



# CloudRouter<sup>®</sup>

Jay Turner, IIX Inc.  
April 2015

# INDUSTRY BACKING



# WHY?

“The whole is greater than the sum of the parts”



Open Source Routing



# WHY OPEN SOURCE?

- Security
- Quality
- Interoperability
- Cost
- Flexibility
- Customizability



THE SOLUTION



**CloudRouter<sup>®</sup>**

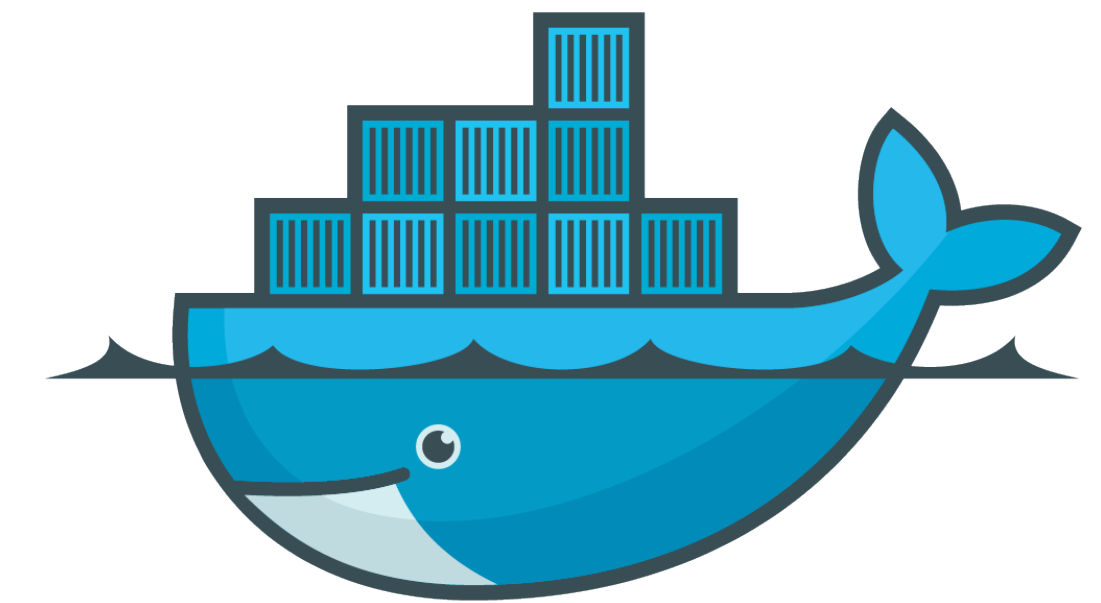
# COMMUNITY APPROACH

- Collaboration
- Drive development and innovation
- Accessibility
- Latest and greatest of all component technologies



# PLAYS WELL WITH OTHERS

- Low barrier to entry
- Leverage best-of-breed technology



docker



vmware®





# HOW IS IT DONE?

- Single source base
- Reproducible build system
- Continuous integration and delivery
- Package and image signing



# SECURITY IS PARAMOUNT

## CVE-2015-1778 OpenDaylight: authentication bypass

### Description

It was found that the custom authentication realm used by karaf-tomcat's "opendaylight" realm would authenticate any username and password combination. The custom realm is work-in-progress code that is not yet suitable for production use. A remote attacker could use this flaw to access interfaces secured using the opendaylight realm, such as the northbound neutron API. The opendaylight realm has been updated to use UserDatabaseRealm, which reads credentials from the tomcat-users.xml file. This issue does not affect the Lithium branch.

### Affected versions

All releases of OpenDaylight Helium are vulnerable.



# TELL ME MORE



**CloudRouter**<sup>®</sup>

[cloudrouter.org](https://cloudrouter.org)

- GitHub:  
[github.com/cloudrouter](https://github.com/cloudrouter)
- IIX is co-sponsoring  
the Thursday @ 15:30  
break!



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**THANKS!**



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## INDUSTRY BACKING



- First off, talking about industry backing and our utilization of those offerings
- Cloudius -> in addition to collaborative development relationship, creating and shipping OSv-formated images
- IIX -> Primary sponsor and contributor
- CloudBees -> central partner in CI
- NGINX -> utilized for internal PoC work
- Linux Foundation -> debt of gratitude for the foundation of this whole system
- ODL -> partner and included in the project images/distribution; to my knowledge, only open source distribution which includes ODL

## WHY?

"The whole is greater than the sum of the parts"



- Lots of innovation happening in the OSS communities, which distributions have not made available
- To consume this innovation, you need a community which understands security, quality, and release engineering
- CloudRouter Project aimed to architect a comprehensive solution to simplify network interconnectivity
- Focus on the enterprise market
- Freedom of choice (ODL versus ONOS, Bird versus Quagga, etc.)
- Currently focused on control plane only . . .  
BUT
- Excited at the prospects being shown by Intel-led DPDK project

## WHY OPEN SOURCE?

- Security
- Quality
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- Security: peer review/code inspection, extremely wide base of exposure, vendor-sec
- Quality: esr -> “many eyes makes all bugs shallow”; refer back to security . . . many eyes, fewer sec issues
- Interoperability: transparency and openness lower barrier to interfacing, and maintaining those interfaces over time
- Cost: collaboration results in multiplicative effect on work product, but inverse effect on costs; also open code means possible for end-user/consumer to perform work themselves, thus lowering costs
- Flexibility: no vendor lock-in
- Customizability: salt to taste



## THE SOLUTION



- Collaborative open source development project focused on bringing simplicity to network interconnection, a traditionally complex process

## COMMUNITY APPROACH

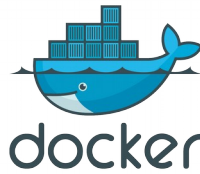
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- Further stimulates collaboration on meaningful technology
- Community means quickly and easily get meaningful technology into the hands of developers and network engineers
- Playground to experiment . . . some of the best innovation results from serendipity!
- Roll-forward, no commitment to backwards compatibility; unburdened by the anchor of sustained maintenance

## PLAYS WELL WITH OTHERS

- Low barrier to entry
- Leverage best-of-breed technology



- We wanted to offer a very low barrier to entry for users
- But offer best-of-breed technology nonetheless
- KVM - hypervisor == cars on an interstate
- Docker - container format == cars in a train
- OSv - cloud computing OS == iPhone accessories

## HOW IS IT DONE?

- Single source base
- Reproducible build system
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- Package and image signing



- single source across physical, virtual, and container technology; holy grail for enterprises
- criticality of reproducible build system; pristine build system . . . chroot
- CloudBees CI/CD
- signing done via hardware security module (blog post on [cloudrouter.org](http://cloudrouter.org) concerning this technology and process); ensures provenance of both the packages (yes indeed, these came from the CloudRouter Project) as well as the distribution as a whole (the truth, the whole truth, and nothing but the truth)

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- IIX employs the head of security response for both ODL and ONOS

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Looking for any and all contributions



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