This article provides the **Preliminary Stage** outline for the Network Track of Huawei ICT Skill Competition.

1. Network Track of Huawei ICT Skill Competition Preliminary Stage Overview

Competition Stage	Exam type	Duration	Total Score
Preliminary Stage	Written	90 min	100

2. Network Track of Preliminary Stage Outline

Exam Content：

Content	R&S	Security	WLAN
Ratio	50%	30%	20 %

The **Network Track of Preliminary Stage** exam covers three modules: R&S, Security and WLAN.

The R&S module content covers basic IP network connectivity, TCP/IP technologies, Ethernet technologies such as STP and RSTP, VLAN and Link Aggregation and their implementation within Huawei switches. Routing principles and technologies including RIP and OSPF for IPv4 and IPv6 networks, WAN technologies, network management as well as IPv4 and IPv6 based application services.

The Security module content covers network security basis, firewall basis such as package filter, NAT, etc. and VPN technologies such as IPSec, SSL etc., as well as their implementation in Huawei firewall products, firewall user management technology, IPS technology, and information security concept & standards, security management process.

The WLAN module content covers cover WLAN Basis and principle, Huawei WLAN product introduction and configuration, Fat AP and Fit AP architecture, WLAN Networking Introduction.

2.1 Knowledge Points

IP Network Principles

1). Ethernet and IP based data forwarding processes.

2). TCP/IP network protocols and data encapsulation.

3). VRP commands for basic navigation and configuration.

4). IPv4 addressing principles, address design and subnetting.

5). TCP/IP supporting applications such as Ping, Tracert, FTP, and Telnet.

LAN Technologies

1). LAN switching operations.

2). Link Aggregation application and configuration.

3). VLAN and GVRP and behavior, application and configuration.

4). STP and RSTP switching behavior, application and configuration.

WAN Technologies

1). Principles and application of serial technologies in wide area networks.

2). HDLC and PPP encapsulation principles and configuration.

3). Frame Relay and PPPoE implementation at the customer edge.

Routing Technologies

1). Static and dynamic routing principles,

2). RIP and OSPF dynamic routing protocol function and implementation in VRP

Network Management

1). Network Management protocols and technologies.

IPv6 Networks

1). IPv6 principles and technologies.

2). IPv6 routing technologies.

3). Application services for IPv6 networks.

Firewall

1). Basic principles of cyber security.

2). Basic Firewall technology and security policy.

3). Different types of NAT technologies and configurations, such as NAT based on source IP, NAT based on target IP, NAT between or inside zones, bidirectional NAT, NAT server, target NAT.

5). Firewall dual-system hot backup technologies and configurations.

6). Firewall user management, user authentication, AAA concept.

VPN

1). VPN basic principles, classifications and encryption technology.

2). L2TP principles, Client-Initialized L2TP, NAS-Initialized L2TP.

3). GRE principles and configurations.

4). IPSec basic principles, AH principles, ESP principles, IKE principles, IPSec configurations.

5). SSL principles, Virtual gateway concept and configurations, Web proxy configurations, file sharing configurations, port forwarding configurations, network extension configurations.

WLAN Technologies

1) WLAN Historical, WLAN Standards Bodies, WLAN RF Principles, WLAN Frequency Bands.
2) WLAN Topologies, 802.11 Protocol, 802.11 Physical Layer Technology, CAPWAP Fundamentals.
3) WLAN Products, Antenna Technologies and Networking.
4) WLAN Product Features and Configuration.

3 Self-learning Resources

Subject	Material
Routing and Switching (HCNA)	Learning Material
Security (HCNA)	Learning Material
WLAN (HCNA)	Learning Material