and robust.

  - Smaller target for attackers.

- If you need a custom solution, use OpenSUSE LEAP

  - Stable and up-to-date.

  - I use it for critical infrastructure.

- If you need support or conventional services, use OES.

  - 99% of the advantages of SUSE

  - Plus additional bits to either make administration easier or provide more robust proprietary services.

  - Preferred support and licensing.

  - The customers who pay the most money are paying for OES to be rock-solid in operation and best-of-class in file services.

Back to the Platform Question

- The growth of platforms is in the cloud.

  - Returning to mitigating risk: Cloud vendors by their nature increase lock-in and operate at a scale where the desires of very few individual customers can be accommodated.

- Focus, in the form of money and engineering talent, is not on On-Prem solutions.

- After some momentum towards the cloud, it appears the world will be Hybrid.

  - On-Prem is part of that.

- OES today has three On-Prem roles:

  - A better Linux

  - Host for the eDirectory Platform

  - Additional Services, Some Hybrid (i.e. storage)