STB Multimeter™

for STB based IPTV/OTT Service Testing & Monitoring

Highlights

Benefits

1 **Save Labour Costs**
by 24/7 Unattended Testing / Monitoring

2 **Shorten the Service Improvement Lead-time**
with Rich Back-data

Solution Overview

The followings are the full structure of STB Multimeter solution.
Customers can configure items according to the purpose of operation.

Management Server

STB Log Server Optional
(STB Log Collection & Visualization)

VQ Monitoring Server Optional
(AI-based Video Quality Monitoring)

Probe
(STB Controls and Output Acquisition, Edge Analysis)
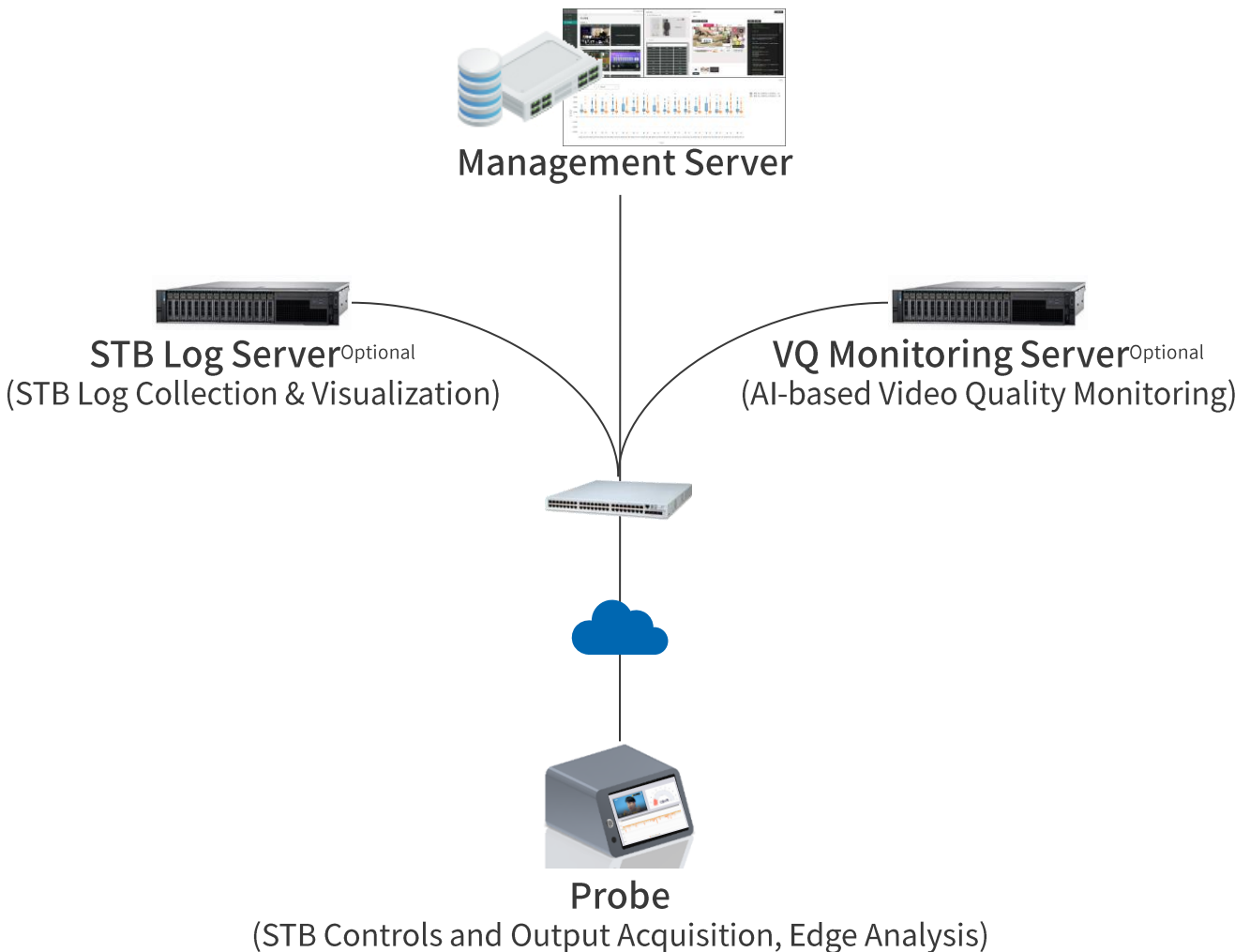
Solutions by Use Cases

1 Centralized IPTV/OTT Service Monitoring
24/7 Real Audiovisual based Service Monitoring

As IP based service monitoring is limited to certain metrics, audiovisual based monitoring is required to fully check the service quality.

