The Linux Foundation

Carrier Grade Linux Version 4.0
Registration Process Document

Prepared by the Carrier Grade Linux Workgroup

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Table of Contents

1. Executive Summary

Carrier Grade Linux (CGL) stands at the center of the move to open architectures. The Linux Foundation Carrier Grade Linux (CGL) Workgroup has addressed the important task of defining the requirements for a Linux distribution suitable for a carrier grade environment. The nature of these requirements result in a complex matrix of external specification references (such as POSIX, SCOPE, SAF, HPI …), general behavior requirements such as soft real-time, and forward looking requirements that provide enough information to guide implementers but leave room for the market to decide on details.

Since its formation, the workgroup has produced four versions of a specification to define these required capabilities. In response, Linux distribution suppliers are now demonstrating that they can meet the emerging needs of telecommunications by registering (publicly disclosing) how their products address the requirements defined in the Carrier Grade Linux Requirements Definition. Today, the CGL working group has grown to include over three dozen representatives from platform vendors, Linux distribution suppliers, network equipment providers, carriers, and development community members worldwide.

This expanded group has now released the Carrier Grade Linux Requirements Definition version 4.0. As CGL capabilities become available in mainstream implementations and distributions, Linux not only becomes more attractive for telecommunications applications, but the entire Linux community benefits from a highly available, scalable, high-performance, and manageable Linux environment. High availability middleware components and service availability middleware that run on CGL systems are addressed by organizations such as the Distributed Management Task Force (DMTF), the Object Management Group (OMG), and the Service Availability Forum (SAF). High availability hardware platforms underlying CGL are addressed by organizations such as the PCI Industrial Computer Manufacturers Group (PICMG) and the Intelligent Platform Management Interface (IPMI).

As with any type of requirements document or specification, an end customer will require a mechanism to verify that a product conforms to the related requirements document or specification. This type of evidence is traditionally done with a formal certification process via a formal certification authority. Even with a simple API specification, formal certification is a complex and expensive process to create and execute. Given the complex nature of the Linux Foundation CGL requirements, formal certification is not realistic.

As a result, the Linux Foundation advocates registration for CGL Linux distributions:

- Registration provides Linux distribution vendors a mechanism to identify how their products conform with the Linux Foundation CGL requirements documents.
- Furthermore, registration allows Linux distribution vendors to provide information to a customer who identifies how the requirements are implemented, the objective, and proof that the implementation is packaged within the product.

2. Introduction

2.1 Purpose of this Document

The purpose of this document is to provide information to help Linux distribution vendors self-register their distribution against CGL 4.0.

2.2 Linux Foundation CGL Registration

The process outlined at in this document shall be followed by a Linux distribution vendor seeking CGL 4.0 registration. The template which will be used for registration information can be found at:

http://www.linux-foundation.org/en/Registration.

2.3 Submission of the Registration Document

The key concept of "registration" is for a distribution to objectively disclose how the distribution conforms to the CGL 4.0 specifications and to provide that information for public review. Registration does not prove the quality of each of the implementations is suitable for deployment in a carrier grade environment.

Registration clarifies how a distribution vendor claims their product is ready for a carrier grade environment, and also helps identify requirements that are interpreted in a fashion different from the specification intent.

2.4 Priority Levels

CGL 4.0 has reintroduced priority levels into the specification:

Priority	Description
1: Required	Full disclosure requirements. If the provider complies with all of the priority 1 requirements, a special endorsement is given in the registration process.
2: Disclosed	Full disclosure requirements. The provider needs to clearly state which CGL 4.0 priority 2 requirements are being complied with and which ones are not as part of the registration.
3: Roadmap	Roadmap requirements are not required to be disclosed. Compliance may optionally be disclosed by listing the requirements in the roadmap section in the registration form.

2.5 Related Documents

Name	Location
Linux Foundation CGL Requirements	http://www.linux-foundation.org/en/Carrier_Grade_Linux
CGL Registration Web Site	http://www.linux-foundation.org/en/Registration
CGL Registration Process	http://developer.osdl.org/dev/cgl/cgl40/CGL_4_registration_template.ots

3. Registration of CGL Requirements

The CGL 4.0 Requirement Definition Documents consist of seven requirements areas: serviceability, standard, security, performance, hardware, availability, and cluster. Each of these areas are published as a separate document with requirements that consists of three priorities: Priority 1: **Required,** Priority 2: **Disclosed,** Priority 3: **Roadmap.**

The priority 1 "Required" items are mandatory for a P1 endorsement, the priority 2 "Disclosure" items must be fully disclosed, while the priority 3 "Roadmap" requirement items are optionally disclosed.

The requirements in CGL 4.0 are categorized in the following areas.

- Availability Requirements Definition Version 4.0: Addresses necessary functionality for single node availability and recovery.

- Clusters Requirements Definition Version 4.0: Meets the need for necessary components to build a clustered set of individual systems.

