

**Table 1. DNS resolution per messenger**

Textsecure DNS results				
Domain names resolved	Unique IPs	Longest routed prefix (Inetnum owner)	AS Location <sup>1</sup>	Relevant <sup>2</sup> ?
textsecure-service.whispersystems.org.	2	52.4.0.0/14 (Amazon AWS)	14618 (Amazon) US	✓
Threema DNS results				
Domain names resolved	Unique IPs	Longest routed prefix (Inetnum owner)	AS Location <sup>1</sup>	Relevant <sup>2</sup> ?
g-[40]e8].0.threema.ch.	2	5.148.175.192/27 (Threema)	29691 (NINE) CH	✓
api.threema.ch.	1	5.148.175.192/27 (Threema)	29691 (NINE) CH	✓
WhatsApp DNS results				
Domain names resolved	Unique IPs	Longest routed prefix (Inetnum owner)	AS Location <sup>1</sup>	Relevant <sup>2</sup> ?
e[1-16].whatsapp.net.	400 <sup>7</sup>	108.168.128.0/17 (SoftLayer)	36351 (SoftLayer) US	✓
		158.85.0.0/16 (SoftLayer)	36351 (SoftLayer) US	✓
		169.54.0.0/18 (SoftLayer)	36351 (SoftLayer) US	✓
		173.192.0.0/15 (SoftLayer)	36351 (SoftLayer) US	✓
		184.172.0.0/15 (ThePlanet)	36351 (SoftLayer) US	✓
		50.22.0.0/15 (SoftLayer)	36351 (SoftLayer) US	✓
		50.97.0.0/16 (SoftLayer)	36351 (SoftLayer) US	✓
WeChat DNS results				
Domain names resolved	Unique IPs	Longest routed prefix (Inetnum owner)	AS Location <sup>1</sup>	Relevant <sup>2</sup> ?
dns.weixin.qq.com.	1	(in China) 124.160.0.0/16 (CU <sup>1</sup> Zhejiang)	4837 (CU) CN	✓
		(in China) 124.161.0.0/16 (CU <sup>4</sup> Sichuan)	4837 (CU <sup>4</sup> ) CN	✗
		(in China) 125.36.0.0/14 (CU <sup>4</sup> Tianjin)	4837 (CU <sup>4</sup> ) CN	✗
hkextshort.weixin.qq.com.	3 <sup>5</sup>	(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
		(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
hklong.weixin.qq.com.	3 <sup>5</sup>	(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
mp.weixin.qq.com.	1	(in China) 163.177.70.0/23 (CU <sup>4</sup> Guangdong)	17623 (CU <sup>4</sup> Shenzhen) CN	✗
		(in China) 115.25.209.0/24 (Cernet <sup>6</sup> )	4538 (CERNET <sup>6</sup> ) CN	✗
masdk.3g.qq.com.	4	(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
		(outside China) 140.207.54.0/23 (CU <sup>4</sup> Shanghai)	17621 (CU <sup>4</sup> Shanghai) CN	✓
WeChat DNS-over-HTTP results				
Domain names resolved	Unique IPs	Longest routed prefix (Inetnum owner)	AS Location <sup>1</sup>	Relevant <sup>2</sup> ?
several <sup>7</sup> .weixin.qq.com	13	(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
		(outside China) 103.7.31.0/24 (Tencent)	132203 (Tencent) CN	✗
		(outside China) 203.205.160.0/24 (Tencent)	132591 (Tencent) CN	✗
		(outside China) 203.205.179.0/24 (Tencent)	132591 (Tencent) CN	✗
several <sup>7</sup> .weixin.qq.com	6	(in China) 101.224.0.0/13 (CN <sup>8</sup> Shanghai)	4812 (CN <sup>8</sup> Shanghai) CN	✗
		(in China) 123.151.8.0/21 (DINGSHENG-LTD)	17638 (CT <sup>9</sup> Tianjin) CN	✗
		(in China) 14.16.0.0/12 (CN <sup>8</sup> Guangdong)	4314 (CT <sup>9</sup> ) CN	✓
		(in China) 183.61.32.0/19 (CN <sup>8</sup> Guangdong)	4816 (CT <sup>9</sup> ) CN	✓
		(in China) 183.232.96.0/22 (China Mobile)	56040 (China Mobile) CN	✗