Probe	✔	1~many
Management Server	✔	1
STB Log Server	✖	
VQ Monitoring Server	✔	1~[1]

2 Nationwide IPTV/OTT Service Monitoring
Fitted for Unmanned, Distributed Environment

Affordable local service monitoring is available and no permanent operator at each branch is required.

Probe	✔	1~many
Management Server	✔	1
STB Log Server	✖	
VQ Monitoring Server	✖	

3 IPTV/OTT Service Software QA Automation
Saves QA Labour Cost and Lead-time for Software Development
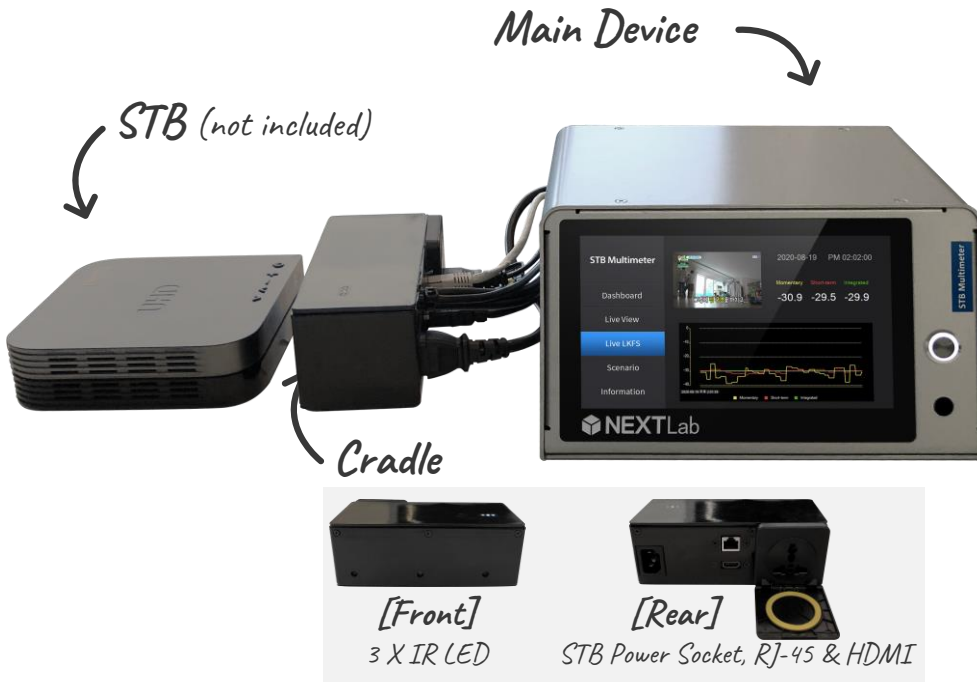
STB Multimeter can replace repeated, precise and overnight tests usually done by human testers. Its rich data acquisition helps debugging.

Probe	✔	1~many
Management Server	✔	1
STB Log Server	✔	1~[1]
VQ Monitoring Server	✖	

1) Quantities depend on the number of STB Multimeters to introduce

Specifications

Probe

1 Desktop Type (NLSMD)
Recommendable for QA Labs

Main Device

STB (not included)

Cradle

[Front]
3 X IR LED

[Rear]
STB Power Socket, RJ-45 & HDMI

Compatible STB Specifications (Supports ONE STB)

Network Interface	RJ-45 (~1Gbps), WiFi (~802.11ac)
STB Output Interface	HDMI (up to 60FPS@1080p)
IR Input Frequency	38~56kHz, 850nm
Power Input	Any type of AC plug

Physical Specifications

Dimensions (mm)	W220 X H134.5 X D224
Weight (kgf)	2.61
No. of Fans Inside	2 (temperature sensitive)

