

128T Provisioning (External)

Date	Author(s)	Description of Changes
	James Silvia	Initial Version
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Introduction

This document will discuss the installation of the 128T ISO, how to verify the installation, and issues that could occur during the provisioning process.



Functional Overview

Image Installation

There are three possible ways to install the 128T ISO image on platforms.

Bootable USB

For smaller deployments or proof of concepts each image can be loaded on to a bootable USB for installing the operating system and 128T software.

128T Blaster

The 128T Blaster will be extended to support the distribution of ISO images as a part of its PXE imaging server. This should support most medium to large deployment models. This should be used in the absence of a distribution partner that has the infrastructure for installing images and managing the supply chain. In some cases, distribution partners will be using the 128T-Blaster for imaging platforms.

Disk Cloning

Disk cloning will allow large distributors to take an ISO image, install it on to a platform, and take a disk copy of the platform (same hardware). This disk copy can then be used to quickly install platforms by copying the filesystem from one platform to another.

Because these ISO images contain a bootstrap service on first-time startup to initialize the system -- the disk copy will not be unique until it has booted into Linux. So the procedure must be ordered:

1. Platform is installed using ISO image which powers down on success
2. Use Clonezilla or other Live USB to take a disk copy of the system
3. Distribute disk clone using USB, multicast, or other technique
4. Start each platform after installation
5. Verify validation report

This is the fastest method.

Quickstart File

The 128T-OTP iso can be customized to include a Quickstart File. The ISO can be rebuilt with a file on disk that contains the provided file. The resulting ISO is a unique image for the provided customer order.

- /etc/128technology/quickstart.txt

The quickstart file is loaded in to factory defaults on startup after OS installation prior to the second shutdown.

Once the system is powered on for the third time, the 128T service should be running with the configuration from the quickstart file. The validation report below will provide a boolean if the generation succeeded.

Image Validation

After the ISO has completed installation there will be a bootstrap validation report that is located at the root filesystem that contains details about the steps taken on first bootup. It is critical that each step succeeds.

Shown below is the location of the bootstrap report as well as an example of the contents

```
[root@sn123456789 ~]# pwd
/root
[root@sn123456789 ~]# cat 128T-bootstrap.txt
128T Bootstrap Tasks
+-----+-----+-----+
| Label          | Result | Error |
+-----+-----+-----+
| Minion ID       | True   |       |
| Hostname        | True   |       |
| Clock Sync      | False  |       |
| Initialize 128T | True   |       |
| Enable 128T     | True   |       |
| Enable salt-minion | True   |       |
+-----+-----+-----+
```

Login Details

The platform can be logged in through the serial console or by connecting to an ethernet port on the device.

Username	Password
root	128tRoutes
t128	128tRoutes

Failure Scenarios and Recovery

Image Installation

The ISO images installation will power off the platforms when the process has succeeded. If for some reason the ISO cannot be installed correctly -- the platform will remain powered on. To troubleshoot image installation the kickstart and journal logs can be used to determine the root cause of installation failure.

Firstboot Service

After the initial installation the first-boot service must bootstrap the platform entirely to complete the imaging procedure.

The script executed on first boot will shutdown the platform when it has completed successfully, but if any errors occur the platform will remain powered on. Because the script will generate a validation report of the steps performed during bootstrapping, any errors can be reported.

Troubleshooting

Through the use of the journal, kickstart, and validation reports -- the provisioning process can be tracked from beginning to end including any errors that occurred.

Use Cases

These use cases are intended to be a simple one-page description for the behavior of provisioning 128T platforms with more detail discussed in both the non-functional and functional overviews.

One Touch Provisioning

When the 128T is connected and powered on it will be running with factory defaults. A unique Quickstart File generated by the Conductor for the 128T will be used to deliver the encoded configuration. The User must connect to the 128T via ethernet cable and use the Quickstart File to bootstrap the 128T. After performing the quickstart operation on the 128T it will have connectivity to the Conductor to download the latest configuration and begin normal operation.

Imaging Options

1. The 128T OTP ISO is used to install each platform through bootable USB
2. The 128T Blaster is used to distribute the 128T OTP ISO to all platforms
3. Disk cloning from a 128T OTP ISO installation
4. ISO boot during boot within hypervisor (KVM, ESXi, HyperV)
5. ISO boot using bare metal “lights out” management tools


Requirements

1. Platform has been imaged appropriately
2. Conductor has been configured with 128T node(s)
3. User must have network access to the platform from a Client with a web browser
4. User has the Quickstart File generated from the Conductor available on Client

Procedure

1. Each platform is imaged and shipped
2. Platform is physically setup according to deployment topology and powered on
3. User connects ethernet cable to any network port and connects to:
 - a. <https://192.168.0.128/quick-start>
4. User drags and drops Quickstart File into a web browser to initiate quickstart
5. Verify checkout on Conductor

Unsupported Topologies



None -- because the Quickstart File is delivered outside network boundaries (direct File placement) this approach will ensure the delivery of necessary configuration to enable Conductor connectivity.



Zero Touch Provisioning

When the 128T is connected and powered on for the first time, it will automatically import a Quickstart File to enable connectivity to the Conductor. Once complete, it will download the latest configuration and begin normal operation.

Imaging Options

1. The 128T ZTP ISO is used to install each platform through bootable USB
2. The 128T Blaster is used to distribute the 128T ZTP ISO to all platforms
3. Disk cloning from a 128T ZTP ISO installation

Requirements

1. Platform has been imaged from 128T ZTP ISO built with a Quickstart File
2. Conductor has 128T configured with asset serial number

Procedure

1. Each platform is imaged and shipped
2. Platform is physically setup according to deployment topology and powered on
3. Verify checkout on Conductor

Unsupported Topologies

If each 128T requires unique configuration (Linux or 128T) to access external network resources -- then the same image cannot be used across all platforms. In other words, Zero Touch requires that a generic 128T configuration can be loaded on to every single platform to enable Conductor network connectivity.

The incomplete list:

- Interface static IP Addressing for interface(s) is required
- Interface of the 128T managed non-forwarding interface feature does not cover your use case

Example Topology

Two images for Node-A and Node-B similar to AAP deployment