



**Clear Linux\***  
Project

# An introduction to today's **Modular Operating System**

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# Agenda

Why the Clear Linux\* OS?

Security & Performance

Other Distinguishing Features

Modular for Customization & Control

# Why the Clear Linux OS?

**Today's operating systems are  
required to meet new  
expectations**



**PERFORMANT**

**SECURE**

**CUSTOMIZABLE**

**MANAGEABLE**

# Clear Linux

a modular open source OS optimized for **performance** and **security**, from the Cloud to the Edge, designed for **customization**, and **deploy-ability**.

# Why Clear Linux?

Designed from the ground up, an industry blueprint to **incorporate Intel platform features and optimizations** in a single, performance-driven Linux distribution.

A modular, **cross architecture open source OS** providing customers the ability to differentiate.

Delivering **tuned performance of Intel features** on Linux across the entire OS stack.

Available at:

[Clearlinux.org](https://clearlinux.org)



# **Security and Performance Focused**

# 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

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### Aggressive mitigation policy

Incorporates threats posted to the National Vulnerability Database. Applies patches and distributes in daily releases.



# Security

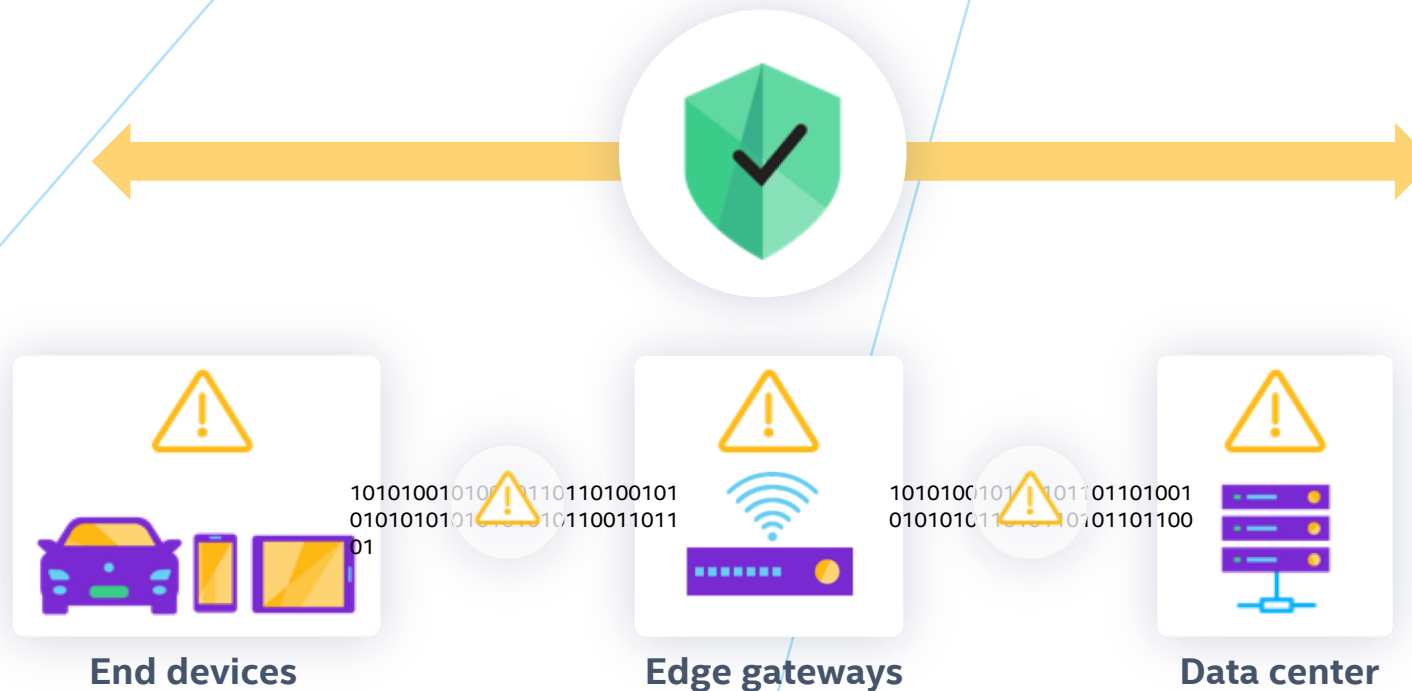
Clear Linux enables security from the Cloud to the Edge, to the End Device.

