An In-Depth Look at the GroupWise® Internet Agent

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Agenda

- Architecture and design
- Configuration
- Design
- Security
- Functionality
- Tips and Tricks
- Trouble shooting

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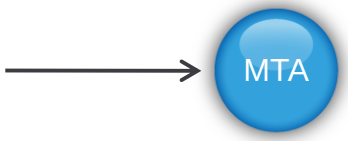
Architecture and Design

GWIA Architecture

GWIA Architecture



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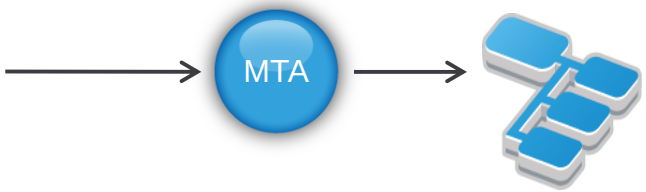

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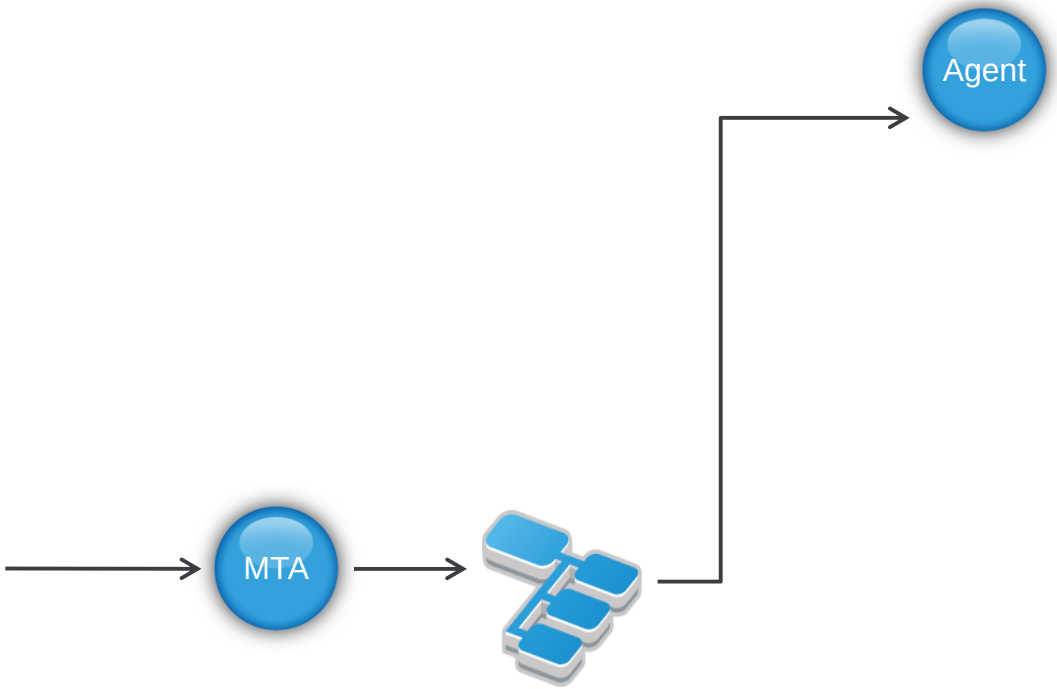

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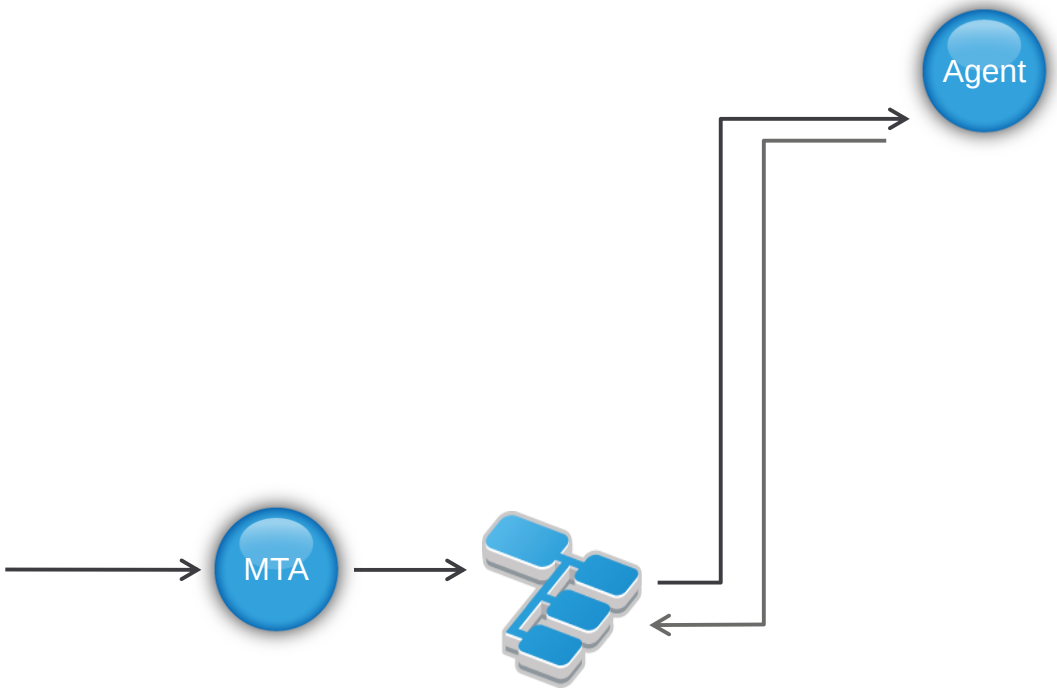

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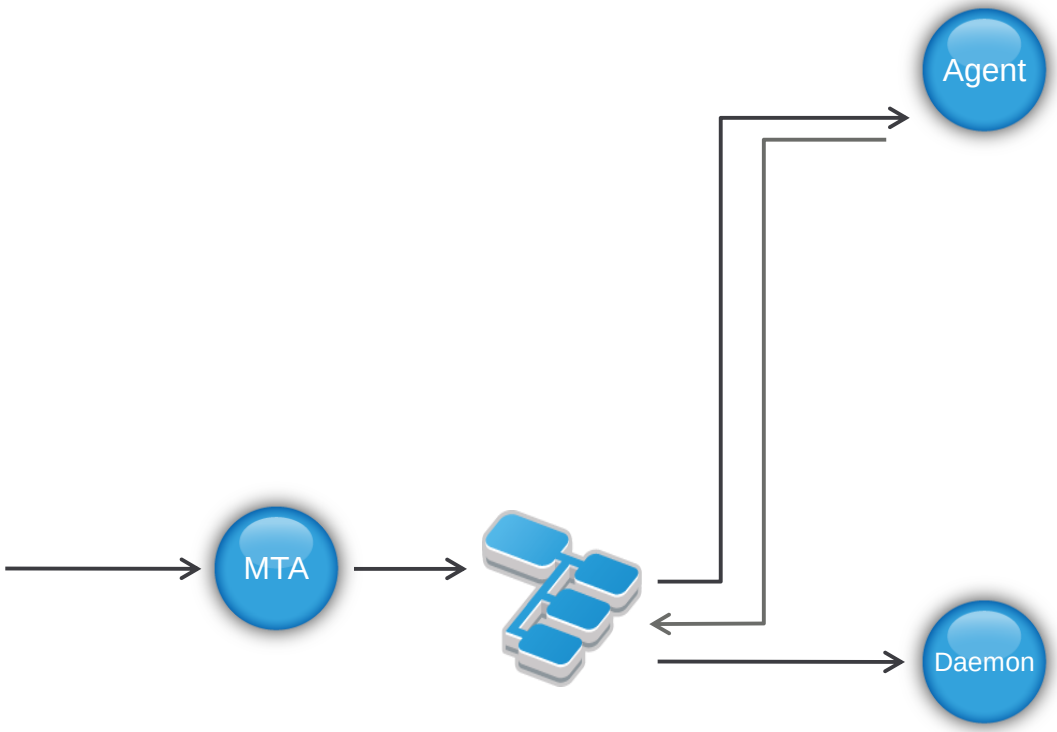

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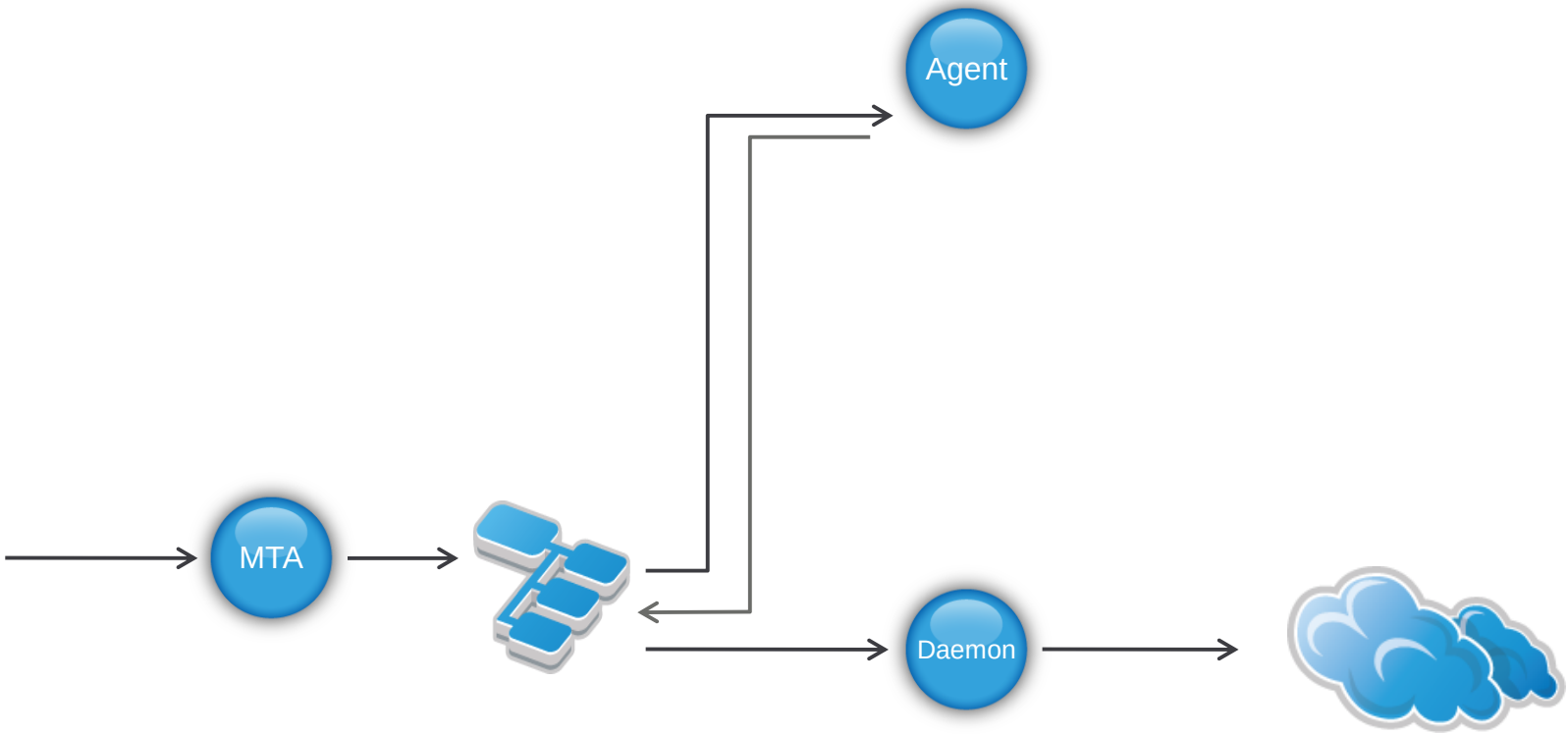

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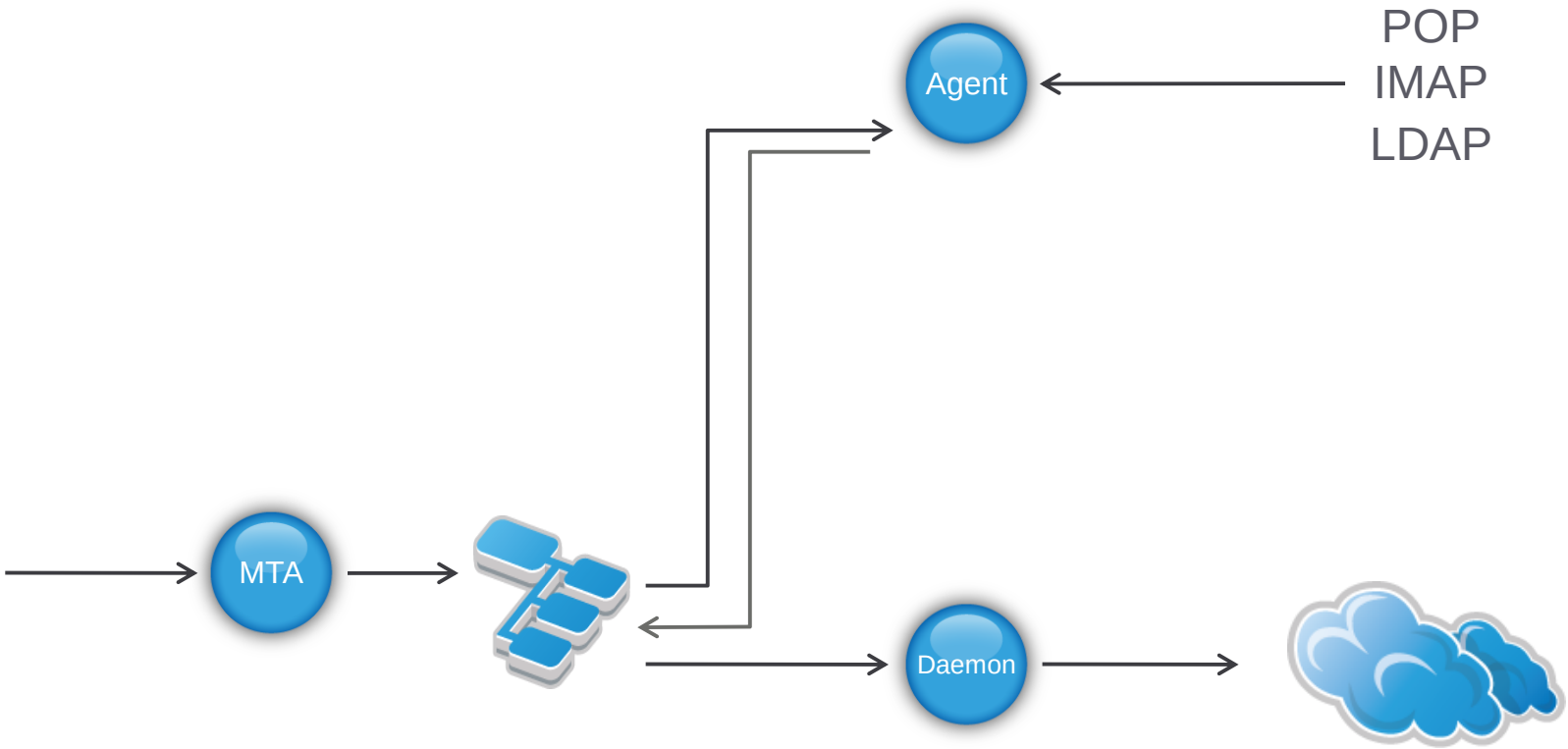

