

GUIDELINE

ABB Ability™ Ekip Com Hub cloud connectivity guideline

Cloud connectivity requirements for ABB Ability™ Ekip Com Hub IoT devices

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This guide provides requirements and guidelines to make an ABB Ability™ Ekip Com Hub IoT device communicating with the ABB Ability Energy and Assets management cloud platform.

1. General requirements

- Internet connectivity via a 100/1000 Mbit ethernet with an RJ45 CAT.6 SFTP (or greater) cable

The Plant IT Network Administrator should also provide either:

- A DHCP enabled network
- A valid, not yet unallocated IP address, the subnet class, the gateway address and a reachable DNS server (port 53/UDP)

A typical example is:

- IP: 192.168.10.123
- SUBNET: 255.255.255.0
- GATEWAY: 192.168.10.1
- DNS SERVER: 192.168.10.254 (DNS server may be on a different subnet)

1.1. Ability™ EL Cloud Endpoints

1.1.1. DNS names resolution

Ekip Hub device must be able to perform DNS queries to a configured DNS server or provided via DHCP.

1.1.1.1. IP address provided via DHCP

In a DHCP enabled network the DNS server IP address must be provided by the DHCP server

1.1.1.2. IP address manually set

When a static IP address is configured on the ABB IoT device the following DNS servers are used:

- OpenDNS 208.67.222.222
- Google 8.8.8.8
- Cloudflare 1.1.1.1

1.1.2. Network firewall configuration

- The firewall eventually configured on the network gateway must allow communications **FROM** and **TO** the following **DNS** servers on port **53/UDP** when a static IP address is set on the ABB IoT Device:

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- OpenDNS 208.67.222.222
- Google 8.8.8.8
- Cloudflare 1.1.1.1
- The firewall eventually configured on the network gateway must allow communications **FROM** and **TO** the following **HTTPS** endpoints on port **443/TCP**:
 - <https://prod.apidevice.edcs.abb.com:443>
 - <https://prodbiot00.servicebus.windows.net:443>
 - <https://library.e.abb.com:443> (only if local firmware upgrade is required)
- The firewall eventually configured on the network gateway should allow communications **FROM** and **TO** the following **NTP** server on port **123/UDP**:
 - ntpabb.westeurope.cloudapp.azure.com

A custom defined NTP server can be configured by the customer via the ABB Ekip Connect 3 interface.

1.2. Additional notes

1.2.1. Proxy servers

Proxy servers are not currently supported by ABB IoT devices, direct internet connectivity must be provided

1.2.2. NTP servers

A working NTP server is not mandatory but it's highly recommended to make sure that the system clock is always synchronized. A bad configured clock may cause certificate validation and communication errors with the cloud.

1.2.3. List of Azure IP addresses (whitelisting)

IP addresses associated with the FQDN may change over time (floating IPs).

A list of IP addresses associated with the API endpoints is provided by the Microsoft Azure team at the following URL: <https://www.microsoft.com/en-us/download/details.aspx?id=56519>.

Involved datacenters and services are:

- *EventHub.NorthEurope* for prodbiot00.servicebus.windows.net
- *AppService.NorthEurope* for prod.apidevice.edcs.abb.com
- *AzureCloud.westeurope* for ntpabb.westeurope.cloudapp.azure.com

1.2.4. Type of data sent and received by ABB IoT devices

- Data outgoing from ABB IoT devices:
 - Json payloads (up to every 30 seconds)
 - XML and json payloads during the commissioning
 - DNS and SNTP queries

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- Data incoming to ABB IoT devices: devices do receive data only as a reply to a request sent to the REST API endpoint, arbitrary data cannot be sent directly from the cloud
- Data incoming to IoT devices via REST API replies:
 - Json payloads
 - XML payloads
 - Binary encrypted and digitally signed archives (only for remote and local firmware upgrade)
- Other incoming data:
 - DNS and SNTP replies

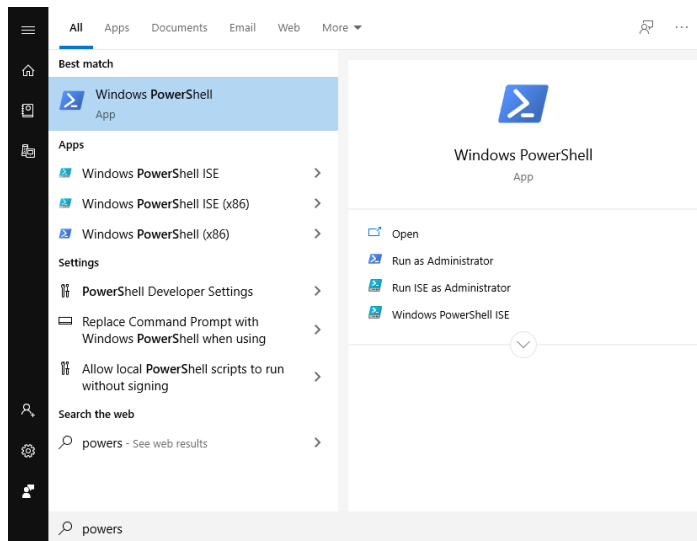
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2. Connectivity troubleshooting guide

A computer must be connected to the same network used by the IoT device to get cloud connectivity.

