Maturity Model for IT Orchestration & Automation

For Guiding and Accelerating Your Organization's Automation Journey

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Executive Summary

Thanks to major advances in automation and the megatrend of digital transformation, technology environments and the business tech stack have grown far more complex and dynamic over the past several years.

Top contributors include cloud computing, the rise of DevOps, and microservices and containers. Collectively, these factors have created more rigorous requirements for speed and responsiveness in the delivery, management, and interconnectivity of infrastructure, applications, and services.

In fact, the speed and flexibility now required in the configuration, provisioning, issue resolution, and ongoing management of the modern technology stack have outpaced humans' capabilities. People simply can no longer keep up.

Orchestration powered by strategic automation is the answer. It's also a new imperative for sustaining competitiveness.

Effective orchestration involves a wide range of technologies and processes, and those resources are continually evolving. All too often, automation is adopted as a tactical response rather than a strategic, organization-wide initiative. The result is tool sprawl, a lack of interconnectedness, and an overall inability to orchestrate processes, applications, and services.

This makes it difficult for organizations to gauge where their automation capabilities presently stand and how best to improve them.

To help organizations assess their capabilities and determine how to strengthen them, Intelliflow offers this guide on the Maturity Model for IT Orchestration & Automation. It describes a tiered framework made up of five distinct levels of automation maturity. Organizations can use this model for automation self-assessments and to develop effective plans for improvement.

Embracing and implementing orchestration and automation is a complex undertaking that takes time and usually occurs in phases. The goal of this guide is to help organizations develop sound automation plans and to navigate those plans successfully as they move forward.

Introduction – The Nature and State of the Market

With more strategic orchestration and automation, organizations simplify and streamline their operations by lowering the barrier to entry for technical infrastructure tasks. This access enables development teams to do more in less time or with fewer resources. In basic terms, this form of automation codifies integrations and infrastructure setup with rules and triggers so they can be handled quickly, efficiently, and correctly.

This type of automation straddles two different types of resources that populate multiple dimensions of technology management. First, there's all the hardware, such as routers, hubs, and switches, as well as physical and virtual servers. Second is the software that comprises all the applications and other services that users rely on. In addition to apps, this includes tech stack items such as operating systems, containers and microservices, cloud-based services, and more.

These and other changes have made environments much faster, more dynamic, and far more complex. This evolution has made success with orchestration and automation more complicated and difficult to attain but more critical for productivity. This is where traditional point solutions or tools — whether off the shelf or embedded into siloed products and services — fall short when businesses look to orchestrate strategic full-stack, organization-wide, cross-domain automation.

Task automation and coordinated orchestration tools are resources that need to be configured, provisioned, managed, and secured, and done so in ways that are consistent, responsive, reliable, and fast. Automating these resources with a platform capable of aggregating, integrating, and accelerating infrastructure, networks, and workflows — and pre-existing automations — is the best practice for enterprise-wide strategic automation.

Benefits of Automation

Automation reduces the human error that frequently occurs when configurations are handled manually. It lowers operational complexity, which lowers both the cost and effort of managing the technology that keeps a business running and innovating. It improves workflows by making them more reliable and manageable, and it paves the way for faster and more responsive delivery of services. But most importantly, automation frees up an organization's talented tech staffers so they can be more innovative, add more value, and work on more strategic projects.

These benefits are the reason why DevOps, IT, and other teams with responsibility for business unit tech stacks are increasingly turning to orchestration platforms and expanding their use of these tools.

Growing Trends

The market momentum for automation solutions is growing rapidly, a fact that's reflected in many market researchers' adoption data and market sizing forecasts. How fast is this market growing? While each market research firm has its own particular view of this general market, here are some relevant data points and forecasts from reputable sources.

Based on recent underline survey data from Forrester:

"87% of enterprise developers use low-code development platforms for at least some of their development work."

In a underline 2023 article from Gartner, its authors stated that:

"By 2026, **80% of large software engineering organizations will establish platform engineering teams** as internal providers of reusable services, components and tools for application delivery. Platform engineering will ultimately solve the central problem of cooperation between software developers and operators."

These and other research reports paint a clear picture: Digital transformation is a competitive must-do. Automation is a key element of these IT environment redesigns. In more and more organizations, this type of strategic automation is being rapidly adopted as DevOps, IT, and security teams increasingly look to these tools to meet their transformation objectives.

The Intelliflow IT Orchestration & Automation Maturity Model

To develop this model, Intelliflow's technical staff drew on their experiences implementing automation and orchestration projects for customers, as well as their extensive involvement in relevant industry groups and forums.

The result is the Intelliflow IT Orchestration & Automation Maturity Model.

