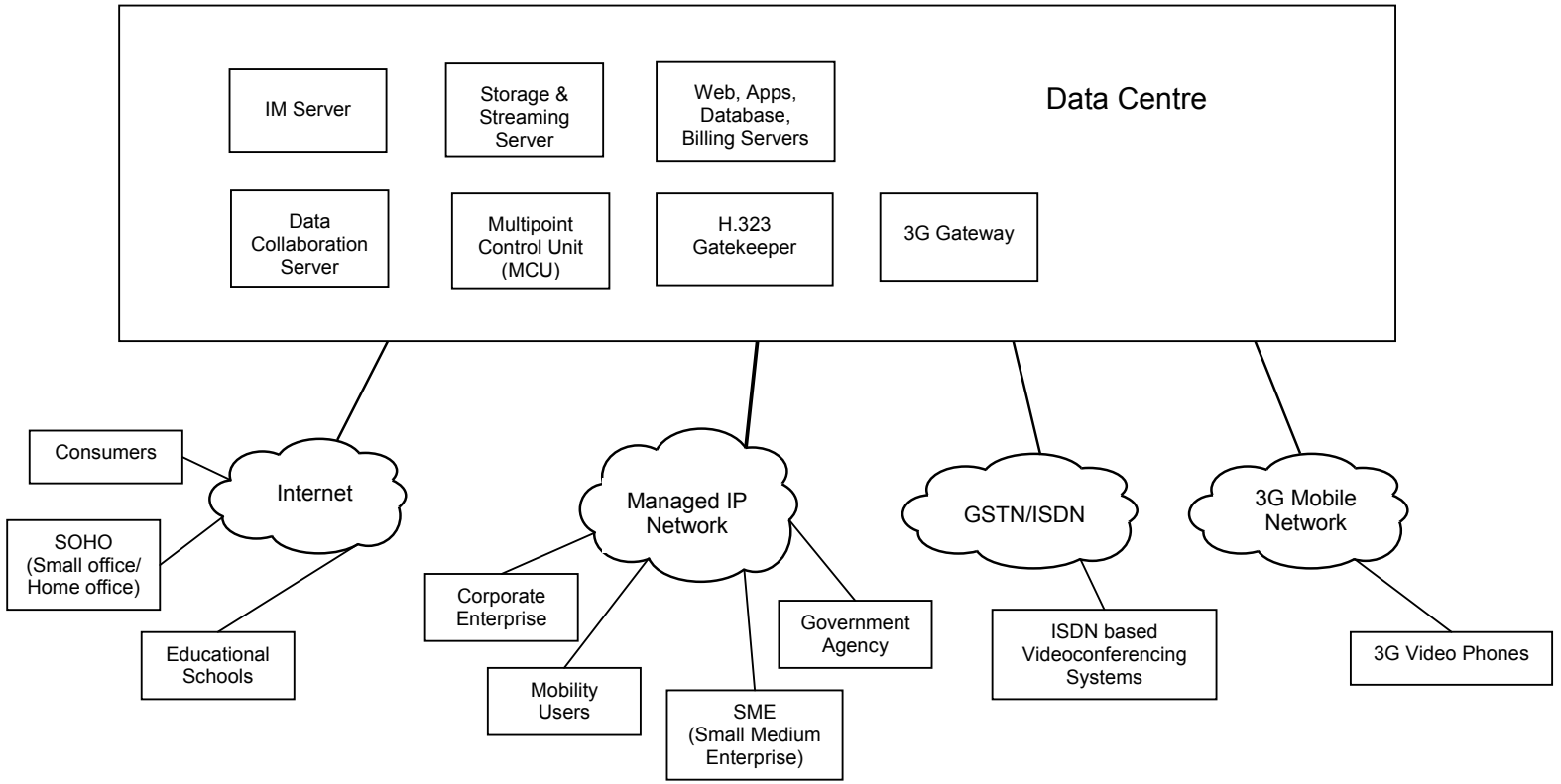

IM Server
Storage & Streaming Server
Web, Apps, Database, Billing Servers
Data Centre
Data Collaboration Server
Multipoint Control Unit (MCU)
H.323 Gatekeeper
3G Gateway
Consumers
Internet
SOHO (Small office/ Home office)
Educational Schools
Managed IP Network
Corporate Enterprise
Mobility Users
SME (Small Medium Enterprise)
Government Agency
GSTN/ISDN
ISDN based Videoconferencing Systems
3G Mobile Network
3G Video Phones

Fig 1

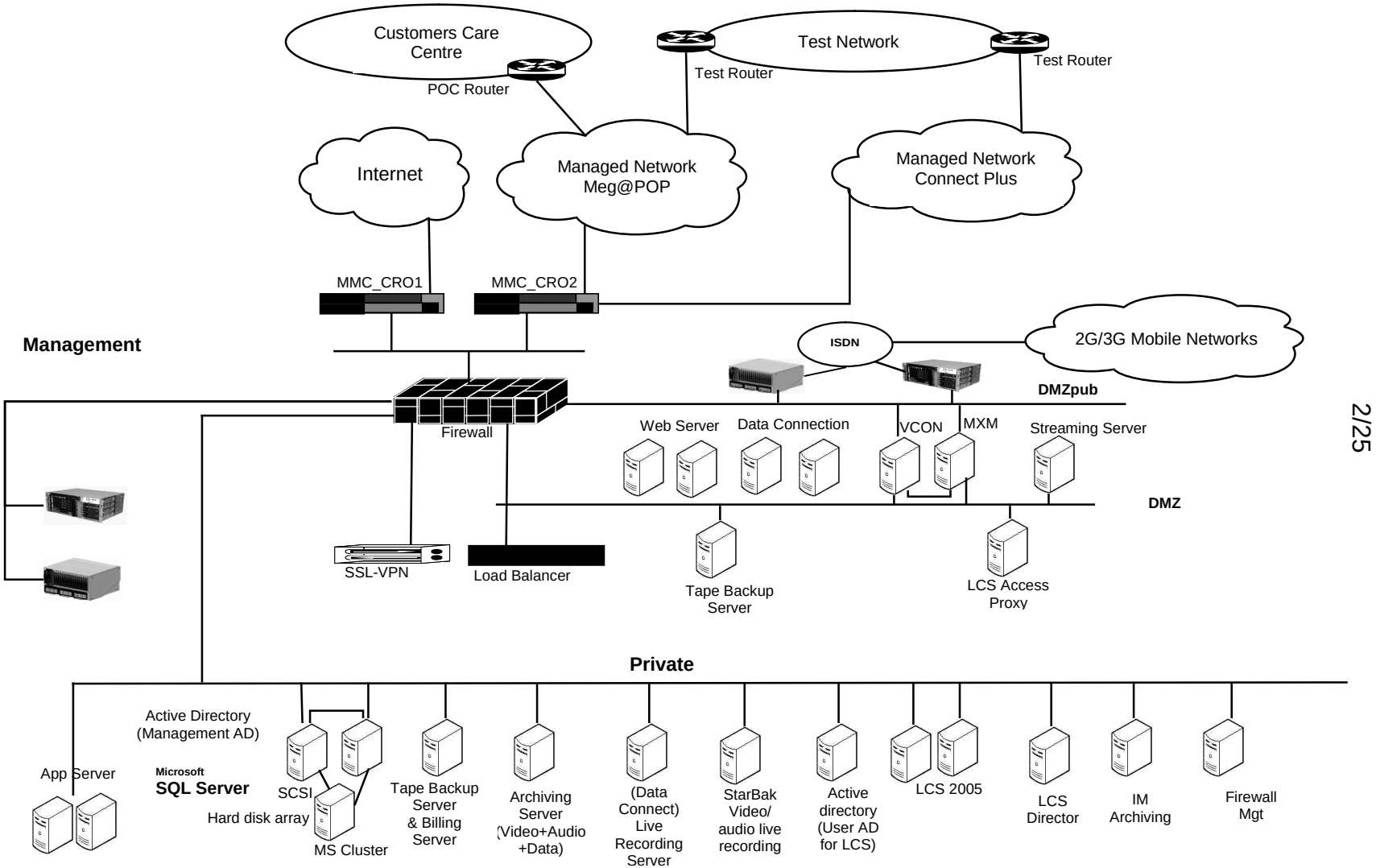

Customers Care Centre
POC Router
Test Network
Test Router
Test Router
Internet
Managed Network Meg@POP
Managed Network Connect Plus
MMC_CRO1
MMC_CRO2
Management
ISDN
2G/3G Mobile Networks
DMZpub
Firewall
Web Server
Data Connection
VCON
MXM
Streaming Server
DMZ
SSL-VPN
Load Balancer
Tape Backup Server
LCS Access Proxy
Private
Active Directory (Management AD)
App Server
Microsoft
SQL Server
SCSI
Hard disk array
MS Cluster
Tape Backup Server & Billing Server
Archiving Server (Video+Audio +Data)
(Data Connect) Live Recording Server
StarBak Video/ audio live recording
Active directory (User AD for LCS)
LCS 2005
LCS Director
IM Archiving
Firewall Mgt

