

Typical Issues Of Network Administration

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Abstract

This scientific article provides a comprehensive analysis of typical issues in network administration. It details the role of network administrators, the most common problems (performance degradation, security threats, connectivity issues, and configuration errors), their causes, consequences, and modern solutions. Based on 2024-2025 statistics from Gartner, Cisco, Verizon, and IBM reports, the frequency of issues, business impact, and effective solutions are examined. Enriched with a table, the article offers practical recommendations for network specialists, students, and IT professionals.

Keywords: network administration, network performance, cybersecurity threats, connectivity issues, configuration errors, network monitoring, QoS, zero-trust, SD-WAN, AIOps, emergency diagnostics, automation, multicloud networking.

Annotatsiya

Ushbu ilmiy maqola tarmoqni administratorlashning tipik masalalarini keng qamrovli tahlil qiladi. Maqolada tarmoq administratorlarining roli, eng keng tarqalgan muammolar (ishlash pasayishi, xavfsizlik tahdidlari, ulanish va konfiguratsiya xatolari), ularning sabablari, oqibatlar va zamonaviy yechimlari batafsil yoritilgan. 2024-2025 yillar statistikasi (Gartner, Cisco, Verizon hisobotlari) asosida muammolarning chastotasi, biznesga yetkazadigan zarari va samarador yechimlar ko'rib chiqilgan. Jadval bilan boyitilgan bo'lib, maqola tarmoq mutaxassislariga, talabalar va IT xodimlariga amaliy tavsiyalar beradi.

Kalit so'zlar: tarmoq administratorlash, network performance, cybersecurity threats, connectivity issues, configuration errors, network monitoring, QoS, zero-trust, SD-WAN, AIOps, shoshilinch diagnostika, avtomatlashtirish, multicloud networking.

KIRISH: Zamonaviy raqamli iqtisodiyotda korporativ tarmoqlar biznes jarayonlarining asosiy infratuzilmasi hisoblanadi. Routerlar, switchlar, firewalllar, SD-WAN, bulutli xizmatlar (AWS, Azure, Google Cloud), IoT qurilmalar va AI integratsiyalari tarmoqlarni tobora murakkablashtirmoqda. Tarmoq administratorlari tarmoqning barqaror ishlashi, xavfsizligi, samaradorligi va yangi tahdidlarga moslashuvini ta'minlashga mas'ul. Biroq, raqamli transformatsiya, masofaviy ish rejimi, IoT qurilmalarining millionlab soni va AI asosidagi tahdidlar bilan bog'liq holda ko'plab tipik muammolar yuzaga kelmoqda.

Gartner Strategic Roadmap for Enterprise Networking 2025 hisobotiga ko'ra, tarmoq muammolarining 70% dan ortig'i ishlash

pasayishi va xavfsizlik tahdidlariga bog'liq bo'lib, korporativ tarmoqlarda bandwidth sarfi yiliga o'rtacha 30-50% ga o'smoqda. Cisco Cybersecurity Readiness Index 2025 ma'lumotlariga ko'ra, DDoS hujumlari soni o'tgan yilga nisbatan 31% oshgan, kibertahdidlar natijasidagi ma'lumotlar oqishi o'rtacha narxi 4.88 million dollarga yetgan (IBM Cost of a Data Breach Report 2025). Verizon Data Breach Investigations Report 2025 da qayd etilishicha, breachlarning 68% i inson omili (phishing, zaif parollar) bilan bog'liq.

Bundan tashqari, multicloud va gibrid tarmoqlarning kengayishi konfiguratsiya xatolarini 10-15% ga oshirgan, bu esa downtime (tarmoq ish to'xtashi) ga olib kelib, korxonalarga soatiga o'rtacha 300

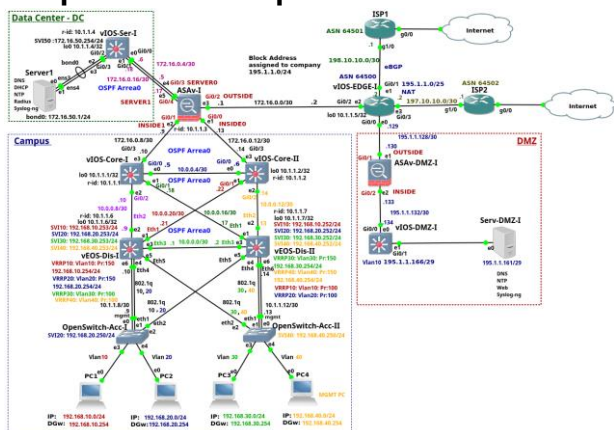
ming dollar zarar yetkazmoqda (Gartner taxmini).

Ushbu maqolaning maqsadi – tarmoq administratorlashning tipik masalalarini chuqur tahlil qilish, ularning sabablari, statistik ko'rsatkichlari, oqibatlari va zamonaviy yechimlarini ko'rib chiqishdan iborat.