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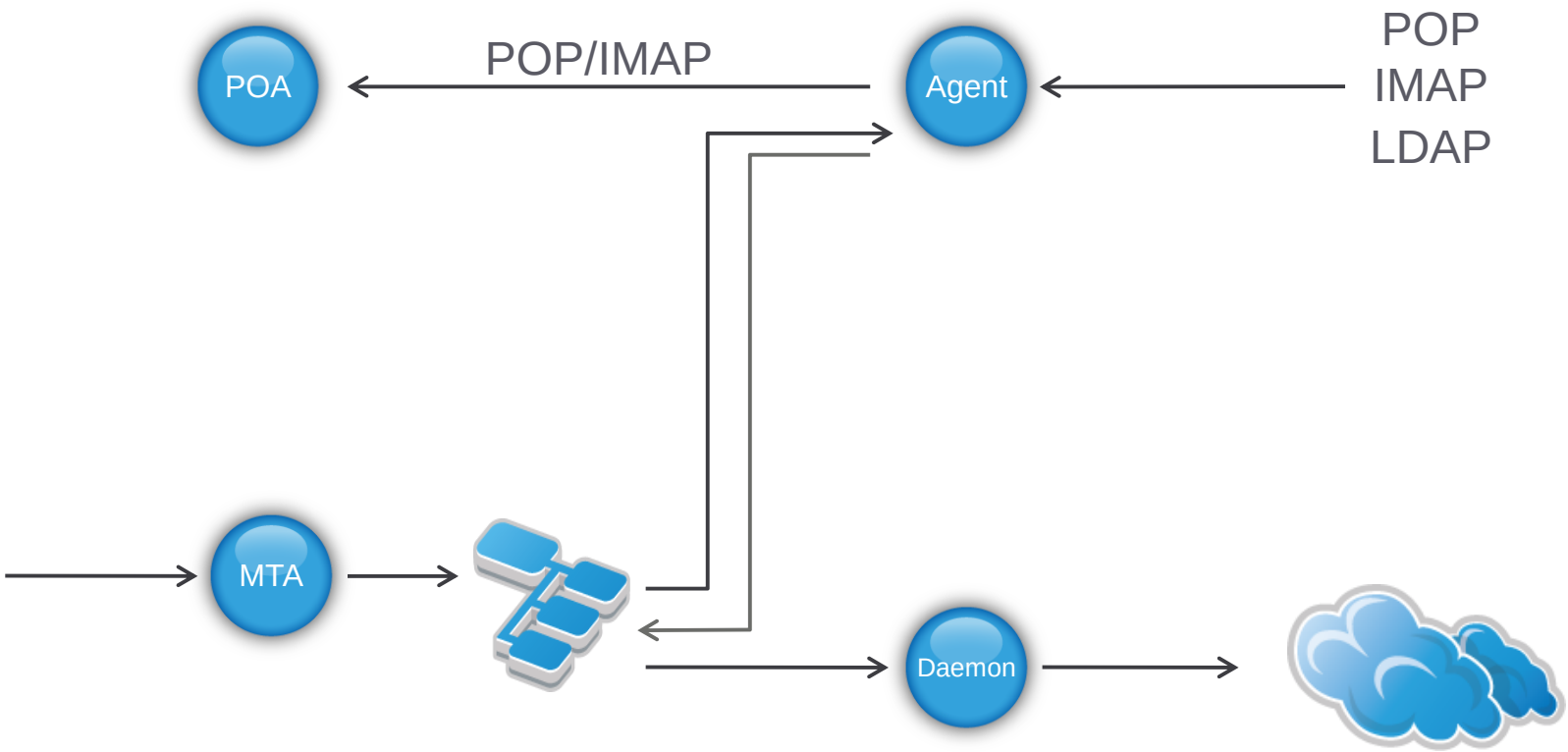

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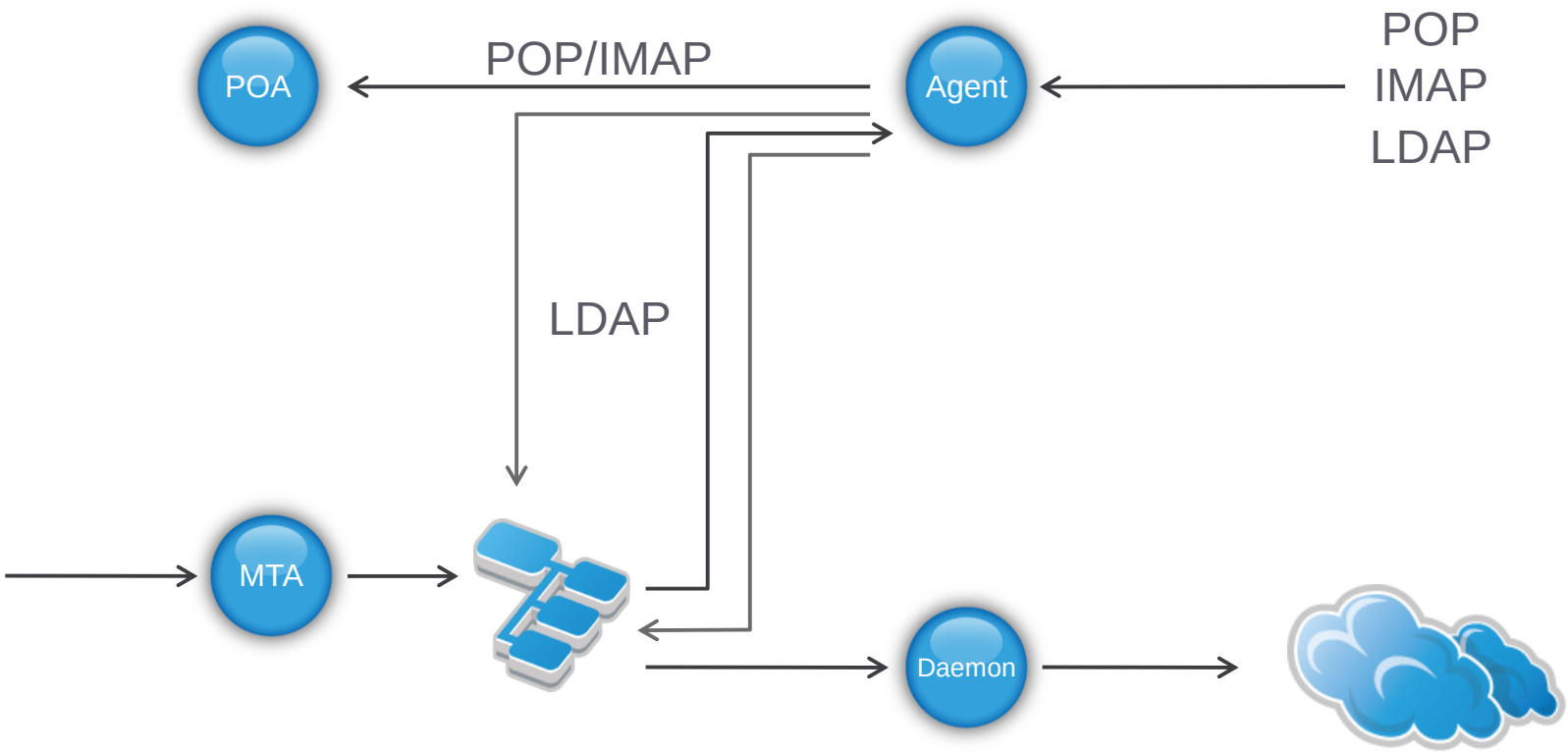

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What can we do to improve services?

- Clever architecture and design choices
  - Using relay servers
  - Weighting MX records
  - Use native load management tools
- Service access control and redirection
  - Using Access Control Lists
  - Alternate GWIAs
- Service load balancing/management
- Service redundancy/high availability
  - GroupWise® high availability and clustering
- Service I/O fencing and demarcations (QoS really)

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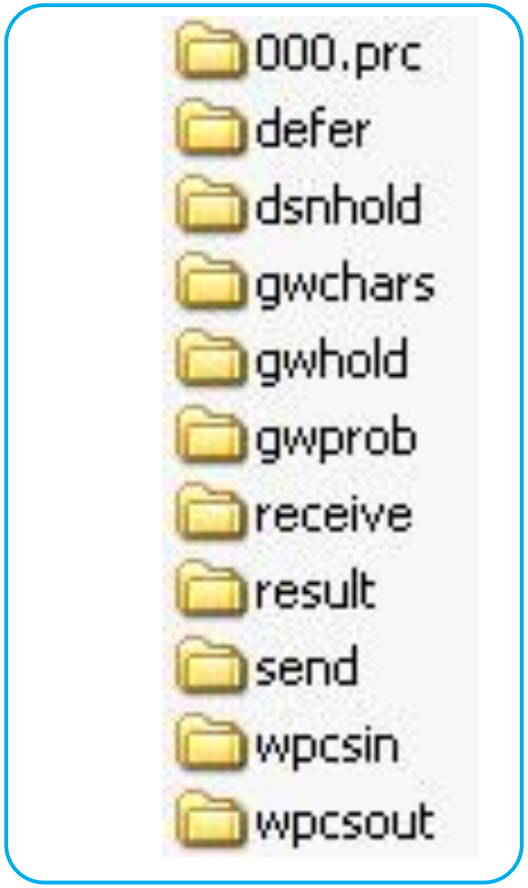
Configuration

Directory Structure



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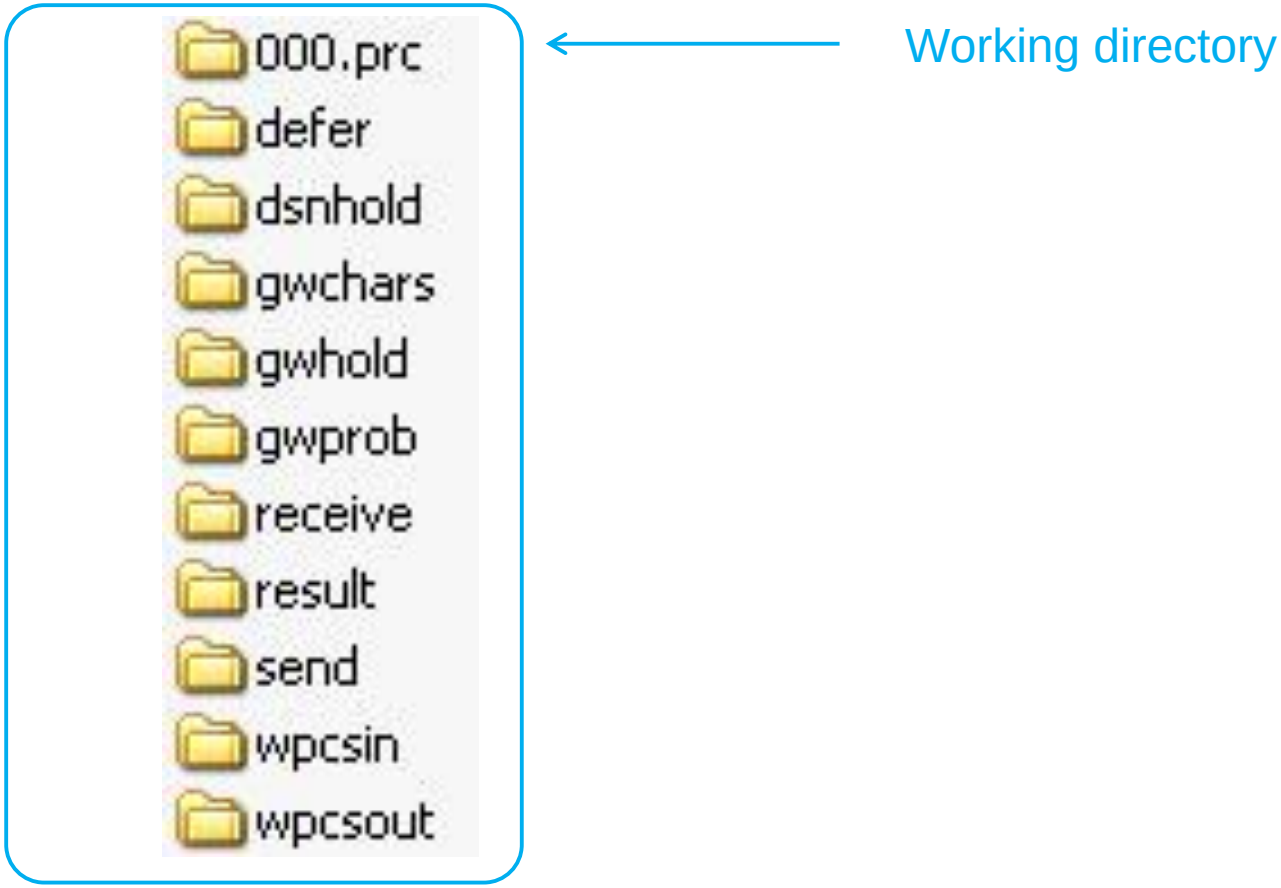

