

## 2 Services and Ports

### 2.1 Voice Traffic and Signaling

#### 2.1.1 HiPath 5000

HiPath 5000 uses for communication on the network the following services and ports:

**Important:** Except the UDP-Ports for the Voice payload the port numbers listed cannot be changed in the product.

**Explanation:**

A-Prot. Application-Layer-Protocol

M-Prot. Middleware-Layer-Protocol

T-Prot. Transport-Layer-Protocol

D-Ports Default-Ports are the port numbers or the port range which comes in effect after turning power on the first time – without administration.

A-Ports Admin-Ports are the alternative port numbers or the port range in which the ports can be altered by administration.

| Application                                                                              | Function                                                                | Type   | A-Prot.  | M-Prot. | T-Prot. | D-Ports      | A-Ports   | Remarks                                                      |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------|----------|---------|---------|--------------|-----------|--------------------------------------------------------------|
| Centralised Administration - Functions provided by the system for DBFS access            |                                                                         |        |          |         |         |              |           |                                                              |
|                                                                                          | FCT<br>Interface to DBFS                                                | server | FCT API  | ---     | TCP     | 7100         | 1 - 65535 | Def: FCT<br>Adm: Default can be modified within this range   |
|                                                                                          | REG Client<br>Registration of HG1500 at DBFS                            | client | REG      | ---     | TCP     | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                  |
|                                                                                          | SYNC<br>Interface to DBFS                                               | server | SYNC     | ---     | TCP     | 7024         | 1 - 65535 | Def: SYNC<br>Adm: Default can be modified within this range  |
| Centralised Ressource Management - Mangement of networkwide Ressources (conference, MOH) |                                                                         |        |          |         |         |              |           |                                                              |
|                                                                                          | IPNC<br>MediaGatewaycontrol                                             | server | MCP      | ---     | TCP     | 12051        | 1 - 65535 | Def: IPNC<br>Adm: Default can be modified within this range  |
|                                                                                          | RM client<br>Resource manager for networkwide use of MOH and Conference | client | RM API   | ---     | TCP     | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                  |
|                                                                                          | RM server<br>Resource manager for networkwide use of MOH and Conference | server | RM API   | ---     | TCP     | 9000         | 1 - 65535 | Def: RM<br>Adm: Default can be modified within this range    |
| CSTA - CSTA access                                                                       |                                                                         |        |          |         |         |              |           |                                                              |
|                                                                                          | CSTA Access                                                             | server | CSTA API | ---     | TCP     | 7001         | 1 - 65535 | Def: CSTA<br>Adm: Default can be modified within this range  |
| Customer License Agent (CLA)                                                             |                                                                         |        |          |         |         |              |           |                                                              |
|                                                                                          | CLA Discovery<br>multicast listener for CLA detection by CLM            | server | CLADP    | ---     | UDP     | 23232        |           | Def: UDP CLA detection Port on multicast address 224.0.23.23 |