Environmental Specifications

Power Consumption	~100Wh
Operating Temperature Range	0~40℃
AC Input Power	220VAC @ 1A, AC Power Cord

Specifications

Package Contents

- STB Multimeter
- Cradle
- Power adapter with corresponding power cord

Ordering Information	NLSMD - B - {A} - {B}
License Options {A}	
Basic (if not choosing any options)	NLSMD - B - X - {B}
└ Audio Option	NLSMD - B - A - {B}
└ Network Option	NLSMD - B - N - {B}
└ Audio + Network Options	NLSMD - B - AN - {B}
Power Cord Options {B}	
Type F	NLSMD - B - {A} - F
Type G	NLSMD - B - {A} - G
Type B	NLSMD - B - {A} - B
Type I	NLSMD - B - {A} - I

Specifications

Probe

2 Rugged Type (NLSMS)
Recommendable for Unmanned Sites

Compatible STB Specifications (Supports TWO STBs)	
Network Interface	RJ-45 (~1Gbps), WiFi (~802.11ac)
STB Output Interface	HDMI (up to 60FPS@1080p)
IR Input Frequency	38~56kHz, 850nm
Power Input	Any type of AC plug, DC 5Vdc & 12Vdc

Physical Specifications	
Dimensions (mm)	4U 19" Rackmount Chassis Compatible
Weight (kgf)	10
No. of Fans Inside	8 (temperature sensitive)

Environmental Specifications	
Power Consumption	~200Wh
Operating Temperature Range	0~40°C
AC Input Power	2 X 220VAC @ 1A, AC Power Cord

Package Contents

• STB Multimeter
• Corresponding power cord

Specifications

Ordering Information	NLSMS - A - {A} - {B}
License Options {A}	
Basic (if not choosing any options)	NLSMS - A - X - {B}
└ Audio Option	NLSMS - A - A - {B}
└ Network Option	NLSMS - A - N - {B}
└ Audio + Network Options	NLSMS - A - AN - {B}
Power Cord Options {B}	
Type F	NLSMS - A - {A} - F
Type G	NLSMS - A - {A} - G
Type B	NLSMS - A - {A} - B
Type I	NLSMS - A - {A} - I

3 Functions License
Applied to all types

| Basic	
Test Automation	• NEXTLab Athena Integration • Basic Image Processing : Image Matching, OCR Recognition • IR Signal Learning / Transmitting • STB Supply Power On/Off Control
QoE Measurement	• Channel Change Time (Channel Zapping) • Reset Delay (Both Sleep-Wakeup and Cold-Reset) • UI Response Time
Audio Option	
Loudness Measurement (ITU-R BS.1770 Compatible)	• Short Term LKFS (S-LKFS) • Integrated LKFS (I-LKFS)
Network Option	
Network Modulation	• Delay, Bandwidth • Specific IP Address or Port Connection Control
Network Measurement	• RTP Streaming Packet : Loss Packet Count, Streaming Bandwidth, Delay, Jitter • ETSI TR 101 290 1st Priority

Specifications

Management Server

Installation Requirements	
O/S	(1) Microsoft Windows Server 2016 or later (64bit) (2) Microsoft Windows 10 or later (64bit) (3) Ubuntu 18.04 or later (4) CentOS 7.7 or later
CPU	at least XEON Scalable Silver 4210 (or similar)
RAM	at least 32GB
Storage	at least 1TB / RAID 1,5,6 preferred
NIC	at least 1 x 1Gbps

Features (Website-based)

(1) Project-based Management : Test Cases and Results are managed under each project