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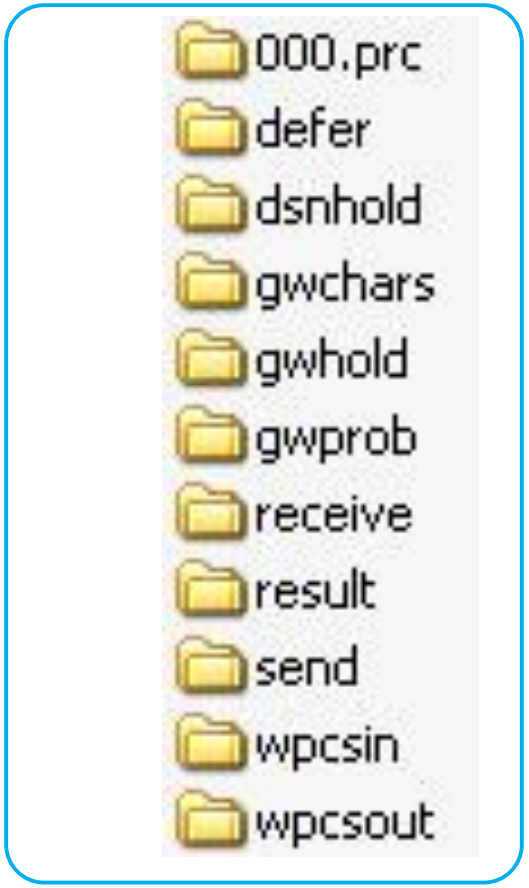
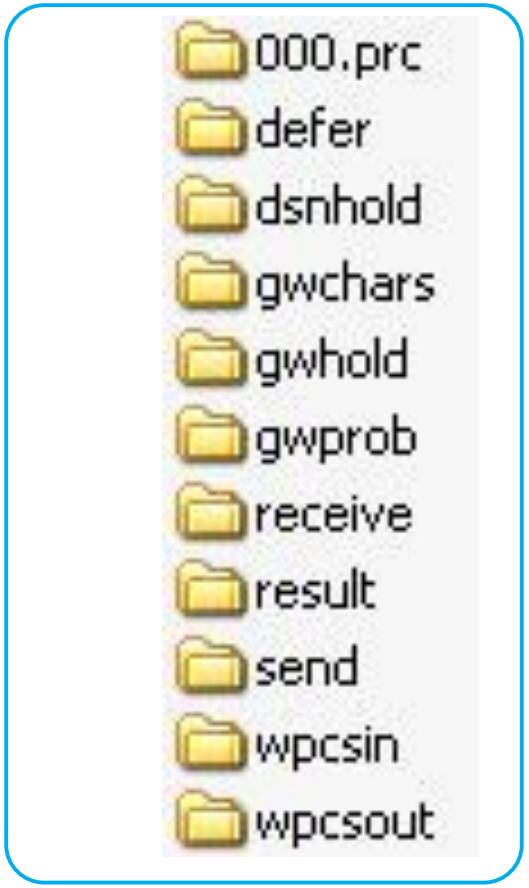


Working directory

Deferred delivery messages

Directory Structure



Working directory

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DSN notification messages

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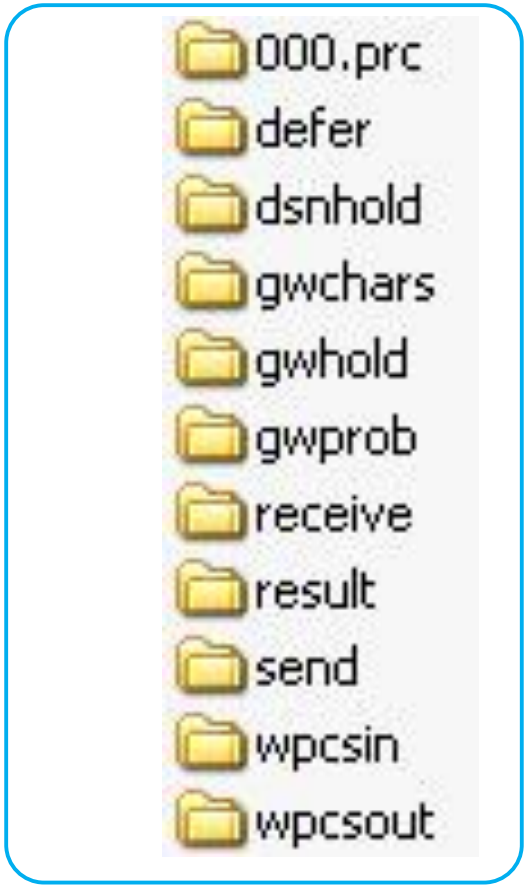

Working directory

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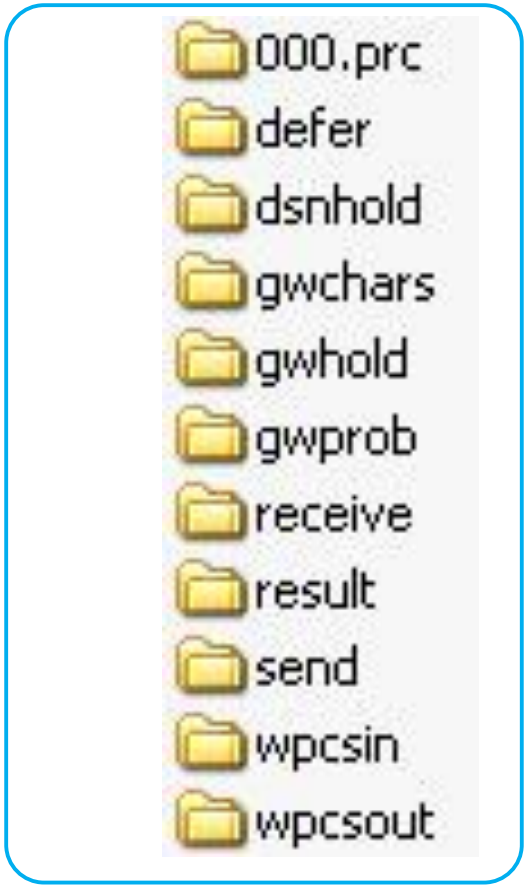
DSN notification messages

Character mappings

Directory Structure



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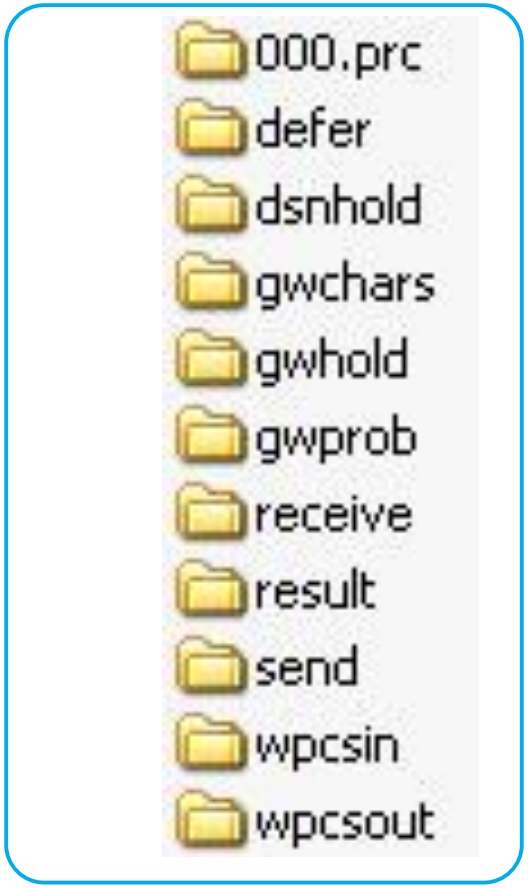
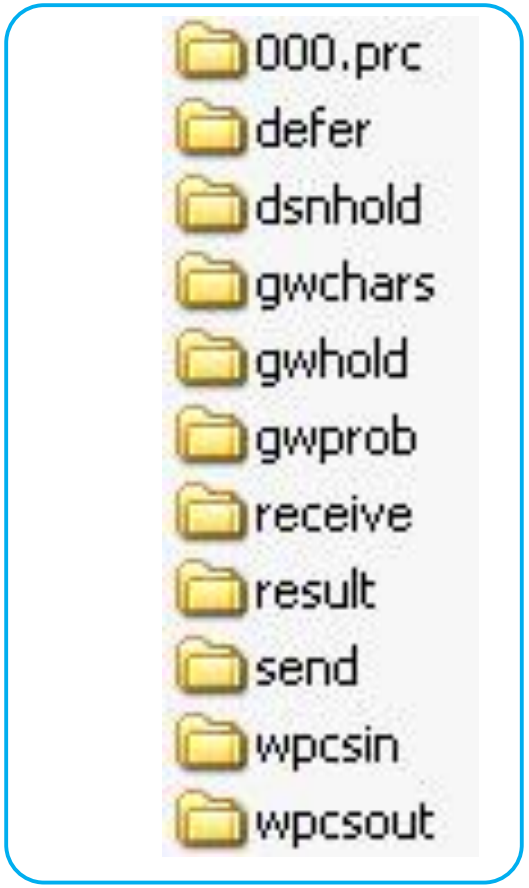


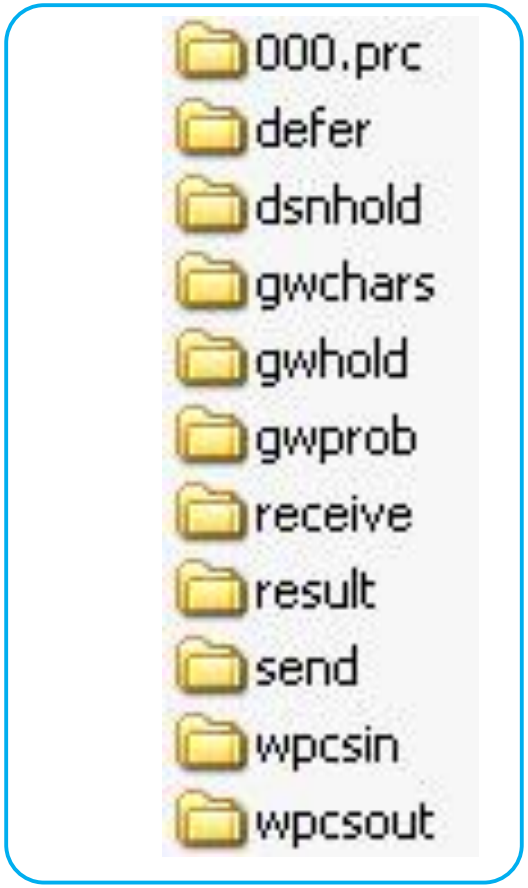
- Working directory
- Deferred delivery messages
- DSN notification messages
- Character mappings
- Delayed delivery messages
- Problem messages

Directory Structure



- 000.prc — Working directory
- defer — Deferred delivery messages
- dsnhold — DSN notification messages
- gwchars — Character mappings
- gwhold — Delayed delivery messages
- gwprob — Problem messages
- receive — Inbound SMTP messages

Directory Structure



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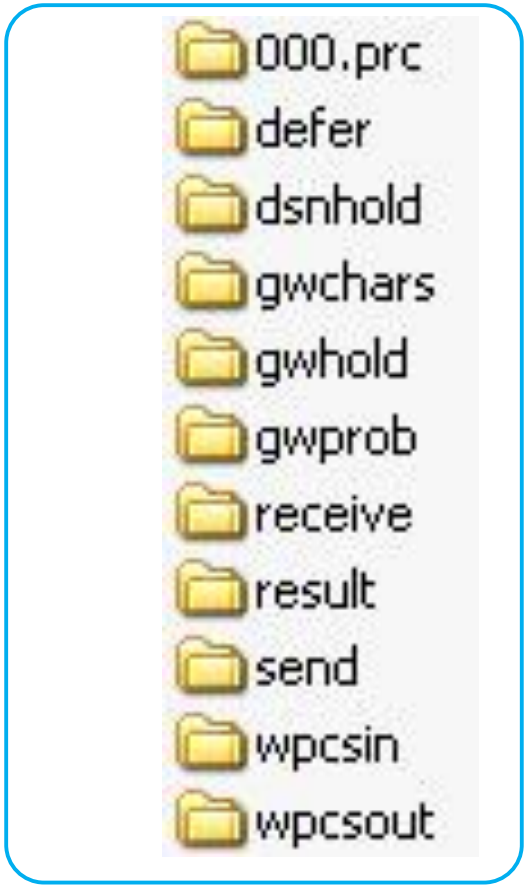

