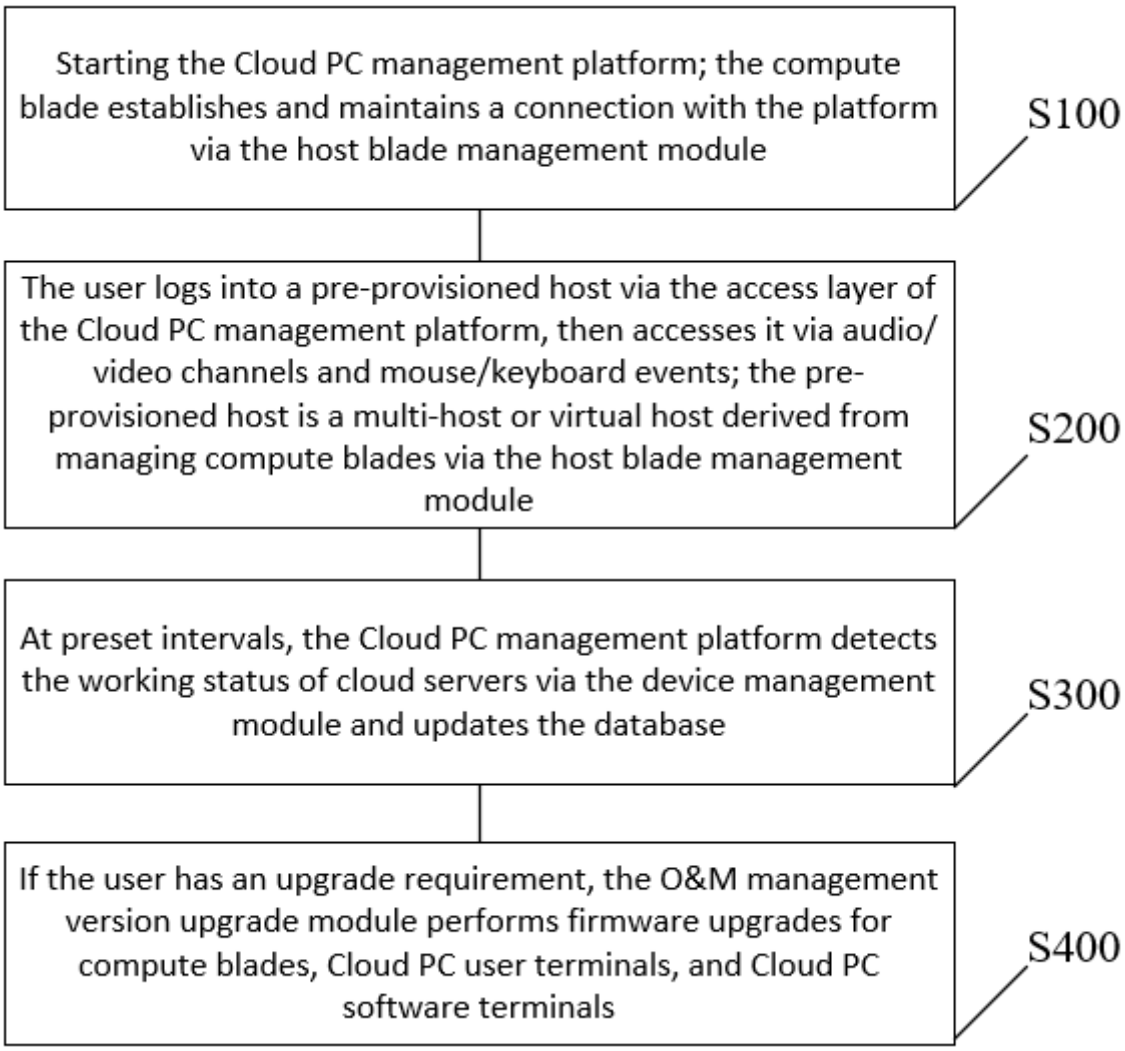

Starting the Cloud PC management platform; the compute blade establishes and maintains a connection with the platform via the host blade management module
S100
The user logs into a pre-provisioned host via the access layer of the Cloud PC management platform, then accesses it via audio/video channels and mouse/keyboard events; the pre-provisioned host is a multi-host or virtual host derived from managing compute blades via the host blade management module
S200
At preset intervals, the Cloud PC management platform detects the working status of cloud servers via the device management module and updates the database
S300
If the user has an upgrade requirement, the O&M management version upgrade module performs firmware upgrades for compute blades, Cloud PC user terminals, and Cloud PC software terminals
S400

