

Reinventing the Network Infrastructure

To build a network infrastructure that can fully utilize resources in response to fluctuating demands, careful planning, development, design, and architecture will have to be carried out.

Your network must streamline and secure the flow of data and information throughout your organization. This is the new paradigm.

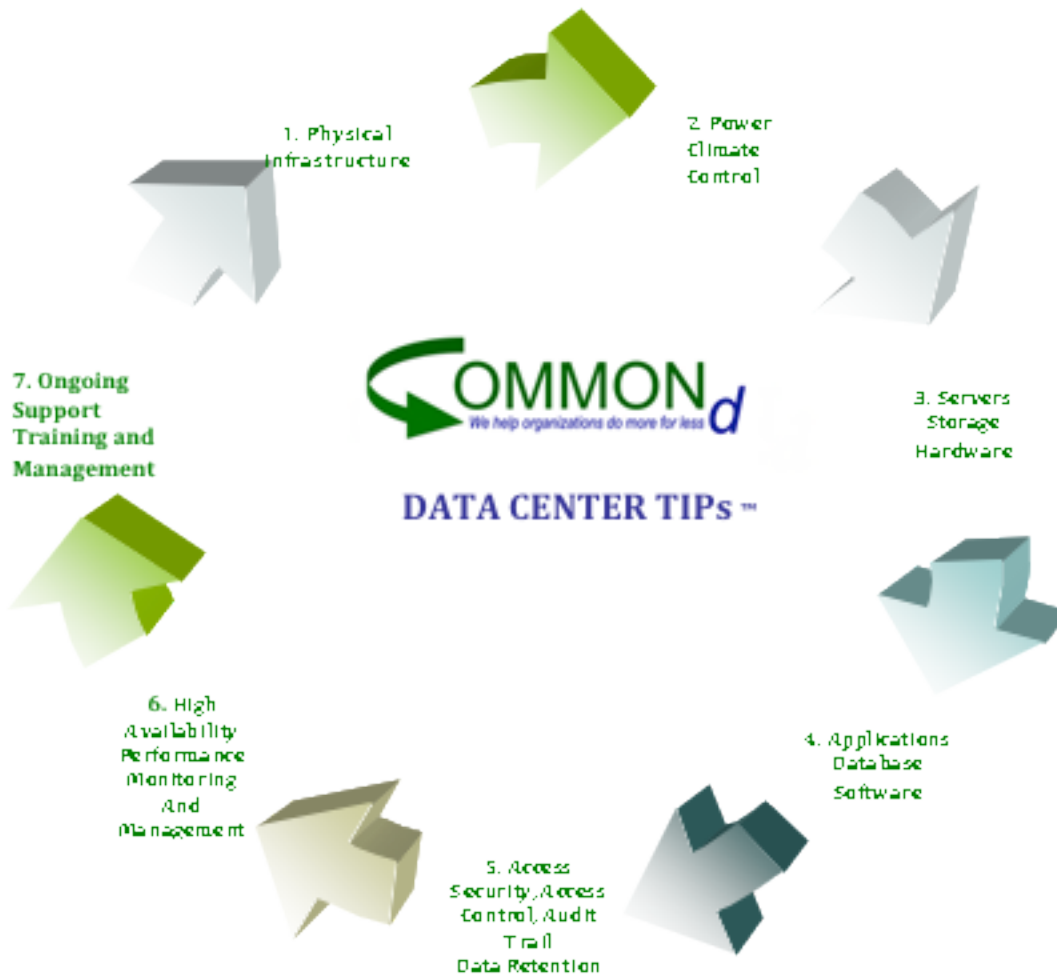
Your network infrastructure needs to bring together collaborative capabilities including presence, instant messaging, telephony, audio

conferencing, web conferencing, unified messaging, mobility, and video conferencing through simple and easy to use resources.

To control the cost, your team must have a solid model with a well planned architecture to accommodate multiple applications, different computing requirements, run multiple applications and services for onsite and off site users and business associates. This model must also include high level service agreements to fully utilize the resources of your network and to reduce overall maintenance costs.

