Mawlana Bhashani Science and Technology University,Tangail

Presentation title: Virtual Network Compution(VNC)

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Presented by	Supervised by
Papon Biswas ID: IT22019 Session: 2021-22 Dept of ICT,MBSTU	Dr. Nazrul Islam Associate Professor Dept. of ICT, MBSTU

Virtual Network Computing

Remote Control Made Simple

Contents

What is VNC?

Virtual Network Computing is a cross-platform screen sharing system that transforms remote access. It allows you to view and control another computer's desktop over a network as if you were physically present, enabling seamless collaboration and support across devices and locations.

Cross-Platform

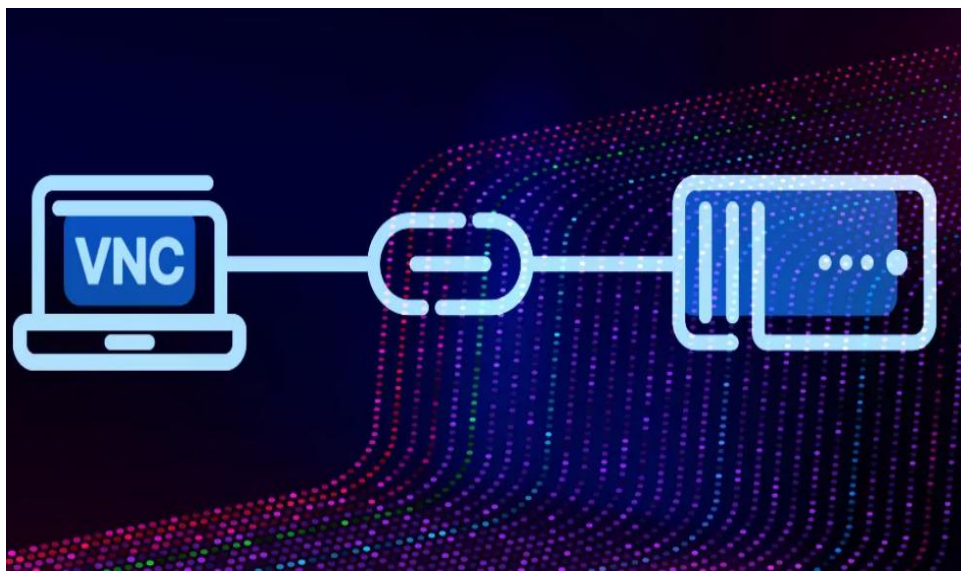
Works on Windows, macOS, Linux, and more

Real-Time Control

Instant keyboard and mouse input response

Network-Based

No special hardware required



Key Features of VNC (Virtual Network Computing):

- Cross-Platform Support: Works on Windows, Linux, macOS, and mobile devices.
- Remote Control: Allows full control of another computer's keyboard and mouse.
- Screen Sharing: Displays the remote system's desktop in real time.
- RFB Protocol: Uses the Remote Frame Buffer protocol for communication.
- Multiple Connections: Supports access by several clients to the same server.
- Password Authentication: Provides security through user authentication.
- Data Compression: Uses encoding (like Tight or Zlib) to reduce bandwidth usage.
- Portability: Lightweight and easy to install on any system.
- File Transfer (in advanced versions): Enables copying files between local and remote machines.
- Session Persistence: Keeps connections active even if temporarily interrupted.

The Origins of VNC

1 — Late 1990s

Created at Olivetti & Oracle Research Lab in Cambridge, UK as a software-only solution to replace expensive thin client terminals

2 — 2002

Commercialized by RealVNC, founded by the original developers with enhanced features and support

3 — Today

Evolved into an industry standard with multiple implementations and widespread adoption across enterprises

How VNC Works

VNC operates on a client-server architecture, creating a seamless bridge between local and remote systems through a straightforward yet powerful communication model.

VNC Server

- Runs on remote computer
- Captures screen updates
- Receives input commands

VNC Viewer

- Runs on local device
- Displays remote screen
- Sends keyboard/mouse input

The RFB Protocol

Remote Framebuffer (RFB) is the elegant protocol powering VNC. It transmits screen updates as small rectangles of pixel data, intelligently optimized for bandwidth efficiency through multiple encoding methods.

Simple Architecture

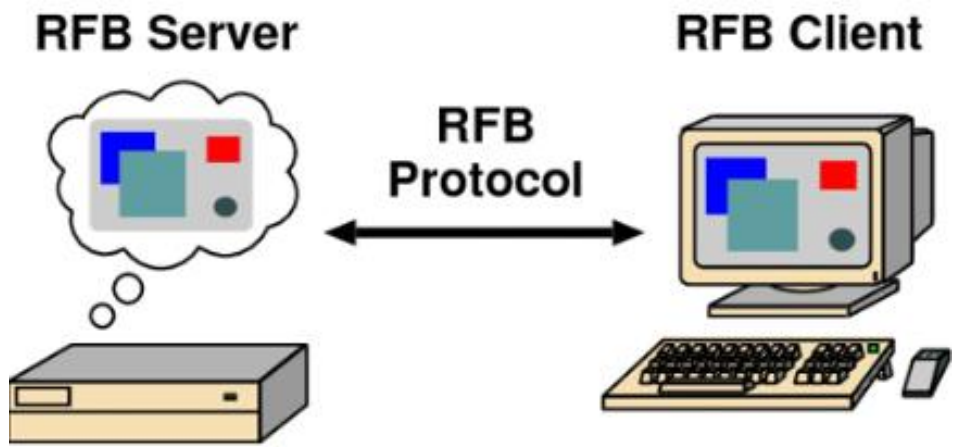
Designed for ease of implementation across platforms

Highly Extensible

Supports multiple encoding methods for optimization

Universal Compatibility

Works seamlessly across Windows, macOS, Linux, and beyond



Real-World Applications

IT Support

Troubleshoot user systems globally in real-time

Remote Work

Access work desktops from home or anywhere

Healthcare

Monitor and control medical systems remotely

IoT Management

Manage and troubleshoot industrial devices

Popular VNC Implementations

The VNC ecosystem offers diverse solutions tailored to different needs and environments, from lightweight open-source options to enterprise-grade commercial platforms.

