Segunda parte de la fase de oposición del proceso selectivo para cubrir plazas de personal laboral de la CNMC

Enunciado del ejercicio escrito

Perfil Científico-técnico. Especialidad en Tecnologías de la Información

Ejercicio 1. (10 puntos)

El texto adjunto es una recopilación de artículos de una periodista, Beth Pariseau, especializada en diversos temas de T.I. Estos artículos están accesibles en: searchitoperations.techtarget.com.

Prepare un resumen ejecutivo de los temas tratados en los diferentes artículos, recogiendo las principales ideas expuestas en los mismos, en relación con el concepto de DEVOPS **(Máximo: 2 páginas)**

Ejercicio 2. (10 puntos)

Una empresa que presta servicios SaaS decidió aprovechar la entrada en vigor del Reglamento General de Protección de Datos para desarrollar un sistema que permita a cualquier compañía informar de la finalidad de sus tratamientos a los interesados, adecuándolos a las exigencias establecidas en el citado Reglamento.

La idea fue que el sistema desarrollado permitiera:

- Diseñar una aplicación de gestión qué permita enviar un correo electrónico a un conjunto de destinatarios (que podrán seleccionarse por ciertos criterios), con un texto que permita dar cumplimiento al deber de informar establecido en el Reglamento, ofreciendo a los destinatarios la posibilidad de ejercer su derecho de oposición y/o cancelación, a través de una página web diseñada al efecto.
- Desarrollar una aplicación que utilizarán compañías para preparar y gestionar los envíos. Debe permitir que se integren en un único repositorio destinatarios de diferentes tratamientos que la empresa puede tener almacenados en diferentes ubicaciones (Tablas de BBDD, listas de correo electrónico, ficheros Excel, etc.) También permitirá gestionar los envíos masivos de correos electrónico y los reenvíos a usuarios que no hayan abierto el correo enviado.
- Desarrollar la página web dirigida a los destinatarios de los correos y accesible desde Internet que le permita ejercer su derecho de oposición y/o cancelación. Las peticiones registradas serán incorporadas la aplicación que utilizan las compañías de gestión para que puedan atender las peticiones de los usuarios.

Imagine que usted fue el ingeniero que la compañía eligió para abordar el desarrollo de la aplicación, y proponga una solución que implemente el sistema expuesto.

La solución debe aportar un diagrama de arquitectura, al menos, del entorno de producción y del entorno de desarrollo, identificando todos los componentes del sistema y su interacción, las tecnologías elegidas y los frameworks principales, en caso de que utilice alguno.

Ejercicio 3 (10 puntos)

Describa en detalle la solución de Integración/Entrega/Despliegue Continuo escogida en su propuesta como solución del apartado anterior para gestionar el proceso de puesta en producción de la aplicación, pasando en los diferentes entornos (preproducción, test, producción, o los que considere oportuno)

Resulta de especial interés, la estrategia de gestión de ramas en el repositorio de código fuente, las herramientas de Integración Continua, y los tipos de test que se utilizarían para garantizar el buen funcionamiento.

DURACIÓN DEL EJERCICIO: 4 HORAS

IT pros make wish list for DevOps practices

Developers and IT operations specialists alike have some requests for their fellow DevOps practitioners.

Beth Pariseau, 19 May 2016 Link to this article:
https://searchitoperations.techtarget.com/news/450296560/IT-pros-make-wish-list-for-DevOps-practices

Modern IT shops say they're on the road to DevOps, rather than saying they've achieved it -- and there are still plenty of DevOps practices to hone as they travel that road.

Many DevOps practices are what one side of the DevOps equation -- developers or operations -- wants to see from the other, but some are shared wishes for better tooling, feedback and adherence to best practices.

Under DevOps, development looks to move faster, while IT operations must contend with a slew of new automation tools used to maintain security.

