The **Modern Operating System**, A Clear Choice.

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Open Source Technology Center, Intel
Today’s operating systems are required to meet new expectations

- PERFORMANT
- SECURE
- CUSTOMIZABLE
- DEPLOYABLE
Clear Linux*
A modular open source OS optimized for security and performance, designed for customization, and readily deployable from the Cloud to the Edge.

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Keeping users performant and secure
Clear Linux* performance philosophy

- **Tooling is key**
  - Collect broad performance metrics

- **Compare the theoretical max performance with actual performance**

- **Leverage the latest performance technology**
  - Favor applications that start, do their work, and shut down quickly
  - Optimize across the whole stack

- **Execute Data Driven trade offs and maintenance**

- **Look beyond high performance benchmarks**

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TensorFlow* optimizations throughout the stack

- Intel® AVX512 Optimizations
- Optimized Python modules
- Intel® AVX2 & Intel AVX512 Python* optimizations
- Additional routines for AVX512
- Tuning kernel for workloads

Intel® architecture optimizes builds
Security

**Clear Linux*** stays in lockstep with upstream for **current security upgrades** and is designed to deliver available security mitigations to customers rapidly.

- **Constant vulnerability scanning**
- **Aggressive mitigation policy**
  - Incorporates threats posted to the National Vulnerability Database. Applies patches and distributes in daily releases.

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Security

Clear Linux* ensures end to end security from the Cloud to the Edge, to the End Device.

Unified "Trust" Store

Provides a common place for Certificate Authority Management
Packages points to one location to find certs, ensuring you can manage your trust policy consistently

Industry standard security features

Out of the box industry standard security features enabled
Eg. SecureBoot, IPTables, SSH, OpenSSL, IPSec VPN, Signed Update Content

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Updates principles

Update size is relative to the size of the change

Clear Linux*
- Original
- Change
- Update

Other distros
- Original
- Change
- Update

1. Lightweight
2. Frequent
3. Incremental
4. Whole system
5. Version controlled

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Customizing Clear Linux*
OS design principle: **Bundles**

**Content delivery system for install and update**
Curated by functionality

**Basis for testing, validation, and stack optimization**
Allow for quality assurance based on use-case

**Encapsulate dependencies**
Dependencies are resolved at build time, not run-time
OS design principle: **Stateless**

**Files are separated by owner**
Unprivileged users: $HOME
Sys admin or root: /etc
Clear Linux*: /usr

**Configurations work out of the box**
No need to modify anything that is owned by the OS

**Modifying configs is safe and easy**
Only include the option line you wish to alter.
Factory reset by deleting user configuration
Creating a custom Clear Linux* OS
Clear Linux* tooling allows for incremental Effort

The Mixer Tool combines new content with an existing Clear Linux* version.

There is no need to recompile the entire OS. Work is only required on the customization piece.
The customization process

Autospec

Source Tarball

Source Tarball

Source Tarball

RPM

Bundle creation

Mixer

Create a custom OS image

Custom Clear Linux* OS

End user

*Other names and brands may be claimed as the property of others
Become a derivative of Clear Linux*

Clear Linux tooling enables you to create your own distribution. Tools are open source. The source code for security and performance patches is on GitHub. Complete control of a downstream version is available.
Manage your custom Clear Linux* OS

As a derivative, **you decide** when or if to consume content from Clear Linux just as you decide whether to update after changes to the software you are developing.
Update your custom Clear Linux* OS

Clear Linux* added robustness through automation

Take advantage of Clear Linux* automated development model for faster TTM.

**Customization Update**

- Develop your Software
  - Autospec
    - Prepare changed content
  - Mixer Tool
    - Create update artifacts
  - Run your tests

**Clear Linux* Update**

- Detect Change
  - Prepare changed content
  - Check into build
  - Create Update Artifacts
  - QA: Integration and functional testing
  - Check release viability

**Client**

- Swupd
  - Consume custom Clear Linux* OS

**Key:**
- Open Source tool
- Tool function
- Custom content required

- PERFORMANT
- SECURE
- CUSTOMIZABLE
- DEPLOYABLE

92% of components packaged by a tool instead of a human

Automated functional testing and software compliance per release

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Leverage Clear Linux* features to deploy

1. **Version control**
   Describe all software on a machine with a single number.

2. **Version verification**
   Prove and reconcile that the software on a machine is consistent for that version of Clear Linux*.

3. **Lightweight updates**
   Consume and dispatch performance and security updates relative to the size of your change.

4. **Robust update tooling**
   Leverage the Clear Linux* way of working to dispatch updates on a cadence that suits your needs.

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Clear Linux* is a modular open source OS optimized for security and performance, designed for customization, and readily deployable from the Cloud to the Edge.
Try us out!

Engage with us at clearlinux.org

See our source code at github.com/clearlinux

Images available at:

Clearlinux.org  Azure  Amazon web services  Alibaba Cloud  Docker
See more at OSS NA!

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<tr>
<th>Event</th>
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<td><strong>Today</strong></td>
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<tr>
<td>Clear Linux* Demos</td>
<td>10:30am - 5:00pm</td>
<td>Technology showcase area at Booth #302</td>
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<tr>
<td>Shop Talk with Matthew</td>
<td>11:00 am - 12:00 pm, 2:00 pm - 3:00 pm</td>
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Back Up
The Customization Process

* A hybrid of custom and upstream that can still get all upstream bundles and updates
Clear Linux* Operational Model = CI/CD

Close loop operational model. End user reporting is fed back into system to ensure quality controlled releases.