## 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



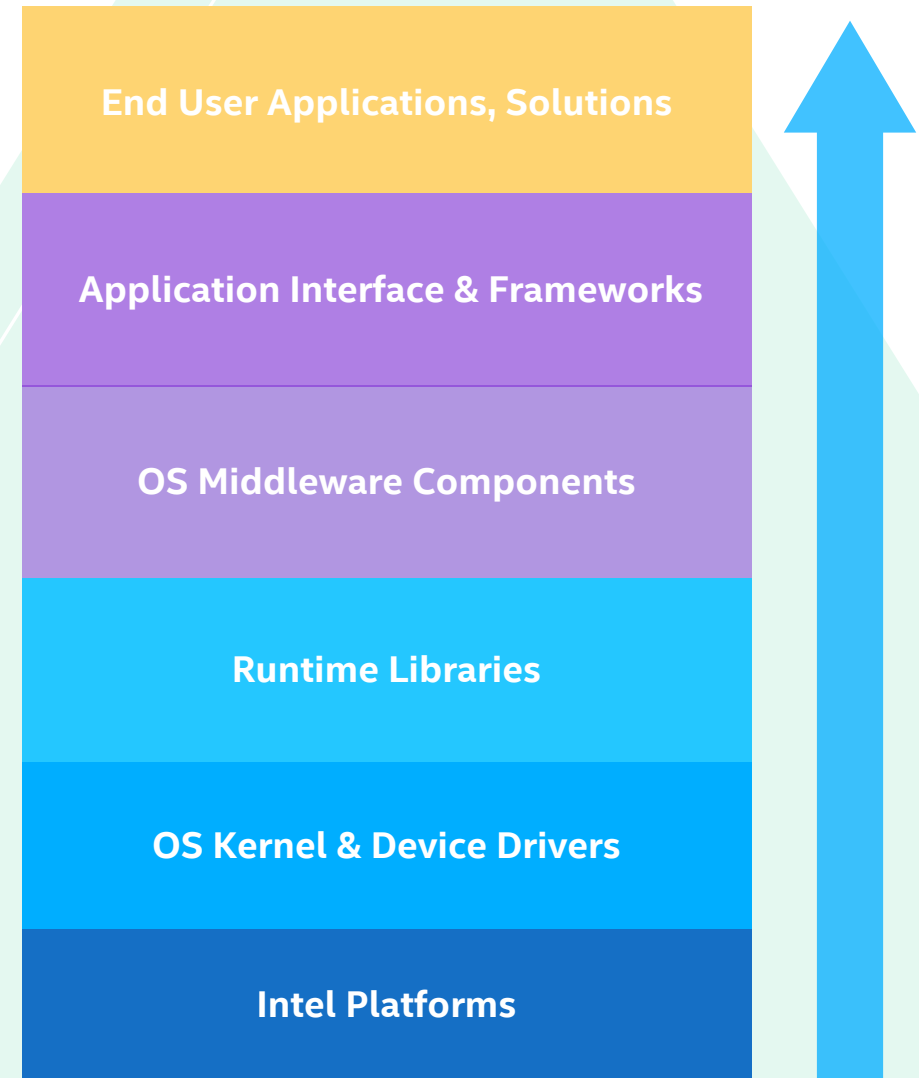
# Performance throughout the stack

## Clear Linux optimizes across the whole stack

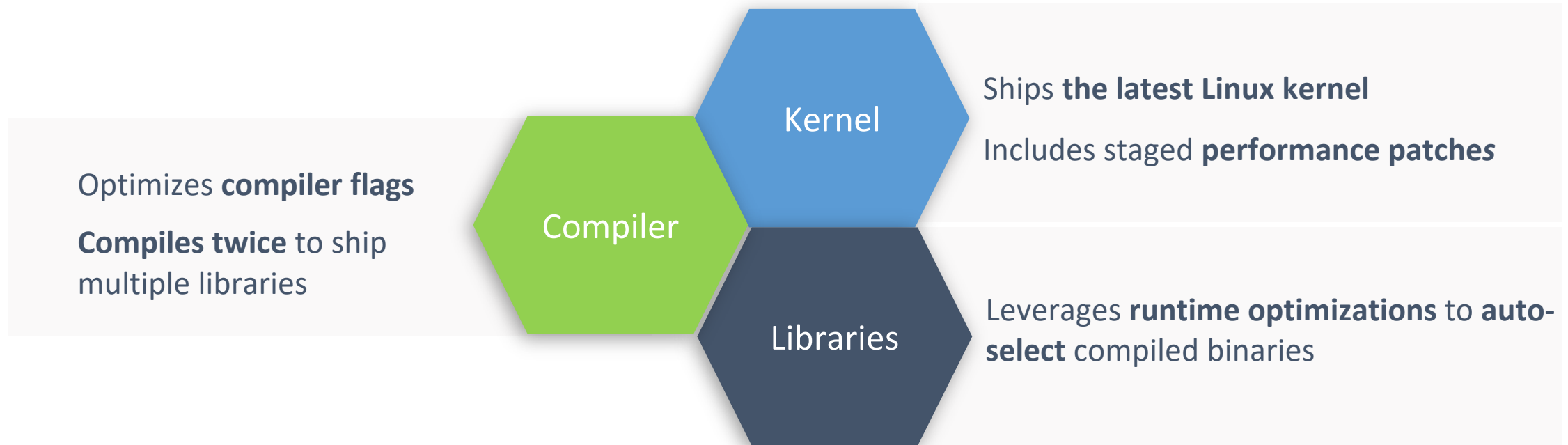
To get end user performance, optimization at all layers is required

Clear Linux is highly tuned for Intel platforms where all optimizations turned on by default

Clear Linux channels the best of Intel's industry leading kernel expertise to provide the highest performing kernel for your OS.



