



# INDEPTH Network

## CiB Centre-in-a-Box

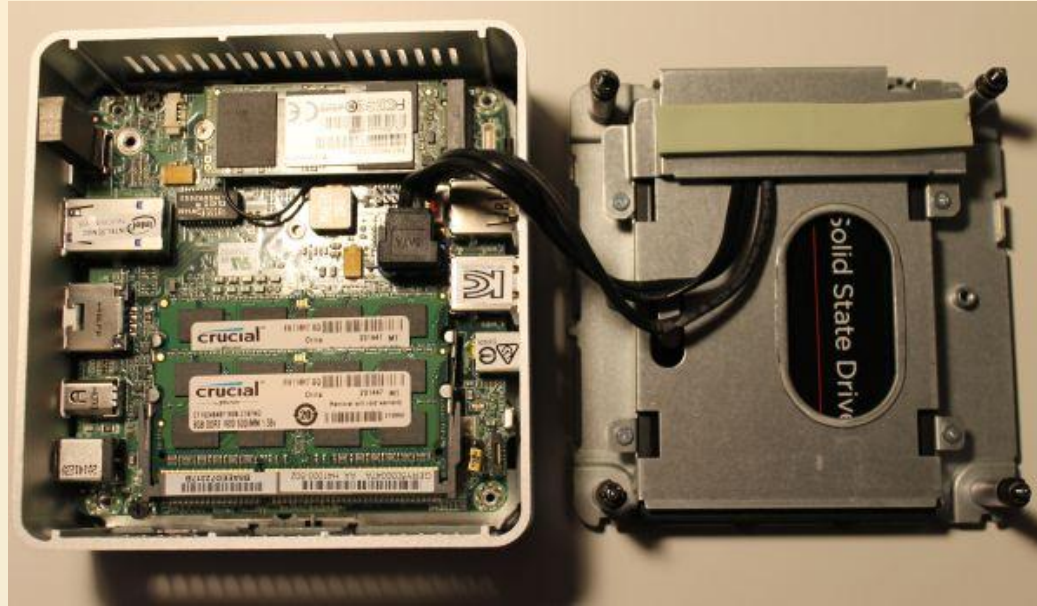
Brendan Gilbert  
iSHARE2 Support Team

# What is a CiB?

- Single physical appliance with all the components needed to document, extract, transform, load and distribute micro-data sets from INDEPTH member centres.