This model recognizes the importance of DevOps, NetDevOps, and ITOps teams being able to consistently meet the growing numbers of IT challenges facing their businesses. Therefore, the overall goal of this model is to help organizations overcome these challenges by automating high-value, repeatable tasks within their organizations.

The model describes five separate levels of automation maturity, the concepts and capabilities generally found at each level, and the operational advantages that come with improvements in automation maturity.

Organizations can use this model to:

• Think more strategically about their IT O&A requirements and resources.
• Accurately assess present capabilities and identify gaps between capabilities and needs.
• Prioritize the changes and upgrades they need to make to advance to higher levels.
• Develop plans for making improvements to enable steady, measurable, upward progress.

Figure 1. The Intelliflow IT Orchestration & Automation Maturity Model
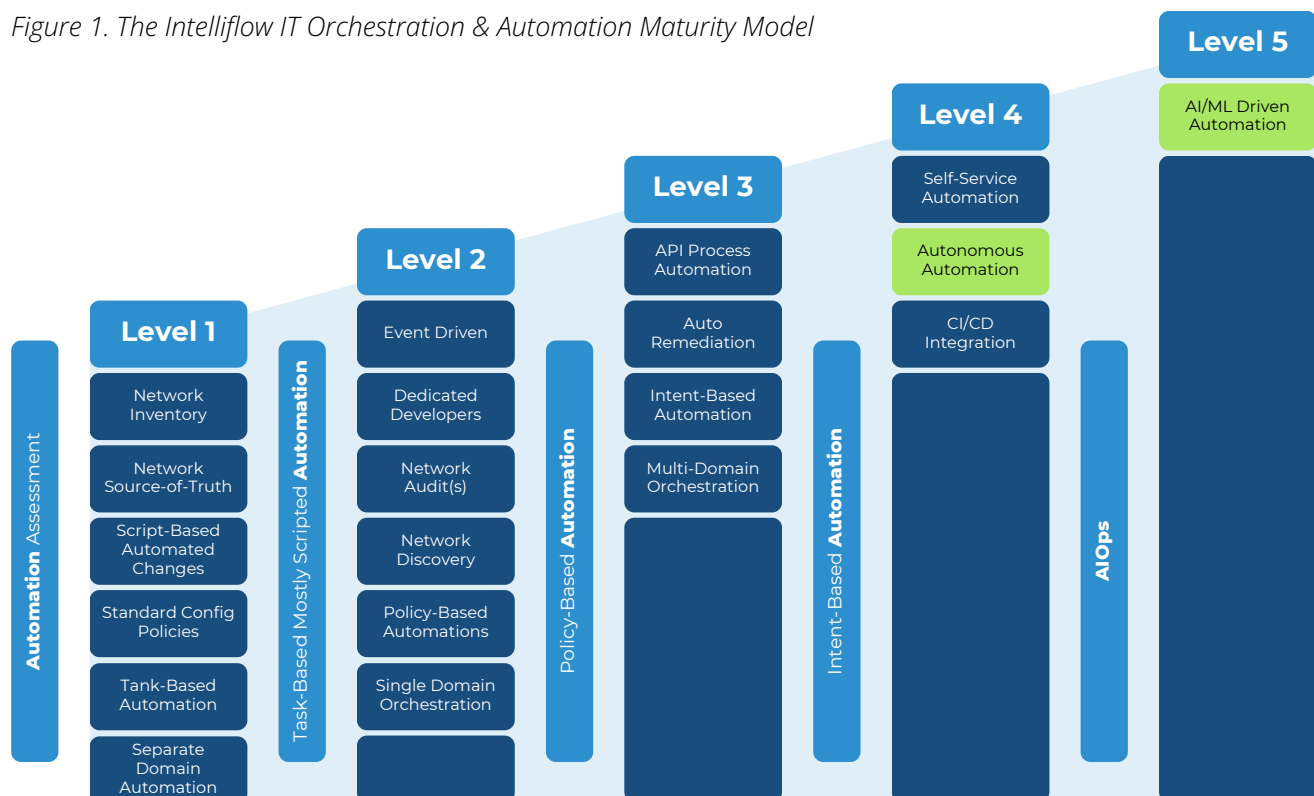
Level One – Your Automation Baseline

The first step in improving anything is to establish a baseline or starting point. To do this, enterprises need to ask: "Where do we stand today with automation, resources, capabilities, processes, and asset management?"

To get the answers they need, enterprises must be able to collect and maintain accurate inventories of relevant resources. Only with accurate data can an organization build the types of foundations required for building out higher-order forms of IT orchestration and automation.