# Optimization methods

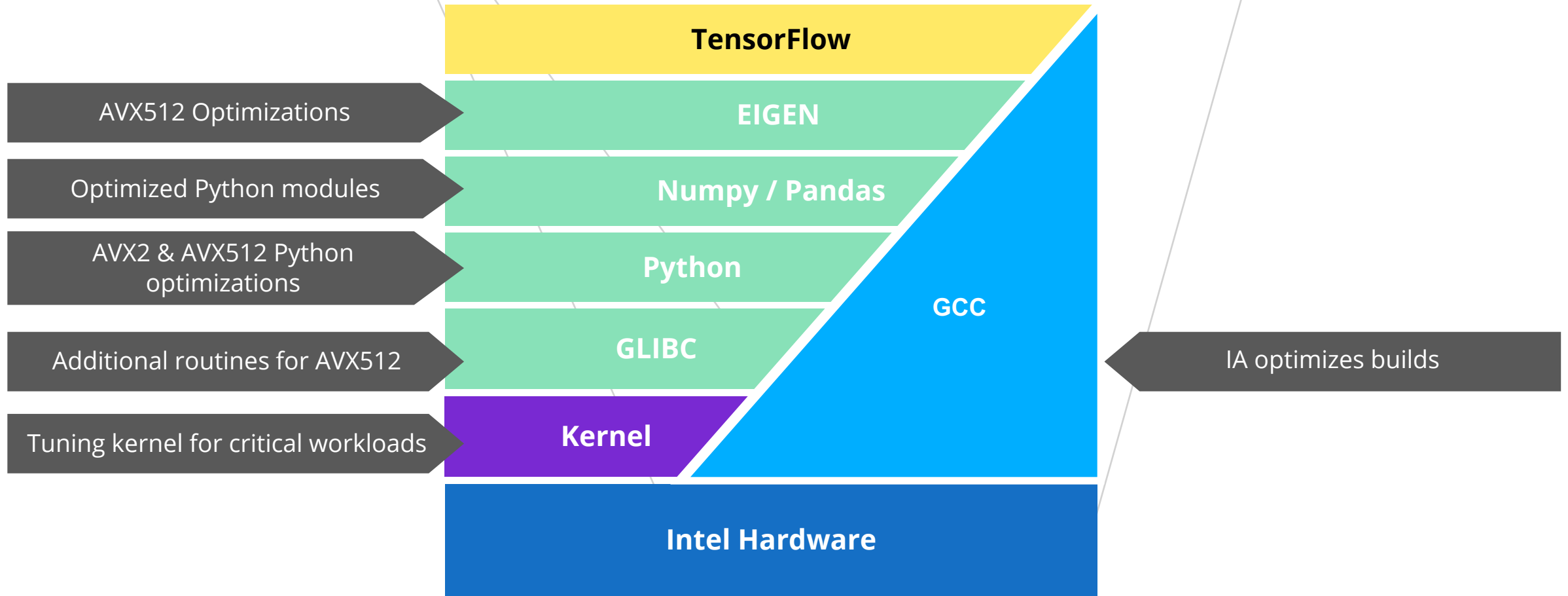


**AVX512**



On the latest hardware, the AVX512 optimized library is auto-selected at application startup

# Ex: TensorFlow\* library optimizations throughout the stack



# Other Distinguishing Features

# Bundles

## Vehicle for install and update

Bundle content is tied to a specific version number

## Dependencies resolved upstream,

not at install or runtime

## Basis for testing and validation

Components of each version are tested together for a specific function