"Development says, 'I just want infrastructure and I want to consume it, and I don't want to be bothered by what I have to do to get the firewall up and running and the networking components running,'" said Stephan Massalt, vice president of cloud at IT service provider Swisscom, based in Switzerland. "On the other side, the infrastructure, people are concerned about applying security policy, applying networking and all the stuff that comes with it."

In other words, developers demand IT offers the infrastructure as a highly abstracted, consumable service, while IT seeks tools to make that easier to accomplish. At Swisscom, those tools are OpenStack for infrastructure as a service, as well as PLUMgrid's software-defined networking, which allows developers to spin up VMs in the infrastructure without having to worry about network connections or settings.

Faster feedback loops

IT ops pros also want developers to be cognizant of, and receptive to, feedback on how their apps perform once they are deployed to production, according to Marc Priolo, configuration manager for Urban Science, a Detroit-based data analysis company specializing in the automotive industry.

"After it goes to production, it's not done," Priolo said. "Getting the information to be returned back down to development so they know how to evolve the application is something that I'm pushing as a long-term goal."

Developers have started to think less about getting things to production and are focused on getting feedback metrics to move forward, which lobs the ball back into IT operations' court, as both sides seek new tools to closely monitor the infrastructure and quickly diagnose problems.

"Any operation that happens in your cloud can involve many services, and if something goes wrong, you need to be able to pinpoint it really quickly," said Stephen Voorhees, director of engineering for cloud platforms at Autodesk Inc., a maker of 3D design software based in San Rafael, Calif.

Instrumentation and getting visibility into running systems has become the focus of both operations and developers, Voorhees said. Developers especially need to be thinking about monitoring from the beginning when they're writing their code.

Reusable code and failure pragmatism

App deployment and troubleshooting both could be made easier with an approach to writing application and infrastructure automation code with reusable components, according to Chris Lawther, data architect for a Fortune 50 company based in the Northeast.

"If one piece of the application needs to interact with storage, the guy [who is] writing the Chef recipes would want to provision a server for you so all of your services can write to interact with that, as opposed to, 'Oh, we have a [network-attached storage] device over here, and we store this on the database,'" Lawther said.

"Common reusable services would be on the wish list."

App developers and infrastructure automators alike should also be realistic about the propensity for failure, as systems and infrastructure grow more and more complex, according to Sam Lambert, director of systems for code repository provider GitHub Inc., based in San Francisco.

"Everything fails at a certain scale," Lambert said. "Building software that knows that failure will happen and reacts properly to failure happening is a dream to work with, because it means that you get so much flexibility and you're not continually reactively jumping from thing to thing."

Data portability the next frontier

Finally, a thorny problem still being hashed out by development and operations is the difficulty of making data storage repositories as easy to change and as portable as application code living in containers.

"You've got all this ephemeral stuff in the application layer and then this massive mound of concrete with data," said Mark Betz, a software engineer with 20 years' experience in the industry who most recently worked for a startup called icitizen in Nashville, Tenn. "Something's got to happen ultimately to make it easier to deal with that."

At Lawther's firm, software from Datical, an Austin, Texas, company specializing in database automation, is being used to take the first steps on that journey. Datical's software allows for SQL databases to be configured and updated on the fly more quickly than with traditional tools.

"We've been starting to think about our database as something that is configurable, as opposed to something that we're doing in one-off independent fashion," Lawther said.

DevOps maturity bolsters IT security in the right hands

Beth Pariseau, 19 Aug 2016. Link to this article: https://searchitoperations.techtarget.com/news/450302860/DevOps-maturity-bolsters-IT-security-in-the-right-hands

Software abstractions and automation may seem to muddy IT security waters, but with proper management, they can offer better visibility into an IT environment.

BOSTON -- Despite fears about intangible machines and lack of human touch, DevOps maturity in the cloud can bring IT security benefits, but only when overseen by one of the few people with the right skill set.

That topic was among the discussions at a security roundtable here this week, which also included how software abstractions in the cloud can clarify the security picture, rather than obscure it, and how software-defined and automated resources can provide stronger security than air-gapped, hands-on physical infrastructure.

