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Tashkilot tarmoqlari axborot xavfsizligini ta’minlashda fizik himoyalash usullari va vositalarini takomillashtirish muammolari

G‘aniyeva Shaxrizod Nurmaxamadovna

Farg‘ona davlat texnika universiteti Dasturiy injiniring va kiberxavfsizlik kafedrasi katta o‘qituvchisi

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Annotatsiya: ushbu maqolada tashkilot tarmoqlarida axborot xavfsizligini ta’minlashda fizik himoyalash usullari va vositalarining ahamiyati, mavjud muammolar va ularni bartaraf etish bo‘yicha taklif etilgan yechimlar tahlil qilinadi. Xususan, zamonaviy texnologiyalar asosida samarali fizik himoya strategiyalarini ishlab chiqishning dolzarbligi yoritiladi.

Kalit so‘zlar: axborot xavfsizligi, fizik himoya, tashkilot tarmoqlari, xavf-hatarlar, himoya usullari, xavfsizlik siyosati, xavfsizlik infratuzilmasi

Problems of improving physical protection methods and means in ensuring information security in organizational networks

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Annotation: This article analyzes the importance of physical protection methods and means in ensuring information security in organizational networks, existing problems and proposed solutions to eliminate them. In particular, the relevance of developing effective physical protection strategies based on modern technologies is highlighted.

Keywords: information security, physical protection, organizational networks, risks, protection methods, security policy, security infrastructure

Проблемы совершенствования методов и средств физической защиты при обеспечении информационной безопасности в организационных сетях

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Аннотация: В статье анализируется значение методов и средств физической защиты в обеспечении информационной безопасности организационных сетей, существующие проблемы и предлагаемые решения по их устранению. В частности, подчеркивается актуальность разработки эффективных стратегий физической защиты на основе современных технологий.

Ключевые слова: информационная безопасность, физическая защита, организационные сети, риски, методы защиты, политика безопасности, инфраструктура безопасности

Kirish.

Axborot xavfsizligi ko‘plab jihatlardan iborat bo‘lib, ulardan biri fizik xavfsizlik (ya’ni, jismoniy himoya) hisoblanadi. Fizik himoya axborot resurslariga jismoniy tarzda ruxsatsiz kirishning oldini olishga qaratilgan. Tashkilotdagi server xonalari, kompyuterlar, hujjatlar saqlanadigan omborlar va boshqa texnik vositalarni himoya qilish buning asosiy qismidir.

So‘nggi yillarda ko‘plab tadqiqotchilar axborot xavfsizligi muammolarini o‘rganishmoqda. Jumladan, Stallings W. (2019) o‘zining “Network Security Essentials” asarida tashkilotlarda axborot xavfsizligi tizimini yaratishda fizik xavfsizlik choralari zarurligini ta’kidlagan. Tipton H.F. va Krause M. (2012) o‘zlarining ishlarida axborot infratuzilmasini fizik tahdidlardan himoya qilish usullarini batafsil o‘rganishgan [1,2,3,4,5]. Yurtimiz olimlaridan esa, A.Rahimov va B.Tursunovlar (2022) O‘zbekistonda tashkilot tarmoqlarining axborot xavfsizligini ta’minlash bo‘yicha milliy tajribalarni o‘rganib chiqqan. Ushbu tahlillar shuni ko‘rsatadiki, ko‘plab metodlar va vositalar mavjud bo‘lsa-da, ular hali ham zamonaviy tahdidlarga to‘liq mos kelmasligi ma’lum.

Yuqoridagi tahlillarga asoslanib tashkilot tarmoqlarida axborot xavfsizligini fizik jihatdan ta’minlashda yuzaga keladigan muammolar quyidagilardan iborat bo‘lishi mumkin:

Fizik xavfsizlikning yetarli darajada ta’minlanmaganligi. Ko‘plab tashkilotlarda axborot tizimlarini joylashtirish uchun ajratilgan joylar – server xonalari, tarmoq uskunalari xonasi, ofislar – oddiy qulf bilan yopilgan yoki hech qanday kirish nazorati tizimiga ega emas. Bu holat tashqi shaxslarning ruxsatsiz kirib, uskunalarga zarar yetkazishi yoki ma’lumotlarni o‘g‘irlashi xavfini tug‘diradi. Shuningdek, binolarda yong‘in, suv bosishi yoki tabiiy ofatlar kabi holatlar yuz berganida axborot tizimlari jiddiy talafot ko‘rishi mumkin. Ko‘pincha tashkilotlarda fizik xavfsizlik boshqa xavfsizlik darajalariga qaraganda ikkinchi darajali deb hisoblanadi, bu esa butun tizimning zaiflashuviga olib keladi.