FIG. 1

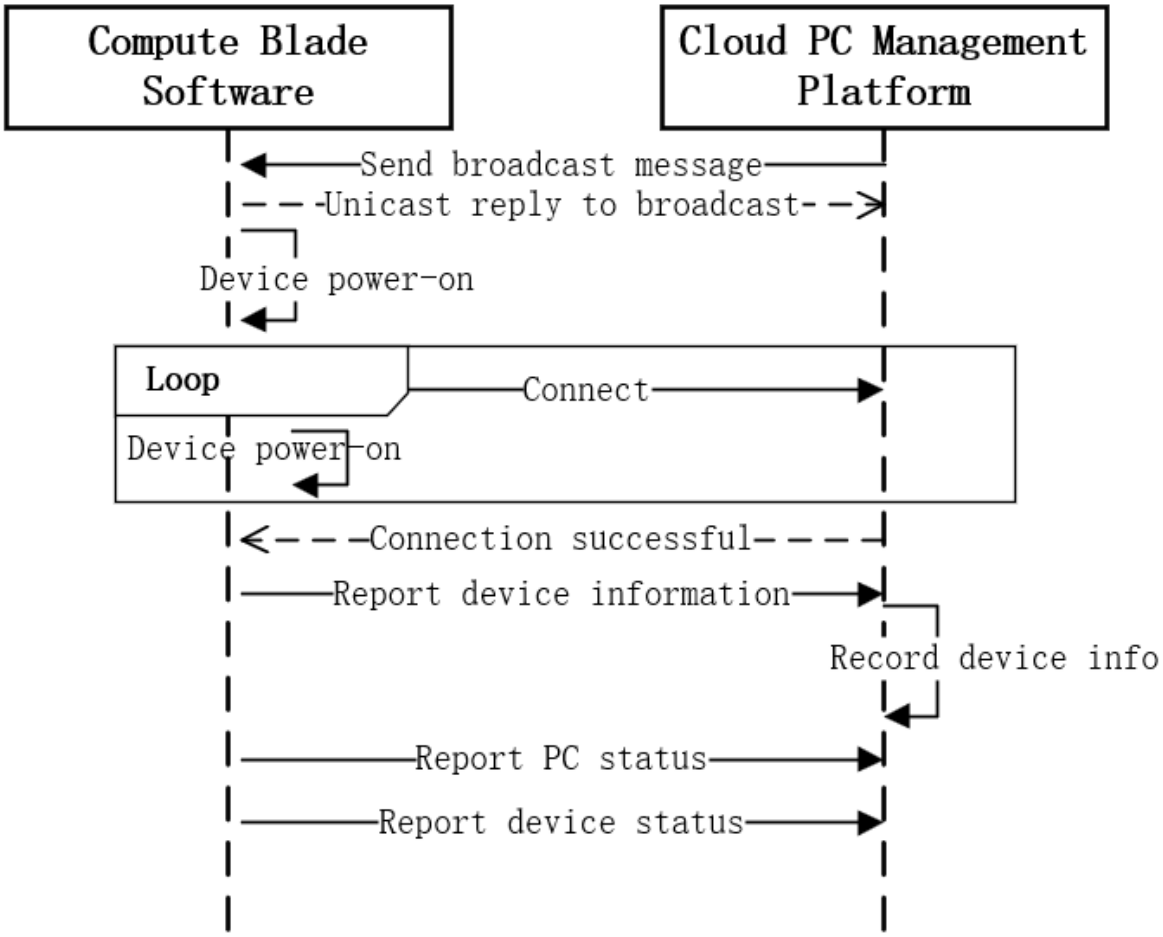

Compute Blade Software
Cloud PC Management Platform
Send broadcast message
Unicast reply to broadcast
Device power-on
Loop
Connect
Device power-on
Connection successful
Report device information
Record device info
Report PC status
Report device status