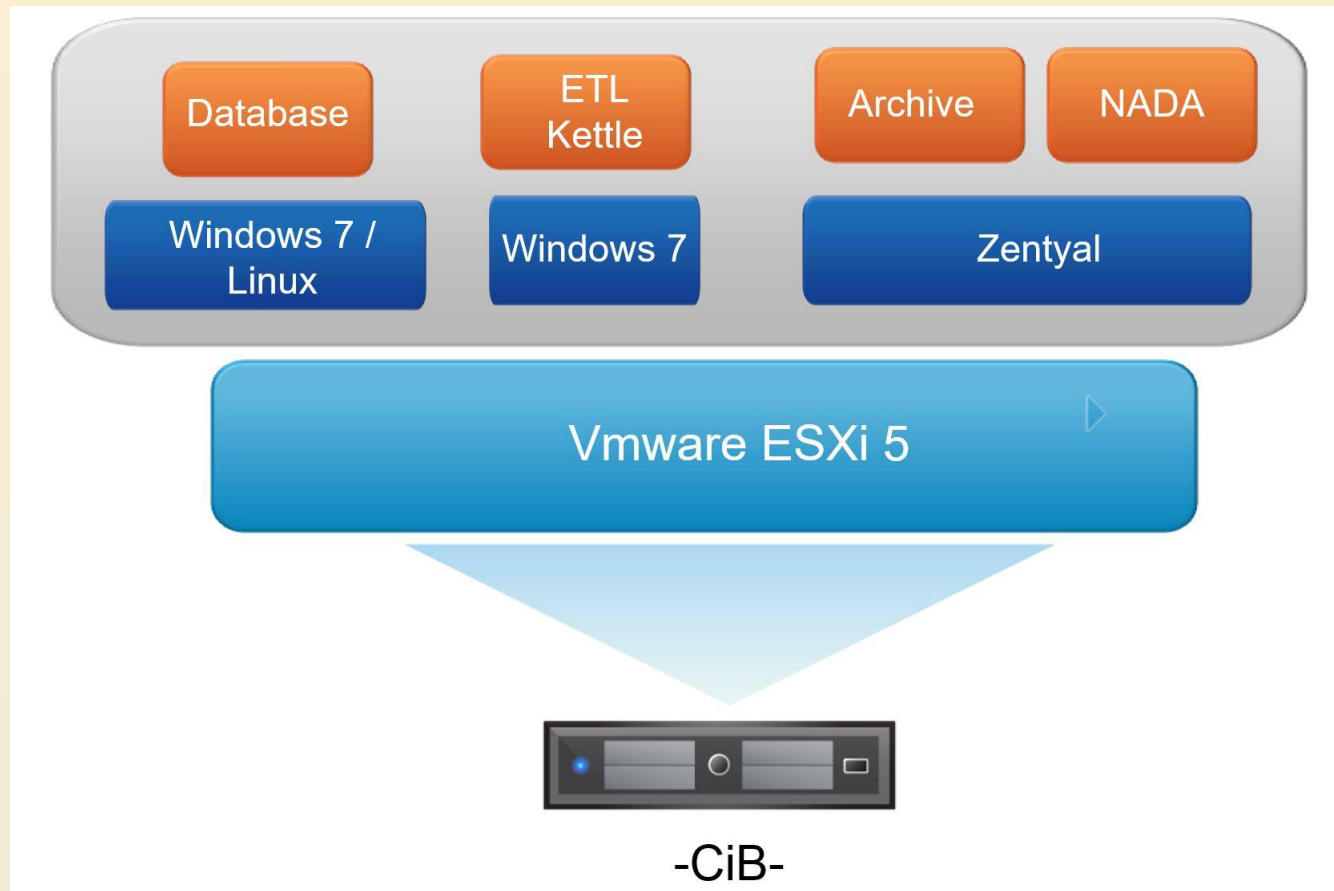


# CiB Components



- Intel i7Core CPU 2.6GHz – Dual Core (4 vCPU)
- 16GB RAM
- 1x 512GB M.2 SSD
- 1x 1TB SATA HDD
- VMware ESXi Hypervisor

# CiB Architecture



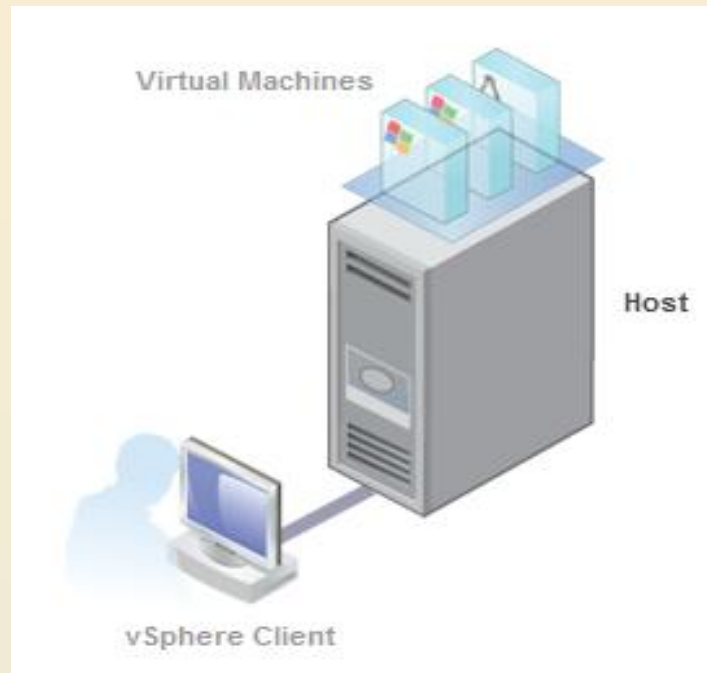
# Introduction to Virtualization and VMware Hypervisor Architecture