## Guides stack optimization

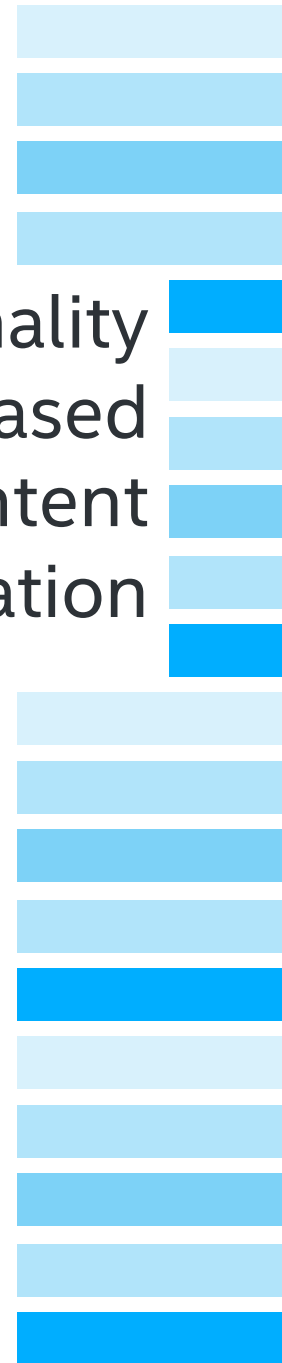
Bundles are curated & optimized based on functionality

Functionality

based

content

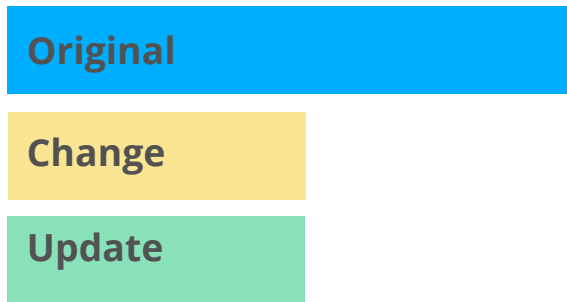
curation



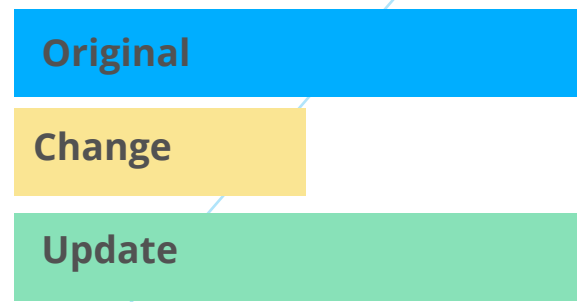
# Update Principles

Allowing for Over-the-Air Updates

## Clear Linux



## Other distros



Update size is relative to the size of the change

- 1 Lightweight
- 2 Incremental
- 3 Whole system updates
- 4 Version controlled
- 5 User control of updates