Fig 2

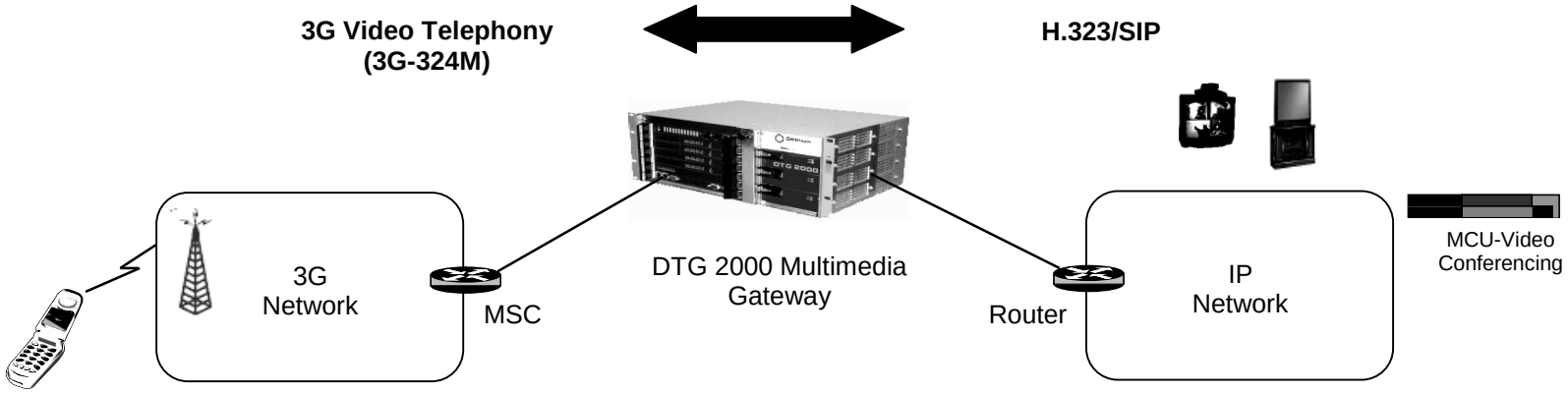

3G Video Telephony
(3G-324M)
H.323/SIP
3G
Network
MSC
DTG 2000 Multimedia
Gateway
Router
IP
Network
MCU-Video
Conferencing

Fig 3

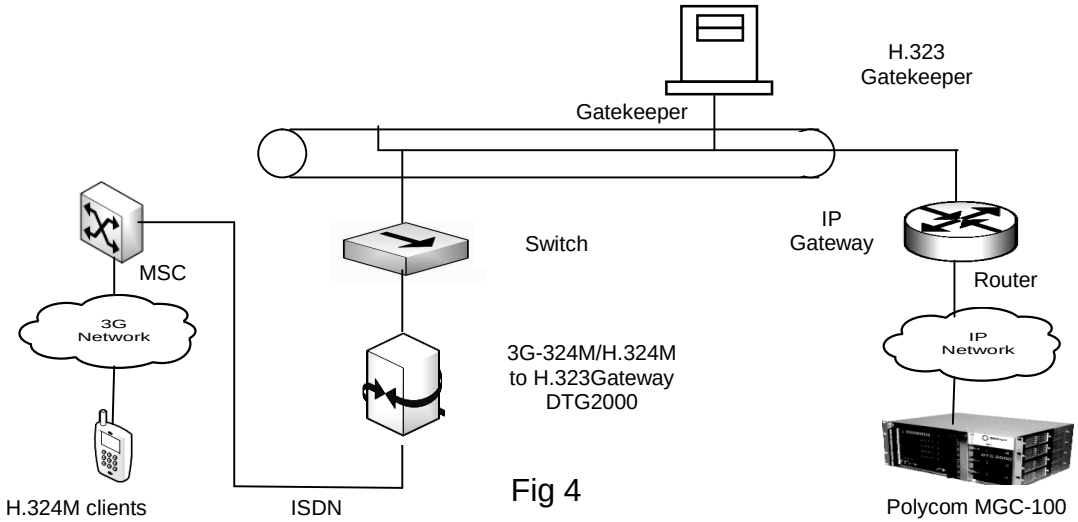

H.323
Gatekeeper
Gatekeeper
Switch
IP
Gateway
Router
MSC
3G
Network
3G-324M/H.324M
to H.323Gateway
DTG2000
IP
Network
H.324M clients
ISDN
Polycom MGC-100