## Product Specific Attributes HiPath 5000

| Application                                                                                                           | Function                                                                                    | Type   | A-Prot.             | M-Prot. | T-Prot.   | D-Ports       | A-Ports      | Remarks                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------|---------------------|---------|-----------|---------------|--------------|------------------------------------------------------------------------------------------------------------------|
|                                                                                                                       | CLA-Service CLA service port for CLC / CLM                                                  | server | XML                 | ---     | TCP - SSL | 61740         |              | Def: Port will be discovered by CLM through multicast procedure. CLC uses port by configuration.                 |
| Customer License Client (CLC)                                                                                         |                                                                                             |        |                     |         |           |               |              |                                                                                                                  |
|                                                                                                                       | CLA Connectivity (CLC)<br>Used for data transfer between CLC / CLM                          | client | HLP                 | ---     | TCP - SSL | 61740         |              | Def: Port will be discovered by CLM through multicast procedure. CLC uses port by configuration.                 |
| Customer License Manager (CLM) Web basierte Applikation zur Verwaltung von HiPath Lizenzen in der Kundeninfrastruktur |                                                                                             |        |                     |         |           |               |              |                                                                                                                  |
|                                                                                                                       | CLA Connectivity (CLM)<br>Used for data transfer between CLA / CLM                          | client | XML                 | ---     | TCP - SSL | 61740         |              | Def: Port will be discovered by CLM through multicast procedure. CLC uses port by configuration.                 |
|                                                                                                                       | CLM Shutdown port Tomcat shut down port provided by CLM setup                               | server | TSP                 | ---     | TCP       | 8820          |              | Def: Shutdown port (Tomcat) of License Manager                                                                   |
|                                                                                                                       | CLS Connectivity (CLM)<br>Interface to Central License Server (CLS)                         | client | SOAP                | HTTPS   | TCP       | 0 - 65535     |              | Def: Port selected by the TCP/IP-implementation of the underlying operating system                               |
|                                                                                                                       | HTTP based Management Access (CLM) Web based Interface of Customer License Manager          | server | HTTP                | ---     | TCP       | 8819          | 1025 - 65535 | Def: HTTP port of License Manager<br>Adm: Default can be modified within this range during Setup or later (CLM)  |
|                                                                                                                       | HTTPS based Management Access (CLM) Secured Web based Interface of Customer License Manager | server | HTTPS               | ---     | TCP       | 8818          | 1025 - 65535 | Def: HTTPS port of License Manager<br>Adm: Default can be modified within this range during Setup or later (CLM) |
| DBFS - Feature Server for centralized administration                                                                  |                                                                                             |        |                     |         |           |               |              |                                                                                                                  |
|                                                                                                                       | CAR Server (DBFS) CAR component for centralized administration                              | server | CAR                 | ---     | TCP       | 12063         | 1 - 65535    | Def: CAR Server<br>Adm: Default can be modified within this range                                                |
|                                                                                                                       | REG Server<br>Registration of HG1500 with DBFS                                              | server | REG                 | ---     | TCP       | 12061         | 1 - 65535    | Def: REG<br>Adm: Default can be modified within this range                                                       |
|                                                                                                                       | VSUNC client (DBFS) Client for database synchronisation between DBFS and H2/3/5k            | client | SYNC                | ---     | TCP       | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                      |
| H.323 Networking                                                                                                      |                                                                                             |        |                     |         |           |               |              |                                                                                                                  |
|                                                                                                                       | CAR client<br>Call address resolution client                                                | client | CAR                 | ---     | TCP       | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                      |
|                                                                                                                       | CAR-Alive Client<br>Alivechecks (configurable)                                              | client | CAR Alive           | ---     | TCP       | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                      |
|                                                                                                                       | CAR-alive server<br>Alive checks (configurable)                                             | server | CAR Alive           | ---     | TCP       | 12062         | 1 - 65535    | Def: CAR<br>Adm: Default can be modified within this range                                                       |
|                                                                                                                       | H.323 Call Signaling active VoIP<br>Verbindungssteuerung                                    | client | H.323 (H.225-Q.931) | ---     | TCP       | 12250 - 12950 | 1 - 65535    | Def: H.323<br>Adm: Default can be modified within this range                                                     |
|                                                                                                                       | H.323 Call Signaling passive Voice over IP:<br>Verbindungssteuerung                         | server | H.323 (H.225-Q.931) | ---     | TCP       | 1720          | 1 - 65535    | Def: H.225/Q.931<br>Adm: Default can be modified within this range                                               |
|                                                                                                                       | RAS client<br>RAS client for registration at external gatekeeper                            | client | H.323 (H.225-RAS)   | ---     | UDP       | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                      |
|                                                                                                                       | RM client<br>Resource manager for networkwide use of MOH and Conference                     | client | RM API              | ---     | TCP       | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                      |

H.323 Subscriber

## Product Specific Attributes HiPath 5000

| Application    | Function                                                                                            | Type   | A-Prot.             | M-Prot. | T-Prot. | D-Ports       | A-Ports   | Remarks                                                            |
|----------------|-----------------------------------------------------------------------------------------------------|--------|---------------------|---------|---------|---------------|-----------|--------------------------------------------------------------------|
|                | H.225 RAS<br>RAS server for H.323 endpoints                                                         | server | H.323 (H.225-RAS)   | ---     | UDP     | 1719          | 1 - 65535 | Def: H.225/RAS<br>Adm: Default can be modified within this range   |
|                | H.245 Media Signaling active H.245 channel signalling for H.323 endpoints                           | client | H.323 (H.245)       | ---     | TCP     | 12250 - 12950 | 1 - 65535 | Def: H.323<br>Adm: Default can be modified within this range       |
|                | H.245 Media Signaling passive H.245 channel signalling for H.323 endpoints                          | server | H.323 (H.245)       | ---     | TCP     | 12250 - 12950 | 1 - 65535 | Def: H.323<br>Adm: Default can be modified within this range       |
|                | H.323 Call Signaling                                                                                | server | H.323 (H.225-Q.931) | ---     | TCP     | 4711          | 1 - 65535 | Adm: Default can be modified within this range                     |
|                | H.323 Call Signaling active VoIP Verbindungssteuerung                                               | client | H.323 (H.225-Q.931) | ---     | TCP     | 12250 - 12950 | 1 - 65535 | Def: H.323<br>Adm: Default can be modified within this range       |
|                | H.323 Call Signaling passive Voice over IP: Verbindungssteuerung                                    | server | H.323 (H.225-Q.931) | ---     | TCP     | 1720          | 1 - 65535 | Def: H.225/Q.931<br>Adm: Default can be modified within this range |
|                |                                                                                                     |        |                     |         |         |               |           |                                                                    |
| HFA subscriber |                                                                                                     |        |                     |         |         |               |           |                                                                    |
|                | Cornet TC                                                                                           | server | Cornet-TC           | ---     | TCP     | 4060          | 1 - 65535 | Def: CorNet-TC<br>Adm: Default can be modified within this range   |
|                | H.323 Call Signaling active VoIP Verbindungssteuerung                                               | client | H.323 (H.225-Q.931) | ---     | TCP     | 12250 - 12950 | 1 - 65535 | Def: H.323<br>Adm: Default can be modified within this range       |
|                | H.323 Call Signaling passive Voice over IP: Verbindungssteuerung                                    | server | H.323 (H.225-Q.931) | ---     | TCP     | 1720          | 1 - 65535 | Def: H.225/Q.931<br>Adm: Default can be modified within this range |
|                |                                                                                                     |        |                     |         |         |               |           |                                                                    |
| MS-SQL Server  |                                                                                                     |        |                     |         |         |               |           |                                                                    |
|                | MS-SQL_Server-TCP<br>MS-SQL Server                                                                  | server | MS-SQL              | ---     | TCP     | 1433          |           |                                                                    |
|                | MS-SQL_Server-UDP<br>Microsof SQL Server                                                            | server | MS-SQL              | ---     | UDP     | 1434          |           |                                                                    |
|                |                                                                                                     |        |                     |         |         |               |           |                                                                    |
| SIP networking |                                                                                                     |        |                     |         |         |               |           |                                                                    |
|                | CAR client<br>Call address resolution client                                                        | client | CAR                 | ---     | TCP     | 1024 - 65535  |           | Def: Ephemeral Ports (IANA)                                        |
|                | CAR-Alive Client<br>Alivechecks (configurable)                                                      | client | CAR Alive           | ---     | TCP     | 1024 - 65535  |           | Def: Ephemeral Ports (IANA)                                        |
|                | CAR-alive server<br>Alive checks (configurable)                                                     | server | CAR Alive           | ---     | TCP     | 12062         | 1 - 65535 | Def: CAR<br>Adm: Default can be modified within this range         |
|                | SIP Call Signalling active (symmetric UDP) Call Signalling for SIP endpoints and SIP based trunking | client | SIP                 | ---     | UDP     | 5060          |           | Def: SIP                                                           |
|                | SIP Call Signalling active (TCP) Call Signalling for SIP endpoints and SIP based trunking           | client | SIP                 | ---     | TCP     | 1024 - 65535  |           | Def: Ephemeral Ports (IANA)                                        |
|                | SIP Call Signalling passive Call Signalling for SIP endpoints and SIP based trunking                | server | SIP                 | ---     | TCP_UDP | 5060          | 1 - 65535 | Def: SIP<br>Adm: Default can be modified within this range         |
|                |                                                                                                     |        |                     |         |         |               |           |                                                                    |
| SIP subscriber |                                                                                                     |        |                     |         |         |               |           |                                                                    |
|                | SIP Call Signalling active (symmetric UDP) Call Signalling for SIP endpoints and SIP based trunking | client | SIP                 | ---     | UDP     | 5060          |           | Def: SIP                                                           |