(2) Test Case Creation : Python-based Test Case script creation

(3) Scheduling : Assign Tests to every connected STB Multimeter

(4) Status Monitoring : STB streamed videos from each connected STB Multimeter

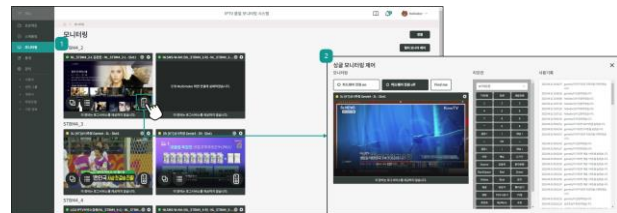(5) Reporting : BI^Business Intelligence styled flexible reporting tool
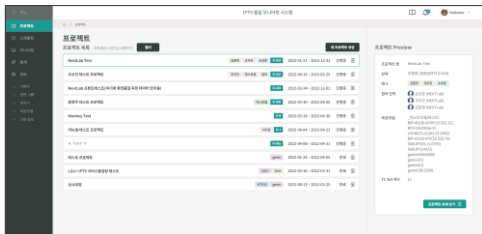
[Project-based Management]

[Test Case Creation]

[Scheduling]

[Status Monitoring]

Ordering Information

Team License	• NLATN-WT • Budget friendly for specific team or project
Corporate License	• NLATN-WC • Supports multiple teams/projects

Specifications

STB Log Server

Physical Specifications	
Dimensions (mm)	4U 19" Rackmount Chassis
Weight (kgf)	8

Environmental Specifications	
Power Consumption	~800Wh
Operating Temperature Range	0~40°C
AC Input Power	220VAC @ 4A, AC Power Cord

Features (All featured User Interface is provided through connected NEXTLab Athena)	
STB Log Collection Methods	• SSH, Adb • Credential information shall be provided by the customer • Collects all or selected logs by levels or processes • Supports Pattern Matching based log collection
Concurrent Supporting STBs	• 20 STBs • Equiv. to 20 STB Multimeter Desktops or 10 STB Multimeter Rugged Rackmounts
Logs Visualization	(1) Line Charts for Resource Usage Trends (2) Heatmaps for each Process output log and lifecycle
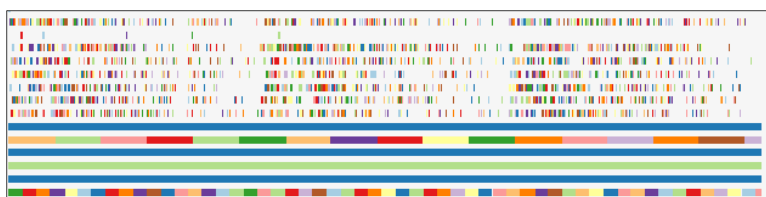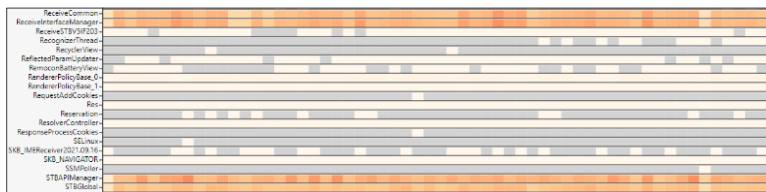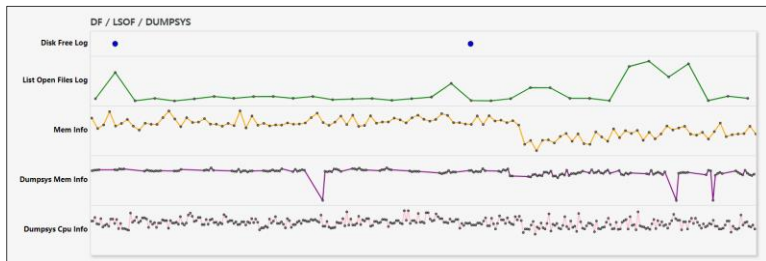
Specifications

VQ Monitoring Server

Physical Specifications	
Dimensions (mm)	4U 19" Rackmount Chassis
Weight (kgf)	8

Environmental Specifications	
Power Consumption	~1,000Wh
Operating Temperature Range	0~40°C
AC Input Power	220VAC @ 5A, AC Power Cord

Features (Monitoring User Interface is provided through connected NEXTLab Athena)	
Monitoring Criteria	• Macro Block (using AI algorithm) • Black Screen • Freeze (Same frame)
Concurrent Supporting STBs	• FPS Shared Design - The server's max. analysis speed is 120FPS @1080p - If the number of connected STB Multimeter Desktops is 20, each STB can be monitored at 6FPS rate. (around 166ms interval)

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Meet STB Multimeter at Youtube!