Thus, Level One focuses on an organization's ability to capture its infrastructure information thoroughly and efficiently, and to store it cleanly in standardized data sets. This generally requires interaction at either the device level, with discovery tools, and/or with asset management databases.

This visibility and information generally comes from task-based, mostly scripted automation of items to gather and validate inventory including:

- IP Address Management Systems
- ITSM solutions such as ServiceNow
- Network Management Solutions
- Network 'single source of truth' such as configuration management tools
- Domain-specific inventory from network, storage, and compute platforms

The primary business benefit gained by attaining Level One status is data standardization. The more sophisticated and valuable automation that is possible in the higher levels of this model all traverse boundaries of one sort or another. In some cases, the boundaries are organizational — e.g., between groups, departments, and divisions, between the company and its suppliers or business partners, or between separate platforms, services, and applications.

In virtually all cases, data that's in standardized (normalized and unified) formats is a must-have for automations to work properly. Therefore, having visibility into an organization's automation-relevant resources, and the ability to generate standardized data from those resources, are both critically important. There's an old saying that "you can't automate what you can't see."

The results of those functions inform and power higher-level automation. It's critical for companies to be prepared in this area before moving ahead with major new automation initiatives. Automation assessments help to level-set these capabilities and can help organizations to determine which new automation to pursue in which priority order.

How to Move to Level Two:

- Analyze the results of the assessment and look for commonalities.
- Check if commonalities can be linked or leveraged to create broader or more sophisticated automations for IT tasks and workflows.
- Define a limited test case or POC in which more ambitious automation is the goal.

Level Two – Task-Based Automation

Organizations at Level Two of the IT O&A Maturity Model have implemented automation in some of their IT provisioning, maintenance, and management activities. The benefits gained at this level include enabling tech teams to operate with more agility, growing those teams' 'automation IQ,' streamlining operations, and the reduction of human errors. Traits and capabilities typically exhibited at this level include:

- Dedicated teams of developers focused on automation
- More accurate and efficient network discovery & auditing
- Increased insight into infrastructure performance and resiliency
- Single-domain orchestration
- Beginning to work with event-driven automation

Level Two-type automations are typically limited in scope, however. One reason is that they are focused on discrete tasks. Another reason is that they are mostly script-based, often created with declarative tools like Terraform scripts, PowerShell scripts, or Ansible playbooks. Due to their declarative nature, these tools are somewhat constrained in the flexibility they can offer. Those constraints can create hurdles when dealing with complex processes and workflows for which advanced automation with deep levels of logic is required.

Still, despite their limitations, the task-based and mostly scripted automations that characterize Level Two do have value. They simplify and streamline some DevOps and IT tasks that those teams would otherwise have to handle manually. Plus, their existence in an IT environment indicates that an enterprise has started its automation journey and has made some significant progress.

How to Move to Level Three:

- Create and organize libraries of declarative automation scripts and remove organizational silos so that Level Two automation can begin the transformation to orchestration at Level Three.
- Build a center of automation excellence by identifying staff who have worked on Level Two automations and provide department-wide knowledge transfer, allowing more teams to pursue new, ambitious automation initiatives.
- Prepare for policy-driven automation. Think about and map DevOps, IT, and security policies and the activities they drive. Begin to design cross-silo orchestration of Level Two automations already built.

Level Three – Policy-Based Automation

Organizations at Level Three of the IT O&A Maturity Model have developed and implemented policy-driven automations across multiple technology domains and organizational silos. Examples include: configuring and provisioning virtual compute, user onboarding and offboarding, automated escalation of events, and automated remediation of security and network performance issues.

Instead of focusing on single tasks, Level Three's policy-based automation takes a broader view. It enables organizations to centralize the development and management of orchestration involving multiple automated tasks or steps.

At this level of maturity, organizations are codifying policies, then applying and enforcing them consistently — and automatically — throughout their environments. That includes processes and workflows that traverse organizational boundaries and extend up and down the technology stack.

Capabilities and functionality typically exhibited at Level Three may include:

- Multi-domain orchestration
- Intent-based outcomes
- Automation-driven integration of management and ticketing systems

Instead of having to go 'hands-on', teams at Level Three define and apply standards for processes and workflows that dictate precisely what needs to happen when, to which resources, and under which conditions. That moves important but repetitive tasks off the plates of IT, DevOps, and security teams so they can focus on more valuable and strategic work.

> ## How to Move to Level Four:
>
> - Transcend domain-specific technologies and processes in favor of business outcomes.
> - Codify policy to allow autonomous, event-driven automation to happen.
> - Apply modern software techniques such as CI/CD pipelines to infrastructure automation

Level Four – Intent-Based Automation

Organizations have arrived at Level Four of the IT Orchestration & Automation Maturity Model if they have implemented intent-based automation and are using it in production. Intent-based automation enables business policy to be applied across network environments with diverse platforms, systems, and tools, as well as myriad service domains. When organizations achieve this level of automation, business decisions and services can be enacted immediately, eliminating months of design and planning, which were incorporated into Levels One through Three.