## Product Specific Attributes HiPath 5000

| Application | Function                                                                                  | Type   | A-Prot. | M-Prot. | T-Prot. | D-Ports      | A-Ports   | Remarks                                                    |
|-------------|-------------------------------------------------------------------------------------------|--------|---------|---------|---------|--------------|-----------|------------------------------------------------------------|
|             | SIP Call Signalling active (TCP) Call Signalling for SIP endpoints and SIP based trunking | client | SIP     | ---     | TCP     | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
|             | SIP Call Signalling passive Call Signalling for SIP endpoints and SIP based trunking      | server | SIP     | ---     | TCP_UDP | 5060         | 1 - 65535 | Def: SIP<br>Adm: Default can be modified within this range |

## 2.1.2 IP- Clients

### 2.1.2.1 optiClient 130 V5.1 R5

| Application                                                                                 | Function                                                                                                | Type   | A-Prot.             | M-Prot. | T-Prot. | D-Ports       | A-Ports      | Remarks                                                                                                                                                           |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------|---------------------|---------|---------|---------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HFA Client                                                                                  |                                                                                                         |        |                     |         |         |               |              |                                                                                                                                                                   |
|                                                                                             | Cornet TC                                                                                               | server | Cornet-TC           | ---     | TCP     | 4060          | 1 - 65535    | Def: CorNet-TC<br>Adm: Default can be modified within this range                                                                                                  |
|                                                                                             | H.323 Call Signaling active VoIP<br>Verbindungssteuerung                                                | client | H.323 (H.225-Q.931) | ---     | TCP     | 12250 - 12950 | 1 - 65535    | Def: H.323<br>Adm: Default can be modified within this range                                                                                                      |
|                                                                                             | H.323 Call Signaling (MDW_MSA) Voice over IP:<br>Verbindungssteuerung                                   | server | H.323 (H.225-Q.931) | ---     | TCP     | 1720          |              | Def: H.225/Q.931                                                                                                                                                  |
|                                                                                             | H.323 Media Signaling (MDW_MSA) Voice over IP:<br>Verbindungssteuerung für Sprachkanäle (Mediachannels) | server | H.323 (H.245)       | ---     | TCP     | 12000 - 12100 |              | Def: H.245 portnumber is negotiated via H.225                                                                                                                     |
|                                                                                             | RTP Payload Transport active VoIP<br>Payloadtransport                                                   | client | RTP_RTCP            | ---     | UDP     | 29100 - 29159 | 1 - 65535    | Def: RTP portnumber is negotiated via H.245. Max 30 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).<br>Adm: Default can be modified within this range |
|                                                                                             | RTP Payload Transport passive VoIP<br>payloadtransport                                                  | server | RTP_RTCP            | ---     | UDP     | 29100 - 29159 | 1 - 65535    | Def: RTP portnumber is negotiated via H.245. Max 30 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).<br>Adm: Default can be modified within this range |
| LDAP Connectivity (client sided) client sided connectivity to a LDAP Service                |                                                                                                         |        |                     |         |         |               |              |                                                                                                                                                                   |
|                                                                                             | LDAP Access Directory access via LDAP                                                                   | client | LDAP                | ---     | TCP     | 1024 - 65535  |              | Def: Ephemeral Ports (IANA)                                                                                                                                       |
| DLC Connectivity (DLS client sided) client sided connectivity to Deployment Licence Service |                                                                                                         |        |                     |         |         |               |              |                                                                                                                                                                   |
|                                                                                             | DLS contact me request (optiClient sided) workpoint sided<br>DLS contact me service                     | server | HTTP                | ---     | TCP     | 8082          |              | Def: HTTP optiClients                                                                                                                                             |
|                                                                                             | DLS Detection (DHCP)<br>DLS detection via DHCP                                                          | client | DHCP                | ---     | UDP     | 68            |              | Def: DHCP Client Port                                                                                                                                             |
|                                                                                             | DLS Detection (DNS)<br>DLS detection via DNS                                                            | client | DNS                 | ---     | UDP     |               | 1024 - 65535 | Def: Unspecified Default Port(range) values<br>Adm: PortLow/PortHigh can be modified within this range ()                                                         |
|                                                                                             | DLS Workpoint Interface (optiClient sided) workpoint sided<br>DLS Communication interface workpoints    | client | WPIP                | HTTPS   | TCP     | 18443         |              | Def: DLS: Communication interface workpoints – DLS                                                                                                                |

