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Equipment nomenclature

Introduction

Technology is something we all understand adds value, both personally and professionally.

Life with the use of tools and technology is usually easier. Who would have thought that in less than 20 years we would go from making plans with friends through the landline phone in the living room to getting into a car, choosing a restaurant for dinner in the middle of the route, making a reservation, setting the map, and letting the car guide us along the fastest route to the desired destination.

All of this, which seems very idyllic, is based on a very strong technological effort and also on the correct use. That's why every element, even a small household appliance, has a manual. No matter how simple the use of things seems, there is always some nuance to consider.

While it is true that most household appliances are not unfamiliar to our use, it doesn't hurt to take a few minutes to see what steam power we should set on the iron for delicate clothing to avoid damage.

Examples as simple as this serve me to introduce that sometimes people take things for granted because we believe we know how they work.

However, when tasks or actions are based on 100% individual work, our judgment may be valid, but when we interact with other people, departments, or companies, we must think that our point of view or what we believe we know is not always as we have it in our minds.

I don't know if you are familiar with automated parking lots where you leave your car, and the elevator moves it to different parking spaces.

Imagine that the system managing it gets confused and cannot distinguish between two parking spaces. What do you think the result would be?

From my point of view, it would be the beginning of a great chaos. Trying to place cars in already occupied spaces, delivering vehicles to people who do not belong to them, etc.

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Therefore, technology, to be useful, must be used correctly.

If you think about it, the example I gave is solved in a very simple way, by controlling the name of each parking space to know which one is occupied and corresponds to an individual.

Therefore, a large investment can be a complete failure simply because the elements it manages are not well identified.

Now let's move to an even more complex environment, such as a Data Center. We have the areas of purchasing, logistics, system architecture, communications, infrastructure, maintenance, storage, virtualization, etc.

Do you think clear communication is possible if the only guiding thread in a conversation, which is the object being discussed, is not well identified? Obviously, it's not possible.

What a person from one department may believe is happening in the organization is always limited to the perspective they have from their operations and in clear and smooth communication within their department. Therefore, it is conditioned in terms of their thoughts.

After many years in the industry, what we see is a lack of communication. Meetings to discuss operational problems, sharing this information with other departments that may offer solutions, are not usually held regularly, and they focus on specific problems instead of analyzing the underlying errors.

This is why we encounter many departments that want to do things their way, without understanding that their work influences other departments and, of course, the final result of the work.

Technology is defined as the set of knowledge and techniques that, applied in a logical and orderly manner, allow human beings to modify their material or virtual environment to meet their needs. That is, a combined process of thought and action with the aim of creating useful solutions. Sometimes, the investment can be minimal, and as the description says, simply use logic.

Let’s discuss one of the main points of inefficiency in Datacenter management and how to solve it with minimal investment. **Are you interested in knowing it? What do you think it could be? .....**

The management of nomenclature

Vital for establishing useful communication that facilitates the lives of everyone involved. When I say everyone, I mean everyone, from management to the technical area.

Communication is the means by which two or more members can have a conversation in which everyone understands the terms, objectives, and purpose of the messages.

In the case of automation, communication is also vital for the information exchange mechanisms that enable automation to function.

As we all know, communication is based on the speakers, the message, and the medium through which communication takes place.

In the case of the medium, it’s simple; we have communication through the physical layer, which, using protocols or communication languages, transmits a message.

The message is the information exchanged between one device and another, such as a UPS receiving information about the state of its batteries, like temperature. These communications also occur between elements and people through applications and software programs.

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This is the basis of monitoring and control systems, elements that communicate with a visualization system managed by people.

If we already have communication with the appropriate channel, what is the next step?

Identification

Well, for all this to work, all configuration elements must be uniquely identified, as indicated by ISO 20000 point 9.1.2 within its control processes for configuration management.

This identification of assets must be adopted by all departments for it to be effective.