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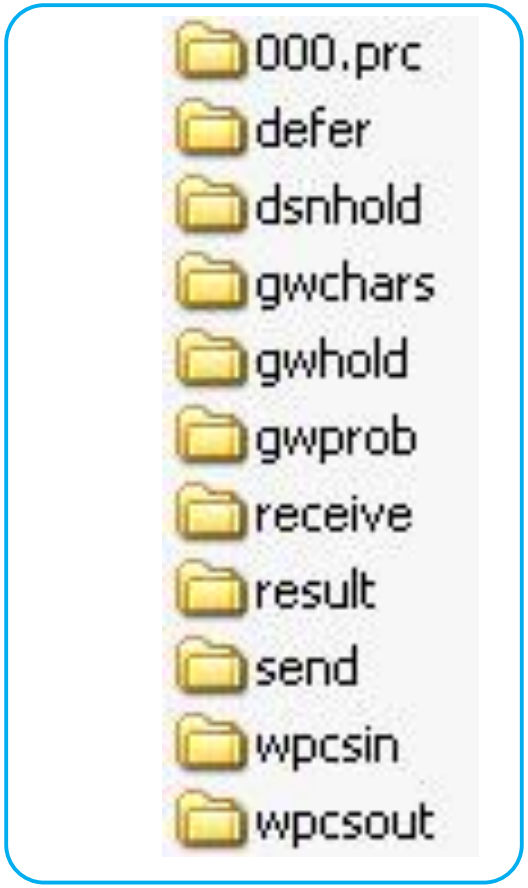

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- wpcsin — MTA inbound queue

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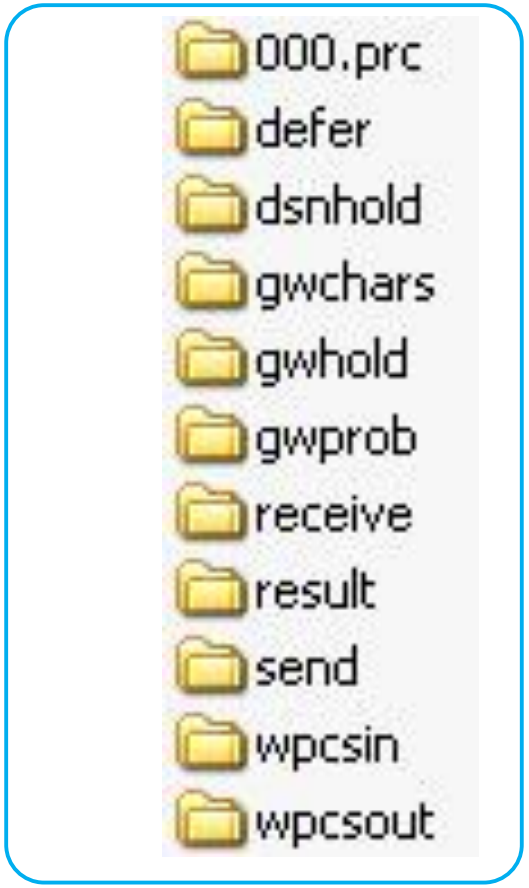

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- receive — Inbound SMTP messages
- result — Result messages
- send — Outbound SMTP messages
- wpcsin — MTA inbound queue
- wpcsout — MTA outbound queue

Configuration Files

• gwia.cfg	Startup switches, mostly now in db
• exepath.cfg	Path to the gwia.cfg
• route.cfg	Routing overrides
• status.xml	Returned status messages
• preamble.*	Mime warning
• blocked.txt	Blocked IP sources
• mimetype.cfg	Content type mapping
• frgnames.cfg	Legacy foreign names
• gwauth.cfg	SMTP host authentication

Exepath.cfg

- Located in the domain\wpgate\gwia directory
- Used by ConsoleOne® to locate the gwia.cfg file
- The file must contain the path to the gwia.cfg file
- Default Paths:
  - Windows : domain\wpgate\gwia
  - Linux : /opt/novell/groupwise/agents/share
    - or \server\opt\novell\groupwise\agents\share

Route CFG

- Used to override any DNS entries for a destination
  - Ignore a relay host for some internal destinations
  - Some hosts are unknown to the DNS
  - Some destinations you may want to virus scan
  - Create the file in the domain\wpgate\gwia directory

```
novell.com      gwia.novell.com
unixbox         [123.1.2.3]
```

- Ensure that the last entry is followed by a carriage return

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SUSE® Linux Enterprise Server Open Enterprise Server 2

- Postfix
  - Do not disable
- Edit /etc/postfix/main.cf
  - Change the "inet_interfaces= all"
    - "inet_interfaces=127.0.0.1"
- Set GWIA to bind exclusive at “load time”

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Design

GroupWise® Design

- Have domain local to the GWIA
  - Recommended to be on a dedicated secondary domain
  - Do not run a gateway across the network
  - Design the IP space for your system
  - Use MTP between MTA and GWIA
    - Needed for alternate GWIA functionality

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Multiple GWIAs

- Why
  - Flexibility
  - Stability
  - Security
  - Performance
- Usage
  - Inbound/outbound mail
  - Internal/external mail
  - Dedicated POP or IMAP services
- Resilience
  - MX records can point to multiple inbound GWIAs
  - Can have a fail-over GWIA if routing via MTP
  - Can have multiple outbound relay hosts

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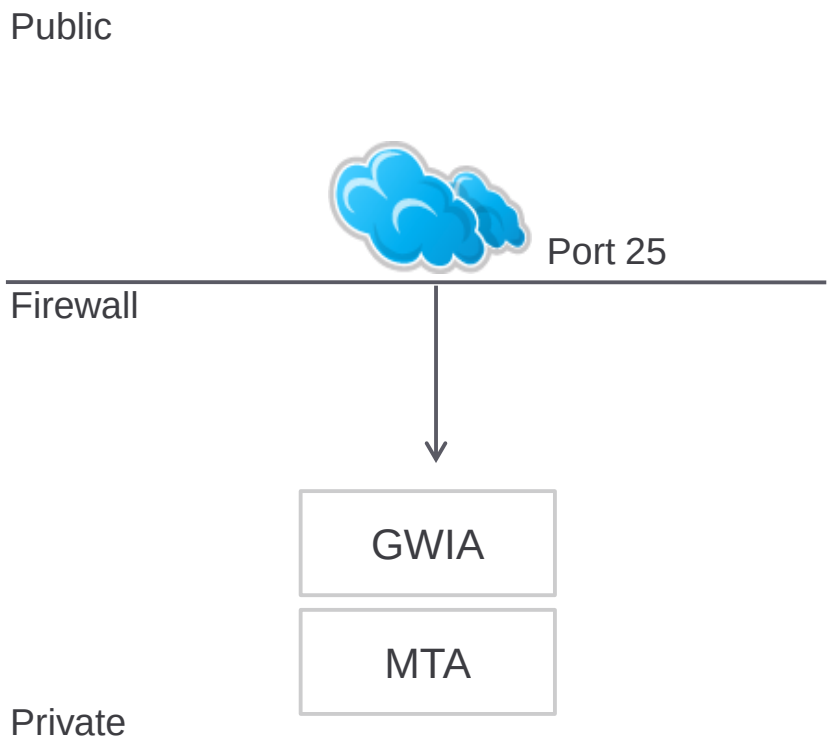
Clustering

- Types: Novell Clustering Services and Linux High Availability
- Badly formatted messages can stop multiple nodes
  - Do not fail over to all nodes
- If no SMTP Relay there is direct external access
- Virtualisation can compete
  - Potential additional cost or overhead

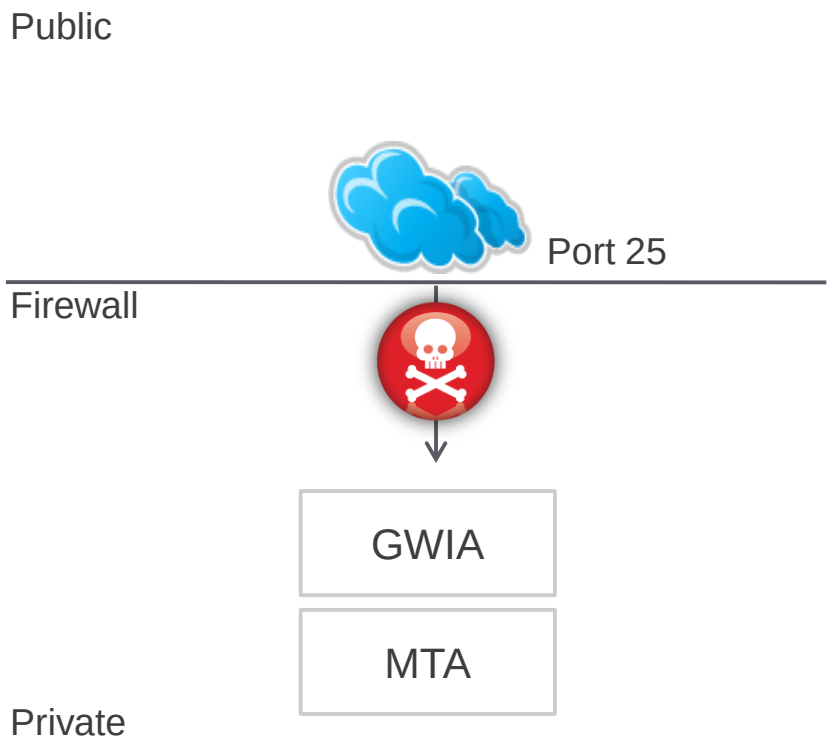
Security

Security



- Avoid having direct connections from the Internet into the production Network

Security



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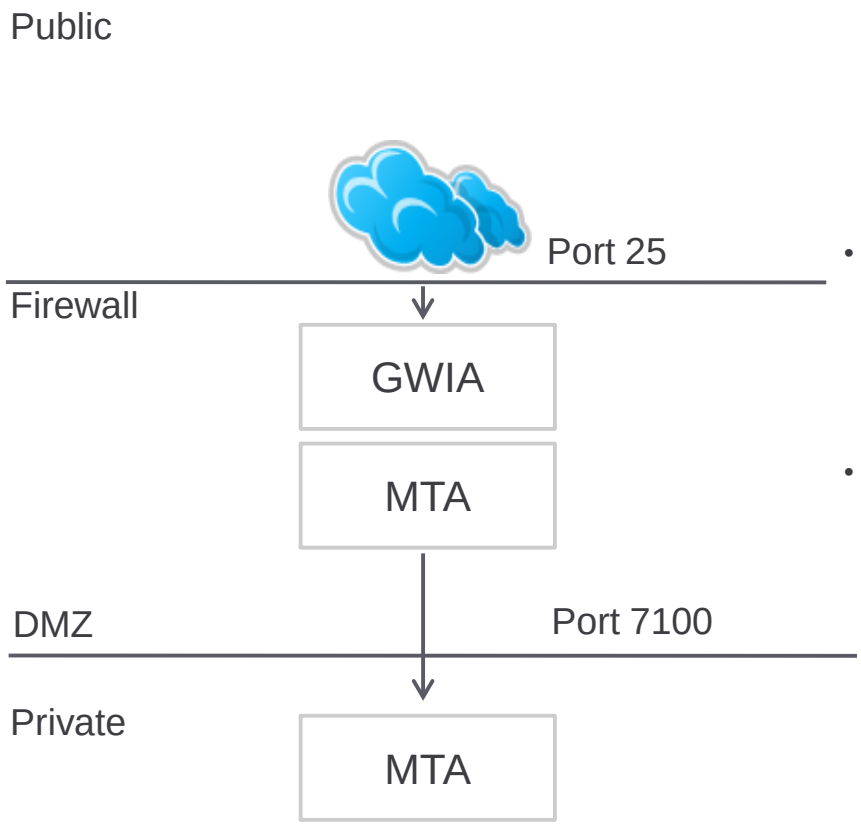
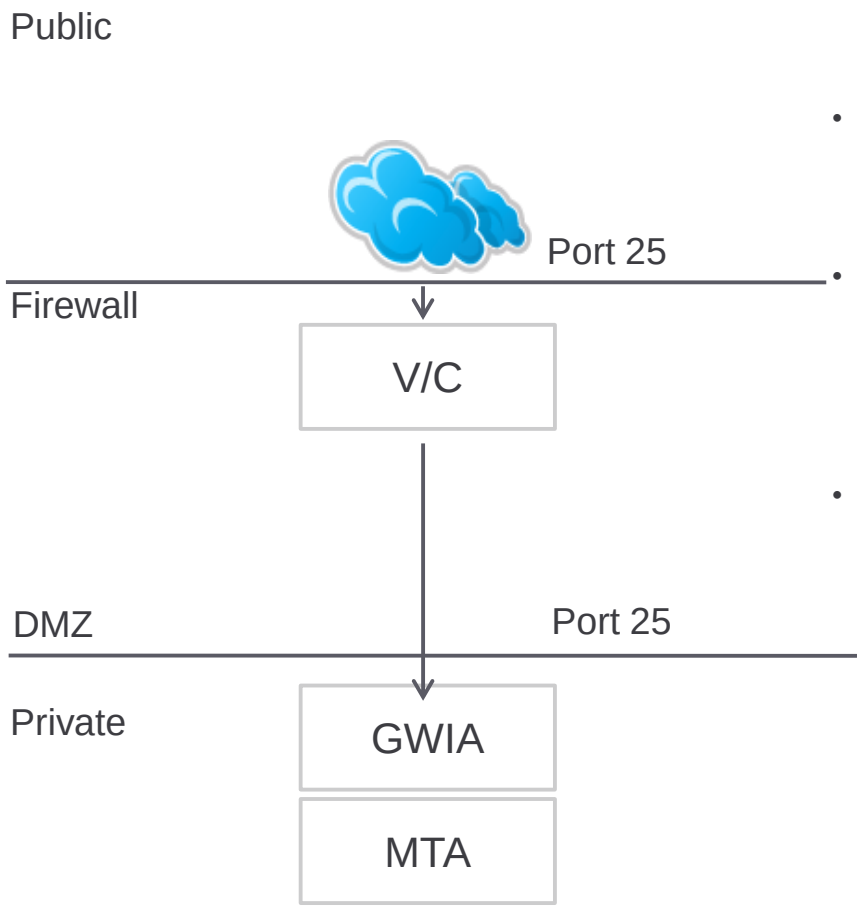
DMZ Security