# Stateless

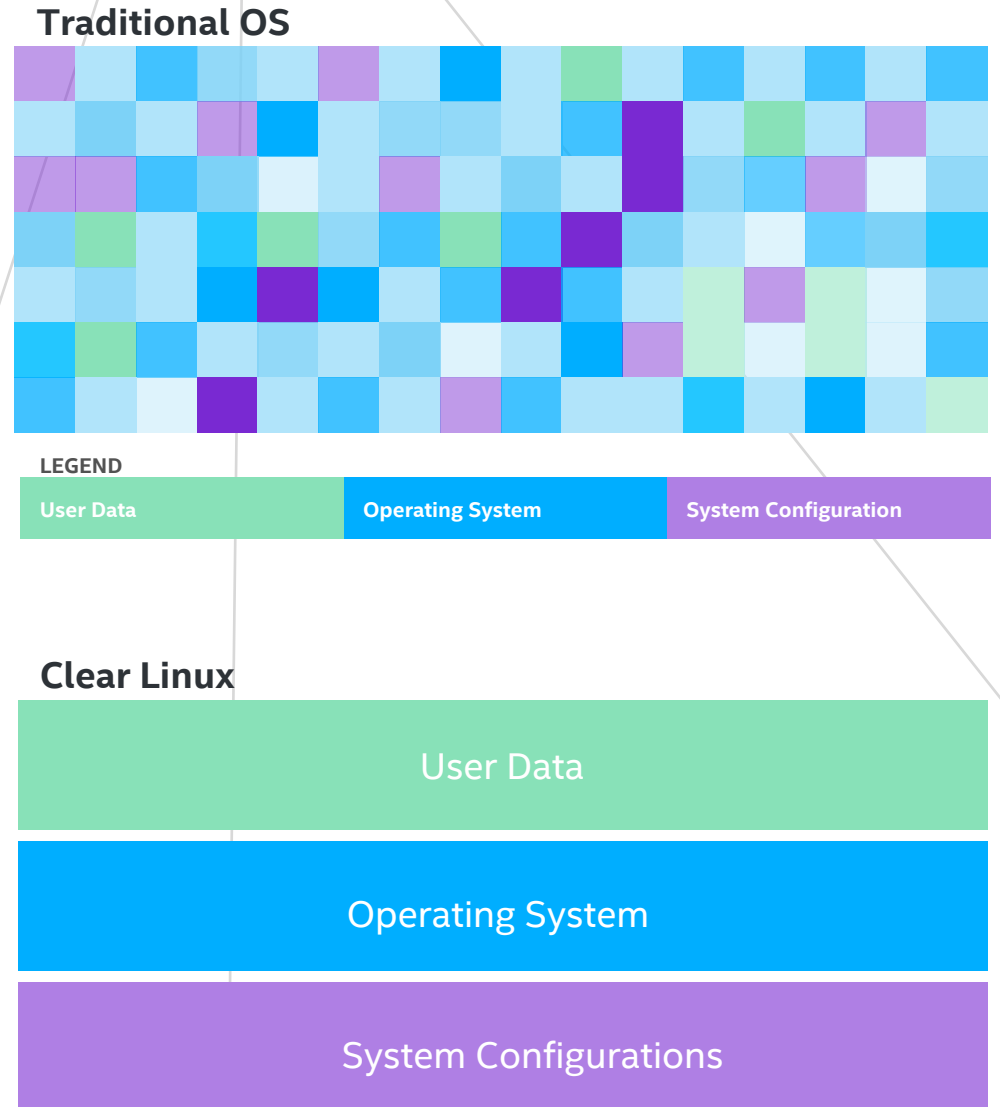
**Clear Linux** employs the stateless concept - a strict separation between User and System files for easier OS manageability.