We have all encountered assets in our Datacenters whose names respond to disparate themes such as mythology (Zeus, Neptune, Ares, etc.) or sports stars like Nadal, Alonso, or Indurain.

Supporters of this way of identifying their assets argue that the goal is to hide the true functionality of the server and prevent intrusions caused by a Lamer. This term is ideal and clearly defines many profiles we face when managing a Datacenter.

So, how do we name our elements?

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Type of identification in nomenclature

What type of nomenclature do we use? Do we have a naming convention for the assets in our Datacenter, such as servers, electronics, etc.?

Although service providers like Microsoft, IBM, or CISCO, to name a few, use their own naming conventions, there is currently no standard convention for identifying infrastructure assets, and companies follow their own patterns. That's why we want to share our vision.

How does Bjumper do it?

As you know, Bjumper, as a believer in the DCiM model, we are convinced of the benefits of unified element management, and that's why we work daily with our clients on standardizing nomenclature... to speak the same language!

We want to share an example of how we do it, and we haven't found a better one than talking about the communications part and the chassis... the lack of standardization in port names gives us so many headaches..

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Nomenclature in networking"

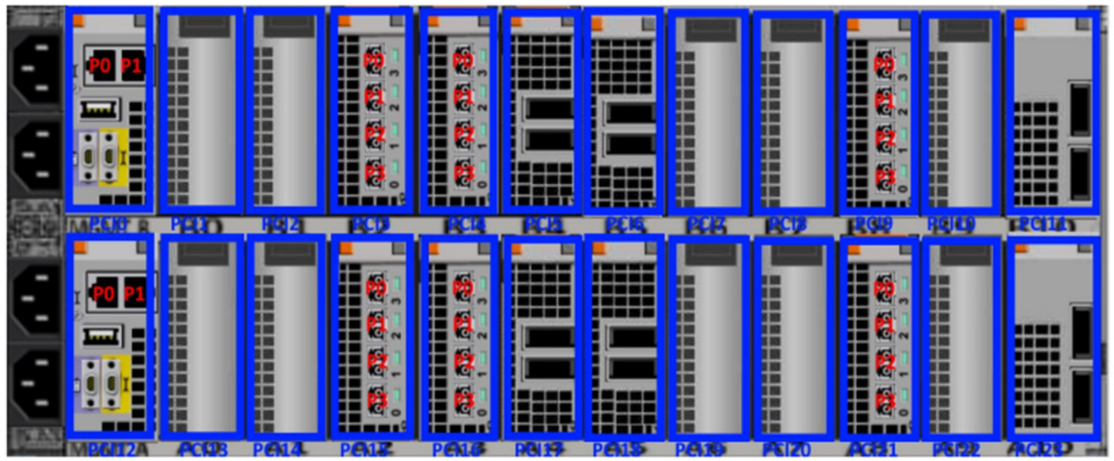
The first thing is to aim for the reasons behind the criteria, for example, for the nomenclature of ports and slots, we base it on the physical position of the cards and ports of the data center equipment.

The goal of such nomenclature is to avoid discrepancies when tracing information between what we have in our source (hopefully, it's a unique and automated one, let's say a DCiM!) and the reality of the data center.