2.1. Windows

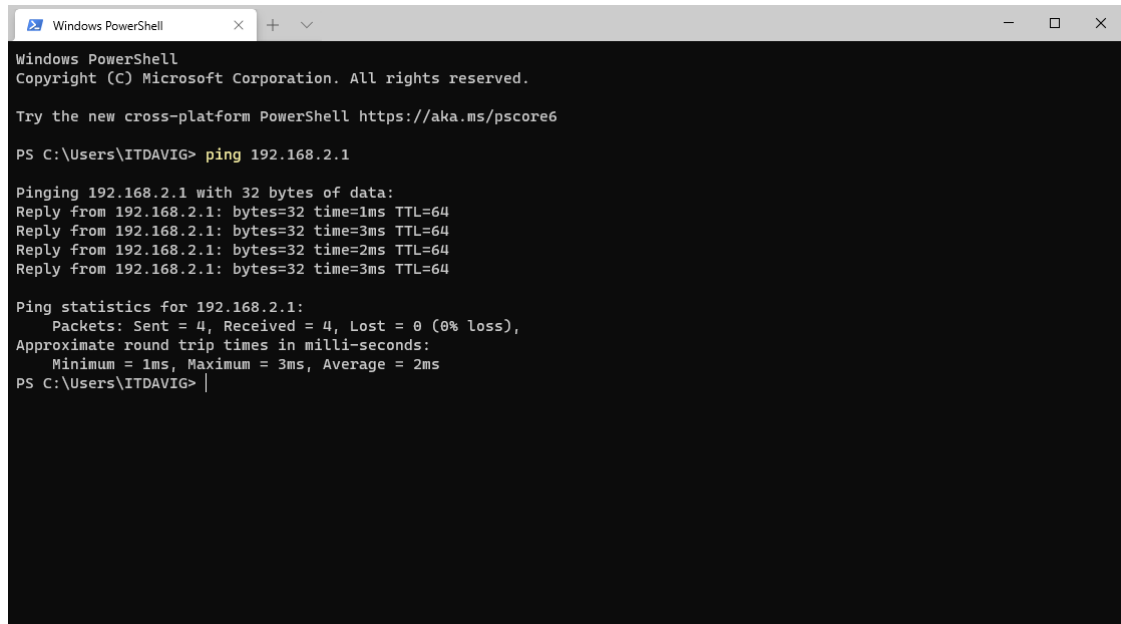
Requirements: Windows PowerShell



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2.1.1. Testing basic connectivity

> ping <gateway IP address>



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\ITDAVIG> ping 192.168.2.1

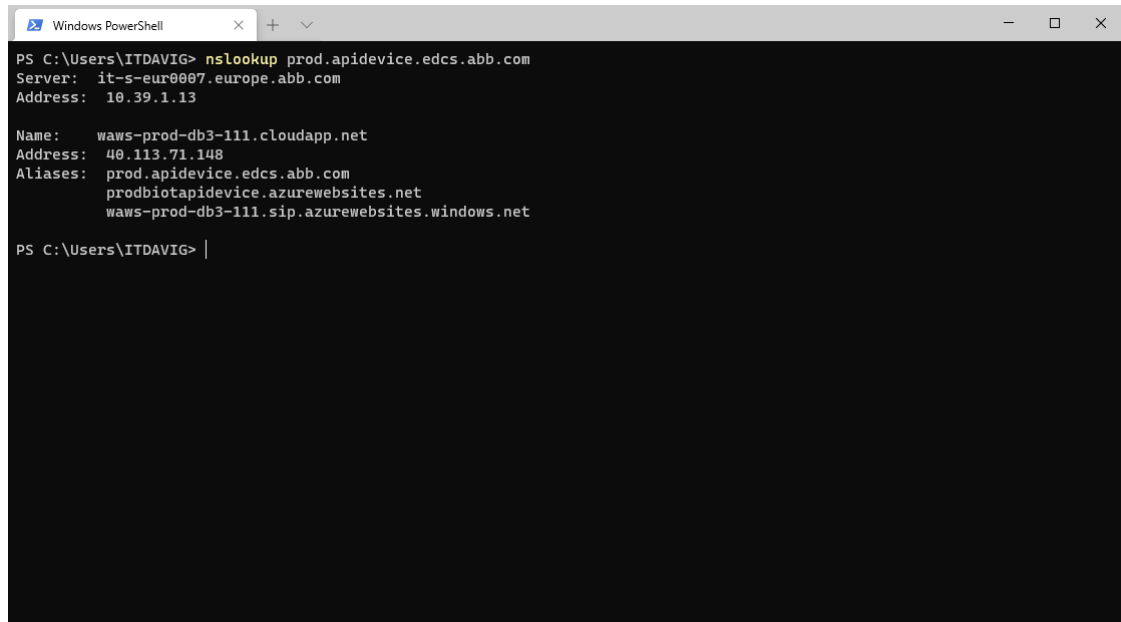
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=1ms TTL=64
Reply from 192.168.2.1: bytes=32 time=3ms TTL=64
Reply from 192.168.2.1: bytes=32 time=2ms TTL=64
Reply from 192.168.2.1: bytes=32 time=3ms TTL=64