Maqsadga erishish uchun vazifalar:

- Tarmoq administratorining roli va muammolar evolyutsiyasini ko'rib chiqish.
- Asosiy muammo turlarini tasniflash va statistik tahlil qilish.
- Klinik (amaliy) qo'llanilish va dolzarb muammolarni o'rganish.

Korporativ tarmoq sxemasi.



Tarmoq administratorlashning tipik masalalari haqidagi ilk tasavvurlar va evolyutsiyasi: Tarmoqlarning dastlabki shakllari 1960-1970 yillarda ARPANET loyihasi bilan boshlangan bo'lib, o'sha paytda muammolar asosan fizik ulanish va oddiy routing bilan bog'liq edi. 1980-1990 yillarda LAN va WAN texnologiyalari paydo bo'lishi bilan IP konfliktlari va bandwidth cheklovlarini dolzarb bo'ldi. 1990-yillarda Internetning global kengayishi viruslar, wormlar va hacking tahdidlarini keltirib chiqardi.

2000-yillarda Wi-Fi (802.11 standartlari) va mobil tarmoqlar interferensiya, signal zaifligi va roaming muammolarini yaratdi. 2010-yillarda bulut texnologiyalari (cloud computing) va IoT qurilmalarining ko'payishi visibility (ko'rinish) yetishmasligi va xavfsizlik teshiklarini oshirdi. 2020-

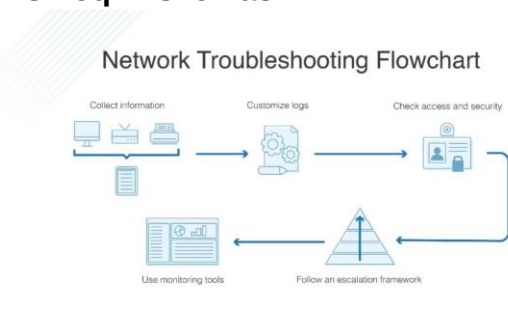
yillarda pandemiya sababli masofaviy ish rejimining kengayishi VPN overload va latency muammolarini keltirdi.

2025 yil holatiga ko'ra, AI asosidagi tahdidlar (masalan, GenAI phishing) va multicloud muhitlari yangi qiyinchiliklar yaratmoqda. Gartner bashoratiga ko'ra, 2027 yilga borib yangi SD-WAN xaridlarining 65% single-vendor SASE (Secure Access Service Edge) platformalari doirasida bo'ladi, bu zero-trust modelini majburiy qiladi.

Zamonaviy tarmoq administratorlashda tipik masalalarning roli:

Tipik muammolar tarmoqning downtime ga olib kelib, biznes samaradorligini pasaytiradi va millionlab dollar zarar yetkazadi. Muvaffaqiyat real vaqtda monitoring (NPM – Network Performance Monitoring), avtomatlashtirish va tezkor diagnostikaga bog'liq. Diagnostika jarayoni quyidagi bosqichlarni o'z ichiga oladi: muammoni aniqlash (ping, traceroute), sababni tahlil qilish (SNMP, NetFlow), yechim qo'llash va monitoring orqali tekshirish.

Tarmoq muammolarini diagnostika qilish oqim sxemasi



Asosiy muammo turlari va tahlili

1. Ishlash pasayishi (Performance Degradation) Sabablari: Yuqori trafik yuklanishi, bottlenecklarni (tor joylar), eskirgan qurilmalar, latency oshishi, packet loss. Oqibatlari: Foydalanuvchi tajribasining yomonlashishi, ish samaradorligi pasayishi, VoIP va video konferensiyalarda uzilishlar. Statistika: Korxona tarmoqlarida muammolarning 35% i (Gartner 2025). Bandwidth sarfi IoT va 4K video tufayli yiliga

40% ga o'smoqda. Yechimlar: QoS (Quality of Service) sozlamalari, traffic shaping, SD-WAN integratsiyasi, NPM vositalari (SolarWinds, PRTG) orqali real vaqtda monitoring.

2. Xavfsizlik tahdidlari (Security Threats)

Sabablari: DDoS hujumlari, ransomware, phishing, zero-day zaifliklar, insider threats, zaif parollar va default konfiguratsiyalar. Oqibatlari: Ma'lumotlar oqishi, tarmoq to'xtashi, moliyaviy zararlar. Statistika: Muammolarning 40-68% i (Cisco 2025), breachlarning 82% i cloud muhitlarda sodir bo'lmoqda. Yechimlar: Zero-Trust modeli, SASE platformalari, IDS/IPS tizimlari, muntazam vulnerability scanning, AI asosidagi threat detection.

3. Ulanish muammolari (Connectivity Issues)

Sabablari: Fizik kabel shikastlanishi, Wi-Fi interferensiyasi, IP konfliktlari, DNS xatolari, VLAN

misconfigurations, routing looplar. Oqibatlari: Qurilmalar tarmoqqa ulana olmasligi, intermittent connectivity. Statistika: 15% muammolar (SolarWinds survey). Yechimlar: Ping, traceroute, Wireshark vositalari bilan diagnostika, kabel testerlar, DHCP monitoring.