Fig 4

Logical Network Diagram

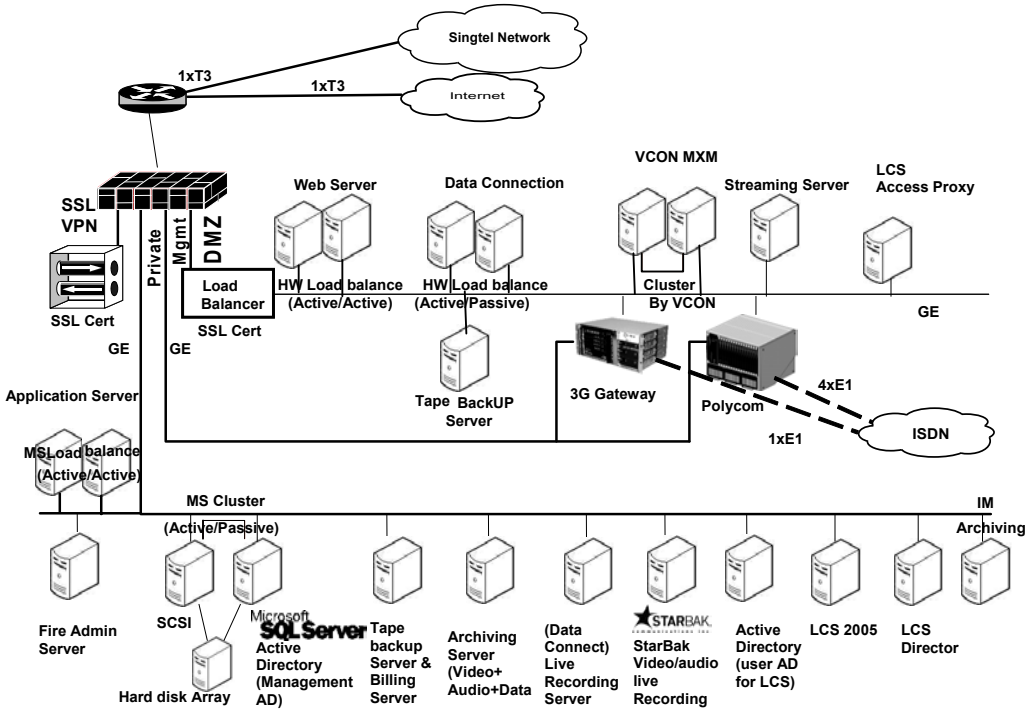


Fig 5

Physical Network Diagram

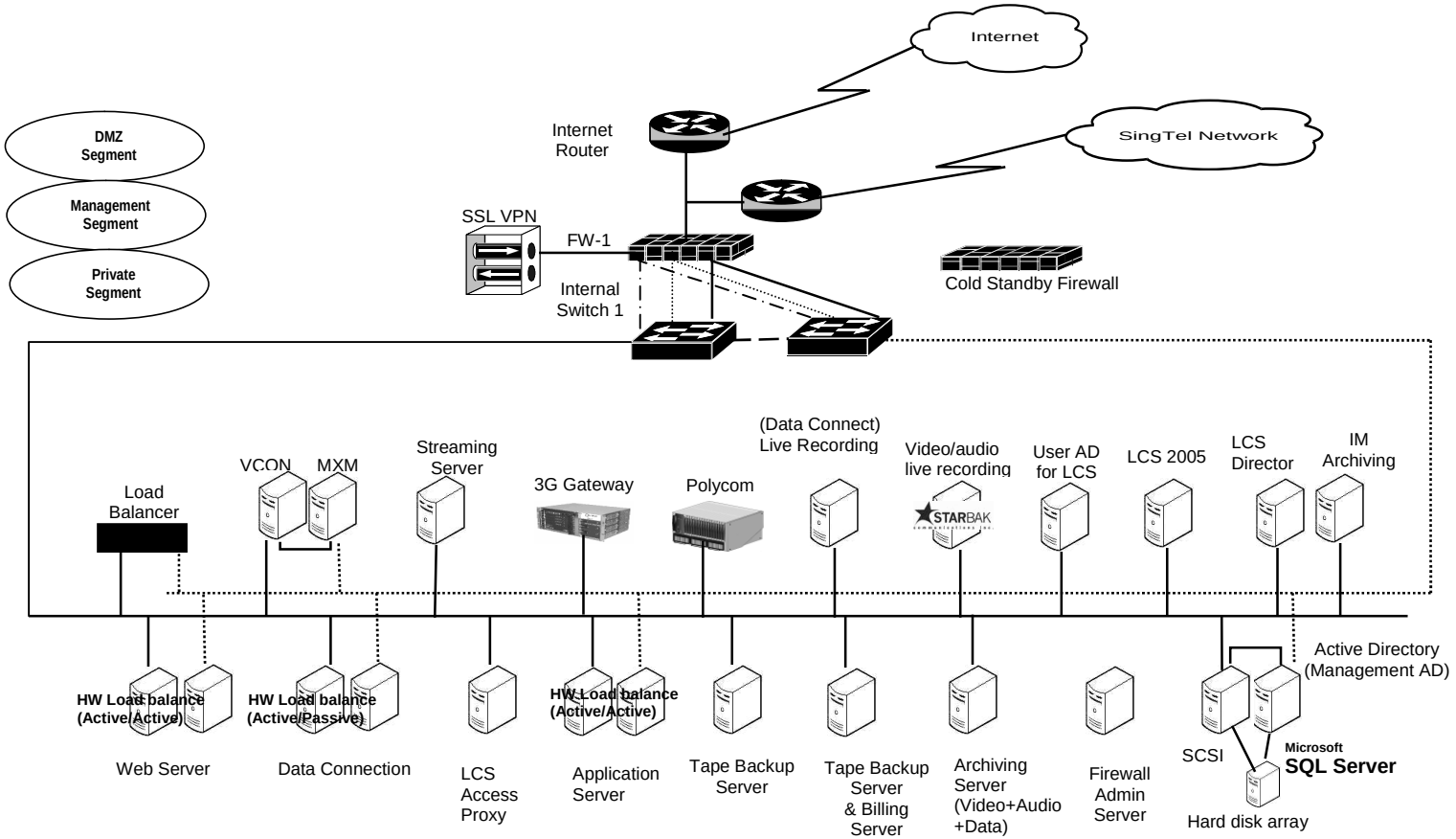


Fig 6

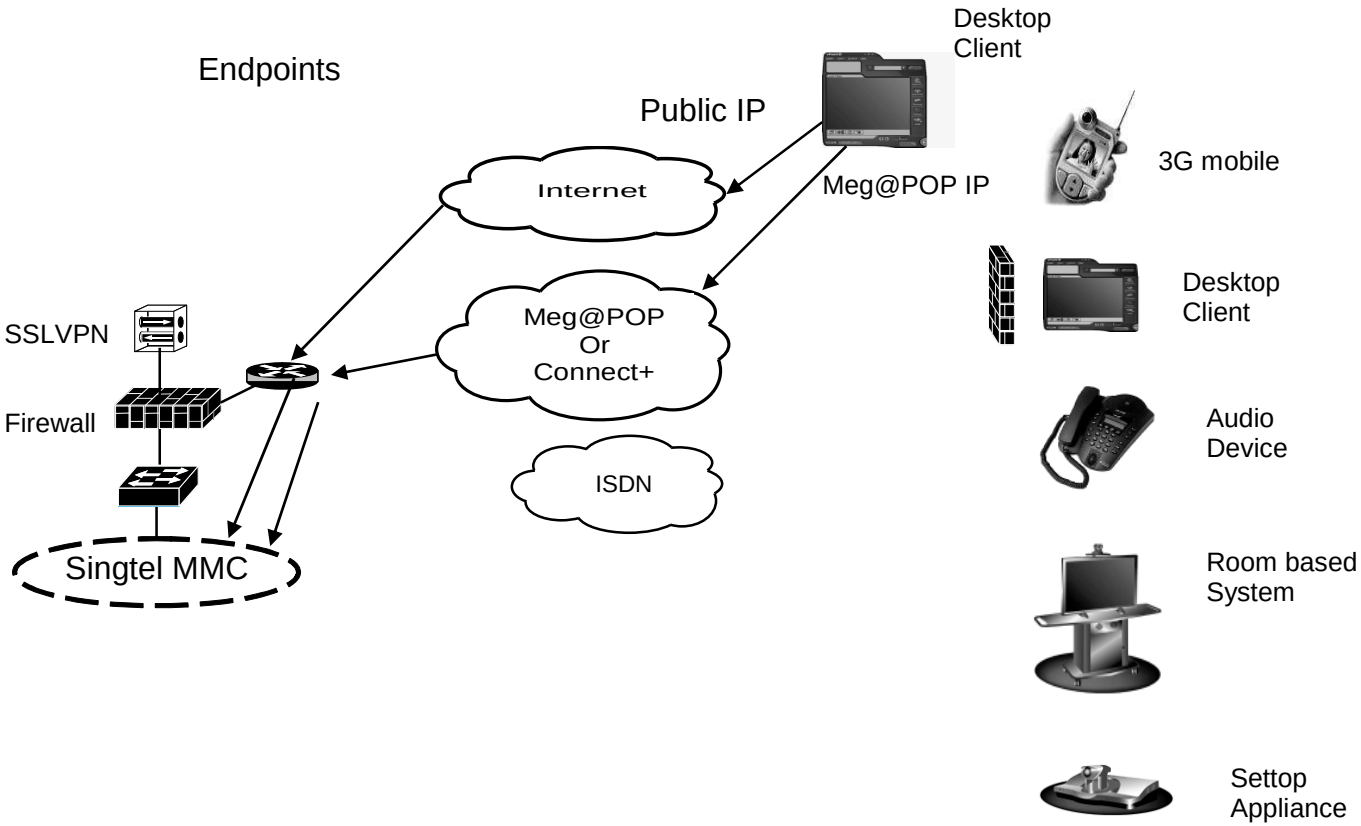

Endpoints
Public IP
Desktop Client
Internet
Meg@POP IP
3G mobile
SSLVPN
Firewall
Meg@POP Or Connect+
Desktop Client
Audio Device
ISDN
Singtel MMC
Room based System
Settop Appliance

Fig 7

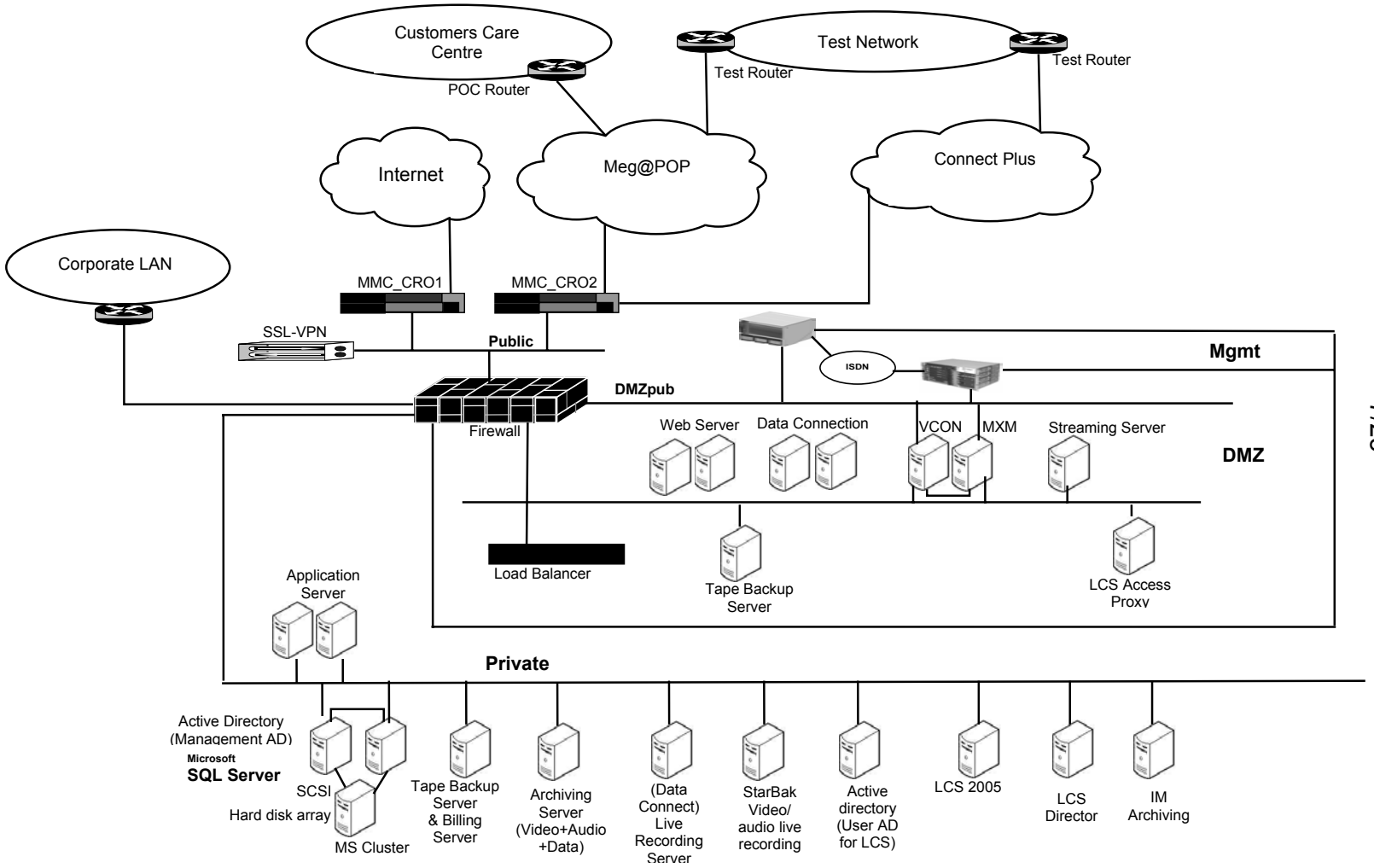

Customers Care Centre
POC Router
Test Network
Test Router
Test Router
Internet
Meg@POP
Connect Plus
Corporate LAN
MMC_CRO1
MMC_CRO2
SSL-VPN
Public
ISDN
Mgmt
DMZpub
Firewall
Web Server
Data Connection
VCON
MXM
Streaming Server
DMZ
Load Balancer
Tape Backup Server
LCS Access Proxy
Application Server
Private
Active Directory (Management AD)
Microsoft
SQL Server
SCSI
Hard disk array
MS Cluster
Tape Backup Server & Billing Server
Archiving Server (Video+Audio +Data)
(Data Connect) Live Recording Server
StarBak Video/ audio live recording
Active directory (User AD for LCS)
LCS 2005
LCS Director
IM Archiving