# Virtual Machines on CiB

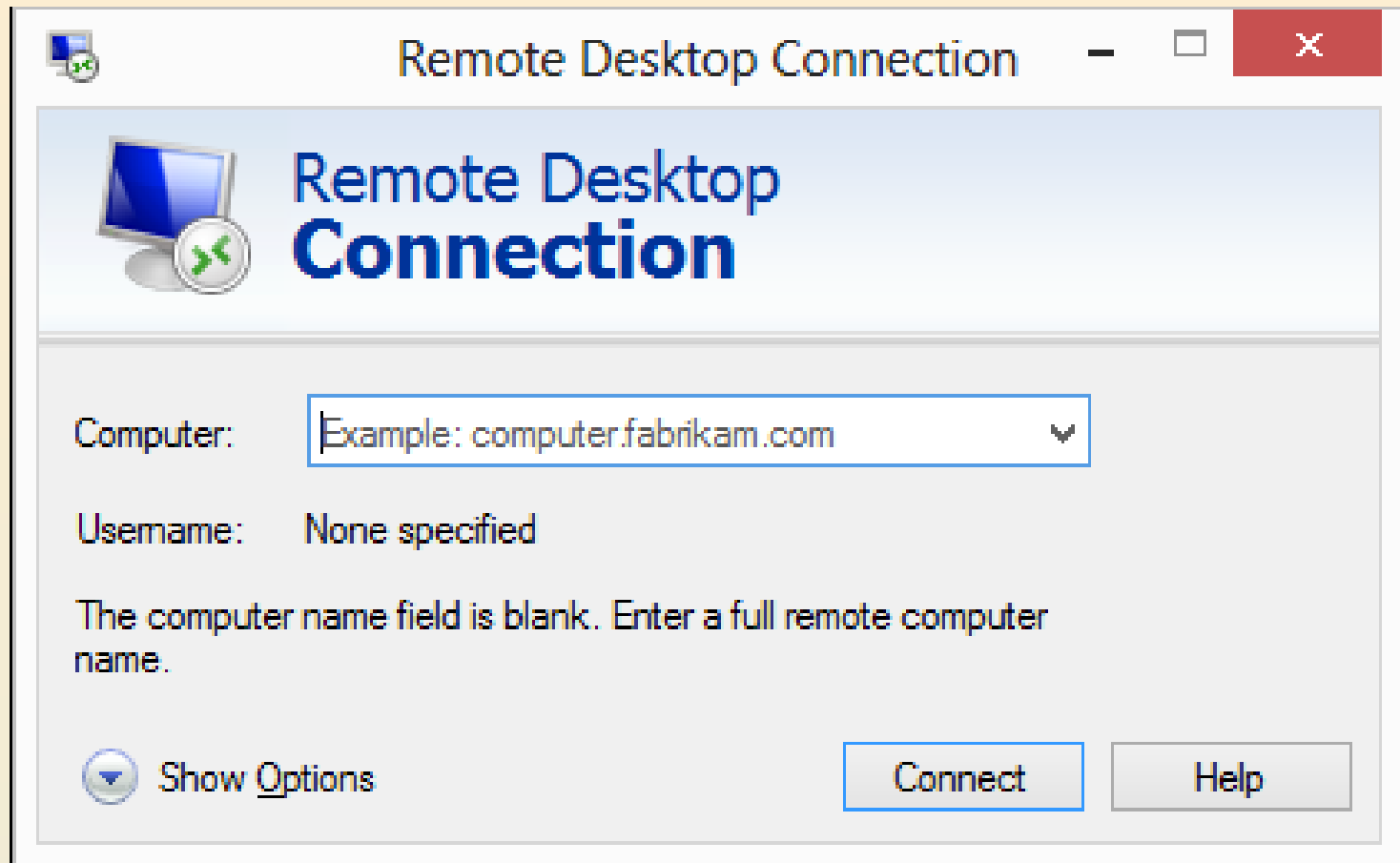
- **System server:** Provides network services, authentication services, web server and file server.
- **Database server:** Hosts a database system that replicates the operational database of the HDSS
- **Datamanager desktop:** Hosts the software required to prepare and document the datasets that will eventually be shared on the repository.

# Terminology

- **Remote Desktop (RDP)** – Feature that allows you to remotely access a computer using RDP client i.e. Remote Desktop Connection Client.



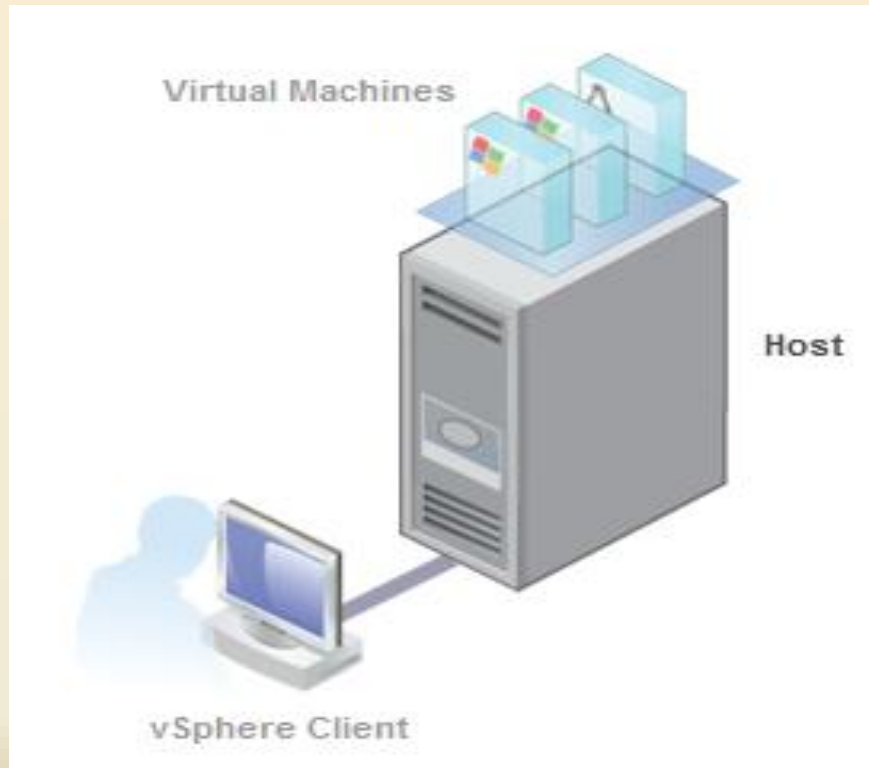
# Remote Desktop Client





# Vmware Vsphere Client

- **Vmware Vsphere Client** - An application that allows to connect any windows PC remotely to a ESX/ESXi host.



# Vmware Vsphere Client



The screenshot shows the VMware vSphere Client login window. The title bar reads "VMware vSphere Client" with a standard Windows window control button (close) on the right. The main header area is blue and contains the VMware logo on the left and a large, stylized green and yellow VMware logo on the right. Below the header, there is instructional text: "To directly manage a single host, enter the IP address or host name. To manage multiple hosts, enter the IP address or name of a vCenter Server." Below this text are three input fields: "IP address / Name:" (with a dropdown arrow), "User name:", and "Password:". Below the password field is a checkbox labeled "Use Windows session credentials". At the bottom are three buttons: "Login", "Close", and "Help".