FIG. 2

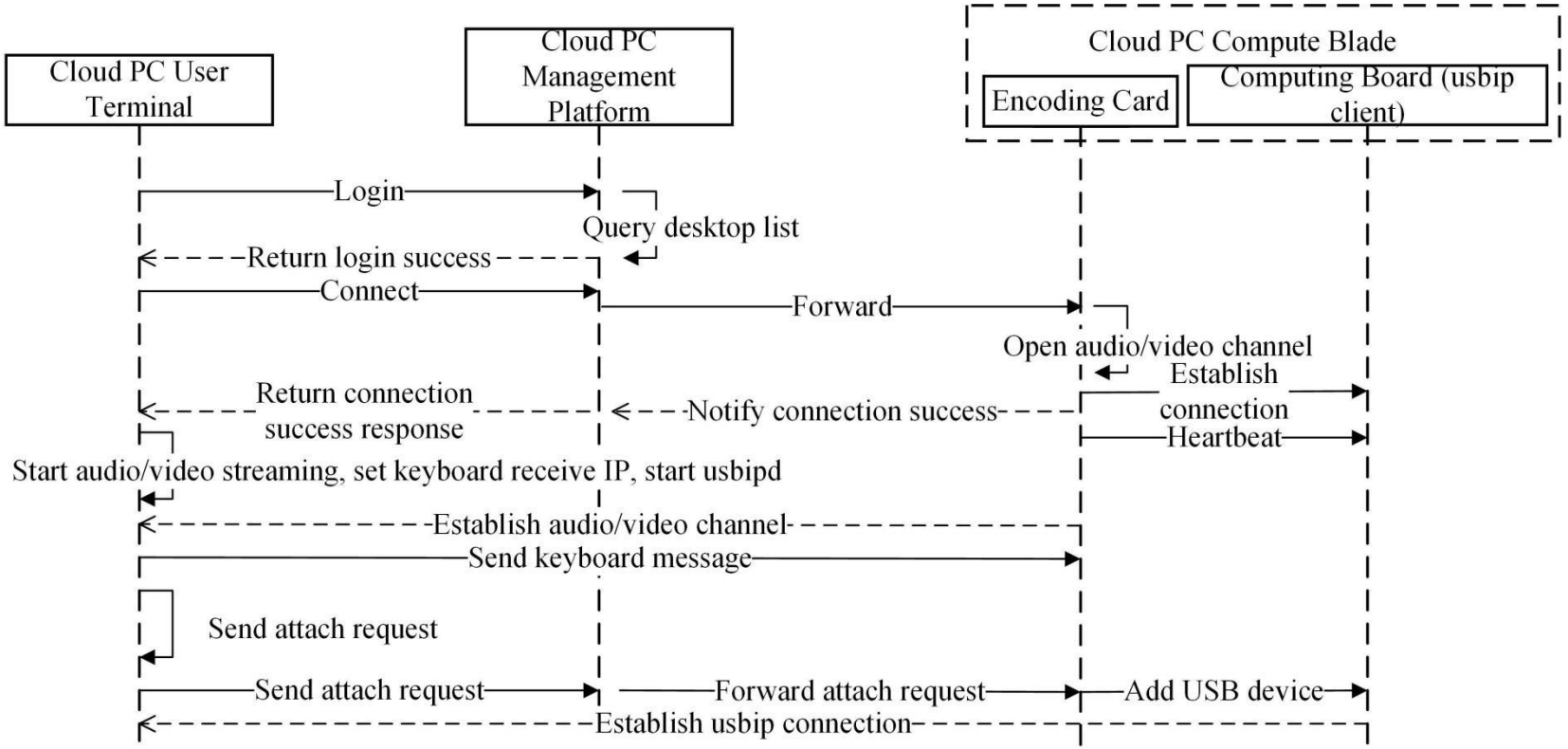

Cloud PC User Terminal
Cloud PC Management Platform
Cloud PC Compute Blade
Encoding Card
Computing Board (usbip client)
Login
Query desktop list
Return login success
Connect
Forward
Open audio/video channel
Establish connection
Return connection success response
Notify connection success
Heartbeat
Start audio/video streaming, set keyboard receive IP, start usbipd
Establish audio/video channel
Send keyboard message
Send attach request
Send attach request
Forward attach request
Add USB device
Establish usbip connection