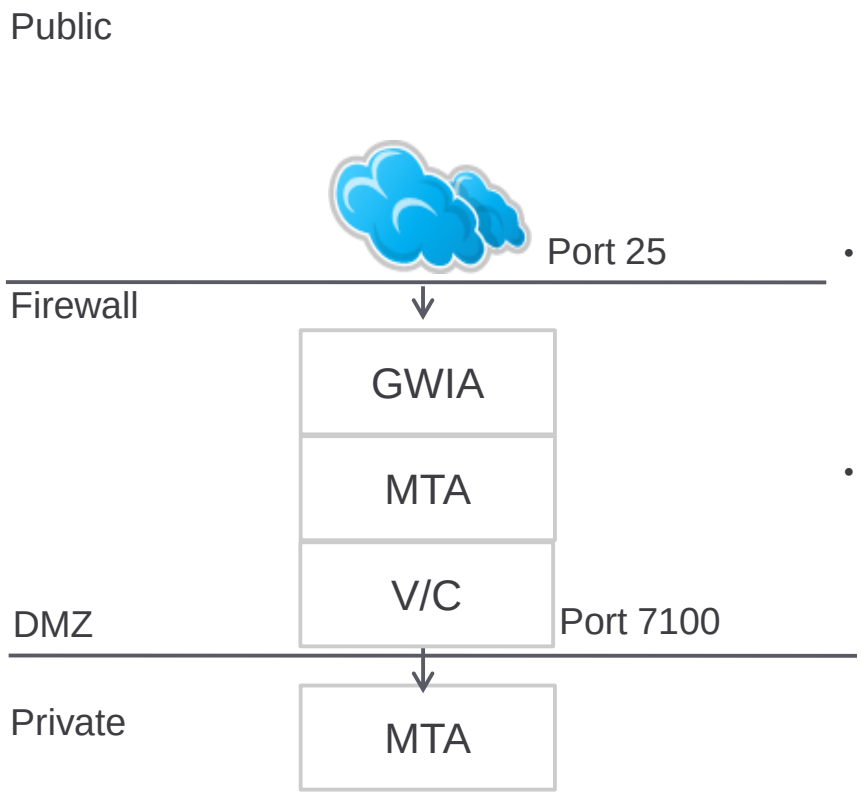
- Place the GWIA on its own domain in the DMZ
- If running on OES, ensure it is in its own tree
  - But GWIA domain and objects are still in production tree..

Virus/Spam Checking



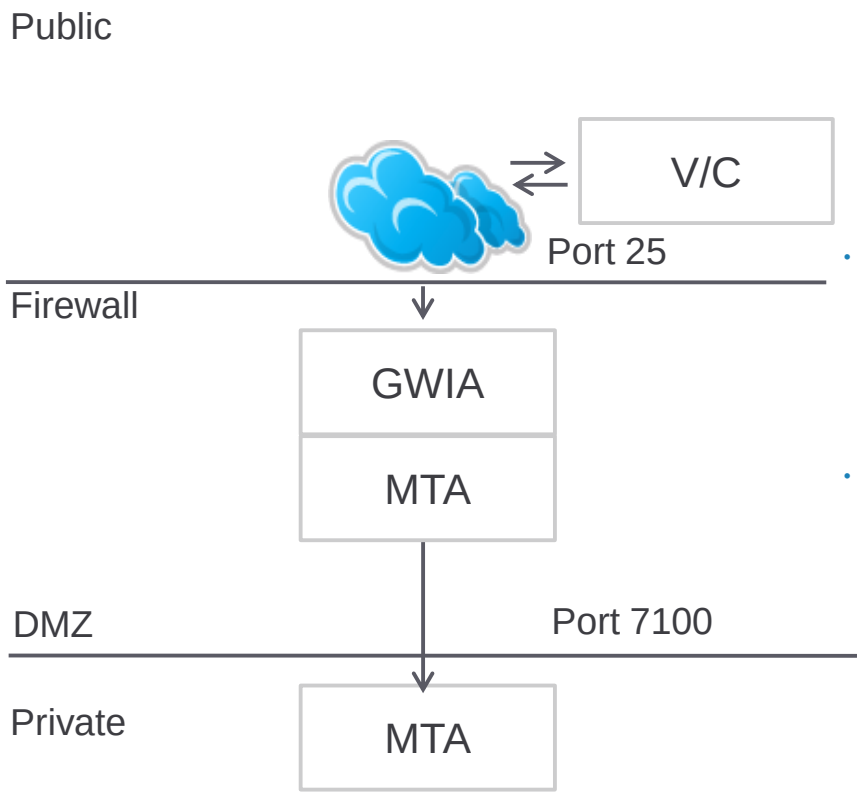
- Check before the GWIA
- Place a virus checker/ relay in the DMZ
- Relay benefits
  - I/O isolation and management
  - Alternate access control point
  - Addition of non-native features and services

Virus/Spam Checking



- Check between one MTA and another MTA.
- Examples: GWAVA

Virus/Spam Checking



- Use an external virus checking organisation.
- Examples: MessageLabs

Access Control

- All access control is stored in the gwac.db
  - Can be deleted or can be copied between different GWIAs
- Class of service use
  - Domain (Mostly)
  - Post Office
  - Network Address
  - User
  - Distribution List
- Benefits
  - Prevention of unauthorized access to services
  - Internal misuse and security compliance issues
  - OMG … if you just checked those logs

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Access Control

- Can control
  - Incoming/outgoing SMTP
  - Maximum message size
  - Allow/deny messages to/from specific users/domains
  - Access to POP/IMAP
    - On Linux can use firewall to control access
- Block/allow all rule-generated messages
  - **/realmailfrom**
  - **/flatfwd**

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Access control

- Class of Service – Restricted GWIA
  - GroupWise specific ACL requirements
    - 10.1.1.1
    - *@*.*
    - Blank-Sender-User-ID

If these aren't in your GWIA Class of Service configurations you'll get disappointing results

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Security

- Relay
  - Disable, users can relay if they authenticate
    - Remember need SSL for authentication
- Mailbomb
  - Only enable mailbomb protection if you have a direct Internet connection
- SSL
  - If another site supports it consider using TLS
  - Enable for POP/IMAP
- Do not publish GroupWise connection information

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Functionality

POP3/IMAP

- Security
  - Ensure SSL is enabled
    - Credentials should not be sent in plain text
  - If not in use then disable for improved security
  - Cannot secure third party “local” message stores
  - Enable intruder detection at the Post Office
  - Internal mail policies circumvented
    - Retention
    - Quotas

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POP3/IMAP4

- IMAP at the POA
  - Direct access to the PO and therefore improved performance
    - But multiple access points need to be managed
- Bandwidth overconsumption
  - Messages not compressed
  - Connections kept open
  - Attachments expand in size with MIME encoding

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POP3/IMAP4

- Specific POP/IMAP start up switches

- Danger
  - SMTP will allow credentials sent in clear
  - Consider using a dedicated Internet Agent
  - Beware Mac mail!

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Lightweight Directory Access Protocol

- Lightweight Directory Access Protocol
  - No, not a database, an access protocol
  - References the GroupWise® domain database
    - Returns only 4 attributes
      - First Name Last Name
      - Email address Telephone
- Use NLDAP instead
  - References eDirectory™ so all user attributes available
  - eDirectory is optimised for LDAP and is therefore faster
- Do not make LDAP access publicly available!

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ESMTP

- Delivery Status Notification
  - Told delivered status by receiving system
- Size limitations
  - Based on the MIME size of the message
- Authentication
  - Inbound and outbound
- STARTTLS
  - SSL between SMTP servers

Blocking Messages

- Real-time blacklists
  - SBL – Known Spam Sources
  - XBL – Transitory Spam relay sources
  - Can override by adding to the exceptions list
- Blocked.txt
  - List of blocked sites
  - Created when editing access control
- Can check your services
  - http://www.dnsbl.info/dnsbl-database-check.php
  - http://www.mxtoolbox.com

Accounting Files

- Logs all inbound and outbound traffic
  - Delivered to the accountant as a CSV file at midnight
  - Gives the following information
    - Date/time
    - Subject
    - Inbound/outbound
    - Priority
    - Recipient
    - Size
    - Sender
    - Message type

    and others...
- Parsing tools
  - GroupWise Monitor
  - Cool Solutions
    - www.novell.com/communities/node/405/groupwise-accounting-data-report-20

Monitoring

- Console
  - Use show option in gwha.conf (Debugging only)
- HTTP monitoring
  - Browser-based monitoring of the GWIA
- GWMonitor
  - Visual representation that the Gateway is running
  - Multiple thresholds can be set
- Third Party monitoring tools

Tips and Tricks

Improving Performance

- Send and receive threads
  - The number of concurrent messages processed
  - The more threads, the more server resources used
  - Decrease the poll intervals for agent and daemon directories
  - Conversion and queue directories should be local
    - Increase threads allocated
- Turn off Delayed Ack, Nagle and Minshall

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Aliases/Nicknames

- Users can be known by other than the default names
- Gateway alias
  - A user can only have one per gateway alias type
  - A GWIA instance can have only one alias type
  - Effects the return address on outbound mail
  - Try not to use
    - Use the override option on Internet Addressing
- Nicknames
  - Can have more than one per user
  - Does not effect the return address on outbound mail
- ConsoleOne® Alias to Override tool

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Schizophrenia

- Users can have multiple inbound personalities
  - Multiple inbound iDomains
  - Multiple personalities from
    - Internet addressing
    - Nicknames
    - Gateway alias
  - But they only have the one outbound address
  - Can publish all addresses to eDirectory™
- Resolution
  - Use multiple outbound GWIAs
    - Define different gateway alias types for each / use different aliases
  - Use POP/IMAP accounts on client and relay off GWIA
  - Proxy to another account

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Troubleshooting

Message Flow

- Why understand the message flow
  - Know which component is causing a problem
  - Know which directories to find messages in

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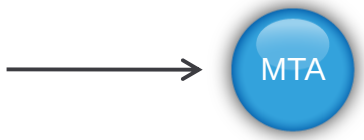
Message Flow



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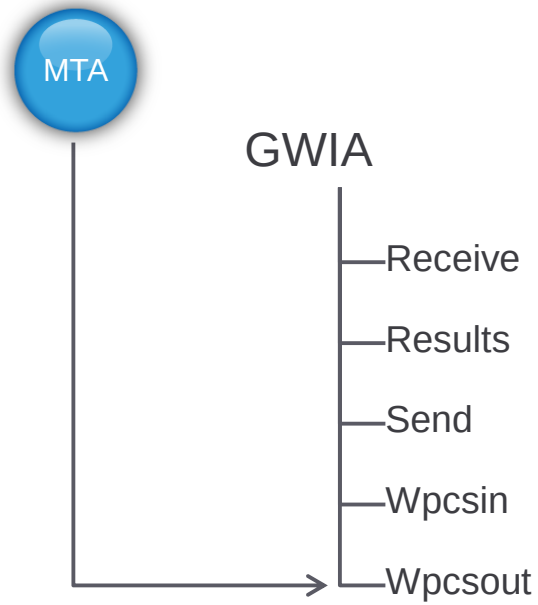

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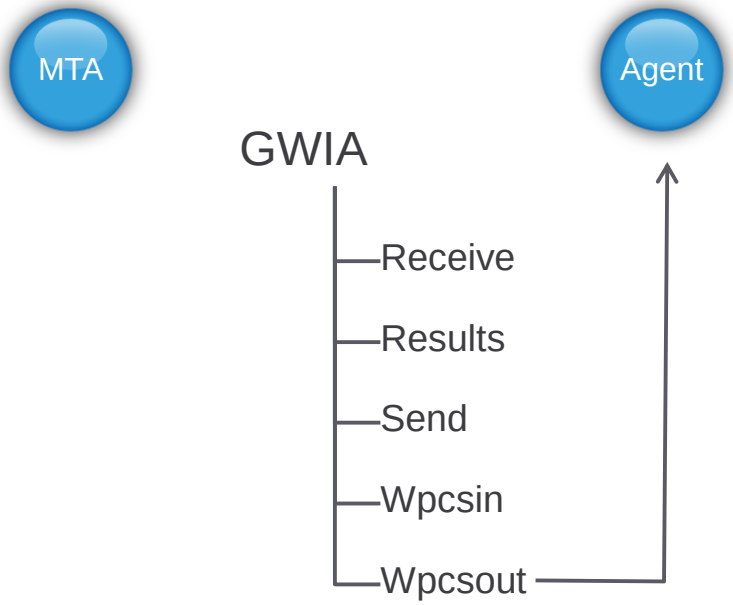

