ZAMONAVIY BULUTLI HISOBLASH TIZIMLARINING TAHLILI

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Annotatsiya.

Ushbu maqolada axborot texnologiyalarining bir qismiga aylangan Bulutli hisoblash tizimlari va provayderlari tahlili amalga oshirilib, ularning xususiyatlari, imkoniyatlari, xavfsizlikni ta’minlash choralari keltirilgan.

Kalit so‘zlar: AWS, Google Cloud Datastore, Elastic Block Storage, Identity and Access Management, Active Directory.

Annotation.

This article analyzes cloud computing systems and providers that have become a part of information technologies, their features, capabilities, and security measures are presented.

Key words: AWS, Google Cloud Datastore, Elastic Block Storage, Identity and Access Management, Active Directory.

Аннотация.

В данной статье анализируются системы и провайдеры облачных вычислений, ставшие частью информационных технологий, представлены их особенности, возможности и меры безопасности.

Ключевые слова: AWS, Google Cloud Datastore, Elastic Block Storage, управление идентификацией и доступом, Active Directory.

Bulutli hisoblash tizimlari foydalanuvchilarga internet orqali ma’lumotlarni saqlash, qayta ishlash, internet xizmlaridan foydalanish va fizik qurilmalardan virtual foydalanish imkoniyatini taqdim etadi. Hozirgi kunda Amazon, Google, IBM, Microsoft, Salesforce va boshqa shu kabi yirik tashkilotlar borki, aynan bulutli texnologiyalarni keng joriy etish va uning ortidan daromad olish bilan shug’ullanishadi. Ammo shuni takidlash joizki, bulutli texnologiyalarning imkoniyati ortishi bilan unga bo‘ladigan tahditlar, ma’lumotlarning o‘girlanishi yoki tarmoqda yo‘qolishi kabi holatlar yuzaga keladi. Ularni bartaraf etish uchun xavfsizlikning turli xil yondashuvlari va usullaridan foydalananish tavsiya etiladi. 1-jadval. eng mashhur bulutli hisoblash platformalari keltirilgan.

1-jadval.

Eng mashhur bulutli hisoblash platformalari

Nomi	IaaS	PaaS	SaaS
Amazon Web Services	+	+	+
IBM Cloud	+	+	
Google Cloud	+	+	
Microsoft Azure	+	+	
Oracle Cloud	+	+	+
App Cloud (SalesForce)		+	

SAP Cloud		+	

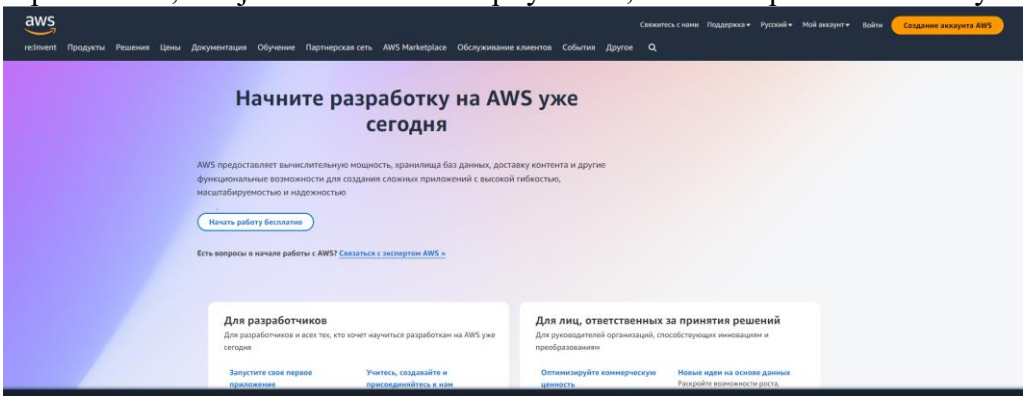
Turli xil bulutli platformalar uchun eng mashhur funksionallikning mosligini ko‘rsatadi.

2-jadval.

Bulutli hisoblashda turli provayderlarning imkoniyatlari

	Google Cloud	Amazon Web Services	Microsoft Azure
Virtual mashinalar	Google Compute Engine	Amazon EC2	Azure Virtual Machines
Veb-ilovalarni ishga tushirish	Google App Engine	AWS Elastic Beanstalk	Azure Cloud Services
Konteyner ilovalari	Google Kubernetes Engine	Amazon EC2 Container Service	Azure Container Service
Ma’lumotlar bazasi	Google Cloud Bigtable	Amazon DynamoDB	Azure Cosmos DB
Ma’lumotlar bazasi	Google BigQuery	Amazon Redshif	Microsoft Azure SQL Database
Serversiz arxitektura yordamida ilovalar yaratish	Google Cloud Functions	AWS Lambda	Azure Functions
Ma’lumotlar bazasi	Google Cloud Datastore	Amazon DynamoDB	Cosmos DB
Ma’lumotlar ombori	Google Storage	Amazon S3	Azure Blob Storage