media & ad services <sup>10</sup>	4	(in China) 61.151.128.0/17 (CN <sup>8</sup> Shanghai)	4812 (CN <sup>8</sup> Shanghai) CN	✗
		(outside China) 103.7.31.0/24 (Tencent)	132203 (Tencent) CN	✗
		(outside China) 184.104.0.0/15 (HE <sup>12</sup> )	6939 (HE <sup>11</sup> ) US <sup>12</sup>	✗
		(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
media & ad services <sup>11</sup>	2	(outside China) 220.249.243.0/24 (CN <sup>8</sup> Guangdong)	17623 (CU <sup>7</sup> Shenzhen) CN	✗
		(outside China) 54.229.0.0/17 (Amazon)	16509 (Amazon) IE <sup>12</sup>	✗
		(outside China) 54.232.192.0/18 (Amazon)	16509 (Amazon) BR <sup>12</sup>	✗
		(in China) 61.151.128.0/17 (CN <sup>8</sup> Shanghai)	4812 (CN <sup>8</sup> Shanghai) CN	✗
		(in China) 140.207.56.0/21 (CU <sup>4</sup> Shanghai)	17621 (CU <sup>4</sup> Shanghai) CN	✗
		(in China) 59.37.96.0/19 (CN <sup>8</sup> Guangdong)	4816 (CT <sup>9</sup> ) CN	✗
		(in China) 101.224.0.0/13 (CN <sup>8</sup> Shanghai)	4812 (CN <sup>8</sup> Shanghai) CN	✗
		(in China) 122.136.0.0/13 (CU <sup>4</sup> Jilin)	4837 (CU <sup>4</sup> ) CN	✗
		(in China) 123.125.64.0/18 (CU <sup>7</sup> Beijing)	4808 (CH CNC) CN	✗
		(in China) 218.8.0.0/15 (CN <sup>8</sup> Heilongjiang)	4837 (CU <sup>4</sup> ) CN	✗
builtinplist <sup>14</sup>	3 <sup>15</sup>	(in China) 218.60.0.0/16 (CU <sup>4</sup> Liaoning)	4837 (CU <sup>4</sup> ) CN	✗
		(in China) 220.194.192.0/18 (CU <sup>4</sup> Comms)	4837 (CU <sup>4</sup> ) CN	✗
		(in China) 42.224.0.0/12 (CU <sup>4</sup> Henan)	4837 (CU <sup>4</sup> ) CN	✗
		(outside China) 203.205.128.0/19 (Tencent)	132203 (Tencent) CN	✓
		(outside China) 203.205.167.0/24 (Tencent)	132591 (Tencent) CN	✓
		(in China) 115.236.128.0/19 (CN <sup>8</sup> Zhejiang)	58461 (CT <sup>9</sup> Hangzhou) CN	✗
		(in China) 123.151.8.0/21 (DINGSHENG-LTD)	17638 (CT <sup>9</sup> Tianjin) CN	✗
(in China) 182.140.164.0/22 (CN <sup>8</sup> Sichuan)	38283 (CN <sup>8</sup> Sichuan) CN	✗		
(in China) 183.60.0.0/20 (CN <sup>8</sup> Guangdong)	4816 (CT <sup>9</sup> ) CN	✗		

1: Determined by manual analysis of intermediate hops and latencies for traceroutes from every source country

2: If we could not exclude the subnet from message passing, it is considered relevant

3: Precisely 25 IP addresses per hostname, with no overlap between hostnames 4: China Unicom

5: Same specific IPs as through DNS-over-HTTP from outside China 6: CERNET: China Education and Research Network

7: shextshort|[tjextshort|[tjlong|[tjshort],[long][short][minorshort][extshort],[sh2tj][sz2tj][sz][ca][hk][extshort][long][minorshort][short]

8: ChinaNet 9: China Telecom 10: wx.qlogo.cn, mmsns.qpic.cn,shp.qlogo.cn

11: Hurricane Electric 12: Not validated as not relevant

13: wx.qlogo.cn, mmsns.qpic.cn,shp.qlogo.cn, weixinc2.tc.qq.com, wxsnsad.tc.qq.com, vcloud1023.tc.qq.com, vweixinf.tc.qq.com

14: DNS-over-HTTP holds built in IP lists, with IPs that are used frequently

15: Same specific IPs as through DNS for dns.weixin.qq.com. outside of China