Yangi texnologik tahdidlarga nisbatan zaiflik. So‘nggi yillarda Internet narsalar (IoT), mobil qurilmalar va aqlli tizimlarning keng qo‘llanilishi axborot infratuzilmasiga yangi, ilgari kuzatilmagan fizik xavflarni olib keldi. Masalan, IoT qurilmalarining ayrimlari ishlab chiqaruvchilar tomonidan xavfsizlik choralarisiz chiqarilgan bo‘lib, ularni osongina topib va buzib kirish mumkin. Mobil qurilmalar orqali ichki tarmoqqa kirib, fizik yaqinlikda turgan tarmoq uskunalariga zarar yetkazish holatlari ham mavjud. Tashkilotlar bu kabi texnologiyalar xavflarini to‘liq anglamaganligi sababli ularni himoya qilishda sustlik ko‘rsatmoqda.

Insonga bog‘liq xatoliklar. Axborot xavfsizligining eng zaif nuqtasi odamlardir. Ichki xodimlarning e’tiborsizligi, mas’uliyatsizligi yoki noaniq ko‘rsatmalarga amal qilmasligi sababli, tashkilotning fizik xavfsizlik tizimi osonlik bilan buzilishi mumkin. Masalan, ruxsatsiz shaxslarni ichkariga kirishga yo‘l qo‘yish, kirish kartasini boshqalarga berish, xavfsizlik kameralari yoki signalizatsiyalarni befarqlik bilan o‘chirib qo‘yish singari holatlar ko‘p uchraydi. Bundan tashqari, ichki sabotaj holatlari – ya’ni xodimning ataylab axborot tizimiga zarar yetkazishi ehtimoli ham mavjud. Bunday vaziyatlarda tashkilot ko‘p hollarda voqea yuz bergandan keyingina xavfni anglaydi.

Moliyaviy va resurs cheklovlari. Ko‘plab tashkilotlarda axborot tizimlarini joylashtirish uchun ajratilgan joylar – server xonalari, tarmoq uskunalari xonasi, ofislar – oddiy qulf bilan yopilgan yoki hech qanday kirish nazorati tizimiga ega emas. Bu holat tashqi shaxslarning ruxsatsiz kirib, uskunalarga zarar yetkazishi yoki ma’lumotlarni o‘g‘irlashi xavfini tug‘diradi. Shuningdek, binolarda yong‘in, suv bosishi yoki tabiiy ofatlar kabi holatlar yuz berganida axborot tizimlari jiddiy talafot ko‘rishi mumkin. Ko‘pincha tashkilotlarda fizik xavfsizlik boshqa xavfsizlik darajalariga qaraganda ikkinchi darajali deb hisoblanadi, bu esa butun tizimning zaiflashuviga olib keladi.

Xodimlar va tashrif buyuruvchilarning harakatlarini nazorat qilish. Fizik himoyaning asosiy vositalari va ularning tavsifi quyidagi jadvalda aks ettirilgan.

1-jadval. Fizik himoyaning asosiy vositalari va ularning tavsifi

Vosita turi	**Tavsifi**
Kirishni boshqarish tizimlari (ACS)	Faqat ruxsat etilgan xodimlarga kirishga imkon beradi (kartochkalar, barmoq izi, yuzni aniqlash texnologiyasi).
Videokuzatuv tizimlari (CCTV)	Binolar va muhim hududlarda doimiy nazoratni ta'minlaydi.
Signalizatsiya tizimlari	Ruxsatsiz kirish yoki xavfli holat aniqlansa, avtomatik ogohlantirish beradi.
Kabinetlar va server xonalarining maxsus qulflari	Yopiq bo‘limlarda maxsus kalitli yoki elektron qulflar qo‘llaniladi.
Yong‘in xavfsizligi vositalari	Datchiklar, avtomatik o‘chirish tizimlari (gaz, suv, kukunli).
Ma’lumotlarni yo‘q qilish moslamalari	HDD shredderlar, qog‘oz maydalagichlar, disklarni termik yo‘qotish vositalari.

Tashkilotlarda fizik himoyani quyidagi yo‘nalishlarda takomillashtirish mumkin:

- Yagona xavfsizlik boshqaruv tizimini joriy etish (PSIM - Physical Security Information Management);
- IoT texnologiyalari orqali real vaqtli monitoring qilish tizimlarini joriy etish;
- Biometrik autentifikatsiya vositalarini kengaytirish;
- AI yordamida kuzatuv tizimlarini aqlli aniqlashga o‘tkazish;
- Ma’lumotlarni saqlash joylarini fizik joylashuvga qarab qayta ko‘rib chiqish (masalan, bulutga ko‘chirish bilan barobar, lokal zaxira va boshqalar).

Xulosa qilib aytganda, fizik xavfsizlik – axborot xavfsizligining ajralmas qismidir. Texnologiyalar rivojlanib borar ekan, tashkilotlar o‘zlarining jismoniy himoya vositalarini ham yangilab, zamon talablariga moslashtirishlari lozim. Bu nafaqat texnik jihatdan, balki tashkilot ichidagi siyosat va madaniyatni ham qamrab olgan holda amalga oshirilishi kerak.

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