LOGZILLA DOCUMENTATION

Search Engine Settings

Tune the LogZilla Sphinx search engine via sphinx.yaml for full-text indexing, word length, infix matching, and performance parameters

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LogZilla uses an advanced search engine for full-text indexing and searching of log events. The search engine configuration is managed through the `sphinx.yaml` file and provides extensive customization options for indexing behavior, performance tuning, and search capabilities.

Critical Warning: Modifying search engine settings can cause system instability, performance degradation, or data loss. Always test changes in a non-production environment first and create backups before making modifications. Contact LogZilla support if unsure about any setting.

Search Engine Configuration

Search settings are stored in `/etc/logzilla/settings/sphinx.yaml` and can be managed using the modern `logzilla settings` command.

Basic Configuration

```
# View current search settings
logzilla settings list sphinx

# Update search settings
logzilla settings update SPHINX_MIN_WORD_LENGTH=3
logzilla settings update SPHINX_MIN_INFIX_LENGTH=3

# Apply changes (automatic with settings update)
logzilla settings reload sphinx
```

Core Indexing Settings

Word and Text Processing

Setting	Description	Impact	Recommended
`SPHINX_MIN_WORD_LENGTH`	Minimum word length to index	Shorter = more matches, larger index	`3–4`
`SPHINX_MIN_PREFIX_LENGTH`	Minimum prefix length for prefix searches	Affects `word*` searches	`3–4`
`SPHINX_MIN_INFIX_LENGTH`	Minimum infix length for wildcard searches	Enables `*word*` and `*word` searches	`3–4` or `0`

Wildcard Search Capabilities

Default Behavior: LogZilla supports suffix wildcards (`start*`) by default.

Infix Wildcards: To enable prefix (`*end`) and middle (`*middle*`) wildcard searches, configure infix indexing:

```
# Enable infix searching (matches SPHINX_MIN_WORD_LENGTH)
logzilla settings update SPHINX_MIN_INFIX_LENGTH=4
```

Example: With `SPHINX_MIN_INFIX_LENGTH=3`, the word "testing" generates indexes for: `tes`, `est`, `sti`, `tin`, `ing`, `test`, `esti`, `stin`, `ting`, `testi`, `estin`, `sting`, `testin`, `esting`, and `testing`.

Performance Warning: Infix indexing increases index size and can significantly impact performance. Use values below 4 only when necessary and with adequate system resources.

Data Safety: Changes to indexing settings only affect new data. Existing data retains its original indexing. Incorrect settings may cause search failures or system instability.

Performance and Scaling Settings

Index Management

Setting	Description	Commonly Changed
SPHINX_MIN_WORD_LENGTH	Minimum word length to index	Yes - tune for data
SPHINX_MIN_PREFIX_LENGTH	Minimum prefix length to index	Yes - tune for data
SPHINX_MIN_INFIX_LENGTH	Minimum infix length to index	Yes - tune for data
SPHINX_MAX_DOCUMENTS_PER_INDEX	Max documents per index	Rarely
SPHINX_MAX_INDEXING_TIME	Max indexing time (seconds)	Rarely
SPHINX_MIN_INDEX_LEN	Min events per indexing batch	Rarely
SPHINX_REINDEX_PROC_MAX	Max concurrent indexing processes	Yes - tune for CPU
SPHINX_MERGING_PROC_MAX	Max concurrent merging processes	Yes - tune for CPU
SPHINX_REINDEX_DELAY	Delay between reindexing (seconds)	Sometimes

Setting	Description	Commonly Changed
SPHINX_MAX_MATCHES	Maximum matches per query	Yes - tune for usage
SPHINX_DISABLE_AUTO_SPLITTING	Disable automatic index splitting	Advanced use only
SPHINX_DISABLE_MERGING	Disable index merging	Troubleshooting only
SPHINX_DISABLE_TEMPORARY_INDEXES	Disable temporary indexes	Troubleshooting only

Concurrent Processing

Setting	Description	Resource Impact
SPHINX_REINDEX_PROC_MAX	Max concurrent indexing processes	CPU and I/O intensive
SPHINX_MERGING_PROC_MAX	Max concurrent merging processes	I/O intensive
SPHINX_REINDEX_DELAY	Delay between reindexing (seconds)	Reduces system load

