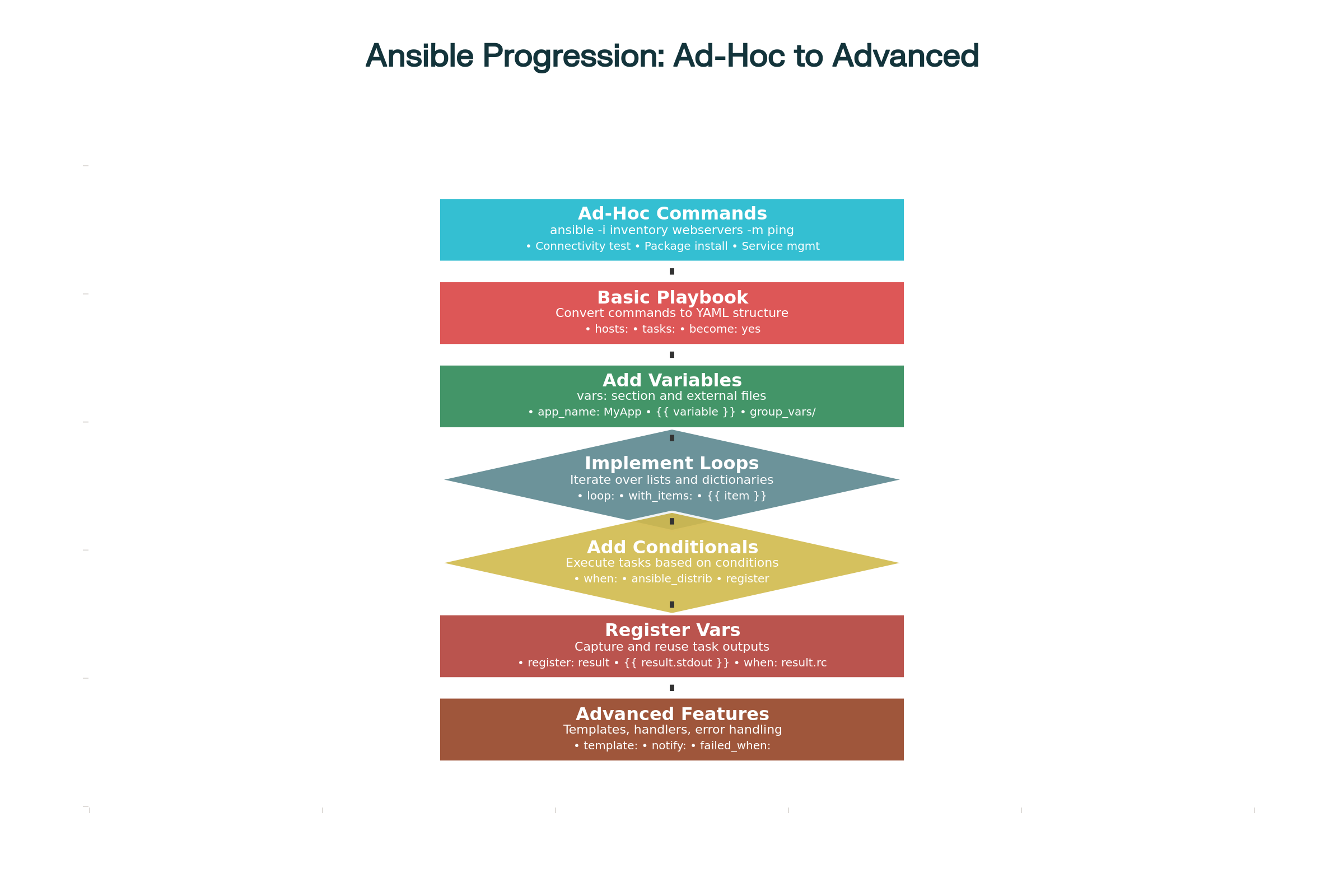
**Ansible Lab Manual: From Ad-Hoc Commands to Playbooks**



Ansible Lab Progression: From Ad-Hoc Commands to Advanced Playbooks

**Lab Overview**

The lab scenario involves configuring and managing multiple web servers for a new application deployment. Students will:

1. **Start with ad-hoc commands** for immediate tasks like connectivity testing, package installation, and service management
2. **Convert these to basic playbooks** with proper YAML structure
3. **Add variables** for flexibility and reusability
4. **Implement loops** to handle multiple items efficiently
5. **Use conditionals** for OS-specific tasks
6. **Leverage register variables** to capture and reuse task outputs
7. **Apply advanced features** like templates, handlers, and error handling

**Key Learning Objectives**

**Variables Implementation**

* **Playbook-level variables**: Using vars: section for configuration
* **External variable files**: Organizing variables in group\_vars/ and host\_vars/
* **Variable substitution**: Using {{ variable\_name }} syntax
* **OS-specific variables**: Conditional variable assignment based on system facts

**Loops and Iteration**

* **Simple loops**: Using loop: directive for package installation
* **Complex loops**: Iterating over dictionaries for user creation
* **Conditional loops**: Combining loops with when statements
* **Loop variables**: Accessing {{ item }} and nested dictionary values

**Conditionals**

* **Basic conditions**: Using when: with facts like ansible\_distribution
* **Complex conditions**: Combining multiple conditions with and, or, not
* **Registered variable conditions**: Making decisions based on task results
* **Variable existence checks**: Using is defined and is undefined

**Practical Examples Included**

The lab manual provides real-world examples including:

* **Multi-OS support**: Handling both Ubuntu and RHEL systems
* **User management**: Creating multiple admin users with different privileges
* **Package installation**: OS-specific package management
* **Service management**: Starting and configuring web servers
* **File operations**: Creating directories and deploying configuration files
* **Error handling**: Managing failures and implementing robust playbooks

**Progressive Learning Structure**

The lab follows a structured progression:

1. **Part 1**: Environment setup and inventory creation
2. **Part 2**: Hands-on ad-hoc commands with practical examples
3. **Part 3**: Converting ad-hoc commands to playbooks step-by-step
4. **Part 4**: Adding advanced features (variables, loops, conditionals)
5. **Part 5**: Best practices and troubleshooting
6. **Part 6**: Practical exercises for reinforcement

**Supporting Materials**

The lab includes supporting files and examples:

* **Inventory file**: Properly structured with groups and variables
* **Basic playbook**: Simple conversion from ad-hoc commands
* **Advanced playbook**: Full-featured with all concepts
* **Comparison table**: Side-by-side ad-hoc vs playbook benefits

This comprehensive lab manual provides a complete learning experience that bridges the gap between simple ad-hoc commands and production-ready Ansible playbooks, making it ideal for DevOps training environments and skill development.

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