Fig 8

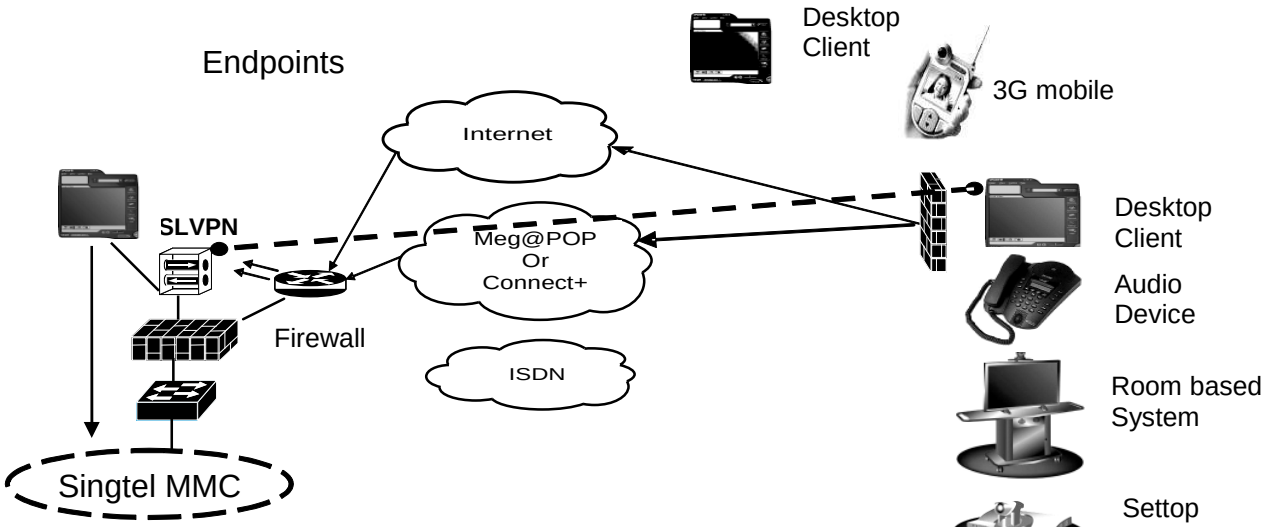


Fig 9

Integration with Public IM

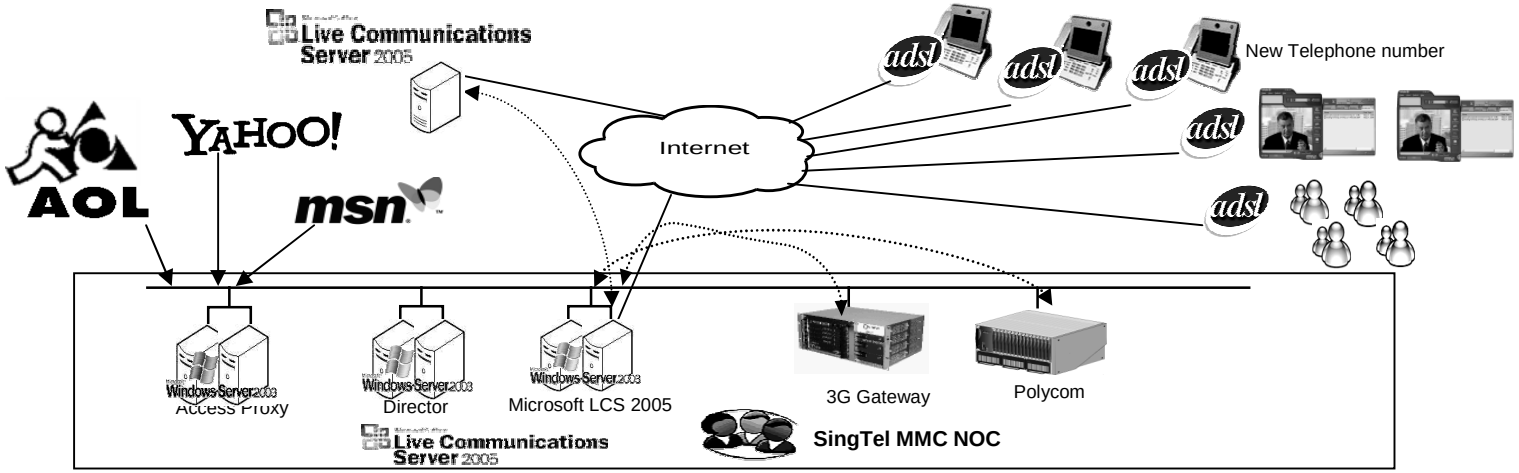


Fig 10

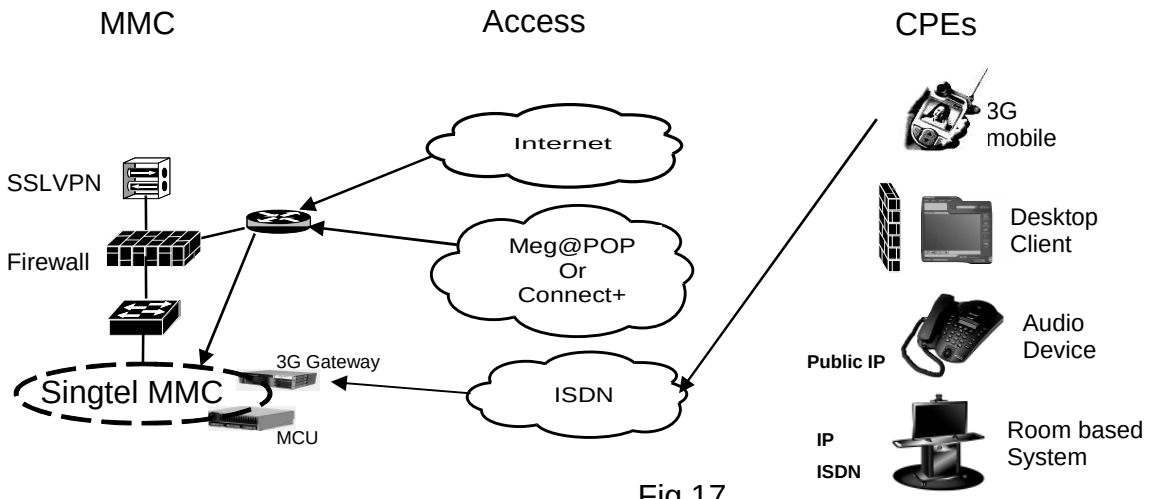

MMC
Access
CPEs
Internet
SSLVPN
Firewall
Meg@POP
Or
Connect+
3G Gateway
Singtel MMC
ISDN
MCU
3G
mobile
Desktop
Client
Audio
Device
Public IP
IP
ISDN
Room based
System

Fig 17

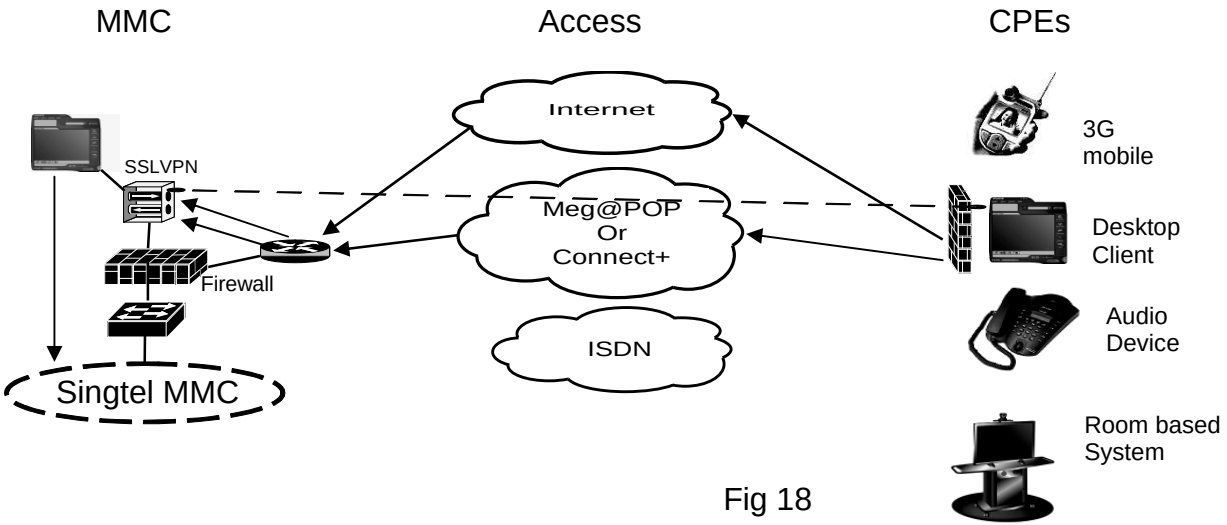

MMC
Access
CPEs
Internet
SSLVPN
Meg@POP
Or
Connect+
Firewall
ISDN
Singtel MMC
3G
mobile
Desktop
Client
Audio
Device
Room based
System

