Test Environment Setup Report

GitHub Spec Kit Training Program

Version: 1.0
Date: September 22, 2025
Setup Completed: 2025-09-22 21:40:35
Environment: Ubuntu Server (Container) - Test Environment
Status: ✅ READY FOR TRAINING

Executive Summary

The test environment setup for the GitHub Spec Kit Training Program has been **successfully completed**. All core components required for Module 1 training activities are operational and verified. The environment follows the verification-first approach with comprehensive testing and validation.

Key Achievements

- ✅ **11 of 11 validation tests passed**
- ✅ **Ubuntu server environment fully configured**
- ✅ **Python 3.11 virtual environment operational**
- ✅ **HX-Infrastructure domain resolution working**
- ✅ **Automated setup and validation scripts created**
- ✅ **Comprehensive documentation updated**

Setup Process Summary

1. System Foundation (✅ COMPLETED)

- **System Update & CA Certificates**: 288 certificates installed, HTTPS connectivity verified
- **Git Installation**: Version 2.39.5 installed and configured with Agent0 credentials
- **Python 3.11 Environment**: Version 3.11.6 with virtual environment capability
- **SSH Server**: Installed with keys generated (container environment)
- **Development Tools**: GCC, curl, wget, vim, tree, unzip all operational

2. Network Configuration (✅ COMPLETED)

- **Hosts File**: HX-Infrastructure entries added successfully
- **Domain Resolution**: dev-test.hana-x.ai resolves to 192.168.1.100
- **Network Connectivity**: All required domains accessible

3. Training Environment (✅ COMPLETED)

- **Virtual Environment**: `.venv-hx-spec-kit-py311` created with communicative naming
- **Python Packages**: pytest-8.4.2 and requests-2.32.5 installed
- **Test Script**: Comprehensive environment validation script operational

- **Directory Structure**: Training workspace organized at `~/training/hx-spec-kit/`

4. Automation & Validation (✅ COMPLETED)

- **Setup Script**: `scripts/setup_test_env.sh` - Automated environment setup
- **Validation Script**: `scripts/validate_env.sh` - Comprehensive environment testing
- **Test Script**: `test_environment.py` - Runtime environment verification

Validation Results

Comprehensive Test Results

```
=== GitHub Spec Kit Training Program - Environment Validation ===
Starting validation at: 2025-09-22 21:40:35

=== System Components ===
Validating CA Certificates... ✅ PASS
Validating Git Installation... ✅ PASS
Validating Python 3.11... ✅ PASS
Validating SSH Directory... ✅ PASS
Validating Development Tools... ✅ PASS

=== Network Configuration ===
Validating Domain Resolution... ✅ PASS
Validating Hosts File Entries... ✅ PASS

=== Training Environment ===
Validating Training Directory... ✅ PASS
Validating Virtual Environment... ✅ PASS
Validating Environment Test Script... ✅ PASS

=== Comprehensive Environment Test ===
✅ Comprehensive test: PASS

=== Validation Summary ===
Passed: 11
Failed: 0
Total:  11
🎉 All validations passed! Environment is ready for training.
```

Environment Test Script Results

```
🔍 Running environment verification tests...
✅ Python version: 3.11.6
✅ Git available: git version 2.39.5
✅ Domain resolution: dev-test.hana-x.ai resolves correctly
✅ Virtual environment active: /home/ubuntu/training/hx-spec-kit/.venv-hx-spec-kit-py3
11
✅ Required packages: pytest and requests installed
🎉 All environment tests passed!
```

Environment Access Information

Training Environment Access

- **Location**: `/home/ubuntu/training/hx-spec-kit/`
- **Virtual Environment**: `.venv-hx-spec-kit-py311`
- **Activation Command**: `source ~/training/hx-spec-kit/.venv-hx-spec-kit-py311/bin/activate`
- **Test Command**: `python test_environment.py`

Repository Access

- **Location**: `/home/ubuntu/github_repos/GitHub-Spec-Kit-Training-Program/`
- **Documentation**: `docs/environment/`
- **Scripts**: `scripts/`
- **Training Materials**: `training/`

Domain Configuration

- **Primary Domain**: `dev-test.hana-x.ai` → `192.168.1.100`
- **API Endpoint**: `api.dev-test.hana-x.ai` → `192.168.1.100`
- **Application**: `app.dev-test.hana-x.ai` → `192.168.1.100`

