

# IPv6 Readiness Report

utem.edu.my — utem.edu.my

Category: Education • Generated: 20 Apr 2026, 21:25 MYT • Last Checked: 07 Mar 2026, 01:30 MYT • Verification ID: 57d8d6c4-e181-4a95-ab37-9ac4d2ea0772

Report generated from National IPv6 Readiness Monitor — <https://ipv6.my6.my>Audit trail: <https://ipv6.my6.my/audit/57d8d6c4-e181-4a95-ab37-9ac4d2ea0772>**Partially Compliant**

MGv6C-1.0

**63%****Partial Support****IPv6-ONLY READINESS**Website: ✓ **Ready**DNS: ✓ **Ready**Email: ✗ **Not Ready****IPv6 ADDRESSES**

2606:4700:20::ac43:4821

2606:4700:20::681a:fa6

2606:4700:20::681a:ea6

**IPv4 ADDRESSES**

103.198.52.31

**Network Information (WHOIS / RDAP)**

	IPv6 Network	IPv4 Network
Organization	Cloudflare, Inc.	Universiti Teknikal Malaysia Melaka
Country	US	MY
ASN	AS13335	AS134722
ASN Name	CLOUDFLARENET - Cloudflare, Inc., US	UTEM-AS-AP Universiti Teknikal Malaysia Melaka, MY
Network (CIDR)	2606:4700::/32	103.198.52.0/23

**Web Services** (35%)

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#	CHECK	RESULT	DETAIL
1	<b>AAAA Record</b>	<b>PASS</b>	2606:4700:20::ac43:4821, 2606:4700:20::681a:fa6, 2606:4700:20::681a:ea6
2	<b>Globally Routable IPv6</b>	<b>PASS</b>	All addresses are globally routable.
3	<b>HTTP over IPv6</b>	<b>PASS</b>	HTTP (port 80) responds over IPv6.
4	<b>HTTPS over IPv6</b>	<b>PASS</b>	HTTPS (port 443) responds over IPv6 — 346ms TTFB.
5	<b>IPv6-Only Reachability</b>	<b>PASS</b>	Site is fully reachable via IPv6-only.
6	<b>TLS Certificate Valid (IPv6)</b>	<b>PASS</b>	Certificate valid — issued by C = US, O = Let's Encrypt, CN = E7, expires Apr 9 18:46:20 2026 GMT
7	<b>Dual-Stack (IPv4 + IPv6)</b>	<b>PASS</b>	Domain has both A and AAAA records.
8	<b>HTTP/3 (QUIC)</b>	<b>FAIL</b>	No HTTP/3 support detected.

**DNS & DNSSEC** (25%)

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#	CHECK	RESULT	DETAIL
1	<b>NS Has AAAA Record</b>	<b>PASS</b>	Nameserver has IPv6 address.
2	<b>NS Reachable via IPv6</b>	<b>PASS</b>	Nameserver is reachable via IPv6 on port 53.
3	<b>NS Answers Queries via IPv6</b>	<b>PASS</b>	DNS queries answered over IPv6.
4	<b>DNSSEC Validated</b>	<b>FAIL</b>	DNSSEC validation failed or zone is unsigned.
5	<b>Reverse DNS (PTR)</b>	<b>FAIL</b>	No PTR record found.
6	<b>DS Record at Parent</b>	<b>FAIL</b>	No DS record at parent.
7	<b>RRSIG Valid</b>	<b>FAIL</b>	No valid RRSIG found.

#	CHECK	RESULT	DETAIL
8	<b>Signing Algorithm</b>	<b>INFO</b>	No DNSKEY record found.

**Email Services** (25%) 3 / 6

#	CHECK	RESULT	DETAIL
1	<b>MX Record Exists</b>	<b>PASS</b>	MX record found.
2	<b>MX Server Has IPv6</b>	<b>PASS</b>	MX server has AAAA record.
3	<b>SMTP Reachable via IPv6</b>	<b>FAIL</b>	SMTP is not reachable over IPv6.
4	<b>STARTTLS over IPv6</b>	<b>FAIL</b>	STARTTLS not available over IPv6.
5	<b>SPF Record</b>	<b>PASS</b>	SPF record found.
6	<b>DKIM Selector</b>	<b>INFO</b>	No common DKIM selector found.
7	<b>DMARC Record</b>	<b>FAIL</b>	No DMARC record found.

