About Verdad and Kickstart

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TLDR: [redacted]'s Verdad Kickstart readme: [redacted]

What is it/What can it do?

Verdad "gives you the tools you need to build a comprehensive database."

Use Verdad ("truth" in Spanish) to define the "true state" of your network; use Verdad clients to apply this state/configuration to servers.

"Verdad is a system for centralizing configuration information for all hosts at a large site. It provides tools like inheritance and versioning to let you build a central configuration database."

Verdad consists of a Perl API, a database, a web interface, and some command line tools. Verdad is a data storage system – Verdad [redacted] is the tool to generate kickstart configurations.

Background/Trivia:

A telecom/networking apps company, Tellme Networks, built Verdad in Perl in around 2001 ([redacted]'s repo says © 2001).

Repo:

[redacted]

Kickstart

Kickstart is a method used by Oracle Enterprise Linux and RedHat Linux.

Red Hat Kickstart reference.

From Oracle's docs:

"The kickstart feature enables you to automate the OS installation. A kickstart installation uses a configuration file that instructs the installer how it should implement a specific installation. The feature offers the following benefits:

- No user intervention is required during the installation process.
- Greater facility in installing on multiple systems.
- The configuration file is useful for troubleshooting a boot-time problem with an installed system.

You can use kickstart to install Oracle Linux locally. However, the best use of this feature is in the installation of the OS on multiple systems over the network. In network installations, a kickstart operation would include the following components:

- Kickstart configuration file
- Configured network that supports network installs such as providing connectivity so that different client systems can access the necessary installation and configuration files specific to those clients.

  For an example of the configuration of a network installation, see Creating a Network Installation Setup." (below is from this site)

"Network installations are useful and advantageous especially in scenarios where you have to install the OS on multiple systems.

If you use a boot ISO or the Preboot eXecution Environment (PXE) to install the OS on systems, you can set up a network installation configuration that consists of the following components:

- A network installation server that provides the IP and network configuration, the PXE configuration files, kernel and boot images, and kernel boot directives.
- A network accessible file system server over a protocol such as NFS or HTTP, where packages, the kickstart file, and other required configuration files might be stored."

Verdad Kickstart and PXE boot

"When you PXE boot (see above and below) a system in our environment and end up with a working machine at the end, [redacted] (command line tool) is the core of that process."

PXE boot = Preboot Execution Environment is "a client-server environment that enables network computers to boot over the Network interface card (NIC)…" source techtarget.

For the device to boot into the PXE environment it needs to receive the relevant instructions. The most common way of trying to do this is to configure your Dynamic Host Configuration (DHCP) server to store and serve this information. Apparently (I'm inferring this) [redacted] triggers the device to send a DHCP broadcast saying, 'I want to PXE boot.'

Much more [redacted] (a collection of [redacted] guides and troubleshooting sites).

More about Verdad

From Verdad docs:

- Verdad is just a place to put data
- Verdad does not control servers
- Verdad clients do the heavy lifting by making config files based on the data they fetch from Verdad.
- Clients "control" the schema
- Verdad does not enforce a schema on the data

Verdad is just a place to put information – Verdad does not control things. Verdad does not write config files. Scripts that rely on Verdad control things and write config files.

Verdad Data Format

- A Verdad item is a set of tag/value pairs.
- Values are either single strings, or lists of strings

"If you are familiar with Cricket, it's like a turbo-charged version of the Cricket config tree."

For help: [redacted] (they'll want a [redacted]).

For access issues (there are lots of access/permission denied errors in Slack – [redacted] needs to resolve it): [redacted]

Supplemental Notes and Info

(Glossary, Puppet, Reference/Sources, IPv6 & IPv4)

Glossary (Abbreviated)

For full version, see here.

Is - The tag is is used to indicate to Verdad which items inherit from which other ones. You can find out more about how Verdad implements inheritance in the document devoted to it.

Inheritance Policy - The rule used to decide how a value inherited from an ancestor item will be applied to the current item. Inheritance policies can be specified on a per-tag basis.

Item - An item is a collection of tags and values. Each item has an item name. All of the item names in an entire Verdad database must be unique.

Tag - A tag is the thing to the left of the equals sign or colon. Of course, since both the equal sign and the colon are optional, perhaps another explanation would be helpful. Tags are descriptions of the data, which programs will use later to find the bit of data they want. For example, if you wanted to store an IP address in an item and later wanted the `dhcpgen` program to find it, you'd use a tag named ip, then write your dhcpgen so that it looks for a tag named ip.

More about Verdad items (the options used in Verdad to control the behavior of the early install and boot process): [redacted]

Puppet

Puppet (Oracle link) "provides the ability to define which software and configuration a system requires and then maintain a specified state after an initial setup."

Tags + Puppet info: [redacted]

IPv6 & IPv4

Schema filter, IP allocation, and ACL doc – see [redacted].

Verdad can't understand the short form of IPv6 addresses.

Assigning IPv6 takes significantly longer than IPv4: "I guess the exponential traverse is giving Verdad a hard time?"

- "Expanding 64 addresses is always easier than 64000 addresses."

- "Yeah, it checks to find the next available."

Typically the [redacted] team allocates subnet and [redacted] team updates Verdad with those definitions at each zone level per property. Here's a thread about getting subnets and adding network definitions to Verdad objects and '[redacted] blocks.'

LDAP Groups

Verdad needs to pull in updates from LDAP for group changes. Evidently the [redacted] team does this with the [redacted] tool. If this is needed, [redacted].

We're not the only ones…

…who have struggled with this. Here's a thread "we're trying to kickstart our hosts in [redacted]" with 173(!) posts.

Sources/Reference

- Verdad docs
- http://verdad.sourceforge.net
- Install guide
- Background about Tellme Networks (Wikipedia)