HFA Client (HiPath 3000) HFA client at HiPath 3000

## Product Specific Attributes HiPath 5000

| Application                                                                  | Function                                                                                                | Type   | A-Prot.             | M-Prot. | T-Prot.   | D-Ports       | A-Ports   | Remarks                                                                                                                                                              |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------|---------------------|---------|-----------|---------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                              | CorNet TC (HG1500)<br>CorNet TC                                                                         | server | CorNet-TC           | ---     | TCP       | 4060          | 1 - 65535 | Def: CorNet-TC<br>Adm: Default can be modified within this range                                                                                                     |
|                                                                              | H.323 Call Signaling (HG1500) active VoIP<br>Verbindungssteuerung                                       | client | H.323 (H.225-Q.931) | ---     | TCP       | 12250 - 12950 | 1 - 65535 | Def: H.323<br>Adm: Default can be modified within this range                                                                                                         |
|                                                                              | H.323 Call Signaling (MDW_MSA) Voice over IP:<br>Verbindungssteuerung                                   | server | H.323 (H.225-Q.931) | ---     | TCP       | 1720          |           | Def: H.225/Q.931                                                                                                                                                     |
|                                                                              | H.323 Media Signaling (MDW_MSA) Voice over IP:<br>Verbindungssteuerung für Sprachkanäle (Mediachannels) | server | H.323 (H.245)       | ---     | TCP       | 12000 - 12100 |           | Def: H.245 portnumber is negotiated via H.225                                                                                                                        |
|                                                                              | RTP Payload Transport (HG1500) active VoIP<br>Payloadtransport                                          | client | RTP_RTCP            | ---     | UDP       | 29100 - 29159 | 1 - 65535 | Def: RTP portnumber is negotiated via H.245.<br>Max 30 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).<br>Adm: Default can be modified within this range |
|                                                                              | RTP Payload Transport (HG1500) passive VoIP<br>payloadtransport                                         | server | RTP_RTCP            | ---     | UDP       | 29100 - 29159 | 1 - 65535 | Def: RTP portnumber is negotiated via H.245.<br>Max 30 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).<br>Adm: Default can be modified within this range |
| HLM Connectivity (client sided) client sided HiPath Licence Management       |                                                                                                         |        |                     |         |           |               |           |                                                                                                                                                                      |
|                                                                              | CLA Connectivity (CLC)<br>Used for data transfer between CLC / CLM                                      | client | HLP                 | ---     | TCP - SSL | 61740         |           | Def: Port will be discovered by CLM through multicast procedure. CLC uses port by configuration.                                                                     |
| LDAP Connectivity (client sided) client sided connectivity to a LDAP Service |                                                                                                         |        |                     |         |           |               |           |                                                                                                                                                                      |
|                                                                              | LDAP Access Directory access via LDAP                                                                   | client | LDAP                | ---     | TCP       | 1024 - 65535  |           | Def: Ephemeral Ports (IANA)                                                                                                                                          |