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms
PS C:\Users\ITDAVIG>
```

WARNING: ping (ICMP protocol) may be blocked by network security policies. Please check with the Customer Network Administrator

2.1.2. Testing the default DNS server

> nslookup prod.apidevice.edcs.abb.com



```
Windows PowerShell

PS C:\Users\ITDAVIG> nslookup prod.apidevice.edcs.abb.com
Server:  it-s-eur0007.europe.abb.com
Address:  10.39.1.13

Name:     waws-prod-db3-111.cloudapp.net
Address:  40.113.71.148
Aliases:  prod.apidevice.edcs.abb.com
          prodbiotapidevice.azurewebsites.net
          waws-prod-db3-111.sip.azurewebsites.windows.net

PS C:\Users\ITDAVIG>
```

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2.1.3. Testing the public DNS servers

Only required when a static IP address is configured on the ABB IoT Device

```
> nslookup prod.apidevice.edcs.abb.com 208.67.222.222
> nslookup prod.apidevice.edcs.abb.com 8.8.8.8
> nslookup prod.apidevice.edcs.abb.com 1.1.1.1
```

```
Windows PowerShell
PS C:\Users\ITDAVIG> nslookup prod.apidevice.edcs.abb.com 208.67.222.222
Server: resolver1.opendns.com
Address: 208.67.222.222

Non-authoritative answer:
Name: waws-prod-db3-111.cloudapp.net
Address: 40.113.71.148
Aliases: prod.apidevice.edcs.abb.com
         prodbiotapidevice.azurewebsites.net
         waws-prod-db3-111.sip.azurewebsites.windows.net

PS C:\Users\ITDAVIG> nslookup prod.apidevice.edcs.abb.com 8.8.8.8
Server: dns.google
Address: 8.8.8.8

Non-authoritative answer:
Name: waws-prod-db3-111.cloudapp.net
Address: 40.113.71.148
Aliases: prod.apidevice.edcs.abb.com
         prodbiotapidevice.azurewebsites.net
         waws-prod-db3-111.sip.azurewebsites.windows.net

PS C:\Users\ITDAVIG> nslookup prod.apidevice.edcs.abb.com 1.1.1.1
```

2.1.4. Testing HTTPS connectivity

```
> curl https://prod.apidevice.edcs.abb.com
> curl https://prodbiot00.servicebus.windows.net
```

```
Windows PowerShell
PS C:\Users\ITDAVIG> curl https://prod.apidevice.edcs.abb.com

StatusCode      : 200
StatusDescription : OK
Content         : {}
RawContent      : HTTP/1.1 200 OK
                  X-AspNetMvc-Version: 5.2
                  Request-Context: appId=cid-v1:05ebdc64-86d7-4fe6-9086-2af466fc19fd
                  Cache-Control: private
                  Set-Cookie: ARRAffinity=60f970b1b96b8bab640abadd16d4f51b796544c17...
Headers         : {[X-AspNetMvc-Version, 5.2], [Request-Context, appId=cid-v1:05ebdc64-86d7-4fe6-9086-2af466fc19fd],
                  [Cache-Control, private], [Set-Cookie, ARRAffinity=60f970b1b96b8bab640abadd16d4f51b796544c17ed5d7b6
                  6185c80ebdc1a655;Path=/;HttpOnly;Secure;Domain=prod.apidevice.edcs.abb.com,ARRAffinitySameSite=60f9
                  70b1b96b8bab640abadd16d4f51b796544c17ed5d7b66185c80ebdc1a655;Path=/;HttpOnly;SameSite=None;Secure;D
                  omain=prod.apidevice.edcs.abb.com]...}
RawContentLength : 0

PS C:\Users\ITDAVIG> |
```

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3. Getting support

For any information or support request please contact

 global-el.operations.digital@abb.com

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