*Amazon Web Services bulutli hisoblash platformasi:*Amazon Web Services bulutli hisoblash platformasining imkoniyatlari quyidagilardan iborat: (https://aws.amazon.com/ru) 2002 yildan beri foydalanuvchilar uchun mavjud. Platformaning imkoniyatlariga kirish uchun siz foydalanuvchi akkauntini yaratishingiz kerak. Ma’lumot olish uchun bepul hisob yaratish mumkin. Biroq, ro‘yxatdan o‘tish jarayonida shaxsni tasdiqlash uchun bank kartasi ma’lumotlarini (VISA, MasterCard va boshqalar) taqdim etish kerak bo‘ladi (bank kartasi ma’lumotlarining dolzarbligini tekshirish uchun hisobda 1 dollar mavjudligi). Bulutli xizmatlardan foydalanishning birinchi yili bepul bo‘ladi, kelajakda ular o‘chirib qo‘yilmasa, to‘lovlar qo‘llanila boshlaydi.

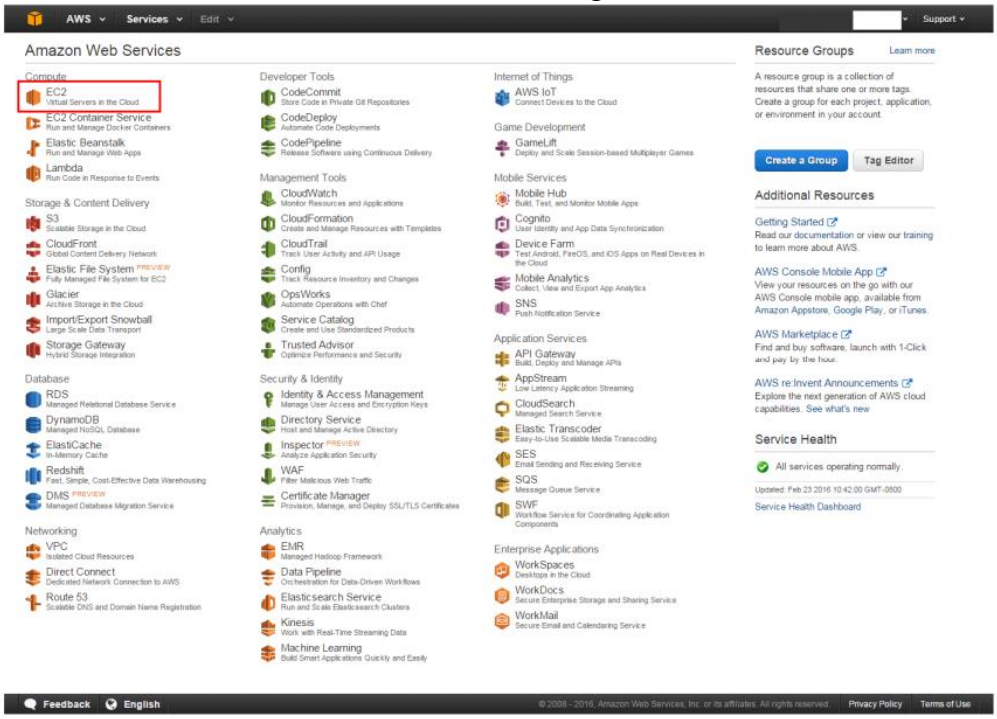


1-rasm. Amazon Web Services platformasida foydalanuvchi yaratish uchun Boshlang‘ich sahifa

Birinchi yil uchun quyidagilar bepul taqdim etiladi:

- faqat Amazonda EC2 Linux Micro Instance asosidagi virtual mashinalar, umumiy foydalanish vaqti yiliga 750 soat;
- 15 Gb qayta ishlangan ma’lumotlar kvotasi bilan Elastic Load Balancer xizmatidan 750 soat foydalanish;

- 10 gigabayt Amazon Elastic Block Storage (EBS) blok saqlash xizmati. Bepul EBS chegarasi, 1 million kiritish/chiqarish operatsiyasi, 1 Gb tezkor xotira, 10 000 ta get so‘rovlari 1 000 ta put joylashtirish so‘rovlarini o‘z ichiga oladi;
- 5 GB Amazon Simple Storage Service (S3) xotirasi. Bepul S3 limitiga 20 ming get so‘rov va 2 ming put so‘rov kiradi;
- 30 Gb kiruvchi va chiquvchi trafik teng nisbatda;
- Amazon SimpleDB bilan 25 soat ish va ma’lumotlar uchun 1 GB;
- Amazon Simple Queue xizmatidan foydalangan holda 100 ming so‘rov;
- Amazon Simple Notification xizmatidan foydalanishda 100 ming so‘rov, 100 ming HTTP bildirishnomasi va 1000 ta elektron pochta xabarnomasi;
- Amazon Cloudwatchda 10 ta ko‘rsatkich, 10 ta ogohlantirish va 1 million API so‘rovi.