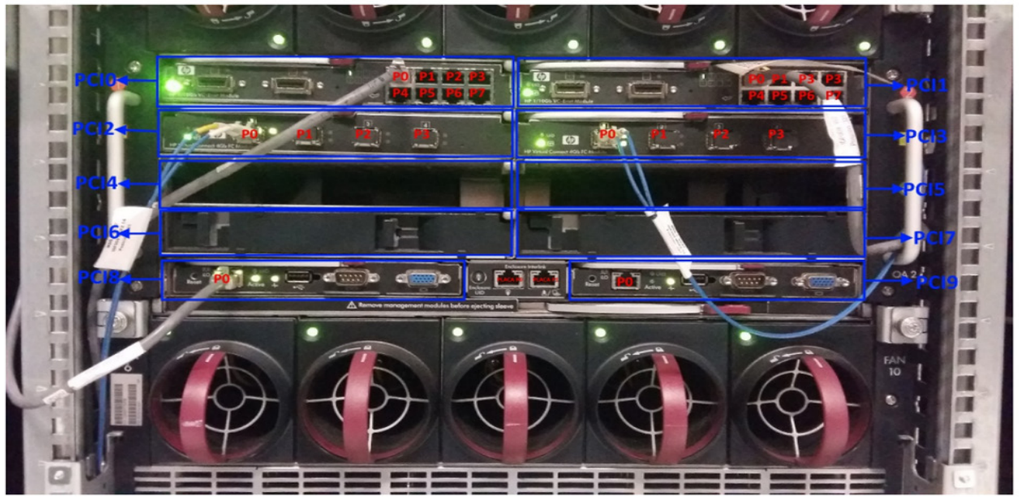
With a physical criterion like the one defined in this document, which is unique and must be transmitted and carried out by all parties involved in the data center, discrepancies about which port and/or card are being operated on are avoided.

Continuing with the correct definition in the nomenclature, we have the numbering sequence, which will be applied in the data center to name the ports. The rule is to name from left to right and from top to bottom, always starting to count from 0. All spaces for PCIs, whether card or blank, must be considered in the count, and within each card, the ports for copper or fiber (including SFP, QSFP, XFP, etc.) should be taken into account.

As for the port numbering, the sequence is the same and can be checked in the attached examples



Numbering sequence



Numbering sequence

Numbering sequence

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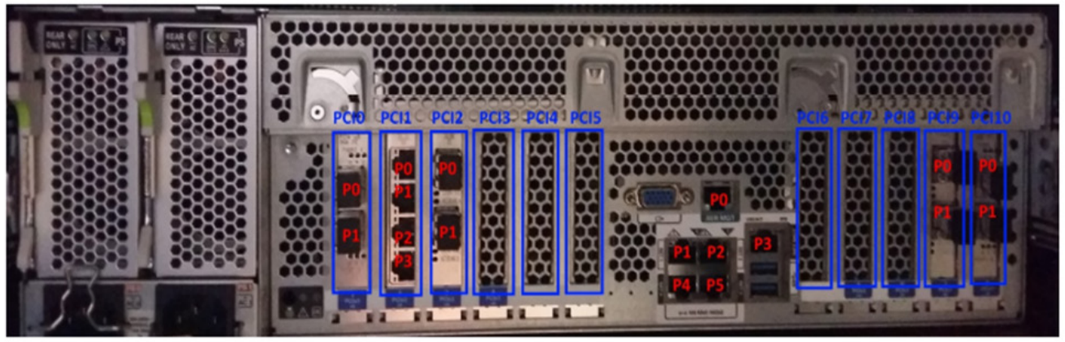
Attention!! Remember that it is necessary to take into account the gaps when naming the cards; otherwise, a future introduction of a new card in a gap would imply changing the name of all the following cards. Also, this way, all cards will have the same numbering in different equipment of the same model, as they are references to their physical positioning.

As for the numbering of the ports, the sequence is the same and can be verified in the attached examples.