The core concept here is 'intent', which, in plain terms, refers to somebody wanting something to happen within their IT environment. Examples include things like a DevOps leader wanting to change how their team's CI/CD cycles are tracked, or a sales executive needing to change how prospects are scored for sales pipeline reporting. At Level Four, they can simply express their intent, and the O&A systems and tools automatically make the desired change without any human intervention.

Capabilities that generally underpin Level Four automation include:

- CI/CD methodology and integration
- Autonomous automation — event-triggered analysis and remediation
- Self-service automation for the delivery of applications and services

Since this type of automation is largely autonomous, the first step is to develop guardrails for the whole effort. That means defining rules and creating policies and procedures that will govern and control which intentions (types, operational context, requester authentication, etc.) will be approved and implemented, and which will not.

Intent-based automation gets near the top of the Maturity pyramid and is undoubtedly a complex and challenging undertaking. However, for organizations that achieve it, intent-based functionality creates IT and network services that are dynamic, flexible, and not prone to human error. It results in high levels of availability, stability, and performance across organizational boundaries.

Automating all that toil that would otherwise have to be handled manually by DevOps, IT, and security teams gets all those tasks done faster, with fewer errors, and at lower costs. Even more positive and impactful is that those teams are freed up to undertake more important work.

How to Move to Level Five:

- Document the business successes achieved in Level Four automations.
- Socialize both the technology and process advances.
- Begin to align with vendors that provide effective, user-friendly interfaces for automation.

Level Five – AIOps

Artificial Intelligence for IT Operations, or AIOps for short, sits at the top of the IT O&A pyramid. Organizations at Level Five use AIOps-driven automation, blending advanced data science with machine learning technology to make process improvements and solve a range of IT operations challenges.

By enhancing IT processes and tasks with automation, AIOps-driven automation enables the complete replacement of manual IT functions and processes with new versions that are "full-auto."

This change drives faster, more accurate, and more effective outcomes — in terms of both operational and financial performance. Areas of IT and network operations that are popular focal points for AIOps-powered automation include network and application performance analysis, anomaly detection, event correlation and analysis, QoS and SLA management, dynamic provisioning, and cloud cost management.

In short, AIOps-driven automation uses new, powerful technologies to provide more effective, efficient, and low-risk ways to deliver responsive and adaptable IT operations in today's modern network environments.

Conclusion

Although many organizations are still in the early days of their digital transformations, and their use of IT orchestration and automation is limited, now is the time for them to bear down and focus on this critical area. By adopting and embracing this game-changing technology, companies will reap myriad benefits and gain competitive advantages that will be tough for challengers to overcome. Conversely, delaying this major — and ultimately, inevitable — shift will only make companies fall further behind in their markets.

Implementing IT automation and orchestration need not be complicated, risky, or expensive. In fact, whether they realize it or not, with their virtualization, container, and cloud computing initiatives, they're already laying the groundwork for process automation.

The most important thing is to get started and to know your starting point. We hope that this Maturity Model will help teams to do both of those things. We also hope that it serves as a guide — or a roadmap of sorts — as they begin to climb up through the levels.

The Intelliflow Platform

Intelliflow's low-code platform for full-stack orchestration simplifies how operations and engineering organizations build and deploy automation. By transforming API code into low-code building blocks, Intelliflow simplifies, streamlines, and secures the communication between an organization's key platforms, services, and applications.

Intelliflow has abstracted thousands of vendor APIs to create intelligent action blocks, allowing users to drag and drop blocks rather than write and rewrite lines of code. From a single platform, citizen developers are able to build consistent and meaningful automation across platforms, services, and applications in minutes — maximizing value across the entire technology stack in one place.

Intelliflow's customers have experienced significant reductions in the time it takes them to address business challenges and adapt to changing conditions. They also are able to launch new services much faster. And from a leadership perspective, companies are able to envision their automation goals and successfully achieve them with the added benefit of centralized administrative control and total transparency.

Contact Us

If your organization is pursuing some form of digital transformation and you want to leverage automation without getting bogged down in all the complexity, Intelliflow has a solution for you. Our platform and consulting staff support all five phases of the maturity model and assist customers as they establish their place in the model and navigate each phase.

To learn more about our powerful but ultra-simple platform, visit our website.

Ready to move faster?

Set up your personalized demo by getting in touch.

Request a Demo