## 2.1.2.2 optiPoint 410/420 SIP V5 R0

| Application                                                                 | Function                                                                                      | Type   | A-Prot.       | M-Prot. | T-Prot.   | D-Ports     | A-Ports   | Remarks                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------|---------------|---------|-----------|-------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OAM (oP410 SIP) Administration of optiPoint SIP devices                     |                                                                                               |        |               |         |           |             |           |                                                                                                                                                                                                                  |
|                                                                             | DHCP-Client (op410) Server of "Dynamic Host Configuration Protocol"                           | client | DHCP          | ---     | UDP       | 68          |           | Def: DHCP Client Port                                                                                                                                                                                            |
|                                                                             | DHCP-Server (oP410) Server of "Dynamic Host Configuration Protocol"                           | server | DHCP          | ---     | UDP       | 67          |           | Def: DHCP Server Port                                                                                                                                                                                            |
|                                                                             | DLS Workpoint Interface (client sided) workpoint sided DLS Communication interface workpoints | client | WPIP          | HTTPS   | TCP       | 18443       | 0 - 65535 | Def: DLS: Communication interface workpoints – DLS                                                                                                                                                               |
|                                                                             | DNS DNS relay                                                                                 | server | DNS           | ---     | TCP_UDP   | 53          |           | Def: DNS                                                                                                                                                                                                         |
|                                                                             | FTP_Server_Control (oP410) FTP-Server                                                         | server | FTP           | ---     | TCP       | 21          |           | Def: FTP-Server Control Port                                                                                                                                                                                     |
|                                                                             | HTTPS_Server (Phones) Secure Embedded Web Server                                              | server | HTTP          | ---     | TCP       | 443         | 0 - 65535 | Def: HTTPS                                                                                                                                                                                                       |
|                                                                             | HTTP_Server (Phones) Web Interface                                                            | server | TFTP          | ---     | TCP       | 8085        | 0 - 65535 | Def: HTTP optiPoints, HG1500                                                                                                                                                                                     |
|                                                                             | IP-Config (Phones) IP Configuration Services                                                  | server | *proprietary* | ---     | UDP       | 5100        |           |                                                                                                                                                                                                                  |
|                                                                             | SNMP (SET/GET) (Phones) SNMP SET/GET-Functionality                                            | server | SNMP          | ---     | UDP       | 161         |           | Def: SNMP (Set/Get)                                                                                                                                                                                              |
|                                                                             | SNMP Trap (oP410) SNMP Trap function                                                          | client | SNMP          | ---     | UDP       | 161 162     |           | Def: SNMP Trap (oP410)                                                                                                                                                                                           |
|                                                                             | SNTP (oP410) Simple Network Time Protocol                                                     | server | SNTP          | ---     | UDP       | 123         |           | Def: SNTP                                                                                                                                                                                                        |
|                                                                             | SNTP heartbeat (oP410) Simple Network Time Protocol                                           | server | SNTP          | ---     | UDP       | 580         |           |                                                                                                                                                                                                                  |
| QoS Data Collection Unit (QCU) phones Send QoS reports                      |                                                                                               |        |               |         |           |             |           |                                                                                                                                                                                                                  |
|                                                                             | QCU client 12010 Client application which sends QDC data to the QCU                           | client | SNMP          | ---     | UDP       | 12010       | 0 - 65535 | Def: QCU receiving Port                                                                                                                                                                                          |
| SIP payload transport (op410 SIP) Session Initiation Protocol (SIP) payload |                                                                                               |        |               |         |           |             |           |                                                                                                                                                                                                                  |
|                                                                             | SIP Payload Transport (oP410) active Voice over IP: Transmission of Payload                   | client | RTP_RTCP      | ---     | UDP       | 5004 - 5027 | 0 - 65534 | Def: Port 5004 .. 5006 for normal usage. For every line-key you have to add two channels. The maximum of line keys are 10 -->. For this the maximum range of 5004 .. 5027 is valid<br>Adm: even port number only |
|                                                                             | SIP Payload Transport (oP410) passive Voice over IP: Transmission of Payload                  | server | RTP_RTCP      | ---     | UDP       | 5004 - 5027 | 0 - 65534 | Def: Port 5004 .. 5006 for normal usage. For every line-key you have to add two channels. The maximum of line keys are 10 -->. For this the maximum range of 5004 .. 5027 is valid<br>Adm: even port number only |
| SIP Signalling (op410 SIP) Session Initiation Protocol (SIP) signaling      |                                                                                               |        |               |         |           |             |           |                                                                                                                                                                                                                  |
|                                                                             | SIP Signaling (WL2-Phone) SIP over TLS                                                        | client | SIP           | ---     | TCP - TLS | 5061        |           | Def: SIP                                                                                                                                                                                                         |

| Application | Function                                                                                          | Type   | A-Prot. | M-Prot. | T-Prot.   | D-Ports | A-Ports   | Remarks                                                                                                |
|-------------|---------------------------------------------------------------------------------------------------|--------|---------|---------|-----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
|             | SIP signaling TCP (oP410) SIP signalling in the case of using TCP (configurable inside the phone) | client | SIP     | ---     | TCP       | 5060    |           | Def: SIP                                                                                               |
|             | SIP signaling UDP (oP410) SIP signalling in the case of using UDP (configurable inside the phone) | client | SIP     | ---     | UDP       | 5060    |           | Def: SIP                                                                                               |
|             | SIP-TLS (OP410) SIP over TLS                                                                      | client | SIP     | ---     | TCP - TLS | 5061    | 1 - 65535 | Def: SIP<br>Adm: Configuration the port value to zero will result in the default port value being used |