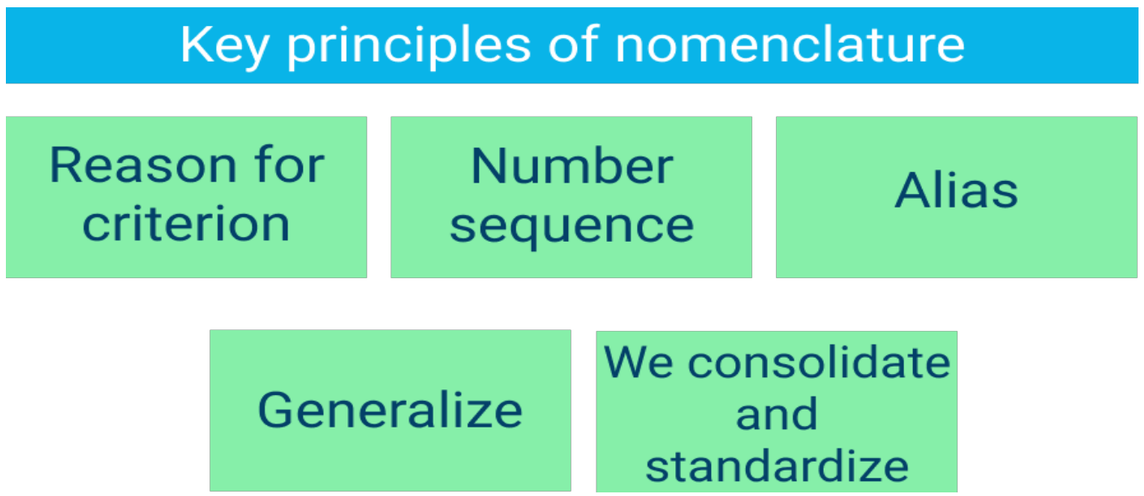


We have the criteria and the sequence; now let's focus on a very useful point in day-to-day operations: our friends, the ALIASES!! Many ask us about them, and the answer is...

Yes, it is possible to include an "Alias" for the port in a specific field, but its function will be solely for internal information. It should never be used when assigning a task to the operations team; always refer to the port by its physical position, that is, by the criteria established in this document. The reasons, as mentioned earlier, are to speak the same language, to use a single identifier to communicate with the rest of the equipment, and to avoid errors.

We now have the foundation of the nomenclature, and it's time to use it globally to allow for generalization. All equipment of the same model will always have all ports of the chassis and its cards named the same. All cards will have their ports named in the same way. Therefore, by unifying and standardizing these nomenclatures, communication and day-to-day operations will be simpler, avoiding downtime and unproductive times.

I'll summarize the main keys so you don't forget:



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But what about other types of elements (very critical ones) like servers? How should I approach their nomenclature?

Different types of Servers

As we all know, servers have the mission of meeting the various information demands required by companies and users, such as: emails, videos, application services, databases, images, etc. For this reason, we can come across different types of servers based on their utility and requested requirements. As an example, we can find

Email Servers They are used as mail offices: they store, receive, and send various information related to personal or business email. These servers can be divided into POP3 (retains emails until they are opened...), IMAP (allows interaction with information, downloads, previews, organization...), or SMTP (manages all outgoing emails...

Web Servers All information can be visualized. We can encounter Apache servers (among the most common), Microsoft IIS (exclusive for Windows systems), Sun Java System Web Server (open-source for PHP, or JSP, among others), Lighttpd servers (lightweight and fast), or Virtual Servers (to optimize hardware costs).)

Database Servers Widely used to store large volumes of information, managing data independently.

Cloud Servers Widely used in cloud companies that rent storage space. They store large volumes of information while being highly protected, both in terms of access and in the event of information loss or leaks.

DNS Servers Used to manage the domains of websites, linking the domain name to its IP address.

Telnet Servers We primarily see their use in telecommunications, where, through network protocols, they facilitate troubleshooting in telephone networks

SIP Servers or SIP Proxy Servers” Required to establish internet phone connections. It only stores the IP for communication.

FTP Servers Connected to the internet to transfer data and files between computers and servers

Shared Servers Servers that store information but, at the same time, share elements such as RAM, CPU, IP address, and internet connection. Their advantage is that they can be shared among many users, but being shared, they cannot handle many requests simultaneously, leading to a decrease in speed.

As we’ve discussed, there are many types of servers that we can encounter. Therefore, it’s crucial to know how to name them and understand the content of each one. For this purpose, having a **clear and secure nomenclature, as mentioned earlier, is necessary.**

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How to identify the equipment/servers

As we mentioned, as a general rule, one shouldn’t provide clues about the content or activities of the equipment, but logically, there is also no standard for naming these devices, primarily due to security concerns. Therefore, each company typically uses its own nomenclature.