Fig 18

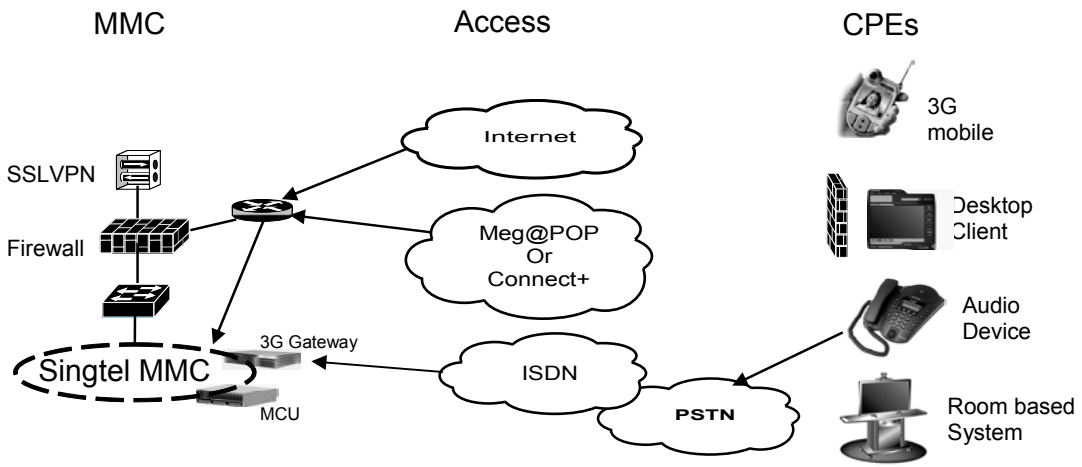

MMC
Access
CPEs
Internet
SSLVPN
Firewall
Meg@POP
Or
Connect+
3G Gateway
Singtel MMC
MCU
ISDN
PSTN
3G
mobile
Desktop
Client
Audio
Device
Room based
System

Fig 19

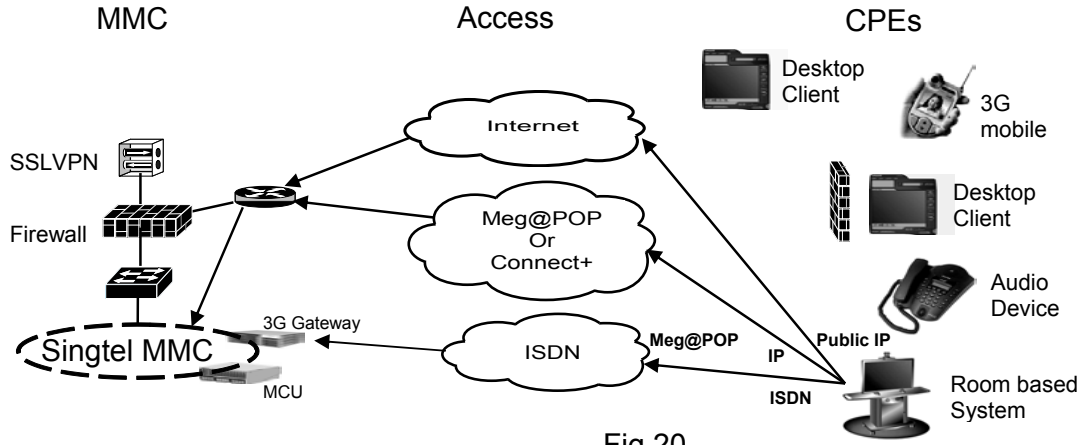

MMC
Access
CPEs
Desktop
Client
Internet
3G
mobile
SSLVPN
Firewall
Meg@POP
Or
Connect+
Desktop
Client
Audio
Device
3G Gateway
Singtel MMC
MCU
ISDN
Meg@POP
IP
ISDN
Public IP
Room based
System

Fig 20

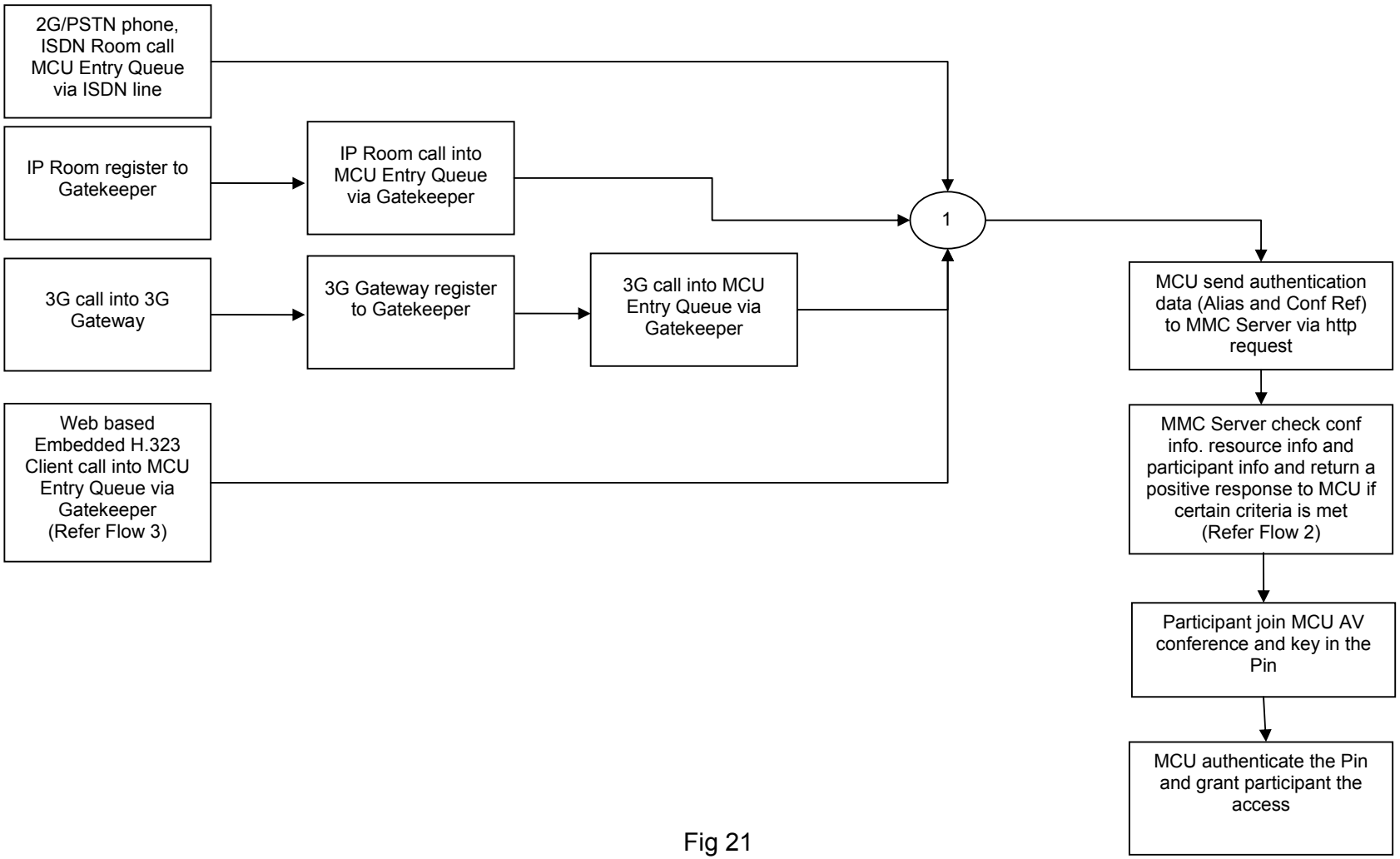

2G/PSTN phone, ISDN Room call MCU Entry Queue via ISDN line
IP Room register to Gatekeeper
IP Room call into MCU Entry Queue via Gatekeeper
3G call into 3G Gateway
3G Gateway register to Gatekeeper
3G call into MCU Entry Queue via Gatekeeper
Web based Embedded H.323 Client call into MCU Entry Queue via Gatekeeper (Refer Flow 3)
1
MCU send authentication data (Alias and Conf Ref) to MMC Server via http request
MMC Server check conf info. resource info and participant info and return a positive response to MCU if certain criteria is met (Refer Flow 2)
Participant join MCU AV conference and key in the Pin
MCU authenticate the Pin and grant participant the access