Provides functional and secure default configuration in `/usr`

Defaults can be overridden or modified in `/etc` and the home directory

Wiping `/etc` and `/var` is effectively a factory reset

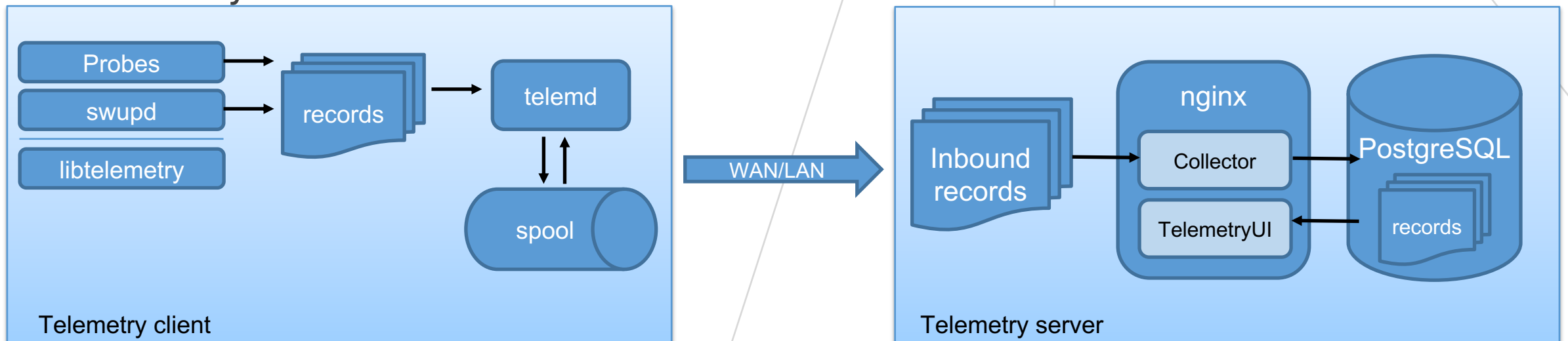
This modularity allows for **easier manageability**, simplifying customization and updatability.






# Opt-In Telemetry Solution

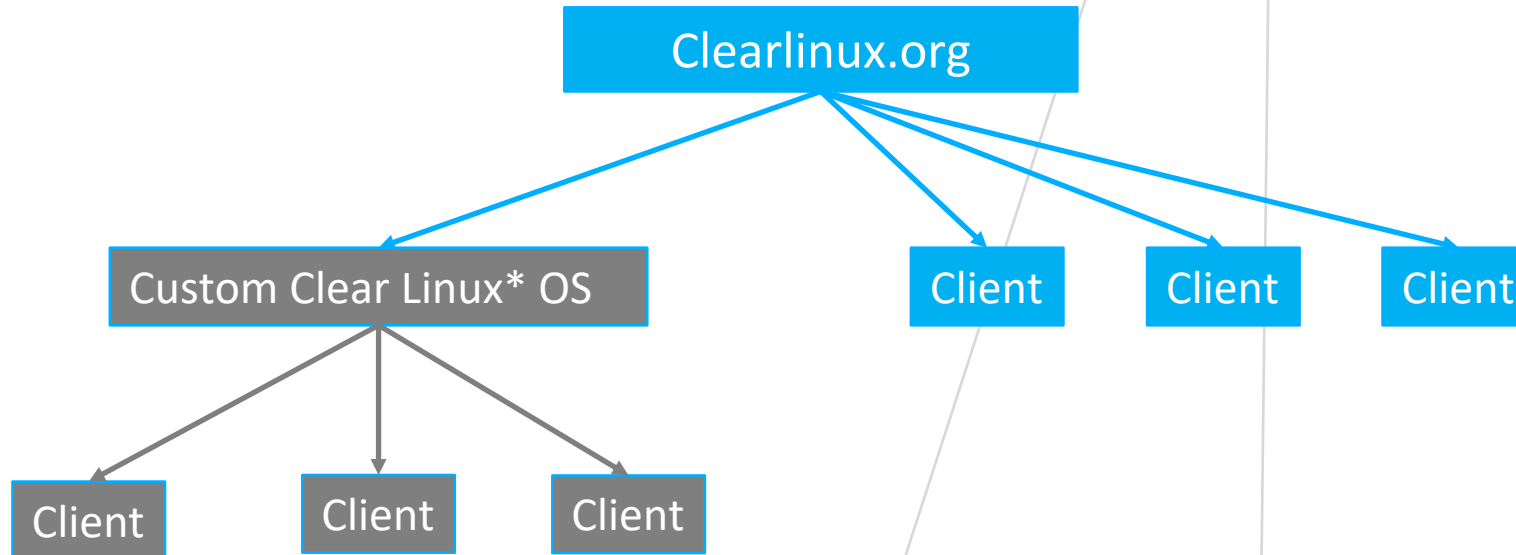
- Opt-in telemetry solution
- Lightweight client service
- Client-side probes send records to help debug software anomalies
- Probes don't collect PII (personal identifiable information) and records comply with Intel's Privacy Policy
- Records are analyzed and displayed in a developer-oriented format on the telemetry server