2-rasm. Amazon Web Services portalida bulut xizmatlarini tanlash



3-rasm. Mintaqaviy ofislar / AWS ma’lumotlar markazlarining joylashuvi



4-rasm. Yuqori masshtabli mijozlarni joylashtirish (dgtlinfra.com).



5-rasm. Amazon bulutli ma’lumotlar markazlarining joylashuvi ko‘rsatilgan xarita.

Xavfsizlik, identifikatsiya va muvofiqlik talablari:

- kirishni boshqarish va shifrlash kalitlari (AWS Identity and Access Management, IAM);
- ierarxik bog‘liq ma’lumotlarni saqlash uchun bulutli kataloglarni yaratish xizmati (Amazon Cloud Directory);
- foydalanuvchining mobil va Internet ilovalariga kirishini identifikatsiyalash, avtorizatsiya qilish va nazorat qilishni boshqarish (Amazon Kognito);
- hodisalar jurnallarini tahlil qilish asosida tahdidlarni aniqlash xizmati (Amazon GuardDuty);
- muvofiqlikni ta’minlash va ilovalar xavfsizligini yaxshilashga yordam beruvchi avtomatlashtirilgan xavfsizlikni baholash xizmati (Amazon Inspector);
- avtomatik aniqlash, tasniflash va himoya qilish uchun mashinali o‘qitish texnologiyalariga asoslangan xavfsizlik xizmati (Amazon Macie);
- AWS xizmatlaridan foydalanish uchun SSL/TLS sertifikatlarini taqdim etish, joylashtirish xizmati (AWS sertifikati menejeri);
- AWS bulutida shaxsiy shifrlash kalitlarini oson genertsiyalash va foydalanish AWS CloudHSM); uchun bulutli boshqariluvchi xavfsizlik appartat moduli (HSM).
- Active Directory katalog va boshqaruvi (AWS Directory Service);
- shifrlash kalitlarini yaratish va boshqarish xizmati (AWS Key Management Service);
- bir nechta AWS hisoblari uchun siyosatga asoslangan boshqaruv xizmati (AWS Organizations);
- yagona tizimga kirish texnologiyasidan foydalangan holda autentifikatsiya xizmati (AWS Single Sign-On);

- DDoS hujumlaridan himoya qilish (AWS Shield);
- veb-trafikni filtrlash (AWS WAF);
- xavfsizlik va SLA muvofiqligi hisobotlari (AWS Artifact).

Amazon Web Services (AWS) AWS resurslariga xavfsiz kirishni ta'minlashda muhim bo'lgan bir nechta autentifikatsiya mexanizmlarini (AWS Signature v4, OpenID Connect, SAML 2.0 va boshqalar) qo'llab-quvvatlaydi.

Quyidagi jadvalda AWS qo'llab-quvvatlaydigan mumkin bo'lgan autentifikatsiya mexanizmlari ko'rib chiqiladi.

3-jadval

AWS da mavjud autentifikatsiya mexanizmlari

Autentifikatsiya mexanizmi	**AWS front-end xizmati**	**AWS backend xizmati**	**m2m aloqa uchun yaxshimi?**
AWS Signature v4	Hammasi	AWS Security Token Service (AWS STS	ha
Mutual TLS	AWS IoT Core Amazon API Gateway	AWS STS	ha
OpenID Connect	• Amazon Cognito • Amazon API Gateway	AWS STS	ha
SAML	• Amazon Cognito • AWS Identity and Access Management (IAM)	AWS STS	ha
Kerberos	• n/a	AWS STS	ha
Microsoft Active Directory communication	• AWS IAM Identity Center • Some AWS services (see Notes)	AWS STS	ha
IAM Roles Anywhere	• AWS Identity and Access Management (IAM)	AWS STS	ha

Xulosa

Mazkur maqolada ommabop bulutli hisoblash platformalarining tahlili amalga oshirilib, ulardagi imkoniyatlar kengroq yoritildi. Bundan tashqari bulutli hisoblash tizimlari provayderlari funksialligi keltirilib o'tildi. Bulutli hisoblashda turli provayderlarning imkoniyatlari tahlili amalga oshirildi. Thlil natijasiga ko'ra Amazon Web Services xavfsizlik va imkoniyatlar kengligi bilan yuqori natijalarni taqdim qildi.

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