For example, Amazon Web Services' CloudTrail allows IT pros to see when a machine's provisioned, when a user account was created, how permissions were granularly altered, when the user account was logged into and when cryptographic keys were issued, among other details about every deployment.

"There are a lot of metadata asset tag changes that indicate ... whether [an action] was employee activity or if [the system] was externally compromised, so I might like to have that information on record," said Sven Skoog, information security officer at Monotype Imaging Inc., a design firm in Woburn, Mass.

So-called server huggers have long protested how software eats the IT world, and among the common objections is the idea that software abstractions are less secure than infrastructure that can be seen and touched.

However, companies which use firewalls have implemented software-based logical abstractions anyway, said Misha Govshteyn, co-founder and chief strategy officer for Alert Logic Inc., a security monitoring vendor in Houston.

Another Alert Logic staffer, chief security evangelist Stephen Coty, added that he previously worked for a service provider, and when acceptable-use alerts came in, he'd have to go investigate.

"Ninety-nine percent of the time, it was a false alarm," Coty said. "But that 99% of the time, nobody knew I was actually touching the box. With CloudTrail, you know."

DevOps maturity means hands-off security

Beyond the cloud, software automation and DevOps are ushering a new era in which IT pros set and forget environmental configurations and allow machines to take over the work of managing and securing themselves. Isn't that more dangerous?

The answer from the security roundtable group was a resounding no.

"Security and configuration management have a heavy overlap," Skoog said.

Skilled DevOps pros will do a good job of packaging manifests and tearing down and rebuilding servers every few days, Skoog argued, and to not do so increases the risk of configuration drift, where systems may sit for months without being properly updated.

"There's a lot of argument that a dynamic DevOps cloud infrastructure fixes that in a way that a traditional on-premises environment does not," Skoog said.

One of the most expensive things an IT team does for systems management is patching, Govshteyn said.

"Contrast that with our data center infrastructure ... which our DevOps team has transformed into a set of Chef recipes and CloudFormation templates," he said. "That sounds like a management enhancement, but it's really a security enhancement ... it's no longer expensive to keep things up to date."

Searching for unicorns and shelling out cash

Security as code can provide great results, but getting to that level of DevOps maturity only increases the need for careful regression testing, which is easier said than done at many organizations today.

"You're at the mercy of testing, you're at the mercy of integration, and finding security defects should be part of QA [quality assurance]," Skoog said. Having separate processes for security and code quality testing "is something that's wrong with the industry as a whole."

Meanwhile, "that person [who] can do both security and DevOps is almost a unicorn," Govshteyn said.

It's rare to find dedicated security developers in any company, according to Govshteyn.

"This is a job function that we barely know exists -- it's very recent," he said. "Most developers aren't trained in this."

All of this portends to increased spending on security staffing and other resources in the next few years, according to another large Boston-based enterprise CTO who spoke in a separate interview this week.

"Like most large companies, if you took a look at our investments in cybersecurity, they're two, three, maybe four times larger on an annual basis than they were just a few years ago," said Mark Kirby, senior vice president and CTO of IT at Liberty Mutual Insurance.

Among the expenditures is the recent replacement of Liberty Mutual's identity management system, though Liberty Mutual officials declined to name either the product that had been used before or what replaced it.

"As a person, you show up differently in the software world," Kirby said. "You might have a Yahoo ID and a Facebook ID and a LinkedIn ID ... that's a big program for us internally."

Liberty Mutual has also invested in vaulting technology for updated secrets management in an increasingly software-defined world. The company also declined to disclose its vendor for this, but one example of such a product is HashiCorp's Vault.