# **Modular for Customization and Control**

# 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.

# The Mixer Tool: Accelerating Customization

## Allows for Incremental Effort

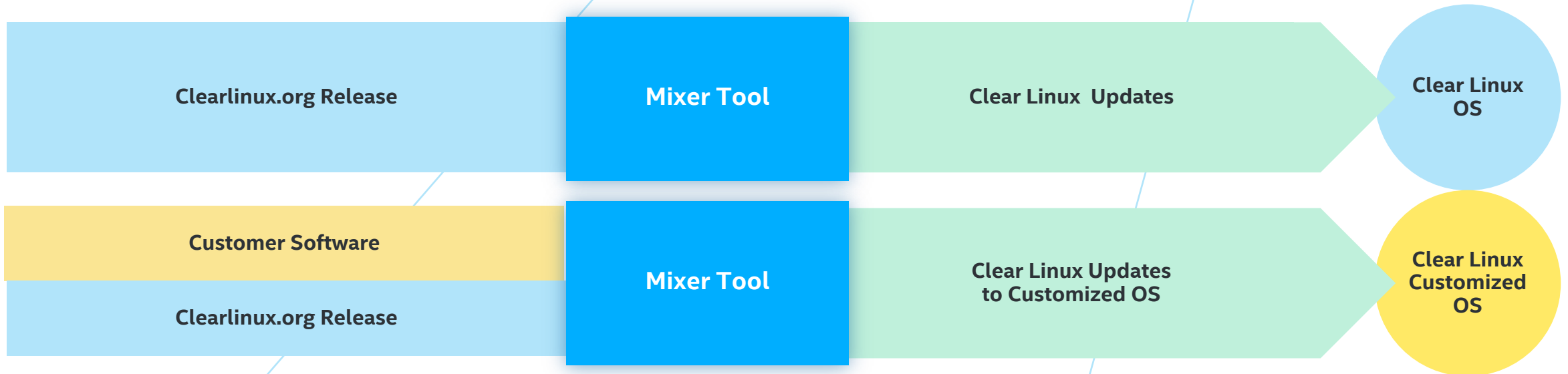
Build customer solutions on top of Clear Linux easily with the Mixer