Fig 21

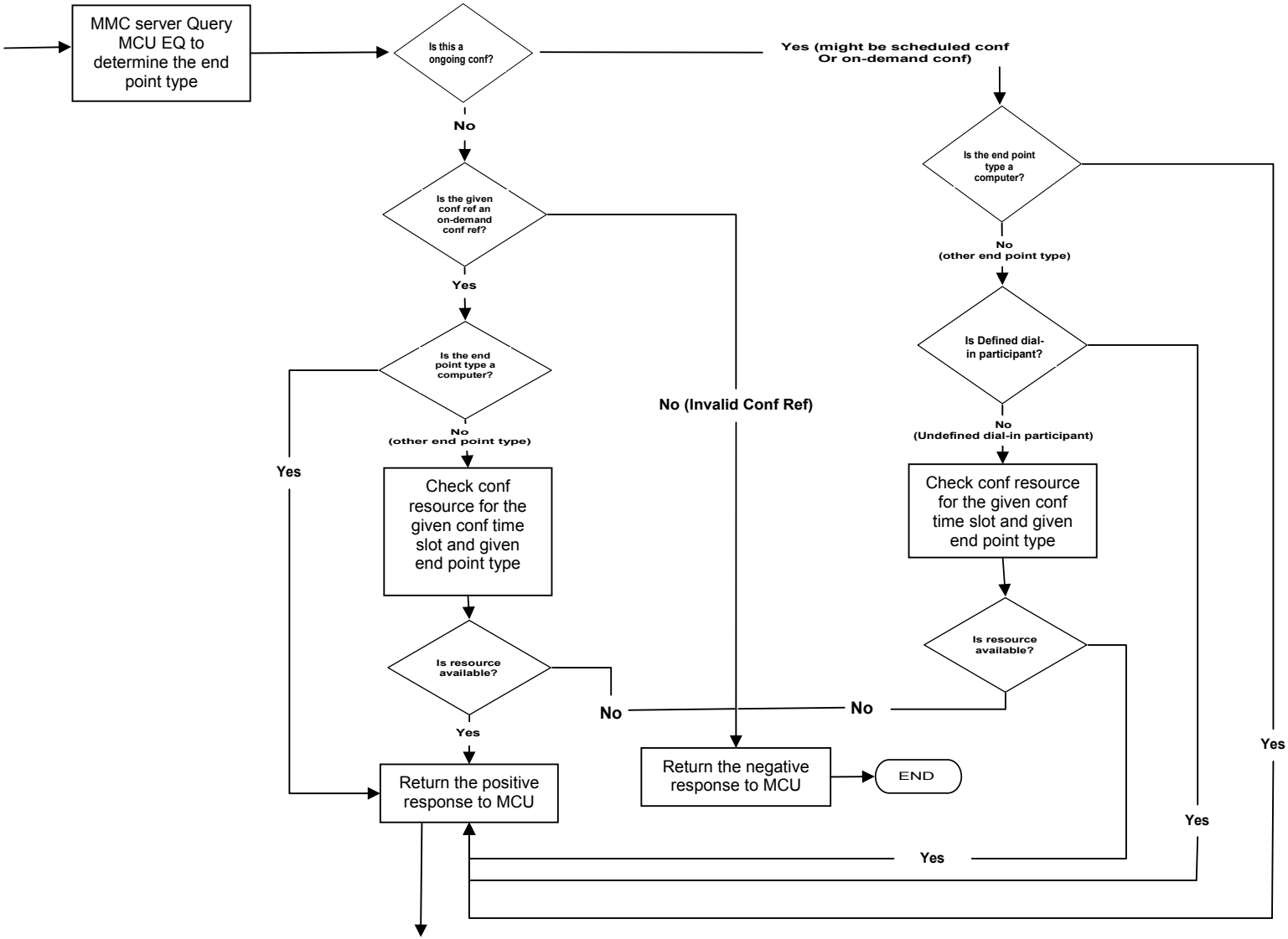

MMC server Query MCU EQ to determine the end point type
Is this a ongoing conf?
Yes (might be scheduled conf Or on-demand conf)
No
Is the given conf ref an on-demand conf ref?
Yes
No (Invalid Conf Ref)
Is the end point type a computer?
No (other end point type)
Yes
Check conf resource for the given conf time slot and given end point type
Is resource available?
No
Yes
Return the positive response to MCU
Return the negative response to MCU
END
Is the end point type a computer?
No (other end point type)
Is Defined dial-in participant?
No (Undefined dial-in participant)
Check conf resource for the given conf time slot and given end point type
Is resource available?
No
Yes
Yes
Yes
Yes

Fig 22

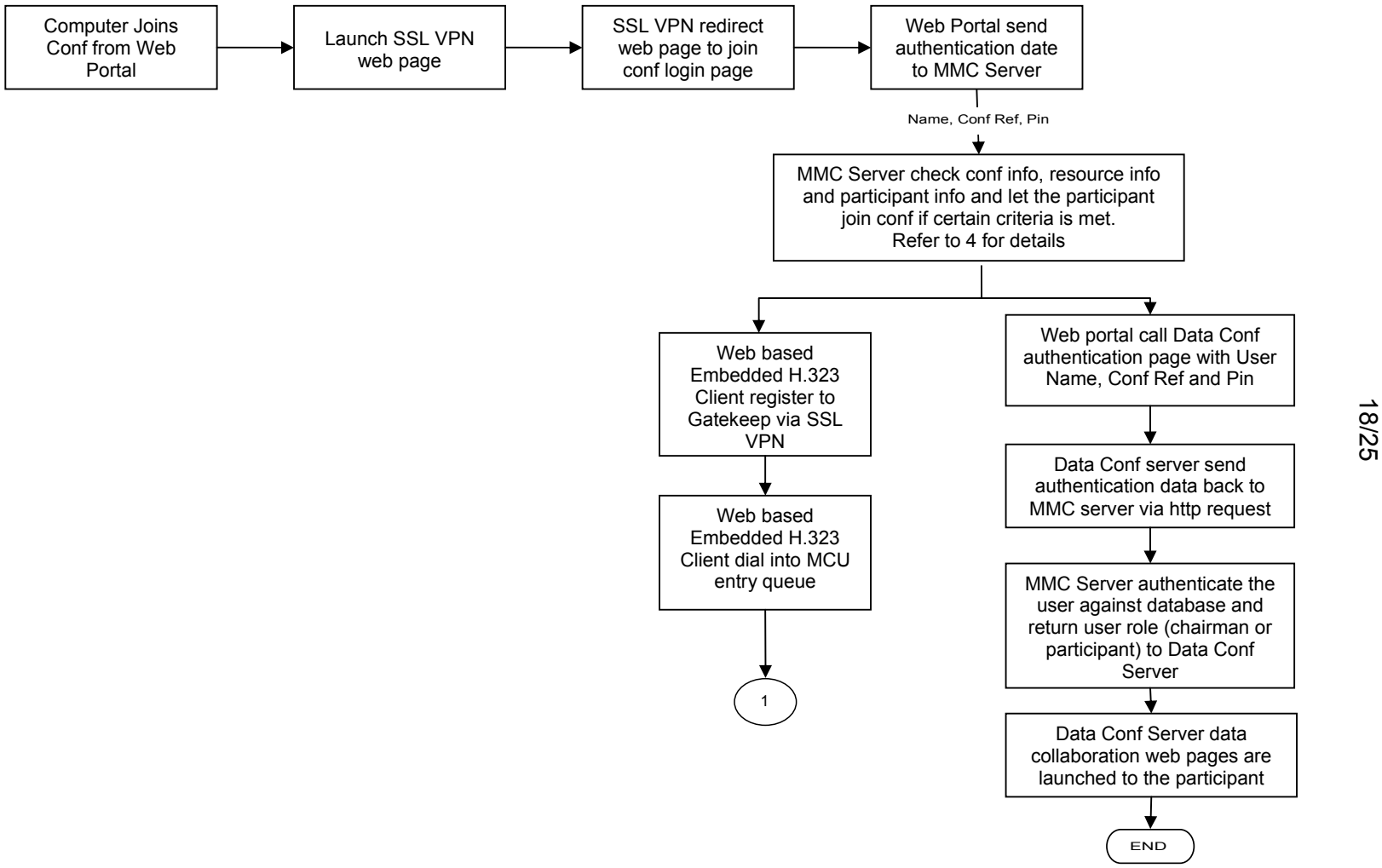

Computer Joins Conf from Web Portal
Launch SSL VPN web page
SSL VPN redirect web page to join conf login page
Web Portal send authentication date to MMC Server
Name, Conf Ref, Pin
MMC Server check conf info, resource info and participant info and let the participant join conf if certain criteria is met. Refer to 4 for details
Web based Embedded H.323 Client register to Gatekeep via SSL VPN
Web based Embedded H.323 Client dial into MCU entry queue
1
Web portal call Data Conf authentication page with User Name, Conf Ref and Pin
Data Conf server send authentication data back to MMC server via http request
MMC Server authenticate the user against database and return user role (chairman or participant) to Data Conf Server
Data Conf Server data collaboration web pages are launched to the participant
END