DevOps a natural fit for SaaS IT shops

Beth Pariseau, 20 Oct 2016. Link to this article: https://searchitoperations.techtarget.com/photostory/450401360/DevOps-capabilities-vary-widely-by-industry-vertical/5/DevOps-a-natural-fit-for-SaaS-IT-shops

Web-based companies that offer SaaS products are the new kids on the block in IT, and they are spearheading the movement toward DevOps by pioneering software automation, as well as a cultural revolution in the technology field.

These are the greenfields: the companies that can build a modern DevOps-driven infrastructure from scratch. Here you'll find the strongest advocates for serverless computing, NoOps and other bleeding-edge ideas. Software as a service (SaaS) IT shops are not without their DevOps implementation challenges, but, in most cases, they're ahead of the game.

SaaS IT practitioners have no legacy infrastructure to accommodate and often have few, if any, operations engineers, as they also tend to be based on public cloud services. However, they must take responsibility for all of the back-end workings of the applications they offer, shifting it off of the customer that previously operated software in on-premises installations. Typically, SaaS IT pros build their own software automation tools from the ground up from open source building blocks, as these differentiate them from the SaaS shop next door.

Take San Francisco-based Zenefits, founded in 2013, for example. The human resources management SaaS company relies on an infrastructure management and app deployment platform called Duplo, which the company's principal engineer, Venkat Thiruvengadam, built from scratch.

In Thiruvengadam's opinion, there are two types of companies: enterprise traditionalists and Web 2.0 trailblazers.

"The world is transitioning from the first approach to the second approach," he said. "The software that [Microsoft] Azure, Google [Cloud Platform] and Amazon [Web Services] are building today is better than the software that has [previously] existed, and this is a realization people are having, slowly."

Transition outside of the SaaS IT bubble is slow because IT traditionalists are afraid to give too much control to their developers, Thiruvengadam said.

"Traditional companies are afraid, for security reasons, that a developer will make a mistake or cause an outage if they do a risky deployment in the middle of the day," he said. "That is where we have to improve software to reduce the risks."

Risk can also be minimized when one SaaS developer team can handle the IT troubleshooting of its own apps, Thiruvengadam believes.

"You don't wait for a human to tell you what the problem is, you just interact with the software," he said. Meanwhile, if there's an infrastructure problem in the public cloud, "I trust Microsoft and Amazon to solve it faster than IT pros in a private cloud responding to support tickets."

DevOps tools training sparks IT productivity

New ways to recruit and train DevOps engineers won't fully compensate for the IT skills shortage, so use DevOps automation in lieu of manpower.

Beth Pariseau, 15 Aug 2017 Link to this article:
https://searchitoperations.techtarget.com/news/450424478/DevOps-tools-training-sparks-IT-productivity

Enterprises have a new weapon to combat the IT skills shortage where new hiring and training practices fall short.

Most IT pros agree the fastest path to IT burnout is what Amazon engineers have termed "undifferentiated heavy lifting," which is repetitive and uninteresting work that has little potential for wider impact beyond keeping the lights on. DevOps tools training, which involves IT automation practices, can reduce or eliminate such mundane work and can compensate against staff shortages and employee attrition.

IT as a whole is making a noticeable shift towards a DevOps culture. So what do skills do you need to keep yourself relevant in this new environment?

"Automation tools aren't used to eliminate staff; they're used to help existing staff perform at a higher level," said Pete Wirfs, a programmer specialist at SAIF Corp., a not-for-profit workers' compensation insurance company in Salem, Ore., that has used Automic Software's Automation Engine to orchestrate scripts.

The company has used Automation Engine since 2013, but last year, it calculated new application development would add hundreds of individual workflows to the IT operations workload. Instead, Wirfs said he found a way to automate database queries and use the results to kick off scripts, so a single centralized workflow could meet all the project's needs.

As a result, SAIF has expanded its IT environment exponentially over the last four years with no additional operations staff. The data center also can run lights-out for a few hours each night, with the automation scripts set up to handle monitoring, health checks and route alerts to the appropriate contacts when necessary. No IT ops employees work on Sundays at SAIF at all.