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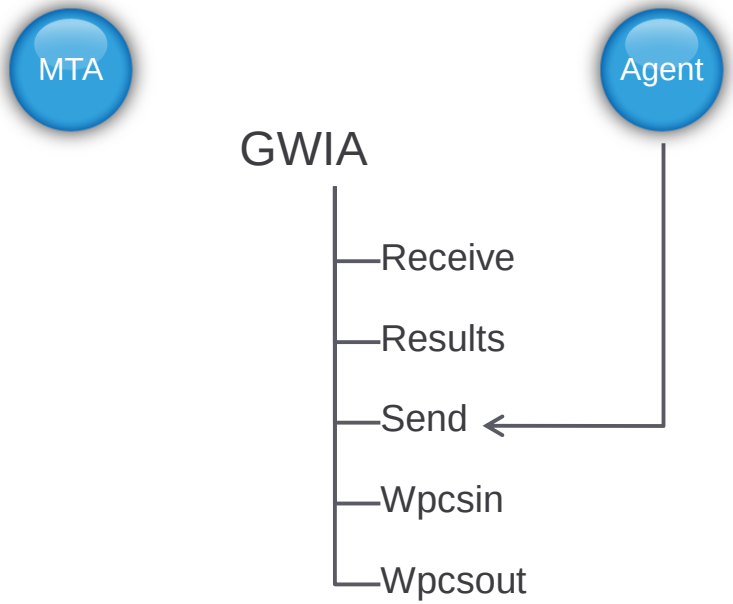

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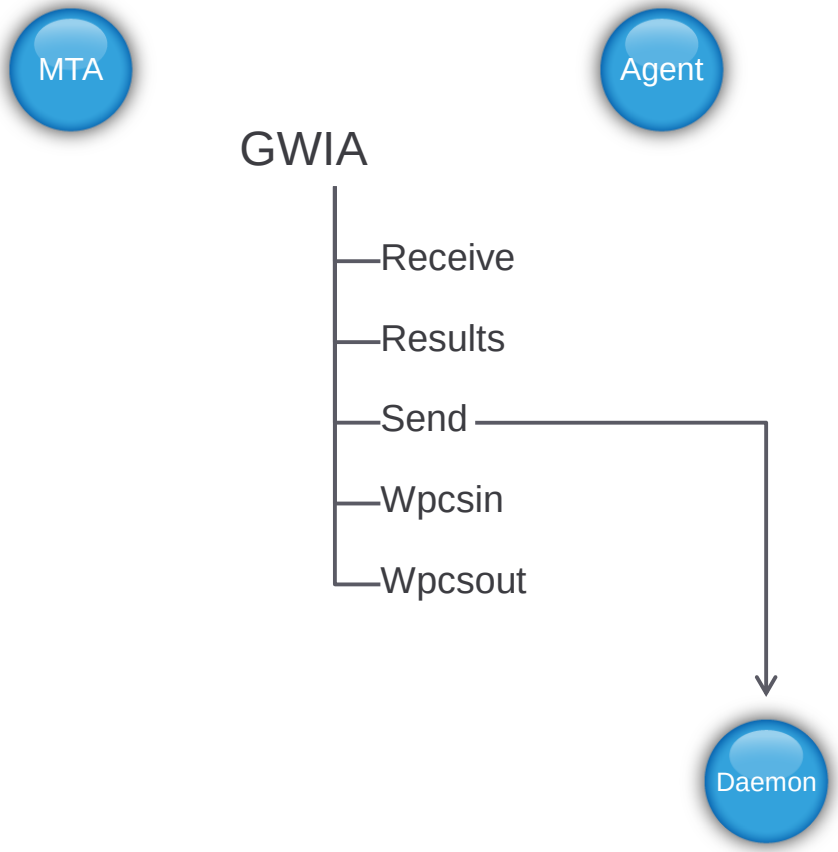

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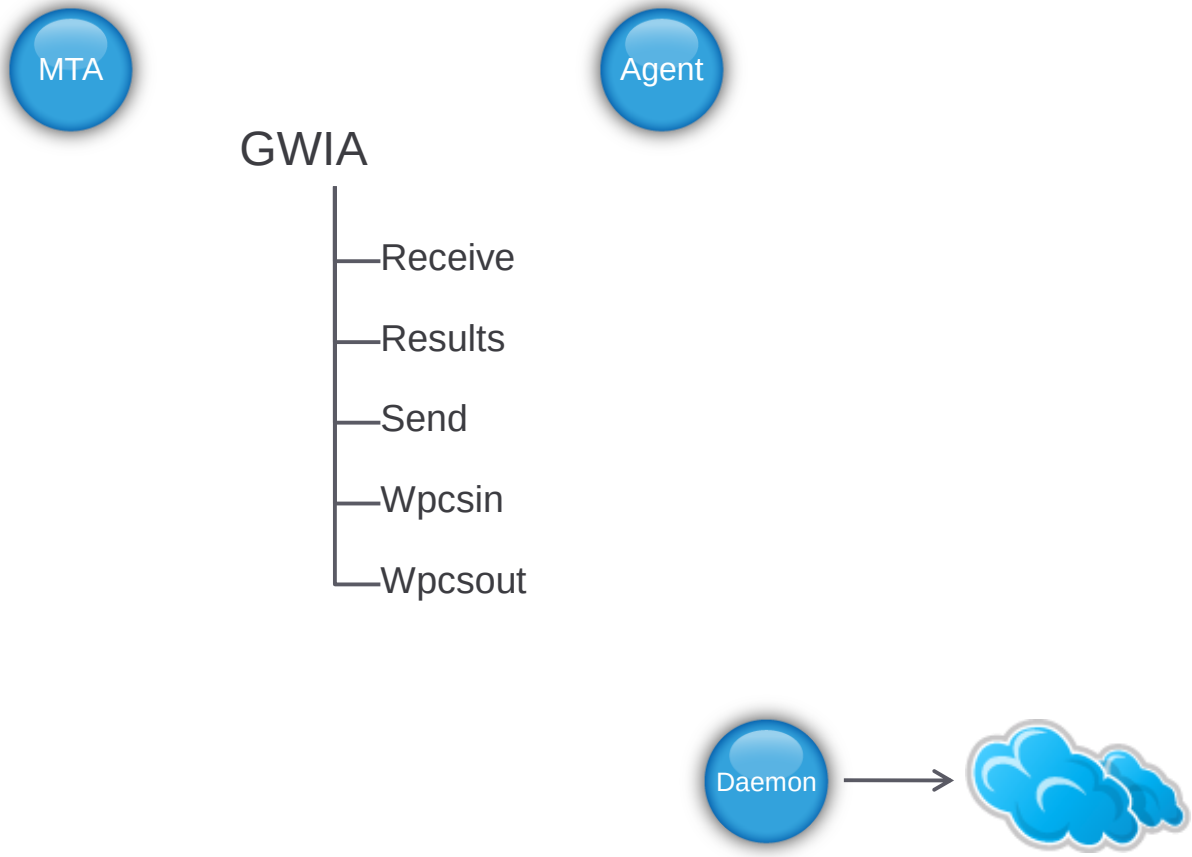

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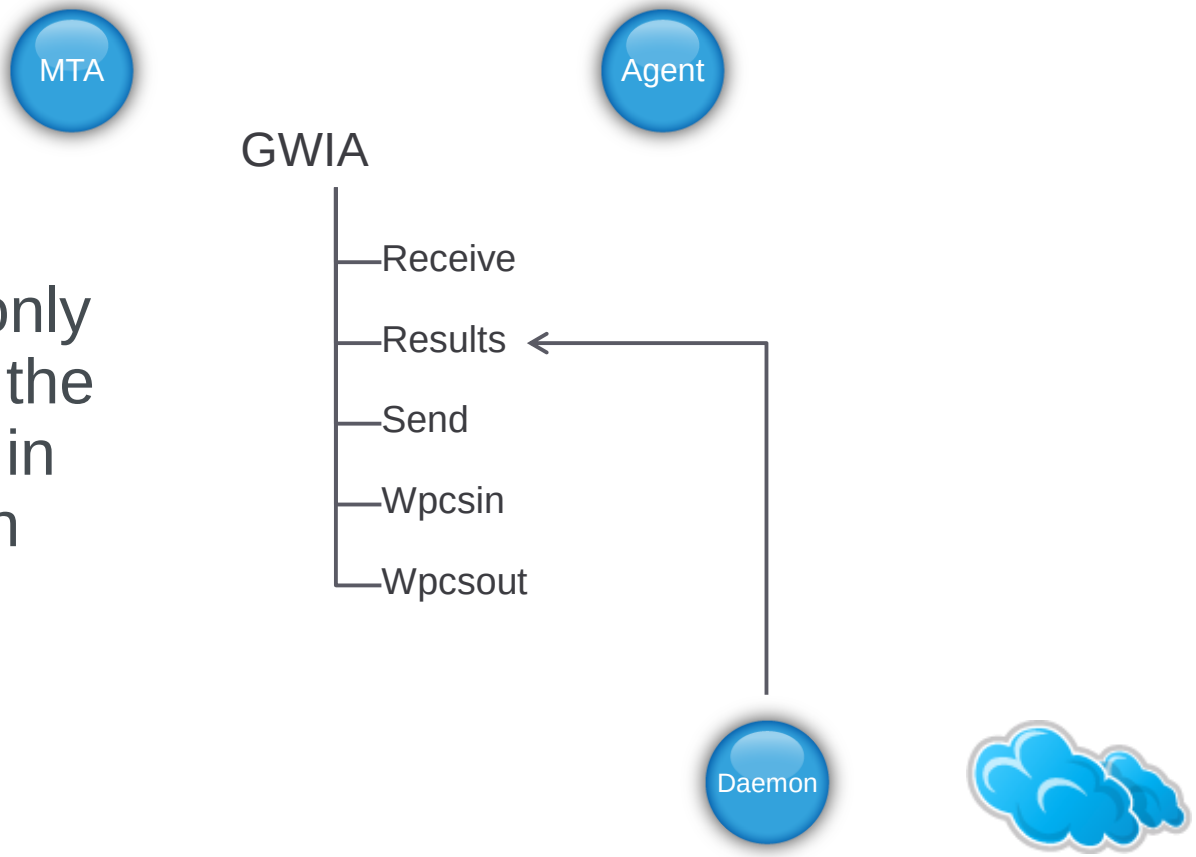
Message Flow

The daemon only writes back to the Results folder in the event of an unsuccessful transmission.



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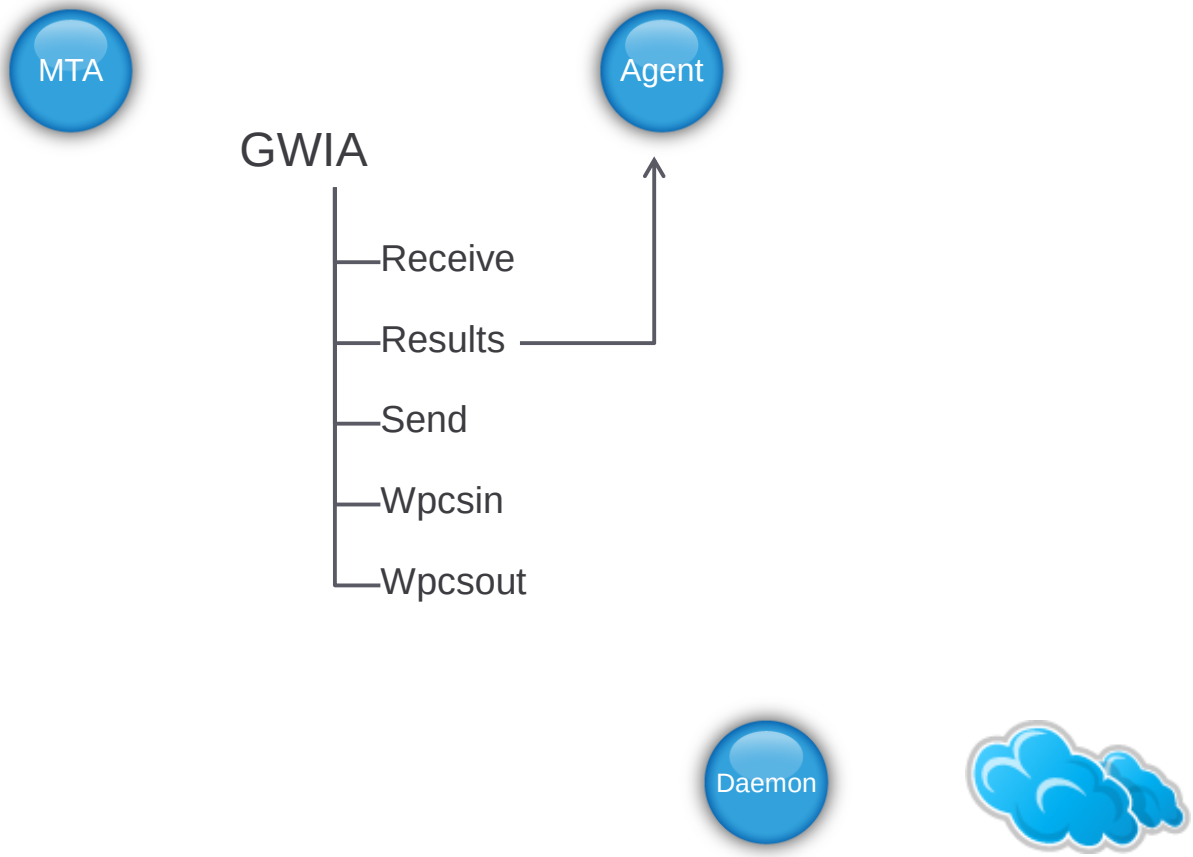