FIG. 3

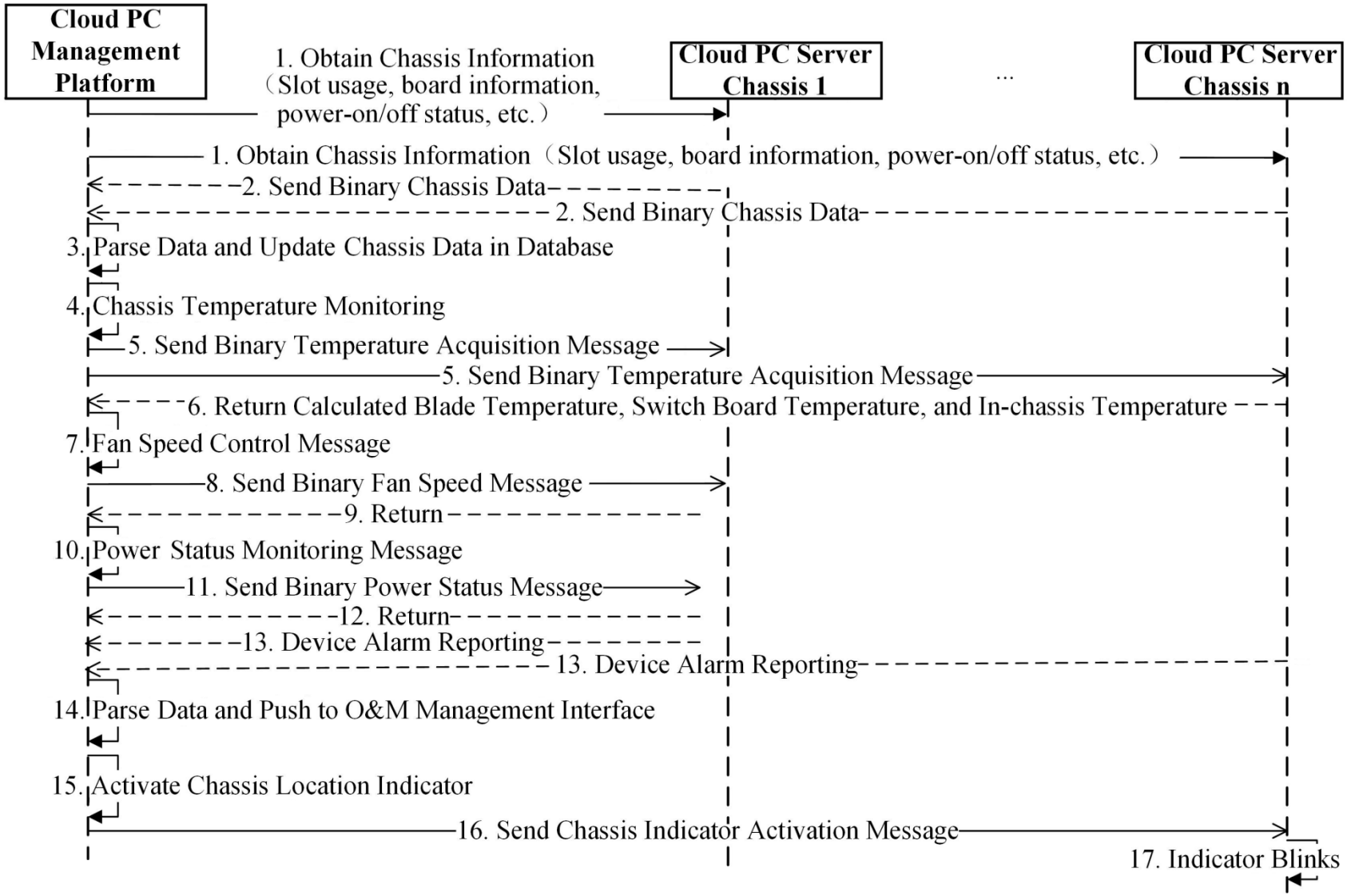

Cloud PC Management Platform
Cloud PC Server Chassis 1
...
Cloud PC Server Chassis n
1. Obtain Chassis Information (Slot usage, board information, power-on/off status, etc.)
1. Obtain Chassis Information (Slot usage, board information, power-on/off status, etc.)
2. Send Binary Chassis Data
2. Send Binary Chassis Data
3. Parse Data and Update Chassis Data in Database
4. Chassis Temperature Monitoring
5. Send Binary Temperature Acquisition Message
5. Send Binary Temperature Acquisition Message
6. Return Calculated Blade Temperature, Switch Board Temperature, and In-chassis Temperature
7. Fan Speed Control Message
8. Send Binary Fan Speed Message
9. Return
10. Power Status Monitoring Message
11. Send Binary Power Status Message
12. Return
13. Device Alarm Reporting
13. Device Alarm Reporting
14. Parse Data and Push to O&M Management Interface
15. Activate Chassis Location Indicator
16. Send Chassis Indicator Activation Message
17. Indicator Blinks