**IPv4 Baseline** (15%) 1 / 3

#	CHECK	RESULT	DETAIL
1	<b>A Record</b>	<b>PASS</b>	103.198.52.31
2	<b>HTTP over IPv4</b>	<b>FAIL</b>	HTTP is not accessible over IPv4.
3	<b>HTTPS over IPv4</b>	<b>FAIL</b>	HTTPS is not accessible over IPv4.

### Audit Trail & Evidence Record

Verification ID	57d8d6c4-e181-4a95-ab37-9ac4d2ea0772
Domain	utem.edu.my
Check Mode	Manual
Status	Completed
Started	07 Mar 2026, 01:26:53 MYT
Finished	07 Mar 2026, 01:30:32 MYT
Test Node Profile	dual stack
Engine Version	2.0.0
MGv6C Version	1.0.0
Audit URL	https://ipv6.my6.my/audit/57d8d6c4-e181-4a95-ab37-9ac4d2ea0772

### Integrity Verification

<b>✓ INTEGRITY VERIFIED</b>	
Algorithm	hmac-sha256-v1
Root Hash	fbaae9b5698e9a3a1c0f7f95dd6d623db54f807ed3ea80c363b14b4ecd8bb02d
http_headers	a9cbc8d4fddb8fd74e79b36bf9865f1b7d76e84381d06d6789ac99ec68c019a0
dns_responses	e18a5b58f17420df0ea5aec420b73206778754db5b2c60afc0ebd1415330cbd2
tls_handshake	852d0423c21f3ddce3f51e679eb877346b8cb0d823e7d6978e28ecbd82e98111
connectivity_log	04492ed18d5692ff1ad2d4a1c7ab99f6479792b17207d57b08f21779c829d35e
dns_resolution_times	b7455cd1f6f4cacec497c7db8932cd285ceaa202fe032b641c336cb377435e3c

### Test Node Identity

Os	Linux srv1440888 6.8.0-101-generic #101-Ubuntu SMP PREEMPT_DYNAMIC Mon Feb 9 10:15:05 UTC 2026 x86_64
Hostname	srv1440888
Php Version	8.3.30
Server Ipv4	76.13.221.142
Server Ipv6	2a02:4780:5e:2789::1

### DNS Resolution Performance

Comparison of A (IPv4) vs AAAA (IPv6) query times across resolvers and transports. Shows median (p50) and 95th percentile (p95) of 3 samples per tuple.

Resolver	Transport	A p50 (ms)	A p95 (ms)	AAAA p50 (ms)	AAAA p95 (ms)	Delta (ms)
System	Default	8.35	16.18	16.09	16.14	+7.7
Google	IPv4	22.77	32.55	23.78	28.4	+1
Google	IPv6	23.83	34.13	29.45	34.18	+5.6
Cloudflare	IPv4	20.98	24.03	10.01	20.11	-11
Cloudflare	IPv6	21.17	30.08	10.98	20.17	-10.2



## DNS Evidence

### A

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 5940
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; ANSWER SECTION:
utem.edu.my. 300 IN A 103.198.52.31
```

### DS

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 46095
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; AUTHORITY SECTION:
edu.my. 1800 IN SOA b.nic.my. hostmaster.nic.my. 2026018485 1800 900 604800 3600
```

### MX

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 13843
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; ANSWER SECTION:
utem.edu.my. 31 IN MX 0 utem-edu-my.mail.protection.outlook.com.
```

### NS

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 34361
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; ANSWER SECTION:
utem.edu.my. 21600 IN NS clay.ns.cloudflare.com.
utem.edu.my. 21600 IN NS lily.ns.cloudflare.com.
```