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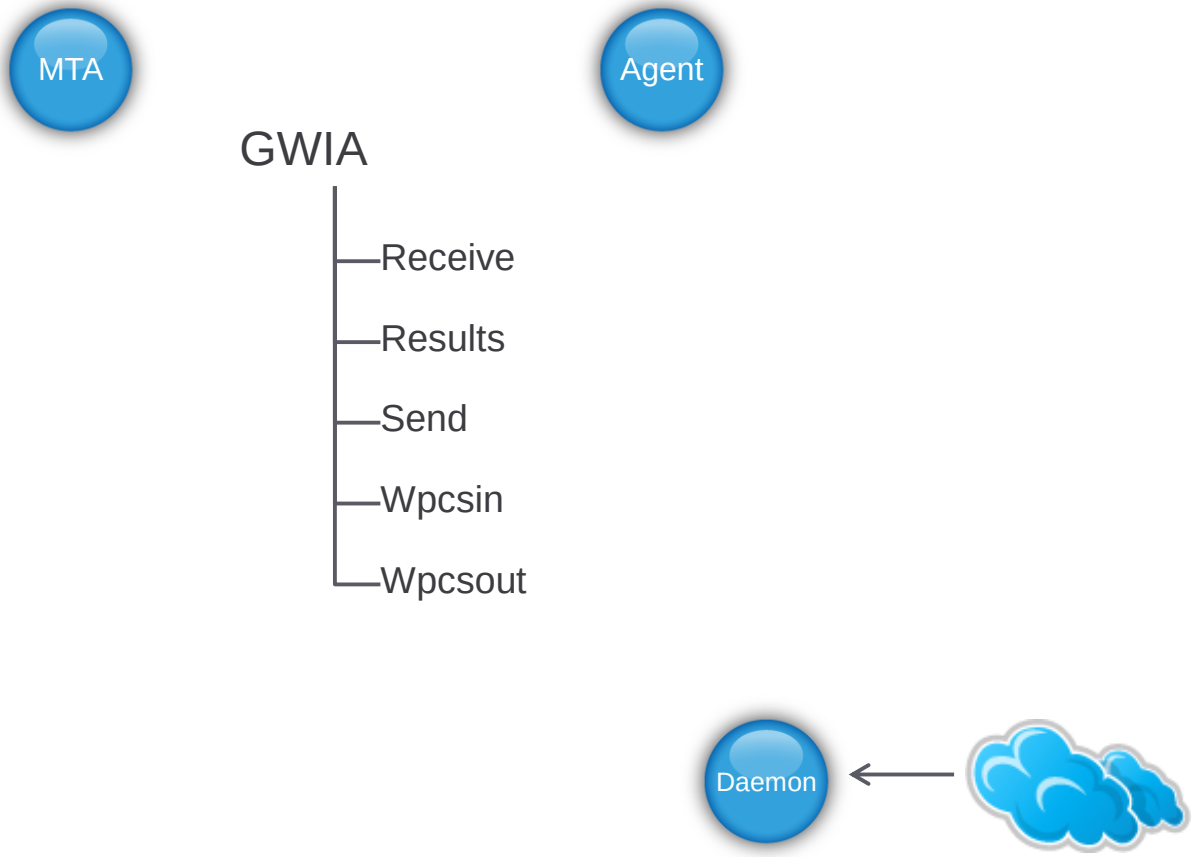
Message Flow



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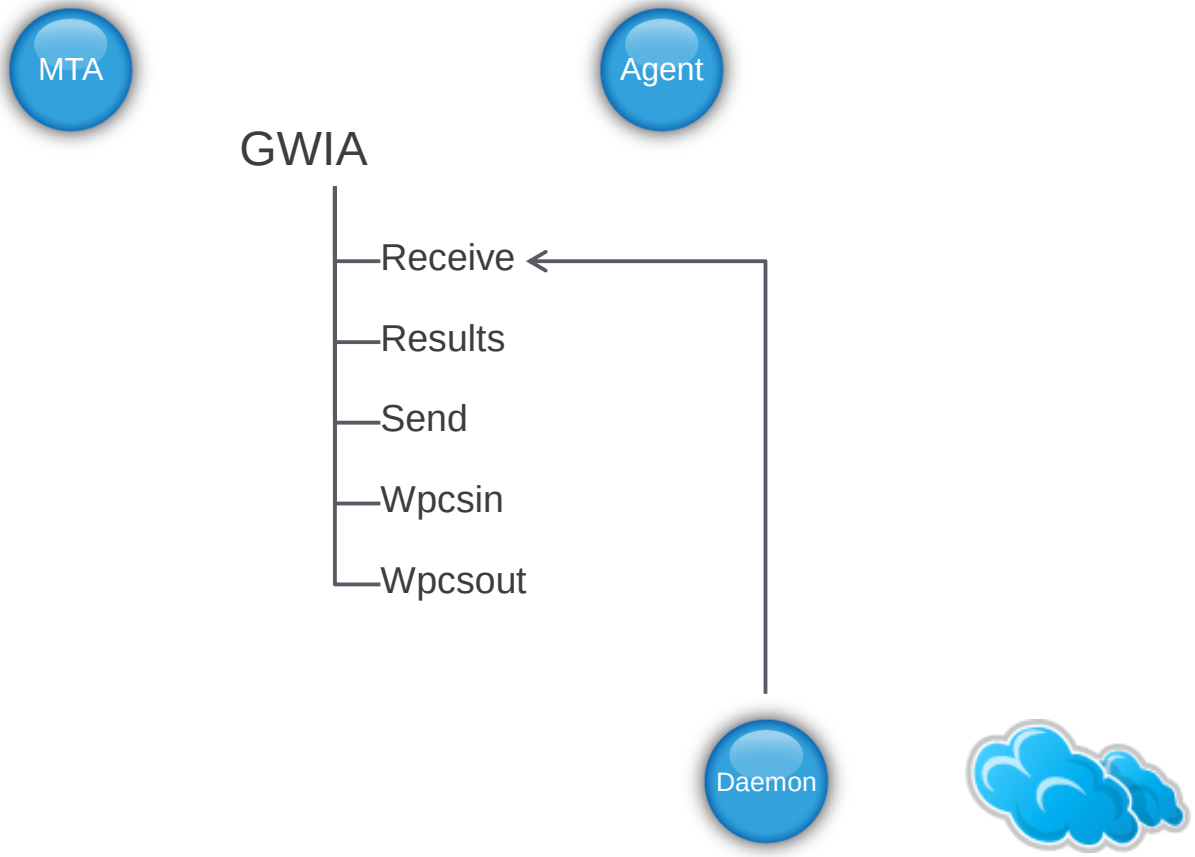
Message Flow



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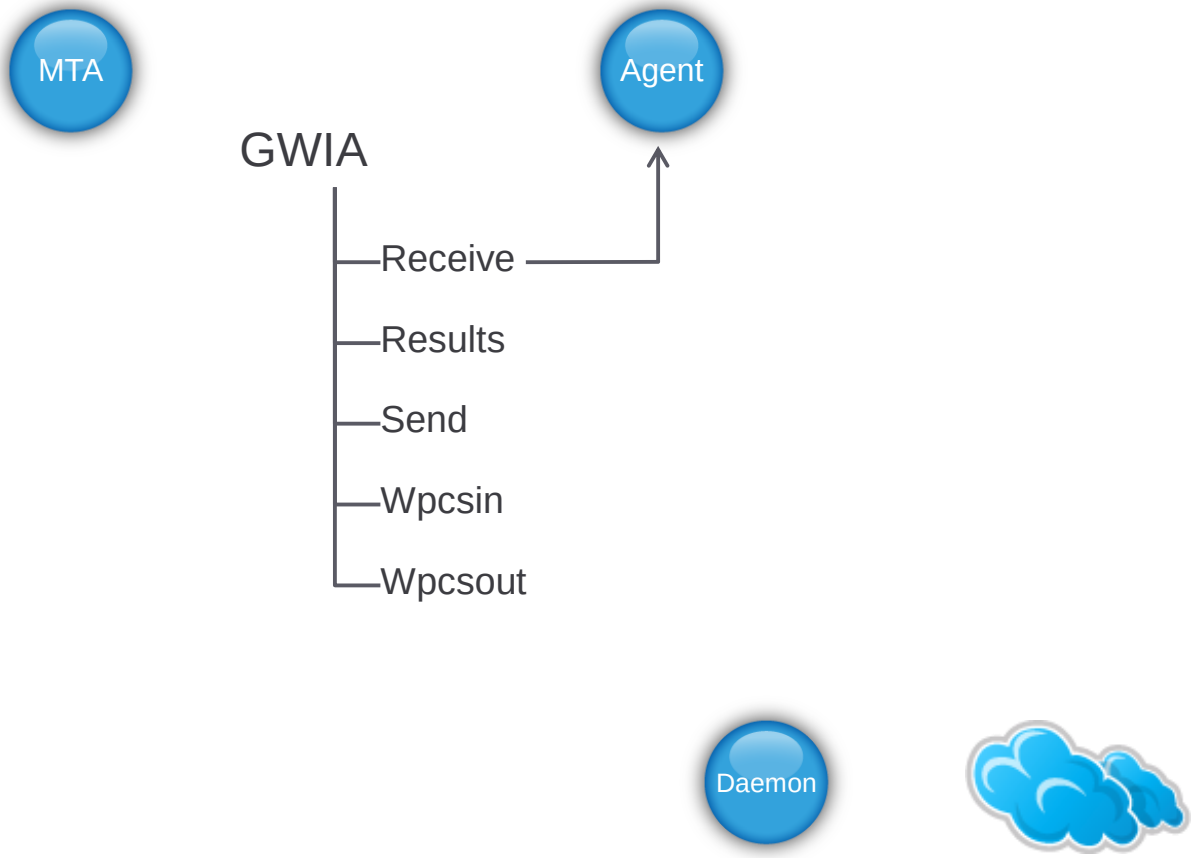
Message Flow



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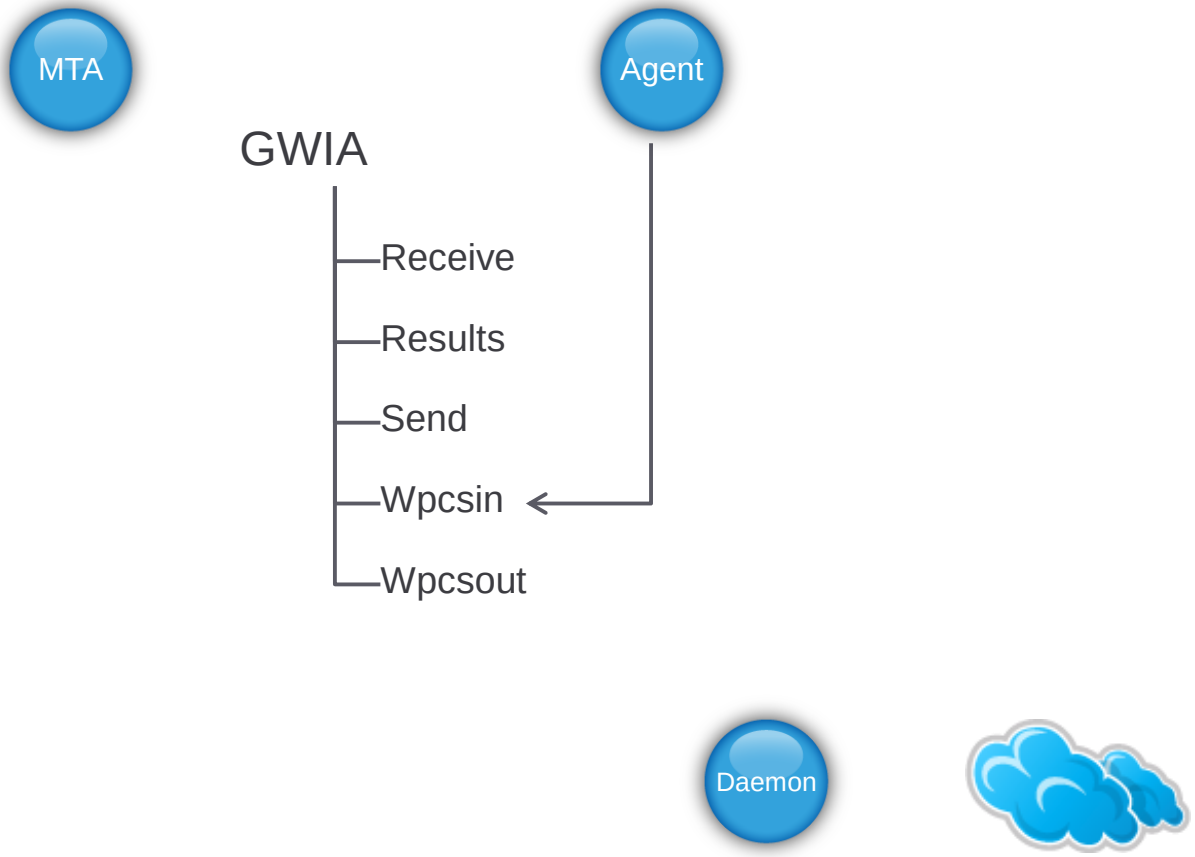
Message Flow