FIG. 4

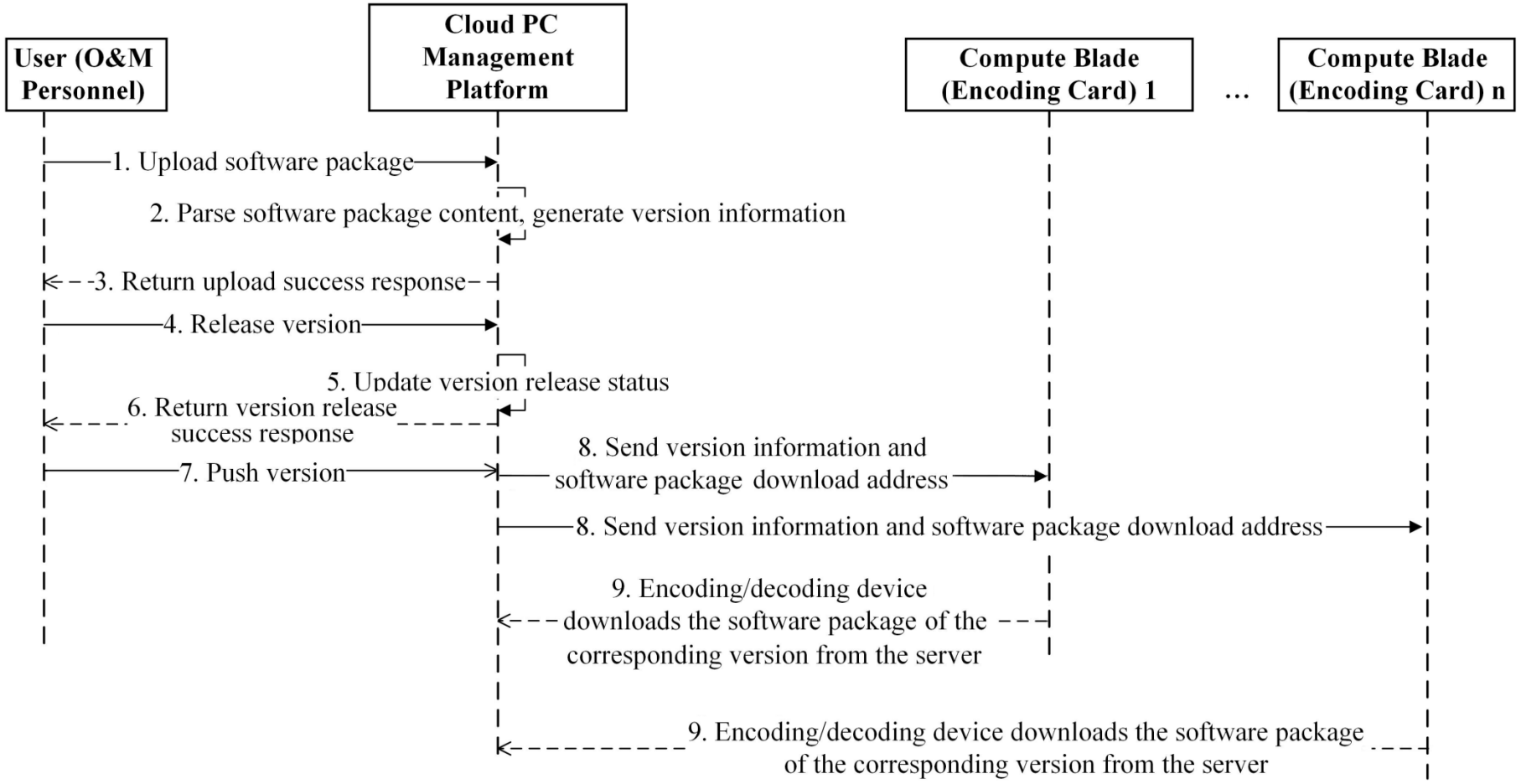

User (O&M Personnel)
Cloud PC Management Platform
Compute Blade (Encoding Card) 1
...
Compute Blade (Encoding Card) n
1. Upload software package
2. Parse software package content, generate version information
3. Return upload success response
4. Release version
5. Update version release status
6. Return version release success response
7. Push version
8. Send version information and software package download address
8. Send version information and software package download address
9. Encoding/decoding device downloads the software package of the corresponding version from the server
9. Encoding/decoding device downloads the software package of the corresponding version from the server