### TXT

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 7195
;; flags: qr rd ra; QUERY: 1, ANSWER: 6, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; ANSWER SECTION:
utem.edu.my. 300 IN TXT "v=spf1 ip4:150.242.183.8 include:spf.protection.outlook.com -all"
utem.edu.my. 300 IN TXT "cisco-ci-domain-verification=6ea0a72c0c9b1af32010f8deb1aa40293ff98b4fadd8d8c7bda54f0fdbdad374"
utem.edu.my. 300 IN TXT "vnhs6nc258pdv1b61t8jk5g04c"
utem.edu.my. 300 IN TXT "google-site-verification=ATZtq-Cnt5rgn8wLIH0ia0fWw7SDMIzigSn5627pzLA"
utem.edu.my. 300 IN TXT "6fpr4gbb0l0x15shgrx8pp4783dlp6dk"
utem.edu.my. 300 IN TXT "google-site-verification=oBR4ZG5f4wj0m035D_VpI_-MRwa3tklthkteEReHzqk"
```

### AAAA

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 42111
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; AUTHORITY SECTION:
utem.edu.my. 1800 IN SOA clay.ns.cloudflare.com. dns.cloudflare.com. 2398099603 10000 2400 604800 1800
```

### RRSIG

```
clay.ns.cloudflare.com. dns.cloudflare.com. 2398099603 10000 2400 604800 1800
```

**DNSKEY**

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 57605
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; AUTHORITY SECTION:
utem.edu.my. 913 IN SOA clay.ns.cloudflare.com. dns.cloudflare.com. 2398099603 10000 2400 604800 1800
```

**DNSSEC\_VALIDATION**

```
; unsigned answer
utem.edu.my. 1762 IN SOA clay.ns.cloudflare.com. dns.cloudflare.com. 2398099603 10000 2400 604800 1800
```





```
YRmT7/0Xpm0H/FVLtwS+8ng1cAmpCujPwteJZNcDG0sF2n/sc0+SQf49fdyUK0ty
+VUwFj9tmWxyR/M=
----END CERTIFICATE-----
---
Server certificate
subject=CN = utem.edu.my
issuer=C = US, O = Let's Encrypt, CN = E7
---
No client certificate CA names sent
Peer signing digest: SHA256
Peer signature type: ECDSA
Server Temp Key: X25519, 253 bits
---
SSL handshake has read 2355 bytes and written 393 bytes
Verification: OK
---
New, TLSv1.3, Cipher is TLS_AES_256_GCM_SHA384
Server public key is 256 bit
Secure Renegotiation IS NOT supported
Compression: NONE
Expansion: NONE
No ALPN negotiated
Early data was not sent
Verify return code: 0 (ok)
---
DONE
```



## HTTP Response Evidence

### IPv4 HTTP (port 80)

HTTP Status	0
Connected IP	
Connect Time	0 ms
TTFB	0 ms
Total Time	8002.87 ms
Error	Failed to connect to utem.edu.my port 80 after 8002 ms: Timeout was reached

### IPv6 HTTP (port 80)

HTTP Status	302
Connected IP	2606:4700:20::ac43:4821
Connect Time	7.4 ms
TTFB	59.68 ms
Total Time	59.82 ms
Error	Could not resolve host: utem.edu.my

#### Response Headers:

```
[
  "HTTP/1.1 302 Found",
  "Date: Fri, 06 Mar 2026 09:29:49 GMT",
  "Content-Type: text/html",
  "Connection: keep-alive",
  "Location: https://utem.edu.my/",
  "Nel: {\\"report_to\\":\\"cf-nel\\",\\"success_fraction\\":0.0,\\"max_age\\":604800}",
  "cf-cache-status: DYNAMIC",
  "Report-To: {\\"group\\":\\"cf-nel\\",\\"max_age\\":604800,\\"endpoints\\":{\\"url\\":\\"https://a.nel.cloudflare.com/report/v4?s=hLbMDhYq3HLXgj59X0816UcnvVvCqjo%2Be6uXi7aJtDmNNFaMPIR7TWTtkELly%2FwQ5stySVmpyZP1E6t89k\\"}},\\"name\\":\\"cf-nel\\"}",
  "Server: cloudflare",
  "CF-RAY: 9d80569439c444c3-SIN"
]
```

### IPv4 HTTPS (port 443)

HTTP Status	0
Connected IP	
Connect Time	0 ms
TTFB	0 ms
Total Time	8002.11 ms
Error	Failed to connect to utem.edu.my port 443 after 8002 ms: Timeout was reached

### IPv6 HTTPS (port 443)

HTTP Status	200
Connected IP	2606:4700:20::681a:fa6
Connect Time	17.83 ms
TTFB	307.64 ms
Total Time	307.76 ms

#### Response Headers:

```
{
  "0": "HTTP/2 301",
  "1": "date: Fri, 06 Mar 2026 09:29:49 GMT",
  "2": "content-type: text/html; charset=utf-8",
  "3": "location: https://www.utem.edu.my/en/",
  "4": "server: cloudflare",
  "5": "x-powered-by: PHP/7.4.33",
  "6": "pragma: no-cache",
  "7": "expires: Wed, 17 Aug 2005 00:00:00 GMT",
}
```

```

"8": "cache-control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0, no-store, no-cache, must-revalidate, post-check=0, pre-check=0",
"9": "set-cookie: a093f42761dbd6bfe596a4c8db558788=m5hr8qa2nh34ck8ibran8aka28; path=/; HttpOnly",
"10": "set-cookie: cookiesession1=678829540CDE7FB8EFE296C9C1982C69;Expires=Sat, 06 Mar 2027 09:29:49 GMT;Path=/;HttpOnly",
"11": "x-content-type-options: nosniff",
"12": "last-modified: Fri, 06 Mar 2026 09:29:49 GMT",
"13": "nel: {\\"report_to\\":\\"cf-nel\\",\\"success_fraction\\":0.0,\\"max_age\\":604800}",
"14": "cf-cache-status: DYNAMIC",
"15": "report-to: {\\"group\\":\\"cf-nel\\",\\"max_age\\":604800,\\"endpoints\\":[{\\"url\\":\\"https://a.nel.cloudflare.com/report/v4?s=WFfHaU0lnLuK%2FjKn0KgaZiZacQttIt984DcbEqda2cVjDjRq89oNNHdSgH0Rp2WfM8quZaD6IHaukzX0AZAa"}]}",
"16": "cf-ray: 9d805696ae55fdcc-SIN",
"18": "HTTP/2 200",
"19": "date: Fri, 06 Mar 2026 09:29:50 GMT",
"20": "content-type: text/html; charset=utf-8",
"21": "server: cloudflare",
"22": "x-powered-by: PHP/7.4.33",
"23": "expires: Wed, 17 Aug 2005 00:00:00 GMT",
"24": "cache-control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0",
"25": "pragma: no-cache",
"26": "set-cookie: a093f42761dbd6bfe596a4c8db558788=nvk0qer16v4cc346oqmLuj6haj; path=/; HttpOnly",
"27": "set-cookie: cookiesession1=678829532BDC43CD25C779CA24EB2959;Expires=Sat, 06 Mar 2027 09:29:50 GMT;Path=/;HttpOnly",
"28": "x-content-type-options: nosniff",
"29": "last-modified: Fri, 06 Mar 2026 09:29:50 GMT",
"30": "nel: {\\"report_to\\":\\"cf-nel\\",\\"success_fraction\\":0.0,\\"max_age\\":604800}",
"31": "cf-cache-status: DYNAMIC",
"32": "report-to: {\\"group\\":\\"cf-nel\\",\\"max_age\\":604800,\\"endpoints\\":[{\\"url\\":\\"https://a.nel.cloudflare.com/report/v4?s=KoMY5yratDeyugWRV4TweLIVKljEFel0IaCT5Vzpj%2FLPzN8xR7W3kc%2BPVucJ70ARo4dkJdpp11t0ksF0"}]}",
"33": "cf-ray: 9d8056974cd75f82-SIN"
    
```

Connectivity Test Evidence

Test	Result
TCP Connect IPv4 → port 80	000 0.000000 0.000000
TCP Connect IPv6 → port 80	302 0.008468 0.049954
TCP Connect IPv4 → port 443	000 0.000000 0.000000
TCP Connect IPv6 → port 443	301 0.007505 0.119367

Test Node Network Evidence

Node Profile	dual stack
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Egress Connectivity

IPv4 Egress	76.13.221.142
IPv6 Egress	2a02:4780:5e:2789::1

Sysctl IPv6 Flags

net.ipv6.conf.all.disable_ipv6	0
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IPv6 Routes

```

2a02:4780:5e::/48 dev eth0 proto kernel metric 256 pref medium
fe80::/64 dev eth0 proto kernel metric 256 pref medium
default via 2a02:4780:5e::1 dev eth0 proto static metric 1024 pref medium
    
```

IPv4 Routes

```

default via 76.13.221.254 dev eth0 proto static
76.13.221.0/24 dev eth0 proto kernel scope link src 76.13.221.142
    
```