Fig 23

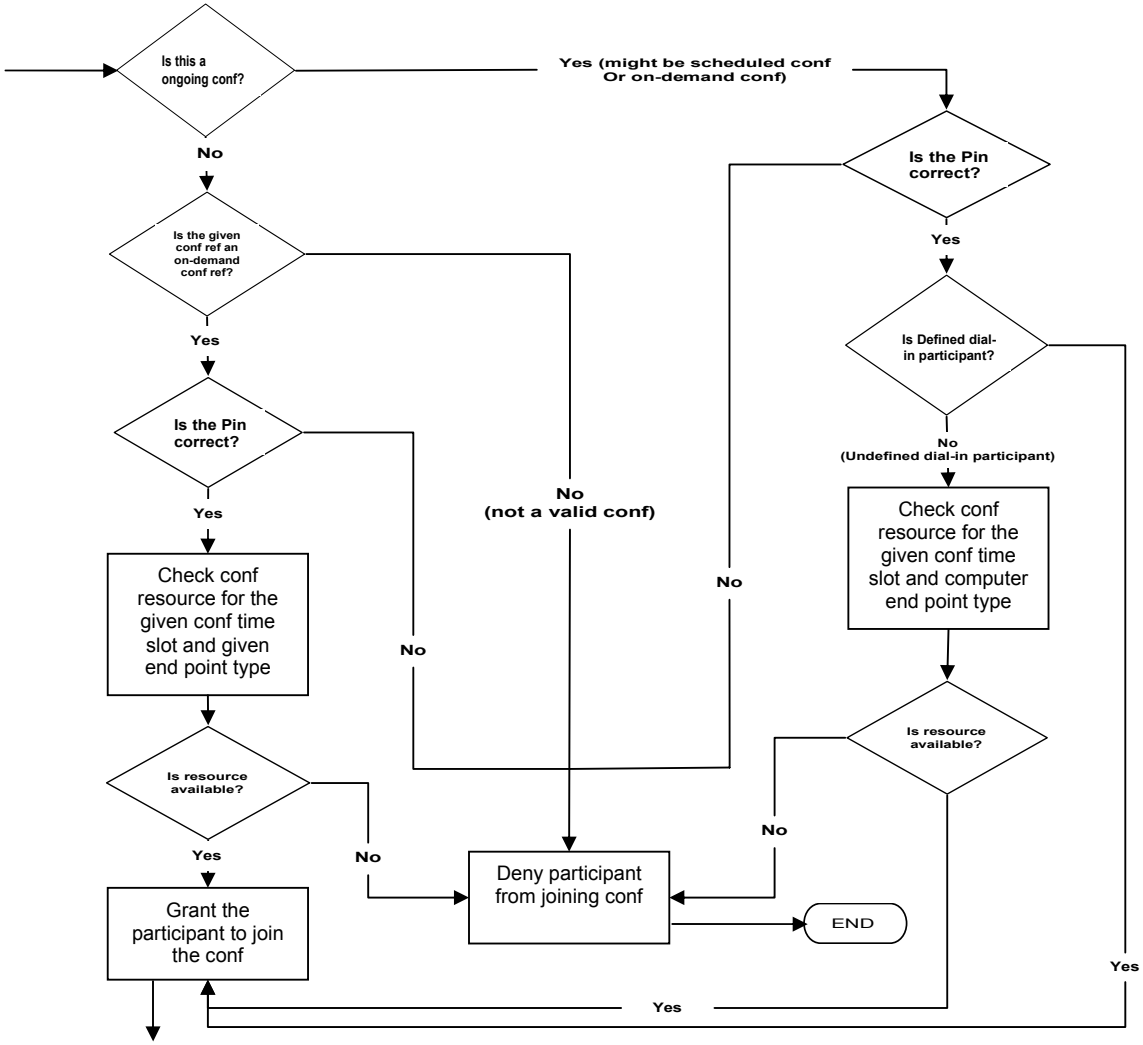

Is this a ongoing conf?
Yes (might be scheduled conf Or on-demand conf)
No
Is the given conf ref an on-demand conf ref?
Yes
Is the Pin correct?
Yes
Check conf resource for the given conf time slot and given end point type
Is resource available?
Yes
Grant the participant to join the conf
No
No
(not a valid conf)
No
Deny participant from joining conf
END
Is the Pin correct?
Yes
Is Defined dial-in participant?
No
(Undefined dial-in participant)
Check conf resource for the given conf time slot and computer end point type
Is resource available?
No
Yes
Yes
Yes

Fig 24

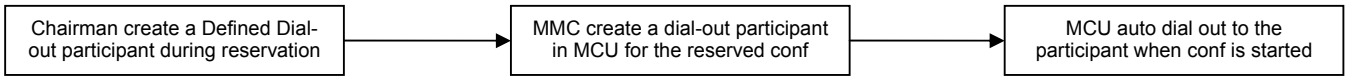

Chairman create a Defined Dial-out participant during reservation
MMC create a dial-out participant in MCU for the reserved conf
MCU auto dial out to the participant when conf is started

Fig 25

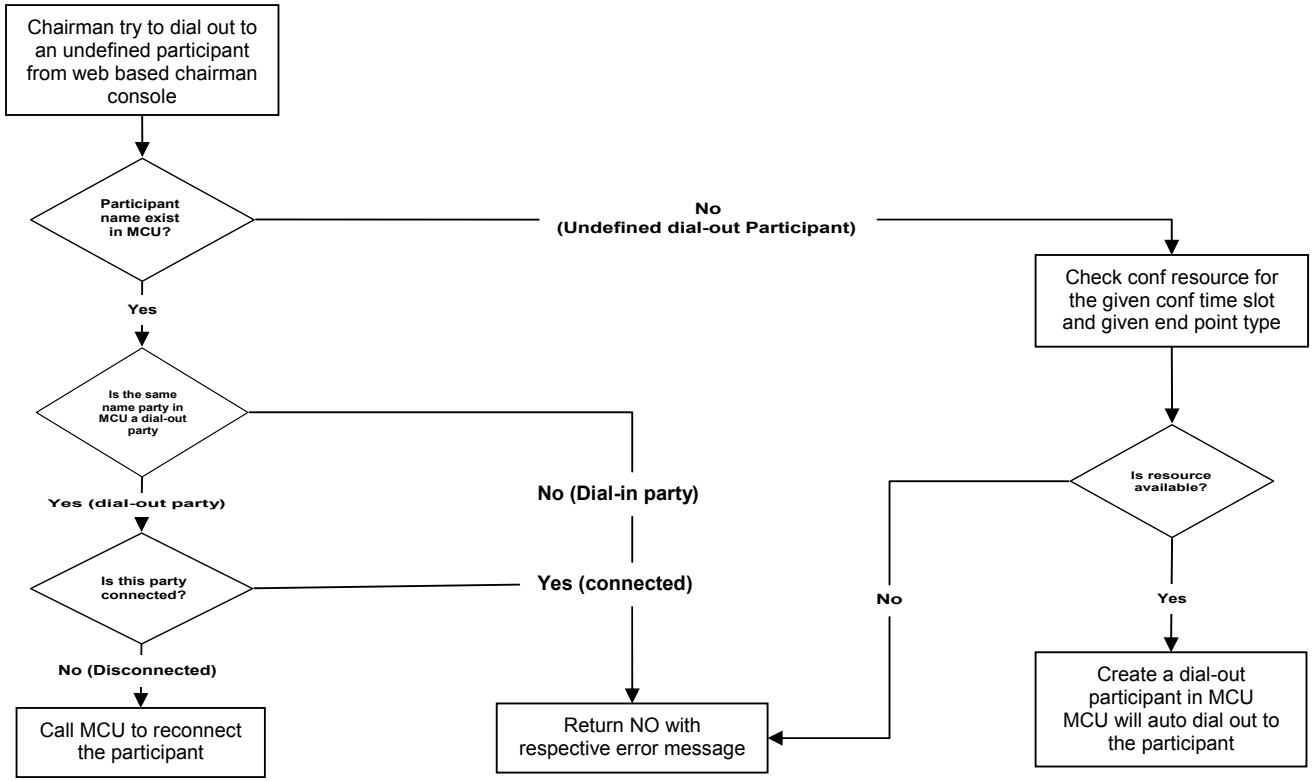

Chairman try to dial out to an undefined participant from web based chairman console
Participant name exist in MCU?
No
(Undefined dial-out Participant)
Yes
Is the same name party in MCU a dial-out party
No (Dial-in party)
Yes (dial-out party)
Is this party connected?
Yes (connected)
No (Disconnected)
Call MCU to reconnect the participant
Return NO with respective error message
Check conf resource for the given conf time slot and given end point type
Is resource available?
No
Yes
Create a dial-out participant in MCU
MCU will auto dial out to the participant