Query Limits

Setting	Description	Memory Impact
SPHINX_MAX_MATCHES	Maximum matches per query	Higher = more memory usage

Advanced Configuration

Debug and Troubleshooting

```
# Enable searchd debug mode
logzilla settings update SPHINX_SEARCHD_DEBUG=true

# Enable searchd logging
logzilla settings update SEARCHD_LOGS_ENABLED=true
```

Optimization Guidelines

For High-Volume Environments

```
# Increase batch processing
logzilla settings update SPHINX_MIN_INDEX_LEN=50000
logzilla settings update SPHINX_MAX_INDEXING_TIME=300

# Optimize concurrent processing
logzilla settings update SPHINX_REINDEX_PROC_MAX=4
logzilla settings update SPHINX_MERGING_PROC_MAX=2

# Increase reindex delay to reduce load
logzilla settings update SPHINX_REINDEX_DELAY=30
```

For Search-Heavy Workloads

```
# Increase query result limits
logzilla settings update SPHINX_MAX_MATCHES=2000000

# Increase concurrent processing
logzilla settings update SPHINX_REINDEX_PROC_MAX=4
logzilla settings update SPHINX_MERGING_PROC_MAX=4
```

For Storage-Constrained Systems

```
# Disable infix indexing to save space
logzilla settings update SPHINX_MIN_INFIX_LENGTH=0

# Increase minimum word length
logzilla settings update SPHINX_MIN_WORD_LENGTH=5

# Disable temporary index splitting
logzilla settings update SPHINX_DISABLE_AUTO_SPLITTING=true
```

Important Considerations

Critical Safety Information

Warning: Search engine settings directly affect system performance and stability. Incorrect configurations can cause:

- Complete search functionality failure
- Excessive memory usage leading to system crashes
- Data processing delays or failures
- Inability to access historical data

Always consult LogZilla support before modifying these settings in production.

Index Rebuilding

Important: Changes to word length and infix settings only apply to new events. Existing events retain their original indexing. Modifying these settings may require system maintenance windows and can affect search performance during the transition period.

Performance Impact

Memory Usage: Infix indexing can increase memory usage by 3-10x depending on text content and minimum lengths.

Disk Space: Index size grows significantly with shorter minimum lengths and infix indexing enabled.

Search Speed: More indexed terms can slow search performance, especially for common terms.

Recommended Settings by Use Case

Standard Deployment:

```
SPHINX_MIN_WORD_LENGTH=4
SPHINX_MIN_PREFIX_LENGTH=4
SPHINX_MIN_INFIX_LENGTH=0  # Disabled for performance
```

Advanced Search Requirements:

```
SPHINX_MIN_WORD_LENGTH=3
SPHINX_MIN_PREFIX_LENGTH=3
SPHINX_MIN_INFIX_LENGTH=3  # Enable with caution
```

High-Performance Environment:

```
SPHINX_MIN_WORD_LENGTH=5
SPHINX_MIN_PREFIX_LENGTH=5
SPHINX_MIN_INFIX_LENGTH=0  # Disabled
SPHINX_MIN_INDEX_LEN=100000
SPHINX_REINDEX_DELAY=60
```

Troubleshooting

Common Issues

Slow Searches: Reduce infix length or disable infix indexing.

High Memory Usage: Increase minimum word lengths and disable infix indexing.

Missing Search Results: Check minimum word length settings and ensure terms meet the configured thresholds.

Indexing Delays: Adjust concurrent processing limits and batch sizes.

Monitoring

```
# Check indexing status and statistics
logzilla events stats
```

Troubleshooting Search Issues

For search-related problems, check the main LogZilla log:

```
# View recent log entries
tail -f /var/log/logzilla/logzilla.log

# Search for indexing errors
grep -i "sphinx\|search\|index" /var/log/logzilla/logzilla.log
```

Note: Advanced search engine diagnostics require container access and should only be performed by experienced administrators or under LogZilla support guidance.