Created Resources

Automation Scripts

1. **`scripts/setup_test_env.sh`**
   - Automated environment setup script
   - Follows documented baseline procedures
   - Includes verification steps

2. **`scripts/validate_env.sh`**
   - Comprehensive environment validation
   - 11 validation checks
   - Pass/fail reporting

Test Resources

1. **`~/training/hx-spec-kit/test_environment.py`**
   - Runtime environment verification
   - Tests Python, Git, domains, virtual environment, packages
   - Comprehensive success/failure reporting

Documentation Updates

1. **`docs/environment/ENV_READINESS.md`**
   - Updated with all verification results
   - 12 of 20 steps completed (Ubuntu server focus)
   - Detailed timestamps and results

2. **`docs/environment/TEST_ENV_SETUP_REPORT.md`** (this document)
   - Comprehensive setup report

- Access instructions
- Troubleshooting guide

Pending Components

The following components are pending and require Windows PC environment setup:

Windows PC Setup (8 steps pending)

- VS Code installation and configuration
- Git for Windows installation
- Remote-SSH extension setup
- SSH key generation and deployment
- SSH config file creation
- VS Code Remote-SSH connection
- Remote extensions installation
- VS Code Python interpreter configuration

Notes on Pending Components

- These components are **not required** for core training functionality
- The Ubuntu server environment is **fully operational** for training activities
- Windows components can be set up separately when needed for remote development
- All training materials and exercises can be run directly on the Ubuntu environment

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Troubleshooting Guide

Common Issues and Solutions

Virtual Environment Issues

Problem: Virtual environment not activating
Solution:

```
cd ~/training/hx-spec-kit
source .venv-hx-spec-kit-py311/bin/activate
# Verify with: which python
```

Domain Resolution Issues

Problem: dev-test.hana-x.ai not resolving
Solution:

```
# Check hosts file entries
grep hana-x /etc/hosts
# Should show: 192.168.1.100    dev-test.hana-x.ai
```

Python Package Issues

Problem: Missing packages (pytest, requests)
Solution:

```
cd ~/training/hx-spec-kit
source .venv-hx-spec-kit-py311/bin/activate
pip install pytest requests
```

Environment Validation Failures

Problem: Validation script reports failures
Solution:

```
# Run individual validation
cd /home/ubuntu/github_repos/GitHub-Spec-Kit-Training-Program
./scripts/validate_env.sh
# Check specific failing component and re-run setup if needed
```

Re-running Setup

If any issues occur, the entire setup can be re-run:

```
cd /home/ubuntu/github_repos/GitHub-Spec-Kit-Training-Program
./scripts/setup_test_env.sh
./scripts/validate_env.sh
```

Training Readiness Confirmation

✅ ENVIRONMENT READY FOR TRAINING

The test environment meets all requirements for GitHub Spec Kit Training Program Module 1:

1. ✅ **Core Infrastructure**: Ubuntu server with all required tools
2. ✅ **Development Environment**: Python 3.11 with virtual environment
3. ✅ **Network Configuration**: Domain resolution and connectivity
4. ✅ **Training Workspace**: Organized directory structure
5. ✅ **Validation Framework**: Comprehensive testing and verification
6. ✅ **Documentation**: Complete setup and access instructions
7. ✅ **Automation**: Scripts for setup, validation, and testing
8. ✅ **Troubleshooting**: Support resources and issue resolution

Next Steps for Training Delivery

1. **Training Materials**: Deploy specific Module 1 content to `training/` directory
2. **Participant Access**: Provide access instructions from this report
3. **Training Scenarios**: Configure specific exercises and examples
4. **Support Resources**: Ensure troubleshooting guide is accessible
5. **Environment Monitoring**: Regular validation using provided scripts

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Contact and Support

Environment Support

- **Setup Scripts**: Use `scripts/setup_test_env.sh` for re-installation
- **Validation**: Use `scripts/validate_env.sh` for health checks
- **Testing**: Use `test_environment.py` for runtime verification
- **Documentation**: Refer to `docs/environment/` for detailed procedures

Training Program Support

- **Repository**: `/home/ubuntu/github_repos/GitHub-Spec-Kit-Training-Program/`
- **Documentation**: `docs/` directory with comprehensive guides
- **Environment Logs**: `docs/environment/ENV_READINESS.md`

Report Generated: 2025-09-22 21:41:00
Environment Status: ✅ OPERATIONAL AND READY FOR TRAINING
Validation Status: ✅ ALL TESTS PASSED (11/11)
Training Readiness: ✅ CONFIRMED