VMware vSphere Client

vmware

VMware vSphere™  
Client

To directly manage a single host, enter the IP address or host name.  
To manage multiple hosts, enter the IP address or name of a  
vCenter Server.

IP address / Name:

User name:

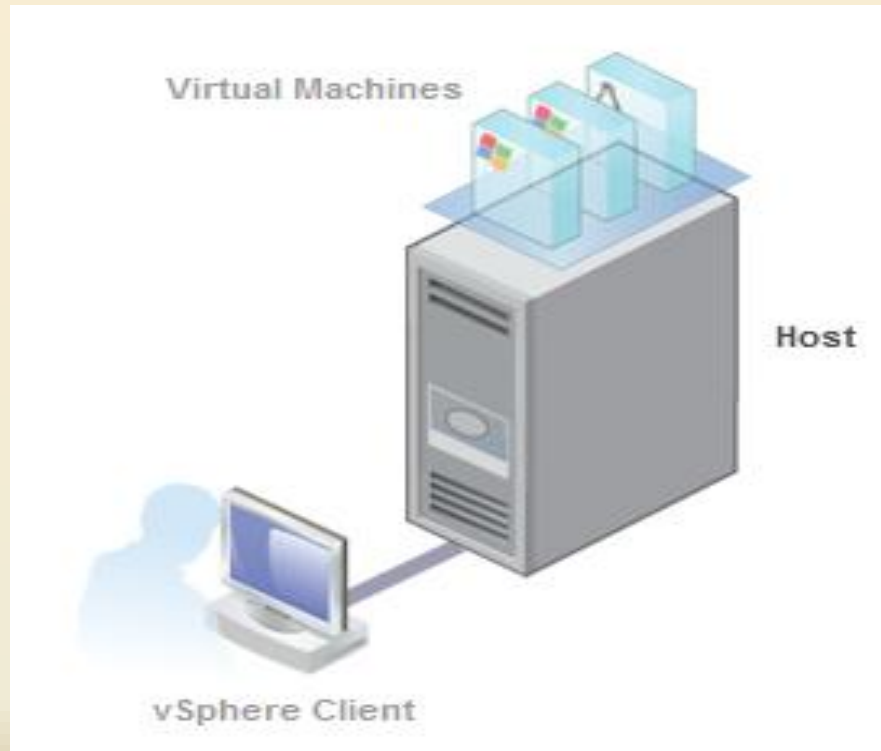
Password:

☐ Use Windows session credentials

Login Close Help

# Vmware ESXi Host

- **VMware Esxi Host** - VMware ESXi host is computer virtualization software developed by VMware Inc.



# Vmware ESXi Host

192.168.1.108

DataBaseServer

DataMgrDesktop

SystemServer

ZA031VMH. VMware ESXi, 6.0.0, 3380124

Getting StartedSummaryVirtual MachinesResource AllocationPerformanceConfigurationUsersEventsPermissions

General

Manufacturer: To Be Filled By O.E.M.

Model:

CPU Cores: 2 CPUs x 3.092 GHz

Processor Type: Intel(R) Core(TM) i7-5557U  
CPU @ 3.10GHz

License: VMware vSphere 6 Hypervisor  
- Licensed for 1 physical CP...

Processor Sockets: 1

Cores per Socket: 2

Logical Processors: 4

Hyperthreading: Active

Number of NICs: 1

State: Connected

Virtual Machines and Templates: 3

vMotion Enabled: N/A

VMware EVC Mode: Disabled

vSphere HA State ② N/A

Host Configured for FT: N/A

Active Tasks:

Host Profile: N/A

Image Profile: ESXi-Customizer

Profile Compliance: ? N/A

DirectPath I/O: Supported

Resources

CPU usage: **110 MHz** Capacity  
2 x 3.092 GHz

Memory usage: **12501.00 MB** Capacity  
16269.37 MB

Storage	Drive Type	Capacity
datastore1	SSD	469.50 GB 14%
datastore2	Non-SSD	931.25 GB 84%

Network	Type
External Network	Standard port group
Internal Network	Standard port group

Fault Tolerance

Fault Tolerance Version: 6.0.0-6.0.0-6.0.0  
[Refresh Virtual Machine Counts](#)

