



NETWORK RELIABILITY

ENGINEERED REDUNDANCY AND DIVERSITY

The last thing you want to worry about is whether or not your critical communications are getting through ... and with Arch, you don't need to. We've engineered redundancy, diversity, and recovery into our network to ensure you the very best service available. And we didn't stop there. We proactively seek out ways to make our services even more reliable and we continually invest in network resilience and hardening initiatives.

End-to-End Reliability

We identified our end-to-end needs and then built those requirements into our service. Where we couldn't find commercially-available solutions that met our standards, we built them ourselves. The result is a service that is truly best-in-class. You can count on Arch every step of the way. From the moment you initiate a message, our resilient service elements work to deliver that message to its recipient on time, every time.

Access Options

Access to the Arch network was designed with redundancy and disaster recovery in mind. Messages may be initiated via the PSTN (Public Switched Telephone Network), Web, Email, dedicated connection, or wireless device (in the case of 2-way service). Protocols include SMTP, HTTP, WCTP, and TAP. If one input method or protocol becomes unavailable for any reason, several other methods and protocols may be relied upon.

Network

Once messages are delivered to the Arch network, our network components ensure a quick and reliable trip to the end device. Network elements are proactively monitored and controlled 24 hours a day, 7 days a week. Redundancy and geographic diversity touch every aspect of our network. We have a backup NOC ready to take on traffic in the event that a disaster interferes with the operability of our primary NOC. Dual satellite facilities ensure that messages will be reliably delivered. On-site generators are capable of providing power to our equipment for an extended time period. Redundant critical hardware and software components ensure that equipment will continue to operate even if an individual component malfunctions.

Message Delivery

After processing, messages are routed to other system elements in preparation for delivery to customers' wireless messaging devices. Routing is "intelligent" and determined by local conditions, geography, and system design. Geographically diverse local terminals transmit messages to user devices. Arch has more than 10,000 one-way transmitter sites and over

2,000 two-way transceiver sites covering 50 US states, Puerto Rico and part of the US Virgin Islands. Inter-carrier agreements provide coverage on some Arch nationwide frequencies, both one-way and two-way, in Mexico and in Canada.

Vendors and Service Partners

Arch demands the same service reliability standards of its vendors and service partners. Telco connectivity and operation is critical to our service. As such, we require dual entrances into our facilities and access to multiple telco fiber rings. Similar standards apply when dealing with other connectivity and service vendors. We regularly test and monitor all aspects of our service.

Disaster Recovery

To supplement network diversity and redundancy efforts, Arch has a formal disaster recovery plan in place with some elements of the network backed up at alternate Arch locations, as well as an agreement with Sungard Recovery Services for other elements of the business. Through this agreement, Arch maintains standby hardware and connectivity to Sungard's hardened, secure data center in Philadelphia, PA. In the event of an outage, Arch's business applications would remain intact with no loss of data. The reverse is also true. An outage associated with our business applications would have no impact on the continued service or performance of our devices. Arch's disaster recovery plan includes a formal schedule of events with specified activities and resources. The plan is tested annually.

Continued Investment

Arch has invested more than \$50 million in local and national redundancy, system enhancements, as well as device development and procurement over the past 3 years. With a continued focus on paging, that investment is not likely to drop off. Paging is our core business and ensuring that our customers' paging needs are met is our core concern.

TECHNICAL SPECIFICATIONS

While the degree of equipment redundancy and disaster recovery capabilities varies by network facility, there are many redundancy features that span the entire Arch network. The degree of redundancy employed is proportional to the critical nature of the network element.

WIRELESS COMMUNICATIONS SERVICES

Geographic Diversity

- Local paging terminals deployed in diverse regional and local network facilities
- Nationwide paging platform co-located with our NOC
- Fully functional back-up NOC
- Billing and financial systems housed in different data centers
- Diverse routing to LEC central offices
- Dial-up connectivity for message input

Redundancy

- Redundant critical components (Hardware, Software, etc.)
- Software and systems operated in tandem by geographically-dispersed platforms
- Redundant satellite dishes, modulators and mirrored uplink functions
- Dual entrances into facilities from LECs and IXC
- Primary and alternate Internet connectivity
- Support for redundant dedicated connections for message input
- Primary and secondary diesel generators, UPS and battery plants

NETWORK ELEMENTS

Facilities

- Dual entrances from LECs and IXCs via copper and/or fiber-optic media
- Diverse routing to two LEC central offices
- PSTN switching services from two or more carrier based switching systems
- AC and DC power plants backed up by on-site generators

WME – Wireless Messaging Engine

- Deployed in geographically diverse cluster of general-purpose mini-computers
- Applications developed to function in diverse physical hardware
- Shared processors
- Up to 5 separate encoding devices on-line simultaneously

Uplink/Downlink Facility

- Primary facility is fully redundant
- Backup facility in a different location

NOC

- Primary NOC in Plano, Tx
- Back-up NOC in Dayton, NJ
- 24x7 monitoring, staffing, escalation
- Troubleshooting of essential LAN/WAN network components and circuits
- Dual power
- Dual lines and generators
- State of the art lightning suppression system
- Rigorously defined, tested and executed escalation protocol/process

WAN

- Diverse routing between facilities and carriers
- Multiple IXCs
- Several layers of networking linking network components

Local Terminals

- Dial backup for data circuits that carry paging data to our uplink facility
- Automatic generator onsite or access to a portable generator for any extended power outages that may occur
- Dual telco lines
- Redundant drives
- Dual-homed subscriber numbers



LOOKING FOR SERVICE YOU CAN COUNT ON?

Contact Arch Wireless for More Information

Phone: 866-206-0810 Web: www.arch.com Email: solutions@arch.com