Fig 26

End Point Dial In Conference Flow Overview

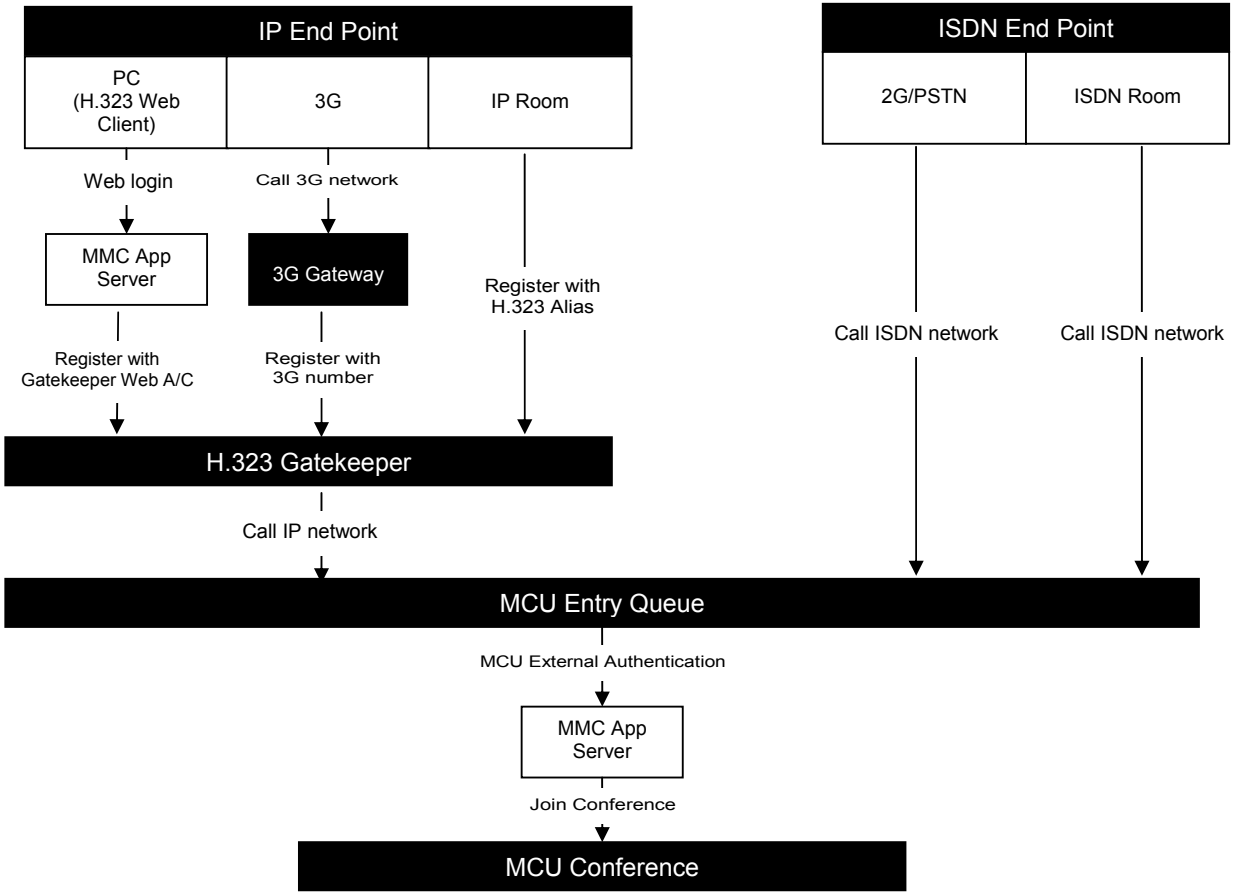


Fig 28

Gatekeeper Web Account Dynamical Allocation Flow

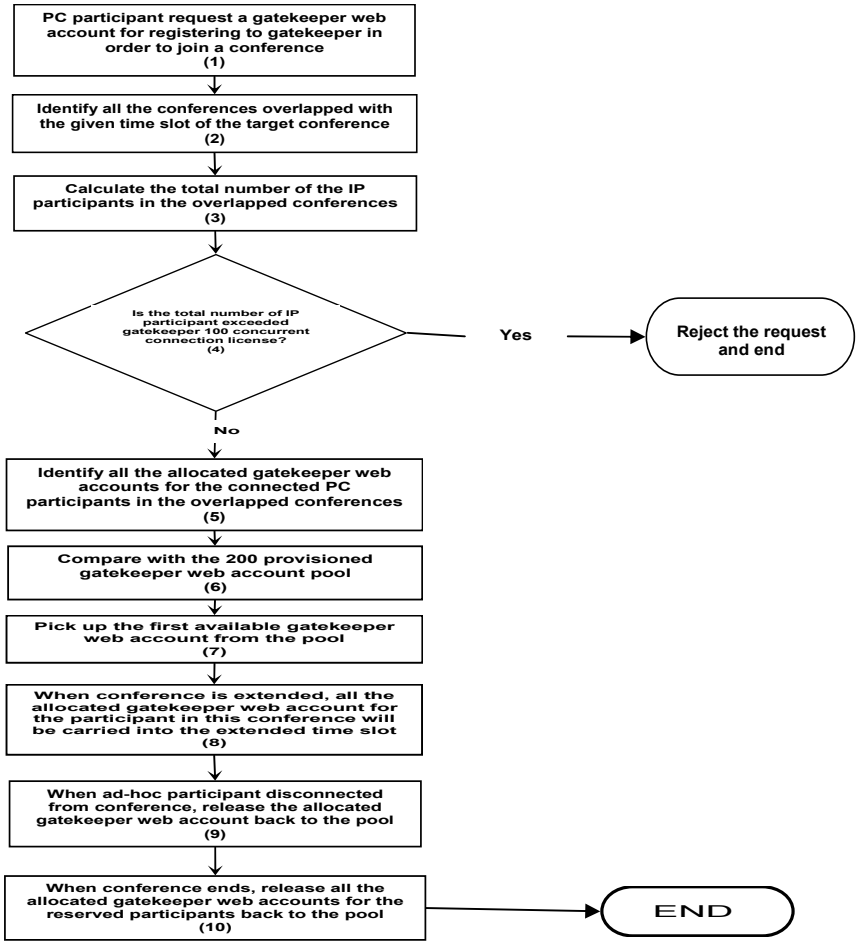


Fig 29

Step 2:
If a conference falls into any of the following overlapping model with the given time slot, it would qualify for the conferences to calculate the total IP participants in the system for the given time slot:

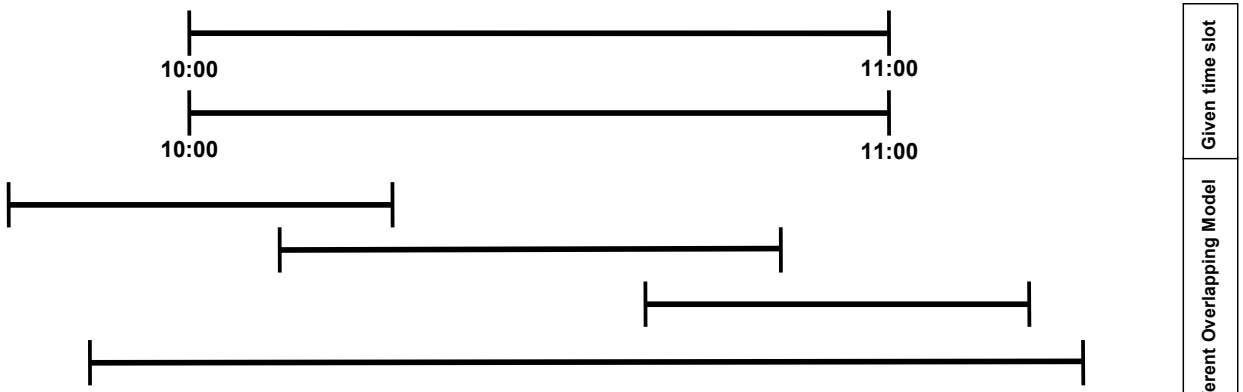


Fig 30

Step 4:
Calculate the total number of the IP participants in the system for the given time slot, it should not exceed the total gatekeeper 100 concurrent connection licenses.

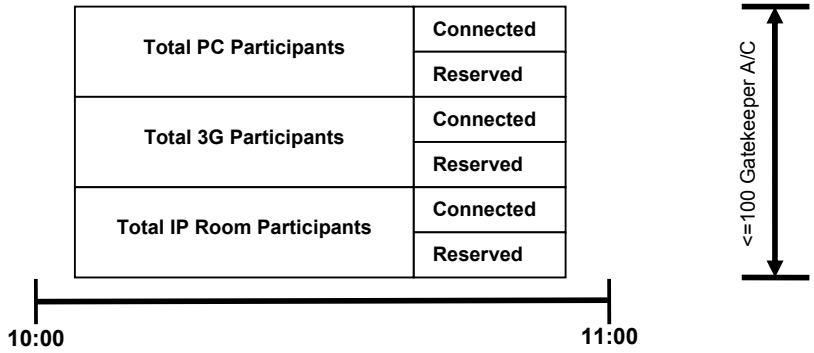


Fig 31

Step 5, 6, 7:
Dynamically pick up an available gatekeeper web account from the pool and assign it to the requesting PC participant for registering to gatekeeper.

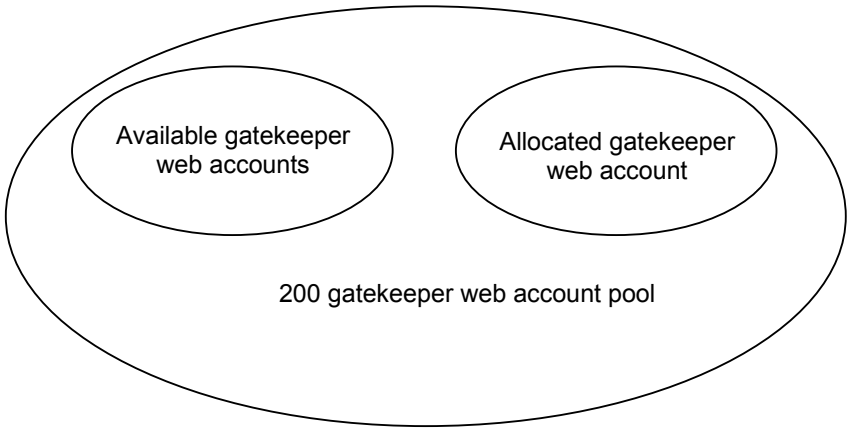


Fig 32