Regardless of the server we are going to use, we should identify it with a machine name through, as mentioned, a nomenclature that we want to implement in our system.

The assigned name should be unique and, at a minimum, provide information about its location, dependency, and function.

As an example, we could generate a name following a model like this:

Server Name = Environment + P-V + D-T-P + Service + control digit (maximum three digits)

It is recommended to keep the number of characters used for identification to a maximum of 15 digits.

Where:

Environment: Location of the asset (Onsite - geolocation with country-city-Datacenter-room) or Cloud (Azure-AmazonWS-Google-Oracle) alphanumeric code of 3 characters.

P/V: Physical or Virtual Server.

D/T/P: Development, Testing, or Production.

Service: Alphanumeric code of up to 6 characters.

- A ALM - File Server (can specify by storage technology: NAS, SAN, or simply FSS as Windows File System)
- APP - Application Server
- CLN - Cluster Name
- DC or PDC - Domain Controllers
- DNS - Name Server
- EXCH - Mail Server
- FSS - Dedicated File Server
- IDX - Index Server (SharePoint / others)
- MLS - Mail Server
- ORC - Oracle Database Server
- PDC - Domain Controllers
- PRS - Dedicated Print Server
- PRT - Printers
- SMS - SMS Server
- SPG - General Purpose Servers
- SQL - SQL Server
- TES - Terminal Server
- TFS - Team Foundation Server
- WEB - Web Server
- WFE - SharePoint Web Front End

But don’t just trust us..

What do the regulations or best practices in the industry tell us? Let’s take ISO 20000 as a reference.

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What does the ISO 20000 standard tell us?

The International Standard for IT Service Management outlines a series of processes for the effective and structured implementation of reliable information technology services within the realm of IT service management.

It’s important to highlight that the standard is comprised of a set of processes aimed at standardizing the management of information systems through effective processes that cover all service and customer-centric activities within the organization.

In Chapter 9, Control Processes, there are references to two sections: 9.1 Configuration Management and section 9.2 Change Management.

These processes ensure the quality of information for those in charge, taking into account, among other aspects, the control of all components of the infrastructure and the verification of actions that have been taken.

One section emphasizes the need to control all elements of the IT infrastructure and furnish a configuration with accurate information. This process also encompasses the management of the repository storing various software libraries.

Additionally, it addresses configuration items (CIs), which include, among other information:

- Hardware devices, such as servers, external storage, PCs, printers, communication equipment, etc.
- Software: operating systems, software products, all kinds of applications, scripts, product configurations, etc.
- Documentation: manuals, service level agreements, support contracts, etc.
- People involved in the service delivery.
- Locations, buildings, offices, etc.
- IT services provided.
- Logical entities, such as partitions, clusters, instances, etc.
- Indicators, metrics, reports, etc.

Therefore, CI is essential for IT management. A CI is not isolated. It needs and interacts with other elements to compose the final service that IT provides. The relationships between two CIs can be of various types. Below are examples of them:

- **Un In use**. An employee CI uses another CI of the type PC.
- **Part of (child)**. A network component is part of a network.
- **Formed by (parent).** A network is formed by communication components.
- **Connected to.** A storage CI is connected to a server CI.
- **Installed on**. A software CI is installed on a server CI.
- **Located in.** A CI is located in another CI of the location type.

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The standard refers to the possible additional fields of a server-type CI. Additional fields may vary depending on the type of CI and could include:

•Serial number.
• Model
• Server class.
• Number of processors.
• Processor type.
• Memory type.
• Memory size.
• Processor speed.
• IP address.
• Hostname.
• Local storage capacity.
• High availability status.
• Number of network interfaces.
• Interface type.
• MAC Address.

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Conclusion Bjumper

The standardization in the nomenclature of elements enhances our management of critical infrastructure

1. **Reduces the risk of failure.**
2. **Optimizes operation times.**
3. **Aids in coordination and improves relationships between departments**

There is no path to automation without the standardization of names within each company!!