---

User Applications (oP410 SIP) bundle of user functions

|                                                             |        |      |     |     |      |           |                                                |
|-------------------------------------------------------------|--------|------|-----|-----|------|-----------|------------------------------------------------|
| JAVA (optiPoints)<br>JAVA applications in phones            | client | HTTP | --- | TCP | 9200 | 0 - 65535 | Def: Java default port in optiPoint phones     |
| LDAP Access (optiPoint phones)<br>Directory access via LDAP | client | LDAP | --- | TCP | 389  | 0 - 65535 | Def: LDAP                                      |
| WAP client (TCP) for WAP access to WAP services (server)    | client | WAP  | --- | TCP | 9200 | 0 - 65535 | Def: WAP connectionless session service (IANA) |

### 2.1.2.3 optiPoint 410/420 V5 R3

| Application                                             | Function                                                                                      | Type   | A-Prot.             | M-Prot. | T-Prot. | D-Ports      | A-Ports   | Remarks                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------|---------------------|---------|---------|--------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| H.323 (oP410) General term for H.323 functions          |                                                                                               |        |                     |         |         |              |           |                                                                                                                                                                                                                                                                                                                                 |
|                                                         | H.323 Call Signaling (oP410) active Voice over IP                                             | client | H.323 (H.225-Q.931) | ---     | TCP     | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                                                                                                                                                                                                                                                                                     |
|                                                         | H.323 Call Signaling (oP410) passive Voice over IP                                            | server | H.323 (H.225-Q.931) | ---     | TCP     | 1720         | 0 - 65535 | Def: H.225/Q.931                                                                                                                                                                                                                                                                                                                |
|                                                         | H.323 Payload Transport (oP4x0 at H2k/H3k) active Voice over IP                               | client | RTP_RTCP            | ---     | UDP     | 5004 - 5013  | 0 - 65534 | Def: RTP portnumber is negotiated via H.245. Max 5 connections: RTP starts at <adr> port2/max - 1 down to <adr> port 1/min , RTCP at <adr> port2/max down to <adr> port 1/min+1<br>Adm: even port number only                                                                                                                   |
|                                                         | H.323 Payload Transport (oP4x0 at H2k/H3k) passive Voice over IP                              | server | RTP_RTCP            | ---     | UDP     | 5004 - 5013  | 0 - 65534 | Def: RTP portnumber is negotiated via H.245. Max 5 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).<br>Adm: even port number only                                                                                                                                                                                    |
|                                                         | H.323 Payload Transport (oP4x0 at H4k) active Voice over IP                                   | client | RTP_RTCP            | ---     | UDP     | 5008 - 5013  | 0 - 65534 | Def: Attention: The phone is prepared to handle up to 5 port couples in total. If the base port is set to 5004 inside the phone, the port range then is 5004 ... 5013. But, in H4k scenarios, only the upper three couples (starting from the top) are used: 5012/5013, 5010/5011 and 5008/5009 .<br>Adm: even port number only |
|                                                         | H.323 Payload Transport (oP4x0 at H4k) passive Voice over IP                                  | server | RTP_RTCP            | ---     | UDP     | 5008 - 5013  | 0 - 65534 | Def: Attention: The phone is prepared to handle up to 5 port couples in total. If the base port is set to 5004 inside the phone, the port range then is 5004 ... 5013. But, in H4k scenarios, only the upper three couples (starting from the top) are used: 5012/5013, 5010/5011 and 5008/5009 .<br>Adm: even port number only |
| HFA (oP410) HiPath Feature Access                       |                                                                                               |        |                     |         |         |              |           |                                                                                                                                                                                                                                                                                                                                 |
|                                                         | CorNet TC Logon (oP600) CorNet TC Logon Port                                                  | client | *proprietary*       | ---     | TCP     | 4060         |           | Def: CorNet-TC                                                                                                                                                                                                                                                                                                                  |
| OAM (oP410 HFA) Administration of optiPoint HFA devices |                                                                                               |        |                     |         |         |              |           |                                                                                                                                                                                                                                                                                                                                 |
|                                                         | DLS Workpoint Interface (client sided) workpoint sided DLS Communication interface workpoints | client | WPIP                | HTTPS   | TCP     | 18443        | 0 - 65535 | Def: DLS: Communication interface workpoints – DLS                                                                                                                                                                                                                                                                              |
|                                                         | FTP_Server_Control (oP410) FTP-Server                                                         | server | FTP                 | ---     | TCP     | 21           |           | Def: FTP-Server Control Port                                                                                                                                                                                                                                                                                                    |
|                                                         | HTTPS_Server (Phones) Secure Embedded Web Server                                              | server | HTTP                | ---     | TCP     | 443          | 0 - 65535 | Def: HTTPS                                                                                                                                                                                                                                                                                                                      |
|                                                         | HTTP_Server (Phones) Web Interface                                                            | server | TFTP                | ---     | TCP     | 8085         | 0 - 65535 | Def: HTTP optiPoints, HG1500                                                                                                                                                                                                                                                                                                    |
|                                                         | IP-Config (Phones) IP Configuration Services                                                  | server | *proprietary*       | ---     | UDP     | 5100         |           |                                                                                                                                                                                                                                                                                                                                 |
|                                                         | SNMP (SET/GET) (Phones) SNMP SET/GET-Functionality                                            | server | SNMP                | ---     | UDP     | 161          |           | Def: SNMP (Set/Get)                                                                                                                                                                                                                                                                                                             |
|                                                         | SNMP Trap (oP410) SNMP Trap function                                                          | client | SNMP                | ---     | UDP     | 161<br>162   |           | Def: SNMP Trap (oP410)                                                                                                                                                                                                                                                                                                          |