Business goals and technical objectives should include:

1. An intelligent, flexible, and scalable network infrastructure to achieve total integration for the business side
2. Enhanced collaboration between security and data flow
3. High availability for your data and a method to allow your users to access your data storage systems with multiple SANs, including bandwidth that enables larger data to be transferred between the tiers
4. A network environment that can host multiple applications and services
5. Minimize the latency of your network



How can you have an intelligent, flexible, and scalable network infrastructure?

Your team needs to look outside of the box to optimize your needed functions.

Your core network and related elements should use standard protocols that could easily communicate with each other. Your protocols should also allow different applications, data bases and manufacturers to work together in any combination.

This network architecture should include a “must have” feature/service in the network fabric that will interface with multiple vendors so that your data can travel securely and freely ubiquitously across your WAN and LAN serving area. A strategic predictive analysis also must be carried out for your WAN, LAN, applications, and access so that your team can accurately plan for the future.

The network infrastructure needs to have collaboration between security and your data flow.

There are 4 components of security:

1. **Confidentiality:** Information is disclosed only to users authorized to access it.
2. **Integrity:** Information is modified only by users who have the right to do so, and only in authorized ways. It is transferred only between intended users and in intended ways.
3. **Accountability:** Users are accountable for their security-relevant actions.
4. **Availability:** Use of the system cannot be maliciously denied to authorized users. Availability can only be discussed relative to what is required to be available (e.g. communications or the service provided by an object).

To fulfill this requirement, we have to look at the particular functionality/service of the network. We must ensure adequate separation of data and functions by having a clearly defined Role-Based and User-Based Access so your data does not interfere with each other as well as separation of users' duties so the damage that an individual user can do is limited.

Security also needs to be enforced by functionality, such as strong authentication and access control and encryption for data in transit. Back up and disaster recovery of the network should be defined, designed, deployed and managed with solid and functional policies and procedures.

The security policy needed to protect against these threats may also depend on the current and future environment. How vulnerable your assets are in this environment must be assessed.

High availability for your data

How to keep your data accessibility high and your costs low is a tough balancing act. The adage "time is money" takes on literal meaning.

A fail-over cluster implementation should be considered, with multiple systems attached to a set of shared storage units, such as disks, connected to a shared device. Each

of the cluster members should also monitors the health of the others.

Choosing the wrong type of product or design will leave your valuable file systems and databases vulnerable to corruption. Some products neglect to mention this fact; others only will state this fact if you dig deep under the surface

Before dedicating any money (and your company's data) to a high-availability solution, be sure you

know how the solution protects you from the following four failure scenarios:

1. Planned maintenance and shutdown
2. System crash
3. Communication failure
4. System hang

How can you architect for a network environment that can host multiple applications and services across the WAN and your LAN?

The reality is that everyone--from management and local users to the most distant of business associates--is demanding more and more.

It's almost a certainty that everyone will expect nothing less than miraculous improvements in network speed, access, and reliability, with only the most conservative of investments set aside for the network components.

The next step requires you to identify all of the aspects of an ideal network that would make you, your users, and management happy, and

hopefully all at the same time. While this can be a nerve-wracking, hair-pulling experience, the ease of administration and general level of user satisfaction that can be achieved from a "golden" network is often well worth the effort. Planning, planning, and planning! As important as planning is in your endeavor to architect your network infrastructure, planning is equally important in your path to careful analysis of the computing environment and your ability to match hardware, software, and infrastructure with proper services and accurate SLA to those tasks are of the utmost importance.

Minimize the latency of your network.

This is extremely important for the network with heavy payload. To understand your network and its performance and to minimize unknown problems often requires you to examine various aspects of your network.

The architecture requires careful consideration for both physical designs of the internal internetwork topology as well as infrastructure. An ad hoc approach in these areas, sometimes out of ignorance and sometimes because of time constraints, is to be avoided. Sooner

or later, you will come to regret it, because either performance degrades or reliability suffers.

Careful planning will take some time, but it will make your life easier in the long run.

To avoid this pitfall, look and plan for:

1. ALL links of the communications
2. Application between sources and destination
3. Bandwidth
4. Hardware and software
5. Business Associates
6. Internal users
7. Management wants needs
8. MONEY

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