Total Primary VMs: 0

Powered On Primary VMs: 0

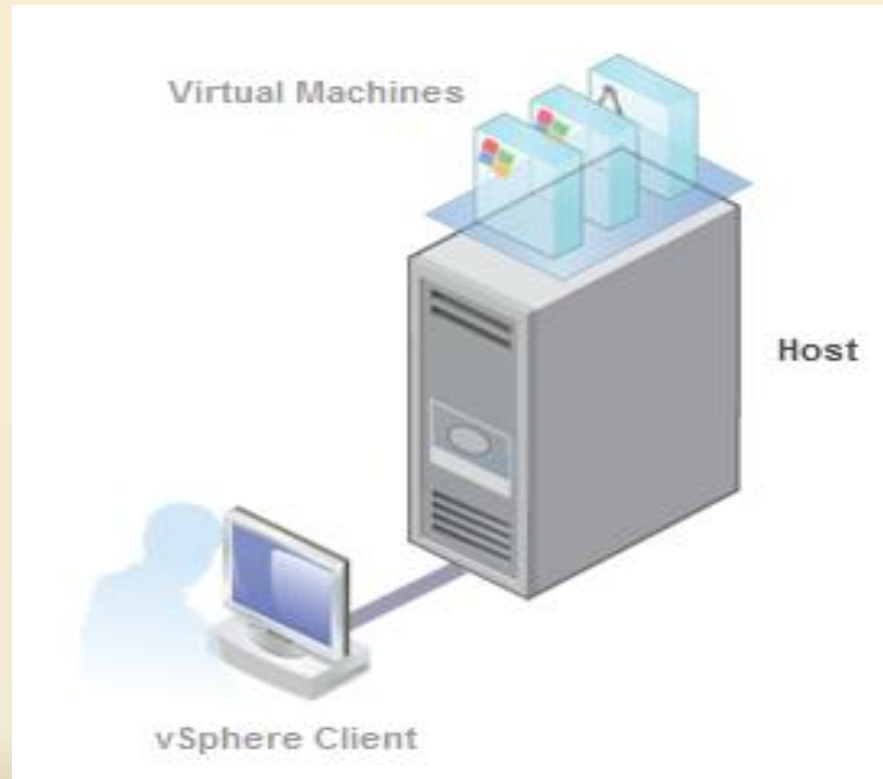
Total Secondary VMs: 0

Powered On Secondary VMs: 0

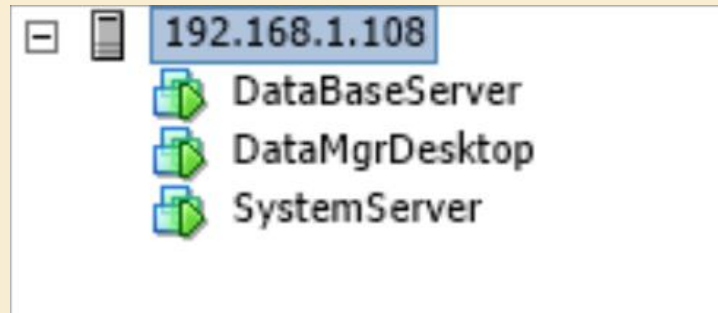
Host Management

# Virtual Machines (VM)

- **Virtual Machines (VM)** - A virtual machine (VM) is a software implementation of a machine (i.e. a computer) that executes programs like a physical machine.



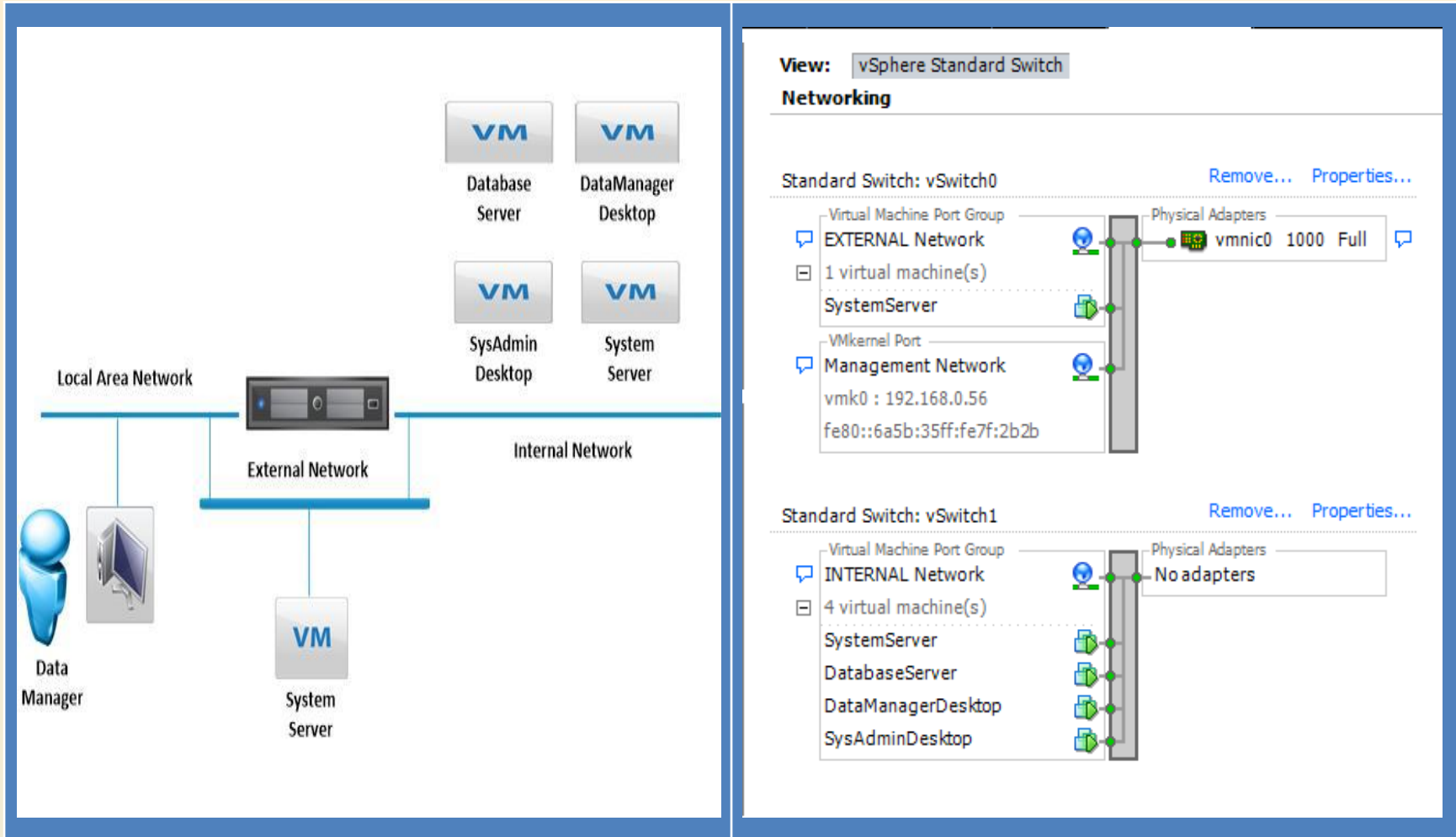
# Virtual Machines (VM)