FIG. 5

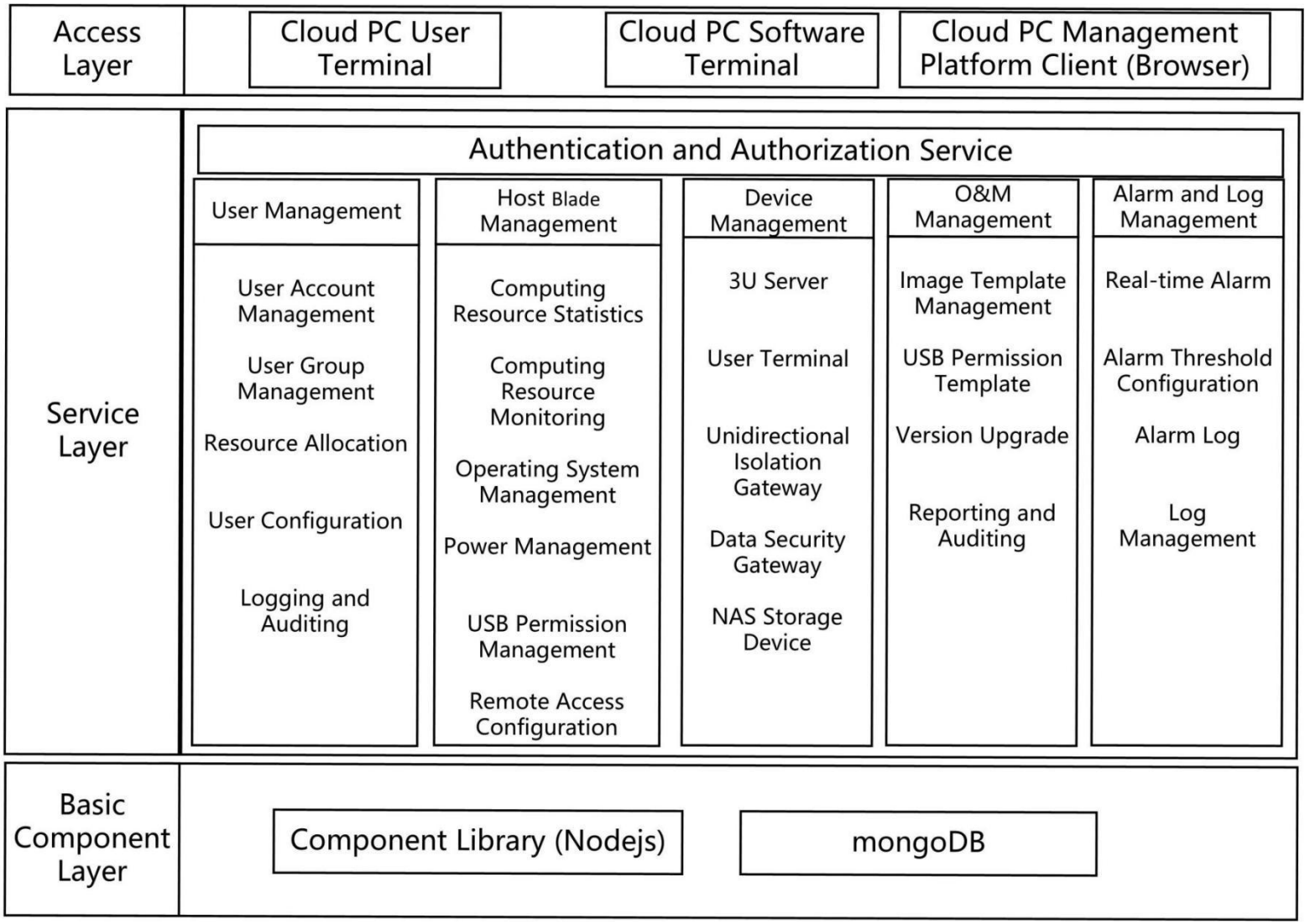

Access Layer
Cloud PC User Terminal
Cloud PC Software Terminal
Cloud PC Management Platform Client (Browser)
Service Layer
Authentication and Authorization Service
User Management
User Account Management
User Group Management
Resource Allocation
User Configuration
Logging and Auditing
Host Blade Management
Computing Resource Statistics
Computing Resource Monitoring
Operating System Management
Power Management
USB Permission Management
Remote Access Configuration
Device Management
3U Server
User Terminal
Unidirectional Isolation Gateway
Data Security Gateway
NAS Storage Device
O&M Management
Image Template Management
USB Permission Template
Version Upgrade
Reporting and Auditing
Alarm and Log Management
Real-time Alarm
Alarm Threshold Configuration
Alarm Log
Log Management
Basic Component Layer
Component Library (Nodejs)
mongoDB

FIG. 6