| Application                                                               | Function                                                            | Type   | A-Prot.   | M-Prot. | T-Prot. | D-Ports | A-Ports   | Remarks                                        |
|---------------------------------------------------------------------------|---------------------------------------------------------------------|--------|-----------|---------|---------|---------|-----------|------------------------------------------------|
| QoS Data Collection Unit (QCU) phones Send QoS reports,                   |                                                                     |        |           |         |         |         |           |                                                |
|                                                                           | QCU client 12010 Client application which sends QDC data to the QCU | client | SNMP      | ---     | UDP     | 12010   | 0 - 65535 | Def: QCU receiving Port                        |
| User Applications (oP410 HFA) bundle of user functions of HFA phone oP410 |                                                                     |        |           |         |         |         |           |                                                |
|                                                                           | CTI Service (TCP) CTI Service in oP410                              | client | Cornet TS | ---     | TCP     | 5105    |           | Def: CTI Service oP410                         |
|                                                                           | JAVA (optiPoints) JAVA applications in phones                       | client | HTTP      | ---     | TCP     | 9200    | 0 - 65535 | Def: Java default port in optiPoint phones     |
|                                                                           | LDAP Access (optiPoint phones) Directory access via LDAP            | client | LDAP      | ---     | TCP     | 389     | 0 - 65535 | Def: LDAP                                      |
|                                                                           | WAP client (TCP) for WAP access to WAP services (server)            | client | WAP       | ---     | TCP     | 9200    | 0 - 65535 | Def: WAP connectionless session service (IANA) |

#### 2.1.2.4 optiPoint WL2 professional V1.0 HFA Variant

| Application                                             | Function                                                                                            | Type   | A-Prot.             | M-Prot. | T-Prot. | D-Ports      | A-Ports   | Remarks                                                                                                        |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------|---------------------|---------|---------|--------------|-----------|----------------------------------------------------------------------------------------------------------------|
| H.323 (WL2) General term for H.323 functions            |                                                                                                     |        |                     |         |         |              |           |                                                                                                                |
|                                                         | H.323 Call Signaling (WL2) active Voice over IP                                                     | client | H.323 (H.225-Q.931) | ---     | TCP     | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                                                                    |
|                                                         | H.323 Call Signaling (WL2) passive Voice over IP                                                    | server | H.323 (H.225-Q.931) | ---     | TCP     | 1720         | 1 - 65535 | Def: H.225/Q.931<br>Adm: Default can be modified within this range                                             |
|                                                         | H.323 Payload Transport (WL2) active Voice over IP                                                  | client | RTP_RTCP            | ---     | UDP     | 5004 - 5011  |           | Def: RTP portnumber : RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1).                                           |
|                                                         | H.323 Payload Transport (WL2) passive Voice over IP                                                 | server | RTP_RTCP            | ---     | UDP     | 5004 - 5013  |           | Def: RTP portnumber is negotiated via H.245. Max 5 connections: RTP starts at <adr>, RTCP at <adr>+1 (=RTP+1). |
| HFA (WL2) HiPath Feature Access                         |                                                                                                     |        |                     |         |         |              |           |                                                                                                                |
|                                                         | CorNet TC Logon (WL2) CorNet TC Logon Port                                                          | client | *proprietary*       | ---     | TCP     | 4060         |           | Def: CorNet-TC                                                                                                 |
| LDAP WL2 LDAP access for phones                         |                                                                                                     |        |                     |         |         |              |           |                                                                                                                |
|                                                         | LDAP Access (WL2) Directory access via LDAP                                                         | client | LDAP                | ---     | TCP     | 389          | 0 - 65535 | Def: LDAP                                                                                                      |
| OAM (WL2) Administration of optiPoint HFA devices       |                                                                                                     |        |                     |         |         |              |           |                                                                                                                |
|                                                         | DHCP-Client (WL2) Server of "Dynamic Host Configuration Protocol"                                   | client | DHCP                | ---     | UDP     | 68           |           | Def: DHCP Client Port                                                                                          |
|                                                         | DHCP-Server (WL2) Server of "Dynamic Host Configuration Protocol"                                   | server | DHCP                | ---     | UDP     | 67           |           | Def: DHCP Server Port                                                                                          |
|                                                         | DLS Workpoint Interface (WL2) (client sided) workpoint sided DLS Communication interface workpoints | client | WPIP                | HTTPS   | TCP     | 1024 - 65535 | 0 - 65535 | Def: Ephemeral Ports (IANA)                                                                                    |
|                                                         | HTTPS Server (WL2) Secure Embedded Web Server                                                       | server | HTTP                | ---     | TCP     | 443          |           | Def: HTTPS                                                                                                     |
|                                                         | HTTP Server (WL2) Web Interface                                                                     | server | TFTP                | ---     | TCP     | 8085         |           | Def: HTTP optiPoints, HG1500                                                                                   |
|                                                         | IP-Config (WL2) Service Agent Reque                                                                 | server | *proprietary*       | ---     | UDP     | 5100         |           |                                                                                                                |
|                                                         | SNMP (SET/GET) (WL2) SNMP SET/GET-Functionality                                                     | server | SNMP                | ---     | UDP     | 161          |           | Def: SNMP (Set/Get)                                                                                            |
|                                                         | SNMP (Traps) (WL2) active SNMP Traps                                                                | client | SNMP                | ---     | UDP     | 162          |           | Def: SNMP (Traps)                                                                                              |
|                                                         | Telnet (WL2) Telnet-Server                                                                          | server | Telnet              | ---     | TCP     | 23           |           | Def: Telnet                                                                                                    |
| QoS Data Collection Unit (QCU) phones Send QoS reports, |                                                                                                     |        |                     |         |         |              |           |                                                                                                                |
|                                                         | QCU client 12010 Client application which sends QDC data to the QCU                                 | client | SNMP                | ---     | UDP     | 12010        | 0 - 65535 | Def: QCU receiving Port                                                                                        |