# Network Virtualization

- Network virtualization is method of combining the available resources in a network by splitting up the available bandwidth into channels.
- Given that the local network configuration can vary significantly across Centres, the topology for CiB is difficult to predict.

# Network Virtualization



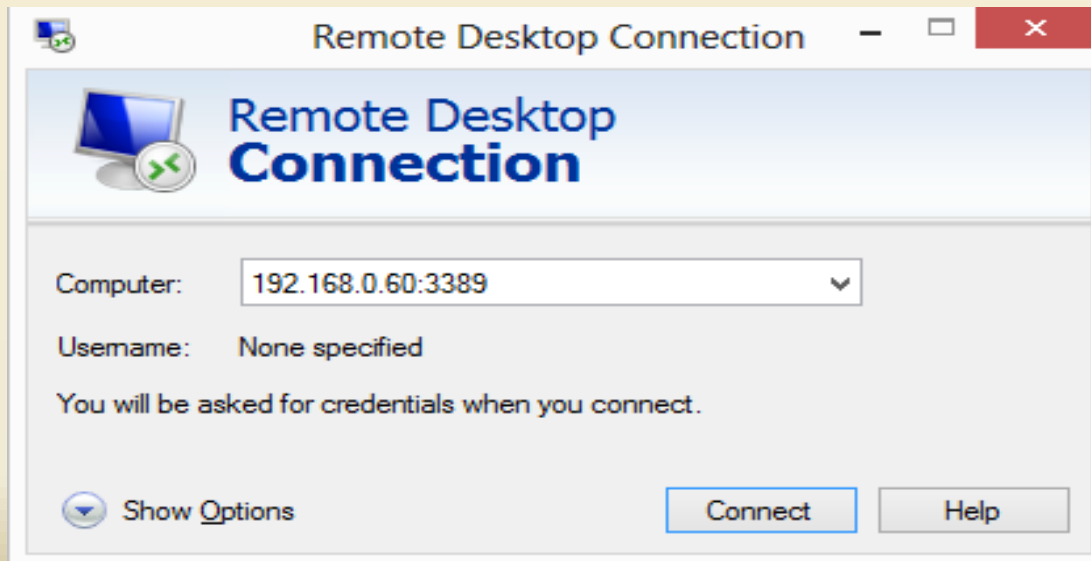


# Connecting to VM's on CiB (pre-requisites)

- Request assistance from your local IT staff to connect CiB to Centre's network (LAN).
- Power ON CiB.
- Allow few mins for ESXi host and VM's to start-up.
- Identify the Esxi Host and System Server IP addresses.
- The System Server's IP will be known as the External IP address.
- Know your login credentials for CiB.

# Connecting to VM's on CiB

- Using Remote Desktop Client connect to the External IP using the designated **tcp port** for the VM e.g. 192.168.0.60:3389 **Data Manager** or 192.168.0.60:3390 **Database Server**
- Login using your credentials e.g. cib\username and password



# RDP Ports for VM's on CiB

- External IP:3389 – Data Manager Desktop
- External IP:3390 – Database Server

e.g. 192.168.0.60:3390

# Hands On Test (exercise - 1)

- Connect to your Data Manager Desktop using Remote Desktop client.
- Connect to your Database Server using Remote Desktop client.

**NB: Remember the pre-requisites.**

# Conclusion

- You have an understanding of the CiB.
  - You have an understanding of the Terminology
  - You are able to Remote Desktop (RDP) to your Data Manager Desktop and Database Server.
- 
- Next we look at Virtual Machines on the CiB.....