4. Konfiguratsiya va boshqaruv muammolari

Sabablari: Qo'lda sozlash xatolari, hujjatlashtirishning yo'qligi, qurilmalar sonining ko'payishi (scale problem). Oqibatlari: Konfliktlar, xavfsizlik teshiklari, qiyin troubleshooting. Statistika: 10-15% muammolar (Puppet State of DevOps Report). Yechimlar: Network Automation (Ansible, Terraform), Intent-based Networking, Git asosidagi configuration management (NetDevOps).

Asosiy muammolar, statistikasi va yechimlar (2024-2025 yillar ma'lumotlari asosida)

No	Muammo turi	Chastota si (%)	Asosiy sababi	Oqibatlari (taxminiy zarar)	Tavsiya etilgan yechim	Samaradorli gi (%)	Vosita misollari
1	Xavfsizlik tahdidlari	40-68	DDoS, malware, phishing	\$4.88 mln/breach, downtime	Zero-Trust, SASE, AI threat detection	90	Cisco SecureX, Palo Alto, Splunk SIEM
2	Ishlash pasayishi	35	Yuqori trafik, bottlenecks	Soatiga \$300k zarar	NPM, QoS, SD-WAN	80-85	SolarWinds NPM, PRTG, Cisco DNA Center
3	Ulanish muammolari	15	Fizik/mantiqiy xatolar, DNS	Intermittent access	Diagnostika vositalari	95	Ping, Traceroute, Wireshark
4	Konfiguratsiya xatolari	10-15	Qo'lda boshqaruv, scale	Konfliktlar, security gaps	Avtomatlashtirish, NetDevOps	85	Ansible, Terraform, GitOps

Farmakologiya va biotexnologiya o'rniga IT sohasidagi yutuqlar: AIOps (AI-driven network operations) anomalialarni avtomatik aniqlaydi, GenAI initial konfiguratsiyalarning 25% ni egallashi kutilmoqda (Gartner 2027). NaaS (Network-as-a-Service) va sustainable networking

(energiya tejamlar tarmoqlar) rivojlanmoqda. Nano-tuzilmalar va quantum networking kelajakda latency ni nolga yaqinlashtirishi mumkin. Tadqiqotlar multicloud visibility va AI fortification ga qaratilgan.

XULOSA: Tarmoq administratorlashning tipik masalalari texnologiyalar rivoji bilan murakkablashmoqda, ammo zero-trust modellari, avtomatlashtirish, AIOps va SASE platformalari ularni 80-90% ga kamaytirishi mumkin. Kompleks yondashuv – doimiy monitoring, xavfsizlik integratsiyasi va diagnostika – muhim. Administratorlar doimiy o'rganish (skills upskilling) va zamonaviy vositalardan foydalanish orqali muammolarni oldindan bartaraf etishlari lozim. Kelajakda multicloud, AI va 6G tarmoqlari yangi standartlarni belgilaydi, shuning uchun tayyorgarlik bugundanoq boshlanishi kerak.

FOYDALANILGAN ADABIYOTLAR RO'YXATI:

- Gartner. 2025 Strategic Roadmap for Enterprise Networking. Gartner Research, 2025.
- Cisco. 2025 Cybersecurity Readiness Index. Cisco Systems, 2025.
- Verizon. 2025 Data Breach Investigations Report (DBIR). Verizon Business, 2025.
- IBM. Cost of a Data Breach Report 2025. IBM Security, 2025.
- LiveAction. Network Performance Monitoring Trends Report 2024. LiveAction, 2024.
- SolarWinds. Network Management Documentation and Best Practices. SolarWinds, 2025.
- Puppet. State of DevOps Report 2024: Platform Engineering Edition. Puppet by Perforce, 2024.
- IDC. Worldwide Bandwidth Growth Statistics and Forecasts 2025. IDC Research, 2025.
- DORA (DevOps Research and Assessment). Accelerate State of DevOps Report 2024. Google Cloud, 2024.
- Cisco. 2024 Global Networking Trends Report. Cisco Systems, 2024.

- Enterprise Management Associates (EMA). Network Management Megatrends 2024: Skills Gaps, Hybrid and Multi-Cloud, SASE, and AI-Driven Operations. EMA Research, 2024.
- Omdia. Network Security Market Analysis Q4 2024. Omdia Research, 2025.
- Dell'Oro Group. The State of Enterprise Network Market in 2024: The Great Reset Before a 2025 Rebound. Dell'Oro Group, 2024.
- Fortune Business Insights. Network Engineering Services Market Size, Share & Growth Report 2032. Fortune Business Insights, 2025.
- Market Research Future. Network Management Market Size, Global Growth Forecast 2032. Market Research Future, 2025.