RealVNC

Commercial and open-source with military-grade encryption and professional support

TightVNC

Open-source champion optimized for bandwidth-constrained environments

UltraVNC

Windows-focused with integrated file transfer and chat capabilities

Vino & TigerVNC

Linux-native implementations providing seamless desktop integration

Security Considerations

While powerful, VNC requires careful security implementation. Unencrypted VNC traffic exposes connections to interception—best practices demand tunneling through SSH or VPN.

1 **Enable Encryption**

Use SSH/VPN tunnels or commercial versions with built-in encryption

2 **Strong Authentication**

Implement complex passwords and limit access permissions strictly

3 **Network Isolation**

Restrict VNC access to trusted networks only

Strengths and Limitations

Advantages

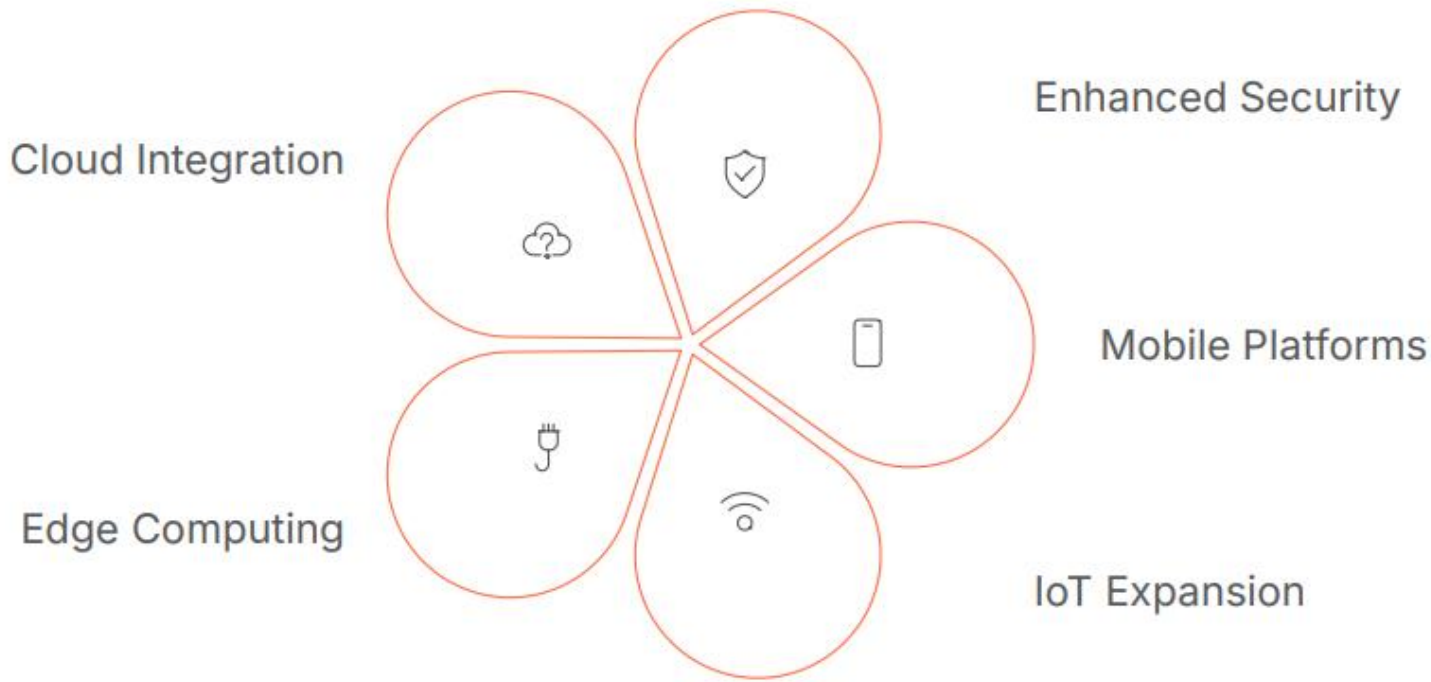
- Platform-independent design
- Easy setup and deployment
- Persistent sessions survive disconnects
- Minimal resource requirements

Limitations

- High bandwidth for resolution
- File transfer needs separate tools
- Multi-user support varies
- Requires network connectivity

The Future Ahead

VNC technology continues evolving as a cornerstone of remote access. Cloud integration, enhanced security protocols, and expanding IoT applications ensure VNC remains essential for seamless remote desktop control across emerging work and technology landscapes.



Conclusion:

- VNC (Virtual Network Computing) is a powerful and platform-independent remote desktop technology.
- It allows users to view and control another computer over a network using the RFB (Remote Frame Buffer) protocol.
- VNC offers a simple and efficient way to access remote systems, share screens, and perform administrative tasks.
- It works across different operating systems, making it highly versatile.

With proper security and authentication, VNC becomes a reliable tool for:

->Remote technical support

->Online education and training

-> Team collaboration and system management


Thank you!