**Next CiB VM's.....**

# Virtual Machines (VM)

- System Server
- Database Server
- Data Manager Desktop


# System Server



The main role of the System server:


- Manage all network services such as network security, resource sharing and network infrastructure.
- It is the open source alternative to Microsoft network infrastructure products.
- Managed via a single easy to use web interface.





# System Server


 **zentyal** Development Edition 4.2


Search...  


 Dashboard


 Module Status


 System <


 Network <


 Logs

 Software Management <

 Users and Computers <

 Domain <

 File Sharing




 DNS

## Dashboard

### General Information

Time	Sat May 7 15:58:11 SAST 2016
Hostname	system
Core version	4.2.2 ( <a href="#">available</a> )
Software	<b>1 component updates, 123 system updates</b>
System load	0.12, 0.09, 0.07
Uptime	26 min
Users	0

### Module Status

Network	Running
Firewall	Running
DNS	Running  Restart
Logs	Running  Restart
NTP	Running  Restart
Domain Controller and File Sharing	Running

### Network Interfaces

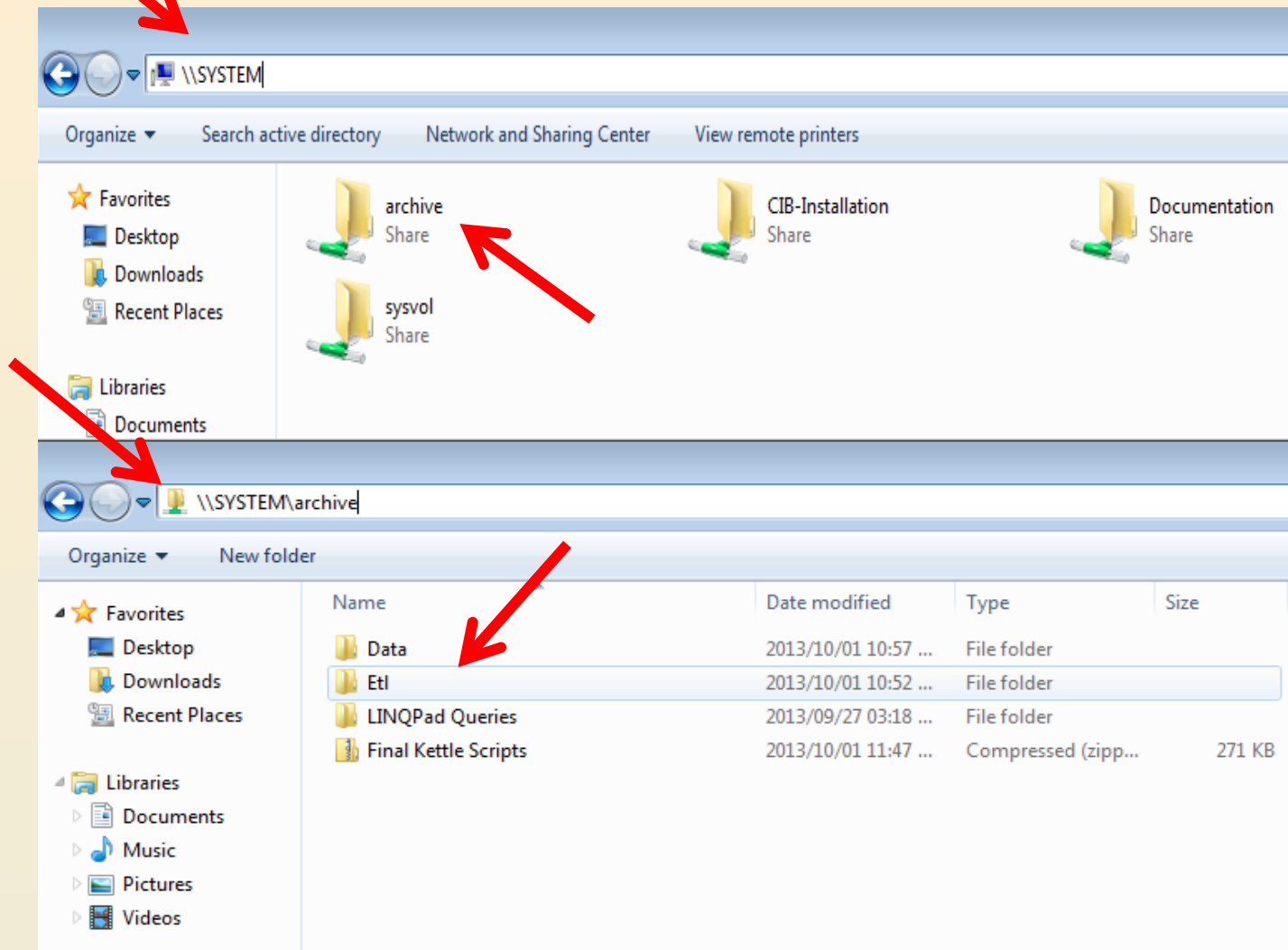
▼ eth0

# System Server (continued)

Key role File Server:

- Shared file storage to Windows and Linux clients.
- Act as a central repository for all the data, documentation, and other files managed and archived at the Centre.