## 2.2 Administration and Diagnosis

The following services are needed for administration and diagnosis in addition to those listed in chapter Voice Traffic and Signaling

### OAM (H5k) Administration and Maintenance HiPath 5000

|                                                                            |        |         |     |           |              |           |                                                            |
|----------------------------------------------------------------------------|--------|---------|-----|-----------|--------------|-----------|------------------------------------------------------------|
| ADM (H2/3/5k) Interface to DBFS                                            | server | ADM API | --- | TCP       | 7000         | 1 - 65535 | Def: ADM<br>Adm: Default can be modified within this range |
| HTTP client (HG1500) used for multi gateway administratrion feature (MGAF) | client | HTTP    | --- | TCP       | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| HTTP Server (HG1500) HTTP Server for WBM access                            | server | HTTP    | --- | TCP       | 8085         |           | Def: HTTP optiPoints, HG1500                               |
| HTTPS client used for multi gateway administration feature (MGAF)          | client | HTTP S  | --- | TCP - SSL | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| HTTPS Server (HG1500) Secure Web Server                                    | server | HTTP S  | --- | TCP - SSL | 443          |           | Def: HTTPS                                                 |
| LDAP Client LDAP client used for centraliced directory service             | client | LDAP    | --- | TCP_UDP   | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| SNMP (SET/GET) (H2/3/5k/HG1500) SNMP Set/Get                               | server | SNMP    | --- | UDP       | 161          |           | Def: SNMP (Set/Get)                                        |
| SNMP (Traps) (H2/3/5/HG1500) SNMP Erromessages                             | client | SNMP    | --- | UDP       | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| SNMP (Traps) (HG1500) Receiving of SNMP-Traps                              | server | SNMP    | --- | UDP       | 162          |           | Def: SNMP (Traps)                                          |
| SNTP Client (H2/3/5k/BizIP) Simple Network Time Protocol                   | client | SNTP    | --- | UDP       | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| TFTP Client (H2/3/5k) APS-Transfer/ KDS-Sicherung mit TFTP                 | client | TFTP    | --- | UDP       | 1024 - 65535 |           | Def: Ephemeral Ports (IANA)                                |
| TFTP Server (H2/3/5k/BizIP) TFTP Server for CDR                            | server | TFTP    | --- | UDP       | 69           |           | Def: TFTP                                                  |

### SW\_Manager (H5k) HiPath Software Manager

|                                                                               |        |               |     |     |      |           |                                                                                                                                                     |
|-------------------------------------------------------------------------------|--------|---------------|-----|-----|------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| SW-Man Secured Web Access from a Client Browser HTTPS Interface of SW-Manager | server | HTTPS         | --- | TCP | 8443 | 0 - 65535 | Def: HTTPS port of SW-Manager, DB Feature Server<br>Adm: Default can be modified within this range via server.xml file in Tomcat's "conf" directory |
| SW-Man Tomcat Shutdown Used to shutdown Tomcat                                | server | *proprietary* | --- | UDP | 8279 | 0 - 65535 | Def: Shutdown port of SW-Manager<br>Adm: Default can be modified within this range via server.xml file in Tomcat's "conf" directory                 |
| SW-Man Web Access from a Client Browser HTTP Interface of SW-Manager          | server | HTTP          | --- | TCP | 8280 | 0 - 65535 | Def: HTTP port of SW-Manager<br>Adm: Default can be modified within this range via server.xml file in Tomcat's "conf" directory                     |

### X-Trace (H2/3/5k) Access for X-Tracer

|                                                     |        |     |     |     |       |  |               |
|-----------------------------------------------------|--------|-----|-----|-----|-------|--|---------------|
| Online Trace (H2/3/5k) Online Trace Port (X-Tracer) | server | XTP | --- | TCP | 21965 |  | Def: X-Tracer |
|-----------------------------------------------------|--------|-----|-----|-----|-------|--|---------------|

### X-Trace (HG1500) Access for X-Tracer

|                                        |        |     |  |     |      |  |             |
|----------------------------------------|--------|-----|--|-----|------|--|-------------|
| Online Trace (HG1500) Acces to X-Trace | server | XTP |  | TCP | 2048 |  | Def: XTrace |
|----------------------------------------|--------|-----|--|-----|------|--|-------------|