**Don't need to recompile entire OS, work is only required on the customization piece**

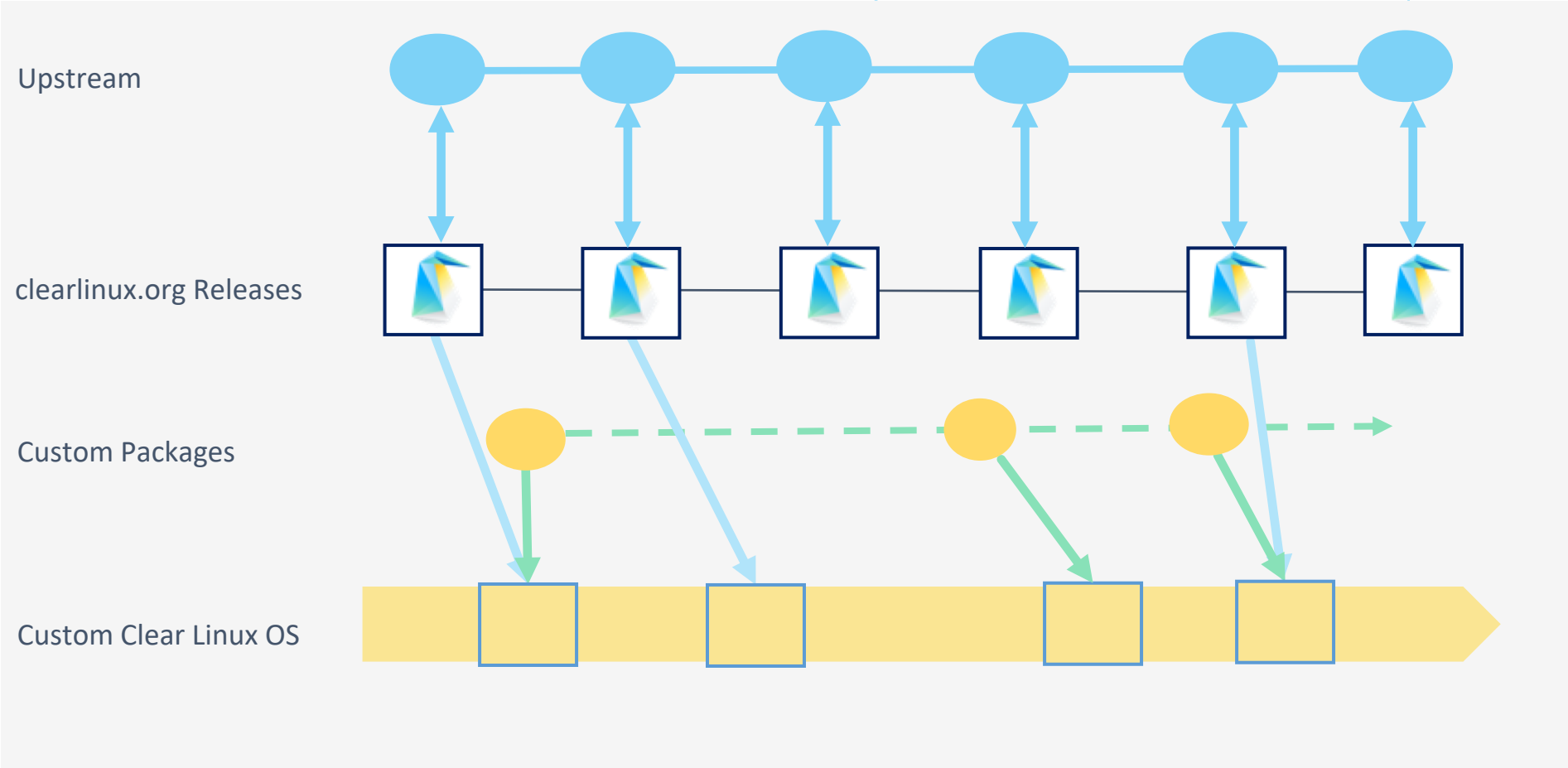
## Cost Proportionate to Customization Level

Take advantage of the Clear Linux automated development model for faster TTM

Cost = complexity



# Simplifying Manageability of 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.

- Keys:
- Package
  - Mix

# Summary

**Clear Linux** a modular open source OS optimized for performance and security, from the Cloud to the Edge, designed for customization, and deployability.

**Clear Linux** optimizes throughout the entire stack; it is the most tuned implementation of Linux for Intel platforms with demonstrated superior performance—as much as 4x in independent testing.

The **Clear Linux OS** and its surrounding components are being developed in lockstep with upstream development.

Try us out

Engage with us at  
[clearlinux.org](https://clearlinux.org)

See our source code at  
[github.com/clearlinux](https://github.com/clearlinux)

Public IRC  
[#clearlinux](#) on Freenode

Public Mailing List  
<https://lists.clearlinux.org/mailman/listinfo/dev>

Images available at:

[Clearlinux.org](https://clearlinux.org)



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