# File Manager




# System Server (continued)

Key role Web Server:


- Manage the web-based content.
- Build survey data portals.
- Researchers can discover, browse and compare information on census and survey data.

# System Server (continued)

**INDEPTH** Data Repository

INDEPTH Network | Login

Home | What is this? | How to use it? | History | Data | Citations | News | INDEPTHStats | Contact Us




### Africa Centre HDSS, South Africa

The service facility survey catalog provides access to data along with accompanying survey documents from facility level surveys conducted by the World Bank. Service delivery surveys are tools to measure the effectiveness of basic services such as education, health, and water and sanitation...The Africa Centre Demographic Information System (ACDIS) started data collection in January 2000. [Read More »](#)

### Central Data Catalog

The Central Data Catalog is a portal for all surveys and datasets held in catalogs maintained by the INDEPTH Network and a number of contributing external catalogs.

 [View all Surveys »](#)

### Latest additions

Ghana, Kenya, South Africa, Tanzania, Uganda - Epidemiology and Treatment of Epilepsy in sub-Saharan Africa  
Aug 29, 2013

Tanzania - Magu Household Demographic Surveillance System Dataset 1994 - 2010  
Jul 01, 2013

Kenya - Nairobi Urban Health and Demographic Surveillance System 2002-2010  
Jun 30, 2013

South Africa - Africa Centre INDEPTH Core Dataset 2000-2011 (Residents only)  
Jun 18, 2013

South Africa - Agincourt INDEPTH Core Dataset 1992-2010  
Jun 18, 2013

[View more...](#)


### FAQ'S


- ▶ How can I contribute to improving the catalog?
- ▶ Can you help with analyzing the data?
- ▶ Can I get help in implementing a survey catalog in my agency?

[Click here for more...](#)

### NEWS

[Go to the news page. Click here](#)

**iSHARE 2**  
an INDEPTH project

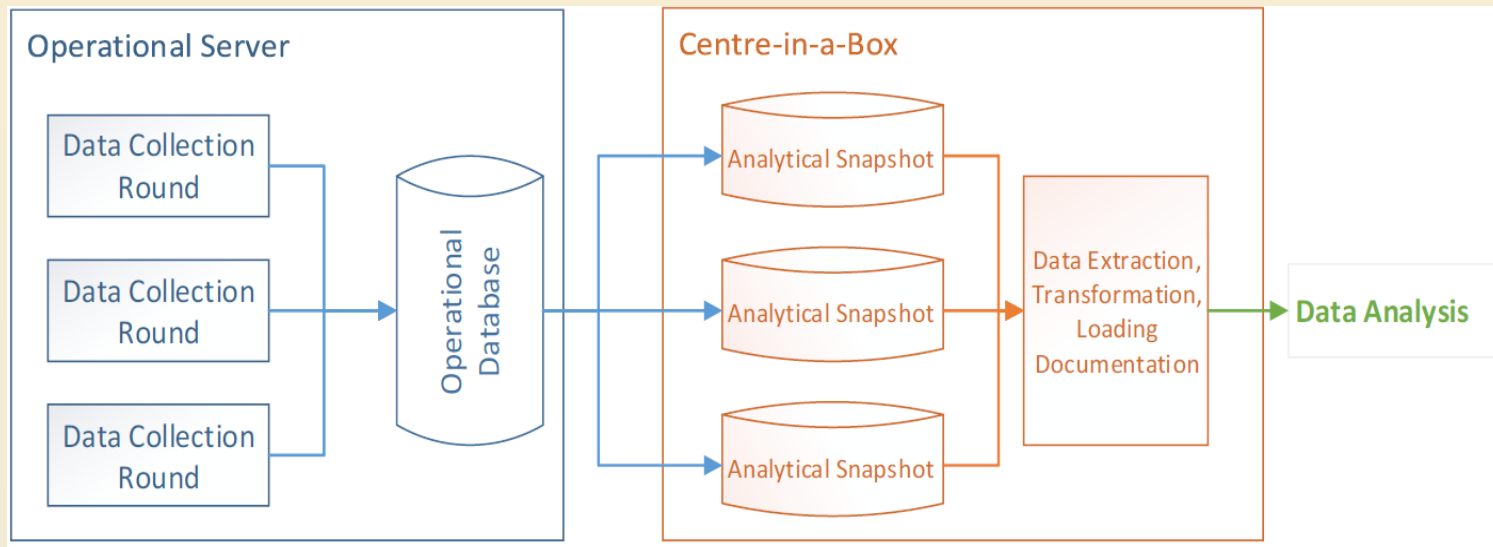
**INDEPTH Network**  
Better Health Information for Better Health Policy

©2013 INDEPTH Network. All Rights Reserved

# Database Server

The main role Database server:

- Host analytical snapshot the centre's operational database.



# Data Manager Desktop

The primary role of this desktop is to host the tools needed by the Data Manager:

- Pentaho Data Integration also called “Kettle” for ETL purposes.
- Nesstar Publisher for DDI documentation.
- Zotero for citation management.

# Data Manager Desktop







**THANK YOU**