- Serviceability Requirements Definition Version 4.0: Addresses necessary features for servicing and maintaining a system and coverage of tools that support serviceability.

- Performance Requirements Definition Version 4.0: Addresses needs to contribute to adequate performance of a system, such as real-time requirements.

- Standards Requirements Definition Version 4.0: Provides references to necessary APIs, specifications, and standards, such as POSIX, IETF, and SA Forum standards.

- Hardware Requirements Definition Version 4.0: Describes necessary hardware-specific support that relates to a carrier operating environment.

- Security Requirements Definition Version 4.0: Addresses necessary features for building secure carrier grade systems.

The CGL requirement documents are published at:
http://www.linux-foundation.org/en/Carrier_Grade_Linux

Self-registration is done by filling out the CGL V4.0 Registration Template. This template can be downloaded from the CGL Registration page:

http://www.linux-foundation.org/en/Registration

Registration consists of descriptions of how the CGL requirements were implemented. Providing proof of how these capabilities were implemented are disclosed in the "Disclosure Type", "Package/Patch Name", and "Version" fields of the registration template. In addition, the self-registration allows disclosure of compliance for "Roadmap" requirements.

4. Registration Strategy and Approach

The goal of registration is to provide reproducible objective evidence that each of the requirements is provided in a given distribution release. Some of the requirements call for additional features to well known Linux packages such as glibc, while others call for new packages.

The registration template is a spreadsheet containing two pages: (1) Summary and (2) Disclosure.

The "Summary" page asks for the following information:

Field	Description
Date	Date when registration was submitted and posted on the Linux Foundation CGL registration site.
Company	Name of company
Product Name	Formal name of the product line
Product Version	Version or versions of the product line which have been registered against CGL 4.0.
Processor Architecture	CPU architecture(s) to which the registrations applies.

Contact (email or phone)	Contact that can be used by the CGL workgroup for questions or comments regarding the registration.
Priority 1 Compliance	Yes or No. If this product/version/architecture has registered with all P1 requirements, this field may be "Yes"

The "Disclosure" page contains the details of the registration and evidence that each requirement was either met or not met.

Field	Description
CGL ID#	Unique identifier for the requirement in the set of CGL specifications.
Requirement Description	Description of the requirement as it appears in the CGL specifications.
Priority	Priority of the requirement as stated in the CGL specifications. All P1 and P2 requirements must be disclosed.
Disclosure Type	**kernel.org** – requirement is implemented in the mainstream kernel. **Patch (not in kernel)** – kernel patch maintained outside of the mainline kernel, but considered mainline because of adoption by several distros. **OS Community Package** – open source package considered mainline by Linux distros. **Value Added Package** – package implemented by distro and not available to community **Hardware** – implemented in hardware **Other** – specified in "Notes" **Not** – not disclosing a P3 requirement
Package/Patch Name	Name of package or patch that implements the requirement.
Version	Version of the package or patch that implements the requirement.
Comply	Yes, if the product complies with the requirement. No, if it does not. Explanations can be provided in the "Notes" field.
Notes	Notes are available for proof of compliance, explanations, and intents relating to the compliance to the requirement.

5. Registration Steps

Going through the submittal process involves the following steps:

- Provide all required information as defined in the CGL V4.0 Registration Template to the CGL workgroup - lf_carrier@linux-foundation.org.
- The CGL workgroup oversees the submission process and confirms that the submission is complete or not within 2 weeks.

- The CGL workgroup may request additional clarification/information regarding the submission.

- Upon successful submission, the Linux Distribution Provider or vendor will then host the submission information at their website.

- The Linux Distribution Provider will provide a link to the submission information from the Linux Foundation CGL registration page to the vendor web site (http://www.linux-foundation.org/en/Registration).

- The vendor works with the Linux Foundation for a public announcement about the submission.

6. NOTES

1. Linux Distribution Providers who offer CGL conformant distributions are responsible to maintain their submission information at their website.

2. If a Linux Distribution Provider wishes to withdraw the submission after their product is has been accepted, they should contact the Linux Foundation CGL workgroup (lf_carrier@linux-foundation.org) to remove the submission information and link from the Linux Foundation CGL web site.

7. Changes to CGL Distribution after Submission

If the conformant CGL distribution undergoes some changes, how does this affect the existing registration?

There are 4 cases:

1) If features are reduced in an already conformant CGL distribution, then a new submission is required and the Linux distribution provider must go through the registration process again.

2) If features are improved in an already conformant CGL distribution, or new features are added to an already conformant CGL distribution, then a new registration is required and the Linux distribution provider must go through the registration process again.

3) If bugs are fixed in an already conformant CGL distribution, and the fixes involve new or changed RPM packages, then the provider/vendor should update the submission information at their web site.

4) If a distribution provider adds new Non-CGL features to an already conformant CGL distribution, then they are required to update their package list.