"There's no end to what we can find to automate," Wirfs said.

DevOps tools training standardizes IT processes

SAIF's case illustrates an important facet of DevOps tools training: standardization of a company's tools and workflows. A move from monoliths to microservices can make an overall system more complex, but individual components become similar, repeatable units that are easier to understand, maintain and troubleshoot.

"The monoliths of the early 2000s were very complicated, but now, people are a lot more pragmatic," said Nuno Pereira, CTO of iJET International, a risk management company in Annapolis, Md. "DevOps has given us a way to keep component complexity in check."

In modern monitoring systems, DevOps tools training can curtail the notifications that bombard IT operations pros through centralized tools, such as Cisco's AppDynamics and LogicMonitor. These are popular among DevOps shops because they boost the signal-to-noise ratio of highly

instrumented and automated environments, and they establish a standardized common ground for collaborative troubleshooting.

"[With] LogicMonitor, [we can] capture data and make it easily viewable so that different disciplines of IT can speak the same language across skill sets," said Andy Domeier, director of technology operations at SPS Commerce, a communications network for supply chain and logistics businesses based in Minneapolis.

Four or five years ago, problems in the production infrastructure weren't positively identified for an average of about 30 minutes per incident, Domeier said. Now, within one to two minutes, DevOps personnel can determine there is a problem, with an average recovery time of 10 to 15 minutes, he estimated.

Standardization has been key to keeping up with ever-bigger web-scale infrastructure at DevOps bellwethers such as Google.

"If every group in a company has a different set of technologies, it is impossible to make organizationwide changes that lift all boats," said Ben Sigelman, who built Dapper, a distributed tracing utility Google uses to monitor distributed systems. Google maintains one giant source-code repository, for example, which means any improvement immediately benefits the entire Google codebase.

"Lack of standardization is an impediment to DevOps, more than anything else," Sigelman said.

Google has standardized on open source tools, which offer common platforms that can be used and developed by multiple companies, and this creates another force-multiplier for the industry. Sigelman, now CEO of a stealth startup called LightStep, said DevOps tools training has started to have a similar effect in the mainstream enterprise.

Will AI help?

DevOps tools training can go a long way to help small IT teams manage big workloads, but today's efficiency improvements have their limits. Already, some tools, such as Splunk Insights, use adaptive machine-learning algorithms to give the human IT pro's brain an artificial intelligence (AI) boost -- a concept known as AIOps.

"The world is not going to get easier," said Rick Fitz, senior vice president of IT markets for Splunk, based in San Francisco. "People are already overwhelmed with complexity and data. To get through the next five to 10 years, we have to automate the mundane so people can use their brains more effectively."

People are already overwhelmed with complexity and data. To get through the next five to 10 years, we have to automate the mundane. Rick Fitz senior vice president of IT markets, Splunk

Strong enthusiasm for AIOps has spread throughout the industry. Today's analytics products, such as Splunk, use statistics to predict when a machine will fail or the broader impact of a change to an IT environment. However, AIOps systems may move beyond rules-based systems to improve on those rules or gain insights humans won't come up with on their own, said Brad Shimmin, analyst with GlobalData PLC, headquartered in London. Groups of companies will share data the way they share open source software development today and enhance the insights AIOps can create, he predicted.

The implications for AIOps are enormous. Network intrusion detection is just one of the many IT disciplines experts predict will change with AIOps over the next decade. AIOps may be able to detect attack signatures or malicious behavior in users that humans and today's systems cannot detect -- for example, when someone hijacks and maliciously uses an end-user account, even if the end user's identifier and credentials remain the same.

But while AIOps has promise, those who've seen its early experimental implementations are skeptical that AIOps can move beyond the need for human training and supervision.

"AI needs a human being to tell it what matters to the business," LightStep's Sigelman said, based on what he saw while working at Google. "AI is a fashionable term, but where it's most successful is when it's used to sift through a large stream of data with user-defined filtering."