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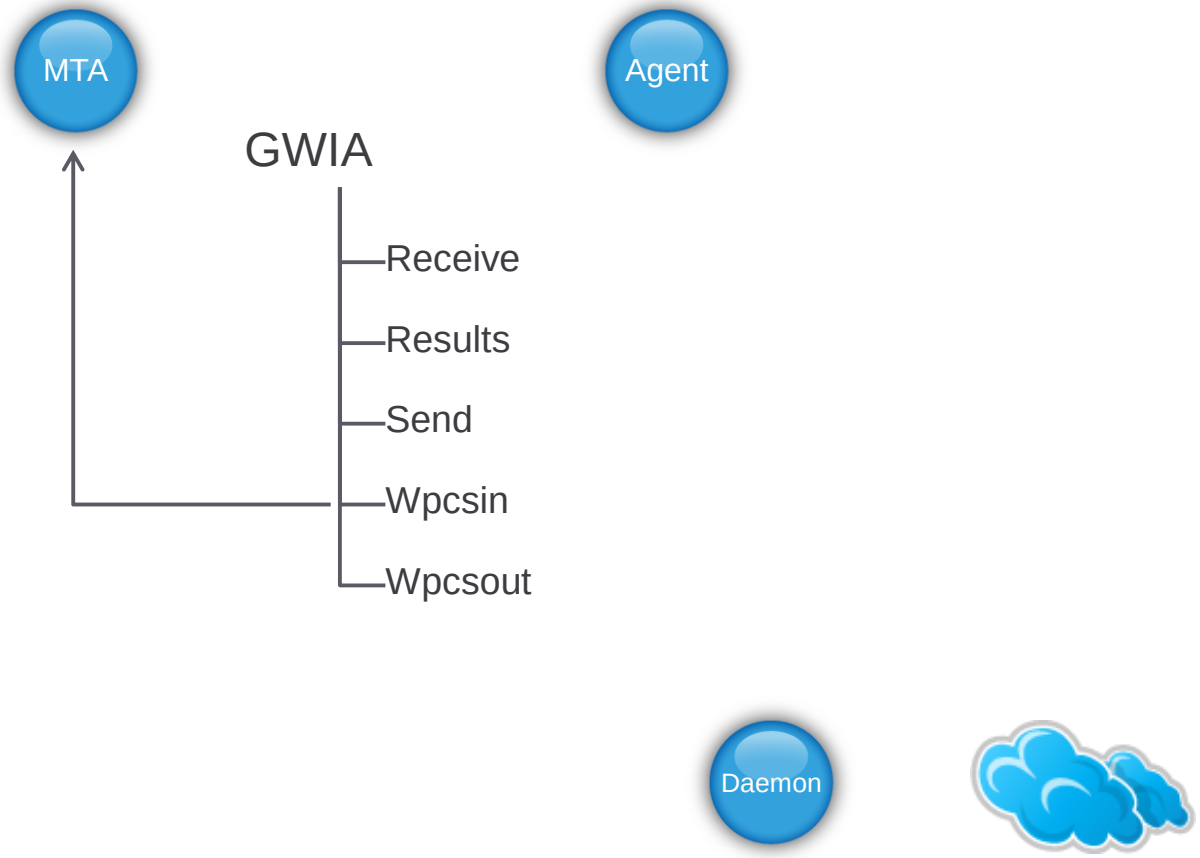
Message Flow



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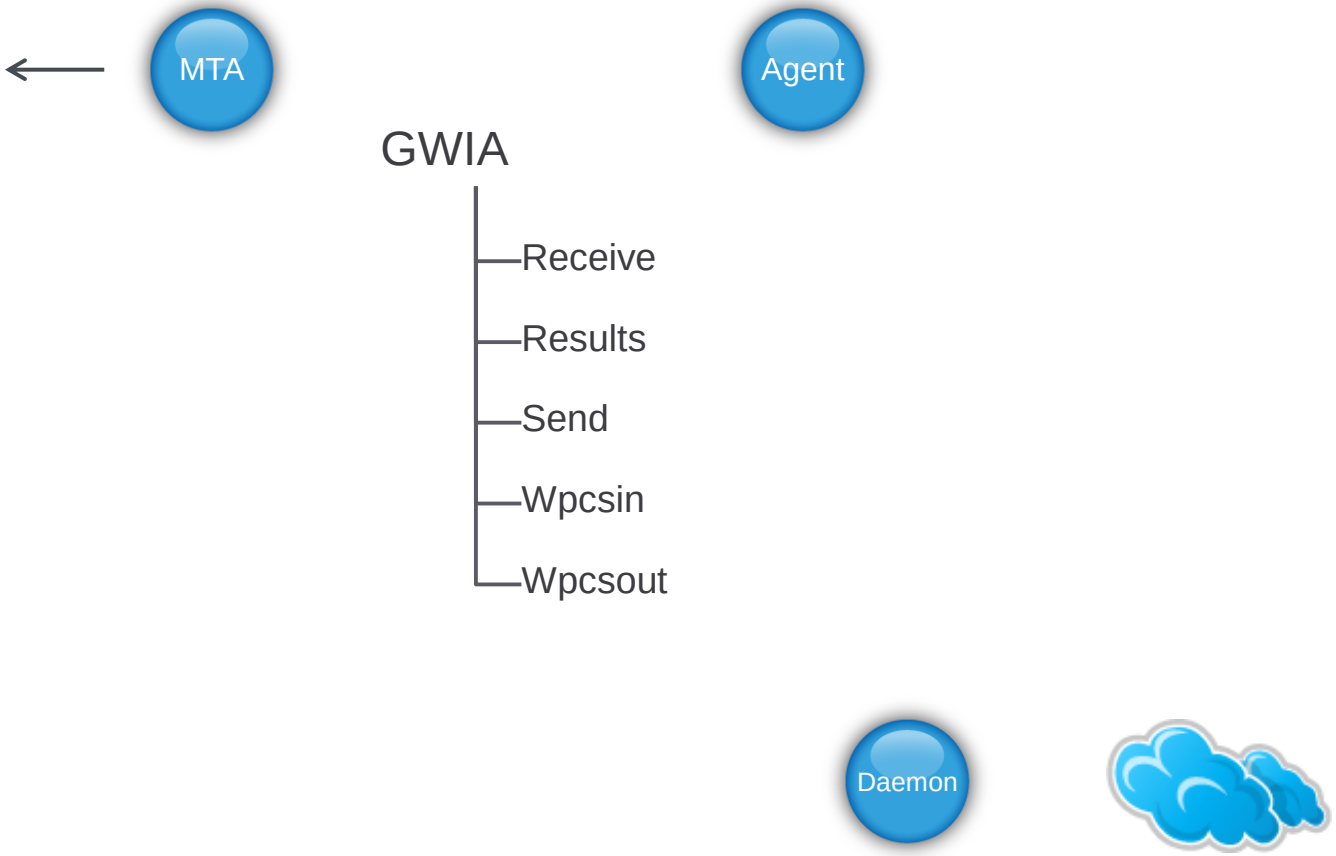
Message Flow



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SMTP Response Messages

- Code
  - 2xx
    - Status: Command succeeded
  - 3xx
    - Status: Command accepted but more information expected
  - 4xx
    - Status: Command failed, however the problem may be temporary. Retry later
  - 5xx
    - Status: Command failed

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Inbound Undeliverable Messages

- If unknown recipient
  - '550 No such recipient' is returned to sending server
  - Message is dropped without receiving body/attachments
  - The Message is not placed in problem directory
- Why?
  - Saves bandwidth and disk space
- Use nicknames to monitor old addresses
- Service/application accounts should have a mailbox
  - Return paths for bounces and relay denials

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Troubleshooting

- Telnet to the GWIA on port 25

Helo acme.com

Mail From:john@acme.com

Rcpt To:alice.smith@novell.com

Data

This is a test

.

quit

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Troubleshooting

HELO relay.example.org
MAIL FROM:john@acme.com
RCPT TO:alice.smith@novell.com
RCPT TO:theboss@novell.com
DATA
From: “John Jones" john@acme.com
To: "Alice Smith" alice.smith@novell.com
Cc: theboss@novell.com
Date: Tue, 15 Jan 2008 16:02:43 -0500
Subject: Test message
Hello Alice.
This is a test message with 5 header fields and 4 lines in the message body.
Bob
.
quit

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Troubleshooting

- Problem messages are stored in the gwprob directory
  - Can be re-queued
    - Rename the .BAD file to .001 or other number extension
    - Open the message and determine if it is inbound or outbound
    - Modify the message, if required, to correct the problem
    - Move the message in the respective RECEIVE or SEND directory
- These messages can be deleted without causing a problem

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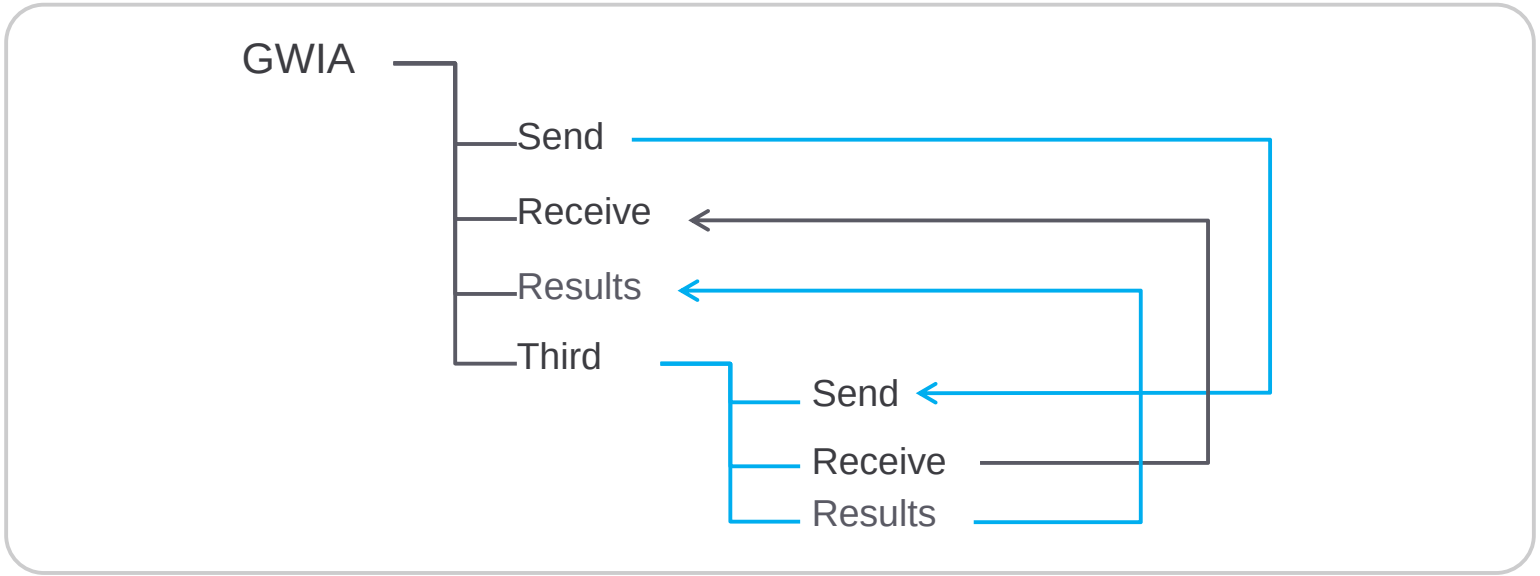
Troubleshooting

- Third party directory
  - Separate send and receive directory used by daemon
  - Need to move mail between the directories



Tracking inbound messages

GWIA

```
13:12:31 000 DMN: MSG 9321338 Receiving file:/smtpdom2/wpgate/smtpia2/receive/f3fc59d4.606

13:12:32 920      MSG 9321338 Processing inbound message: /smtpdom2/wpgate/smtpia2/receive/f3fc59d4.606

13:12:32 920      MSG 9321338 Sender: fluffy.pilpott@earthlink.net

13:12:32 920      MSG 9321338 Recipient: lkearney@georgiahealth.edu

13:12:32 920      MSG 9321338 Queuing to MTA

13:12:32 920      MSG 9321338 File: /smtpdom2/wpgate/smtpia2/wpcsin/4/4d95cf41.yw7 Message Id:
(4D960780.4F4:148:62708) Size: 2.8 Kb
```

GWIA MTA

```
13:12:33 112 RTR: SMTP2: 00666996.YW4: Routing /smtpdom2/mslocal/gwinprog/4/00666996.YW4 (3 kb)

13:12:33 112 RTR: SMTP2: 00666996.YW4 Priority 4  4D960780.4F4:148:62708 : Transfer to DOMAIN1

13:12:33 112 RTR: SMTP2: 00666996.YW4: Message queued:/smtpdom2/mslocal/mshold/dom219d/4/00666996.001
```

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Tracking inbound messages

Destination MTA

```
13:12:34 0C5 RTR: DOMAIN1: 0040c817.YW4: Routing e5/domain1:\domain1\mslocal\gwinprog\4\0040c817.YW4 (3 kb)

13:12:34 0C5 RTR: DOMAIN1: 0040c817.YW4 Priority 4  4D960780.4F4:148:62708 : Transfer to DOMAIN1.PO6:OFS

13:12:34 0C5 RTR: DOMAIN1: 0040c817.YW4: Message queued:
e5/domain1:\domain1\mslocal\mshold\po64fc1\4\0040c817.001
```

Destination POA

```
13:12:35 09E MTP:  Received file: E6\mail6:\po6\wpcsout\ofs\4\4d95cf43.YW2, Size: 2996

13:12:35 07E Processing 4d95cf43.yw2 Message ID(4D960780.4F4:148:62708)

13:12:35 07E Sender of message (4d95cf43.yw2) fluffy.pilpott@earthlink.net

13:12:35 07E Distribute message from: fluffy pilpott

13:12:35 07E Begin distribution to 1 users

13:12:35 07E Processed OK
```

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Open Connections

- netstat -patune | grep ':25' > /tmp/abc.txt
  - Replace 25 with 110, 143, 993 or 995

```
tcp   1 0 10.6.10.97:25   10.6.10.167:61430     CLOSE_WAIT  1071  54707306  19318/gwia
tcp 100 0 10.6.10.97:25   166.137.14.31:39105   CLOSE_WAIT  1071  54699863  19318/gwia
tcp   1 0 10.6.10.97:25   158.93.190.200:44671  CLOSE_WAIT  1071  54685441  19318/gwia
tcp   1 0 10.6.10.97:25   68.47.36.215:52209    CLOSE_WAIT  1071  54707314  19318/gwia
```

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Questions?


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